Clear Lake Annotated Bibliography

August 29, 2011

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This bibliography contains 302 references, including journal articles, books, reports, newspaper articles, and videos. The main focus was on fish, particularly Clear Lake hitch and largemouth bass, but there are also references on culture, settlement, mining, and lake water chemistry.

Items are listed in alphabetical order by author, beginning with anonymous works (no author listed).

A version of this bibliography is available in EndNote, at no cost.
Please contact Lisa Thompson at lcthompson@ucdavis.edu to obtain a copy.

Reference Type: Newspaper Article
Record Number: 211
Year: 1850
Title: From California-Clear Lake Indian Massacre
Newspaper: New-Hampshire Patriot
Place Published: Concord, New Hampshire
Issue Date: July 11, 1850
Short Title: From California-Clear Lake Indian Massacre
Notes: html ONLINE; settlement
URL:
http://docs.newsbank.com/s/HistArchive/ahnpdoc/EANX/10C296745F173A80/0D0CB57AEDE52A75

Reference Type: Newspaper Article
Record Number: 255
Year: 1857-1876
Title: Scrapbooks on San Francisco water, 1857-1876
Frequency: 2
Issue Date: 1857-1876
Type of Article: Book; Archival Material Date of Entry: 20040427
Short Title: Scrapbooks on San Francisco water, 1857-1876
Accession Number: OCLC: 122382996 Provider: OCLC
Call Number: call # - MS OV 5085 CHS

Keywords: Water-supply -- California -- San Francisco.
Abstract: Newspaper clippings (and a few documents), chiefly on San Francisco's water supply: rainfall, reservoirs, water companies, water in mining, hydrants. Water companies mentioned include: San Francisco Water Works Co.; Bensley Water Co., Spring Valley Water Co., San Mateo Water Co., Mountain Home Water Co., Pacific Water Co. Volume 1 (1857-1871) also includes clippings on Central Pacific Railroad construction; coal at Mt. Diablo; San Francisco Fire Dept.; law (e.g., regarding private corporations, and mining); Croton reservoir in N.Y.; a burst dam in Sheffield, England; and construction of a railway tunnel in Mont Cenis, France. Volume 2 (1875-1876) includes several illustrations from Thistleton's Illustrated Jolly Giant on pollution of Spring Valley water by Lock's ranch, and clippings on lakes (Lake Merced, Clear Lake, Blue Lakes, mountain lakes), water supply of N.Y., and street paving.
Notes: clear lake
ill. ; 36 cm.
Pages are unnumbered, and blank pages were not included in the page count./ Previously listed as Magee Scrapbook. More Records: Show record information

Reference Type: Newspaper Article
Record Number: 256
Year: 1859
Title: Another California Curiosity-Borax Lake
Newspaper: The Pittsfield Sun
Place Published: Pittsfield, Massachusetts
Issue Date: January 20, 1859
Short Title: Another California Curiosity-Borax Lake
Abstract: need abstract
Notes: clear lake; pollution; html ONLINE

-borax lake
-sulphur lake
URL:
http://docs.newsbank.com/s/HistArchive/ahnpdoc/EANX/1064829133808769/0D0CB57AEDE52A75

Reference Type: Newspaper Article
Record Number: 257
Year: 1866
Title: The Lake County Democrat
Newspaper: The Lake County Democrat
Place Published: Lakeport, Lake Co., Cal.
Publisher: E.F. Lemar & W.B. James Place: United States; California; Lake; Lakeport.
Pages: Vol. 1, no. 1 (May 9, 1866)-; v.
Issue Date: 1866-1800s
Type of Article: Serial
Short Title: The Lake County Democrat

ISSN: LCCN: sn 93-52047
Accession Number: OCLC: 28536867 Provider: OCLC
Call Number: call # - BANC NMP 4284:11 Bancroft UCB and NRLF; MICROFILM 78779 News Micro UCB
Keywords: Lake County (Calif.) -- Newspapers.
Notes: clear lake; fish
Weekly
Newspaper (new)

Reference Type: Newspaper Article
Record Number: 91
Year: 1888
Title: The Clear Lake press
Newspaper: The Clear Lake press
Place Published: Lower Lake, Calif.
Publisher: J.B. Baccus, Jr. Place: United States; California; Lake; Lower Lake.
Pages: Began in 1886.; v. ; 61 cm.
Issue Date: 1886-1900s
Type of Article: Serial
Short Title: The Clear Lake press
ISSN: LCCN: sn 85-66441
Accession Number: OCLC: 12982966 Provider: OCLC
Call Number: call # - BANC NMP 4284:12 Bancroft UCB and NRLF; MICROFILM 78779 Micro News UCB; CSL
Keywords: Lake County (Calif.) -- Newspapers.
Lower Lake (Calif.) -- Newspapers.
Notes: clear lake
Weekly
Description based on: Vol. 3, no. 15 (Oct. 20, 1888).
Newspaper (new)

Reference Type: Audiovisual Material
Record Number: 258
Year: 1900
Title: The Indians of California Photograph Collection, [ca.1900s]
Date: 1900
Type: Archival Material
Short Title: The Indians of California Photograph Collection, [ca.1900s]
Accession Number: OCLC: 62257212 Provider: OCLC
Call Number: call # - Mss 71 special collections; UCSB
Keywords: Indians of North America -- California -- History.
Indians of North American -- California -- History.
Abstract: The collection contains 69 black and white photographs of California Native Americans, apparently the Yokut of the San Joaquin Valley, Miwok of Yosemite, and the Pomo

of the Clear Lake Basin - with captions indicating activities such as arrow making, basket making, fishing, hunting, and village life. Used at one point as educational packets, these appear to be relatively recent photos, not 19th century or early 20th century ethnographic images.
Notes: native american; photo
Use of the collection is unrestricted./ Use governed by UCSB Special Collections' policy./ Preferred citation: Cite as: [Identification of item], The Indians of California Photograph Collection, Mss 71, Department of Special Collections, Davidson Library, University of California, Santa Barbara./ Finding aid available in the Department of Special Collections and on the Internet./ Acquisition Information: Purchase, 1987-1988.
URL: http://www.oac.cdlib.org/findaid/ark:/13030/kt6199p09b
Note: Finding aid http://www.oac.cdlib.org/findaid/ark:/13030/kt6199p09b

Reference Type: Manuscript
Record Number: 259
Year: 1917
Title: An abbreviated history of the fight between the Lake County people and the Yolo Water & Power Company for possession of our Lake County waters, [1917?]
Pages: 18 leaves ; 34 cm.
Date: 1917
Type of Work: Book; Archival Material Date of Entry: 19980501
Short Title: An abbreviated history of the fight between the Lake County people and the Yolo Water & Power Company for possession of our Lake County waters, [1917?]
Accession Number: OCLC: 39048533 Provider: OCLC
Call Number: call # - MS 86/7 459.3.8a WRCA UCB
Keywords: Water rights -- California -- Lake County -- History.
Water rights -- California -- Yolo County -- History.
Water diversion -- California -- Clear Lake (Lake County) -- History.
Yolo Power and Water Company.
Clear Lake (Lake County, Calif.) -- Water rights -- History.
Cache Creek (Lake County and Yolo County, Calif.) -- Water rights -- History.
Abstract: need abstract
Notes: water rights; settlement
Typescript, with holograph annotations.
Manuscript (mss)

Reference Type: Book
Record Number: 260
Year: 1919
Title: The people of the state of California, plaintiff, vs. Yolo Water and Power Company, a corporation, defendant, F.G. Burrows, et al., intervenors, 1919 December
Number of Pages: 2 leaves ; 34 cm.
Date: 1919
Type of Work: Book; Archival Material Date of Entry: 19980501

Short Title: The people of the state of California, plaintiff, vs. Yolo Water and Power Company, a corporation, defendant, F.G. Burrows, et al., intervenors, 1919 December
Abbreviation: At head of title:; In the Superior Court of the state of California, in and for the county of Lake
Accession Number: OCLC: 39048450 Provider: OCLC
Call Number: call # - MS 86/7 455.2e UCB WRCA
Keywords: Irrigation -- California -- Yolo County.
Water rights -- California -- Yolo County.
Water rights -- California -- Lake County.
Water diversion -- California -- Clear Lake (Lake County)
Yolo Power and Water Company.
Clear Lake (Lake County, Calif.) -- Water rights.
Abstract: need abstract
Notes: wate rights
California.; Superior Court (Lake County)
Typescript (carbon).
Manuscript (mss)
Research Notes: UCD

Reference Type: Report
Record Number: 261
Year: 1936
Title: Deepen the irrigation channel between Clear Lake and Lost River, in the state of California : report (to accompany H.R. 6773)
Series Title: Report / 74th Congress, 2d session, Senate;; no. 2228; Variation: United States.; Congress.; Senate.; Report ; 74th Congress, no. 2228.
Place Published: [Washington, D.C.?
Institution: U.S. G.P.O.
Pages: 2 p.
Short Title: Deepen the irrigation channel between Clear Lake and Lost River, in the state of California : report (to accompany H.R. 6773)
Accession Number: OCLC: 29179214 Provider: OCLC
Call Number:call # - Y 1.1/2: 09989 1936 no. 2228 Univ of Central Oklahoma lib use only
Keywords: Channels (Hydraulic engineering) -- California.
Abstract: need abstract
Notes: clear lake; settlement; flood control
United States. Congress. Senate. Committee on Irrigation and Reclamation.
23 cm.
Caption title./ "June 1 ... 1936."
Government publication (gpb); National government publication (ngp)
Book

Reference Type: Book
Record Number: 262

Year: 1939
Title: Preliminary examination, flood control Sacramento and San Joaquin River valleys, California. Appendix K, Clear Lake area
Place Published: Sacramento
Publisher: The Corps
Number of Volumes: 1
Short Title: Preliminary examination, flood control Sacramento and San Joaquin River valleys, California. Appendix K, Clear Lake area
Accession Number: OCLC: 24022035 Provider: OCLC
Call Number: call # - G430 F6 App.K WRCA at NRLF UCB
Keywords: Flood control -- California -- Sacramento River Watershed.
Flood control -- California -- San Joaquin River Watershed.
Clear Lake (Lake County, Calif.)
Kelsey Creek (Calif.)
Adobe Creek (Lake County, Calif.)
Middle Creek (Calif.)
Clover Creek (Calif.)
Scotts Creek (Calif.)
Abstract: need abstract
Notes: flood control
United States. Army. Corps of Engineers.
ill., maps ; 37 cm.
Government publication (gpb); National government publication (ngp)
Book

Reference Type: Book
Record Number: 263
Year: 1939
Title: Report on Clear Lake-Cache Creek flood control investigation
Place Published: [Sacramento, Calif.]
Publisher: State of California, Department of Public Works, Division of Water Resources
Number of Volumes: 1
Number of Pages: (various pagings)
Short Title: Report on Clear Lake-Cache Creek flood control investigation
Accession Number: OCLC: 13902174 Provider: OCLC
Call Number: call # - TC424.C2 R4 1939 PhySciEng UCD

LC: TC424.C2; Dewey: 627.474
Keywords: Flood control -- California -- Clear Lake (Lake County)
Flood control -- California -- Cache Creek (Lake County and Yolo County)
Abstract: need abstract
Notes: flood control
California.; Division of Water Resources.
ill., maps ; 28 cm.
"February, 1939."

State of California, Department of Public Works, Division of Water Resources. More Records:
Show record information
Book

Reference Type: Book
Record Number: 264
Year: 1950
Title: A preliminary report on fish and wildlife resources in relation to the Clear Lake and Cache Creek Project, California
Place Published: Portland (Ore.)
Publisher: U.S. Dept. of the Interior, Fish and Wildlife Service
Number of Pages: ii, 17 leaves, 1 leaf of plates
Short Title: A preliminary report on fish and wildlife resources in relation to the Clear Lake and Cache Creek Project, California
Accession Number: OCLC: 33001797 Provider: OCLC
Call Number: call # - DOC I 49.2:C 58/2x Shields UCD gov info stacks

LC: TC425.C3
Keywords: Water resources development -- California -- Cache Creek.
Wildlife conservation -- California -- Cache Creek.
Fishery management -- California -- Cache Creek.
Cache Creek (Calif.)
Abstract: need abstract
Notes: fish
U.S. Fish and Wildlife Service.
ill., map ; 27 cm.
"June 1950."
United States Department of the Interior, Fish and Wildlife Service.
Government publication (gpb); National government publication (ngp)
Book

- Pg 5
- Scotts, middle, clover, doba(?), Kelsey, cole
- Pg 8
- Above Indian valley dam site:
  - Rainbow trout, sac sucker, native cyprinids (sac Pikeminnow)
- Kelsey, scotts, clover, middle-hitch spawning streams
  - Important forage fish
  - Spawn late march and early april
- Small trout fisheries on scotts, middle and clover
- Indian valley-flood control
- Pg 17
- Kelseyville dam would result in insignificant fishery loss

Reference Type: Book
Record Number: 265
Year: 1954
Title: Engineering report on report of Soil Conservation Service, United States Department of Agriculture on Adobe Creek watershed protection project, Lake County, California
Place Published: [Sacramento]
Publisher: The Division
Number of Pages: 32 leaves
Short Title: Engineering report on report of Soil Conservation Service, United States Department of Agriculture on Adobe Creek watershed protection project, Lake County, California
Accession Number: OCLC: 24358094 Provider: OCLC
Call Number: call # - G458 H4 WRCS UCB; P2500 .A45 STATE LIB CSL
Keywords: Watershed management -- California -- Adobe Creek Watershed (Lake County)
Adobe Creek Watershed (Lake County, Calif.)
Abstract: need abstract
Notes: tributary; soil
California. Division of Water Resources. ; United States.; Soil Conservation Service.
ill., photos. ; 28 cm.
Government publication (gpb); State or province government publication (sgp)
Book

Reference Type: Book
Record Number: 266
Year: 1954
Title: Work plan for the Adobe Creek subwatershed of the Cache Creek Watershed in Lake County, California
Place Published: Portland, Ore.
Publisher: The Service
Number of Volumes: 1
Short Title: Work plan for the Adobe Creek subwatershed of the Cache Creek Watershed in Lake County, California
Accession Number: OCLC: 24351697 Provider: OCLC
Call Number: call # - G458 H4-1 WRCS UCB
Keywords: Cache Creek Watershed (Calif.)
Adobe Creek Watershed (Calif.)
Lake County (Calif.)
Lake County Flood Control and Water Conservation District (Calif.)
Abstract: need abstract
Notes: tributary
United States. Soil Conservation Service. ; Big Valley Soil Conservation District. ; United States.; Forest Service.
ill., maps ; 27 cm.
Cover title: Work plan, Adobe Creek watershed, California.
Government publication (gpb); National government publication (ngp)
Book

Reference Type: Book
Record Number: 267
Year: 1958
Title: Watershed work plan Adobe Creek watershed, Lake County, California
Place Published: Palo Alto, Calif.
Publisher: George S. Nolte
Number of Pages: 39, [31] p.
Short Title: Watershed work plan Adobe Creek watershed, Lake County, California
Accession Number: OCLC: 227012134 Provider: OCLC
Call Number: call # - G458 H8-1 WRCA UCB
Keywords: Watershed management -- California -- Lake County.
Adobe Creek (Calif.)
Abstract: need abstract
Notes: tributary
George S. Nolte and Associates. ; Lake County Flood Control and Water Conservation District (Calif.) ; Big Valley Soil Conservation District (Calif.) ; United States.; Soil Conservation Service. ; United States.; Forest Service.
ill., map ; 28 cm.
"March 1958."/ "Prepared under the authority of the Watershed Protection and Flood Prevention Act (Public Law 566, 83d Congress, 68 Stat. 666) as amended by the Act of August 7, 1956 (Public Law 1018, 84th Congress, 70 Stat. 1088)".
prepared by George S. Nolte ; for Lake County Flood Control and Water Conservation District [and] Big Valley Soil Conservation District ; with assistance by U.S. Department of Agriculture, Soil Conservation Service [and] U.S. Department of Agriculture, Forest Service.
Book

Reference Type: Book
Record Number: 268
Year: 1959
Title: A reconnaissance study to investigate the feasibility of the Scotts Creek watershed project for construction under the Federal watershed protection and flood prevention act as amended : a report for the State Soil Conservation Commission
Place Published: [Sacramento?
Publisher: s.n.]
Number of Pages: 15 p.
Short Title: A reconnaissance study to investigate the feasibility of the Scotts Creek watershed project for construction under the Federal watershed protection and flood prevention act as amended : a report for the State Soil Conservation Commission
Accession Number: OCLC: 58854758 Provider: OCLC
Call Number: call # - N530 .S31 STATE LIB CSL

GovDoc: N530.S31
Keywords: Watersheds -- California -- Lake County.

Watershed management -- California -- Lake County.
Soil conservation -- California -- Lake County.
Scotts Creek watershed (Lake County, Calif.)
Lake County (Calif.)
Abstract: need abstract
Notes: tributary
California. Division of Soil Conservation. ; California.; State Soil Conservation Commission.
ill., map.
[Prepared under the authority of the Watershed protection and flood prevention act (Public law 566, 83rd Congress; 68 Stat. 666), as amended].
Feasibility of the Scotts Creek watershed project.; United States.; Watershed protection and flood prevention act.
Government publication (gpb); State or province government publication (sgp)
Book

Reference Type: Unpublished Work
Record Number: 553
Year: 1962-1980
Title of Work: Clear Lake Commercial Catch Records
Place Published: Yountville
Institution: State of California- The Resources Agency
Department: California Department of Fish and Game
Short Title: Clear Lake Commercial Catch Records
Abstract: Commercial catch and by-catch records recorded by individual anglers, years dating 1962-1980. Species recorded include: Carp, Blackfish, Hitch, Channel catfish, White catfish, Brown bullhead, Crappie, Bluegill, Largemouth Bass, Sacramento Perch.

Research Notes: Catch records were photocopied from the California Department of Fish and Game. Assisted by Jay Rowan and DFG Volunteer Gary Sypnicki.
North Central Regional Office
1701 Nimbus Road
Rancho Cordova, CA 95670
Access Date: 7/7/2011

Reference Type: Book
Record Number: 269
Year: 1963
Title: Transcript of public hearing on Scotts Creek, Cache Creek Basin, California : held in Lakeport, California, 4 June 1963
Place Published: Sacramento, Calif.
Publisher: U.S. Army Engineer District, Sacramento Corps of Engineers
Number of Volumes: 1
Number of Pages: (various foliations)

Short Title: Transcript of public hearing on Scotts Creek, Cache Creek Basin, California : held in Lakeport, California, 4 June 1963
Accession Number: OCLC: 36321762 Provider: OCLC
Call Number: call # - MS 97/1 C32 1963 WRCA UCB
Keywords: Flood control -- California -- Cache Creek Watershed (Lake County and Yolo County) -- Planning -- Citizen participation.
Flood control -- California -- Scotts Creek -- Planning -- Citizen participation.
Abstract: need abstract
Notes: tributary
United States.; Army.; Corps of Engineers.; Sacramento District.
map ; 28 cm.
Transcript of public hearing held in connection with plans for Scotts Creek, Cache Creek Basin, California; Public hearing on plans for flood control on Scott's Creek, Cache Creek Basin, California
Government publication (gpb); National government publication (ngp)
Book

Reference Type: Book
Record Number: 270
Year: 1965
Title: Scotts Creek, Cache Creek Basin, California. : Letter from the Secretary of the Army transmitting a letter from the Chief of Engineers ... dated July 27, 1965, submitting a report
Series Title: 89th Cong., 1st Sess. House Document ;; no. 259;
Place Published: Washington
Publisher: GPO
Number of Pages: 133 p.
Short Title: Scotts Creek, Cache Creek Basin, California. : Letter from the Secretary of the Army transmitting a letter from the Chief of Engineers ... dated July 27, 1965, submitting a report
Accession Number: OCLC: 24359199 Provider: OCLC
Call Number: call # - G458 J5-1 WRCA UCB; D 103.22:Sco 8 SSH UCSD

LC: TC425 .C3
Keywords: Scotts Creek Watershed (Calif.)
Lake County (Calif.)
Cache Creek Watershed (Calif.)
Abstract: need abstract
Notes: tributary
United States. Dept. of the Army. ; United States.; Army.; Corps of Engineers.
folded map ; 26 cm.
Government publication (gpb); National government publication (ngp)
Book

Reference Type: Book
Record Number: 103

Year: 1966
Title: Clear Lake water quality investigation
Series Title: Its Bulletin; no. 143-2; Variation: California.; Dept. of Water Resources.; Bulletin ;; no. 143-2.
Publisher: [Sacramento]
Number of Pages: xvi, 202 p. illus., maps (part fold.) 28 cm.
Short Title: Clear Lake water quality investigation
ISBN: LCCN: 66-64396
Accession Number: OCLC: 9588709 Provider: OCLC
Call Number: call # - G400 XW7 no.143-2 WRCS UCB; TD224.C2 A5 no.143-2 Langson UCI; TA224 C3A3 no.143-2 Science UCR; TC824.C2 A2 no.143:2 NRLF; TD224.C3 C123c SRLF; W750 .B9 no.143-2 STATE LIB CSL

LC: TD370 More Records: Show record information
Keywords: Water quality -- California -- Clear Lake.
Abstract: need abstract
Notes: clear lake
California. Dept. of Water Resources.
Book

Reference Type: Book
Record Number: 104
Year: 1966
Title: Report on debris reduction and removal at Clear Lake : prepared pursuant to Senate Concurrent resolution no. 16, 1964 Legislative Session, 1st Extra Session
Place Published: [Sacramento?
Publisher: s.n.
Number of Pages: 28 p.
Short Title: Report on debris reduction and removal at Clear Lake : prepared pursuant to Senate Concurrent resolution no. 16, 1964 Legislative Session, 1st Extra Session
Accession Number: OCLC: 58745654 Provider: OCLC
Call Number: call # - L260 .D4 State Lib CSL

GovDoc: L260.D4
Keywords: Refuse and refuse disposal -- California -- Clear Lake.
Clear Lake (Calif.)
Abstract: need abstract
Notes: clear lake
California. State Lands Commission.
ill., map.
Debris reductiona and removal at Clear Lake.
Government publication (gpb); State or province government publication (sgp)
Book

Reference Type: Book
Record Number: 554
Year: 1969
Title: Fishery Survey 1969
Place Published: Region III
Publisher: California Department of Fish and Game
Short Title: Fishery Survey 1969
Abstract: Methods of take for survey included 21 foot Marinovitch otter trawl, 3/8 inch beach seine 80 x 8 feet, and 6 200 foot electroshock transects. Results yielded 16 species of fish including 33 goldfish, not previously recorded. Undeveloped shoreline yielded most fish. Silversides are now widespread. Bass Growth rates are rapid and compares rate to earlier study (Murphy, 1951). Hitch listed as abundant.
Research Notes: Photocopied from the California Department of Fish and Game. Assisted by Jay Rowan and DFG Volunteer Gary Sypnicki.
North Central Regional Office
1701 Nimbus Road
Rancho Cordova, CA 95670

Access Date: 7/7/2011

Reference Type: Report
Record Number: 271
Year: 1969
Title: Water Quality Control Study, English Ridge Reservoir, Eel River Basin, California
Type: Clean water rept
Short Title: Water Quality Control Study, English Ridge Reservoir, Eel River Basin, California
Accession Number: PB2284354
Call Number:call # - TD224.C3 U56 Shields UCD
Keywords: Water pollution; English Ridge Reservoir; Eel River Basin; California
Water quality control; Water quality standards
50B Civil Engineering: Civil Engineering
Abstract: Construction and operation of the English Ridge Reservoir, as proposed by the U.S. Bureau of Reclamation, together with the naturally available flows from the remaining drainage area, will provide flows in the Eel River downstream from English Ridge Reservoir that will be sufficient to maintain adequate water quality for the fishery and other beneficial uses of the river's waters. The planned diversion of stored water through Clear Lake will enhance the water quality of Clear Lake, and thereby improve its aesthetic and recreational values. (Modified author abstract)
Notes: clear lake
Performer: Federal Water Pollution Control Administration, San Francisco, Calif. Southwest Region. Aug 1969. 69p.

Reference Type: Book
Record Number: 272

Year: 1971
Title: Economic development and water demands Clear Lake Basin
Place Published: [S.l.]
Publisher: The District
Number of Pages: 28 leaves
Short Title: Economic development and water demands Clear Lake Basin
Accession Number: OCLC: 22475100 Provider: OCLC
Call Number: call # - G4581 K1 WRCA UCB
Keywords: Water use -- California -- Lake County.
Water-supply -- California -- Lake County.
Clear Lake Basin (Calif.)
Abstract: need abstract
Notes: settlement; clear lake
California.; Dept. of Water Resources.; Northern District.
map ; 28 cm.
Memorandum report./ "March 1971."
California Dept. of Water Resources, Northern District.
Government publication (gpb); State or province government publication (sgp)
Book

Reference Type: Book
Record Number: 273
Year: 1971
Title: Lakeport Lake, Scotts Creek, California : site selection
Series Title: Design memorandum ;; 4;
Place Published: Sacramento
Publisher: U.S. Army Corps of Engineers, Sacramento District
Number of Pages: [69] p. in various pagings
Short Title: Lakeport Lake, Scotts Creek, California : site selection
Accession Number: OCLC: 32840390 Provider: OCLC
Call Number: call # - DOC D 103.62:L 34/FINALx Shields UCD gov info stacks

LC: TD221 .C3
Keywords: Scotts Creek (Calif.)
Clearlake (Calif.)
Abstract: need abstract
Notes: tributary
United States. Army. Corps of Engineers. Sacramento District.
maps, folded plates ; 27 cm.
Cover title./ "March 1971."
Department of the Army, Sacramento District, Corps of Engineers.
Government publication (gpb); National government publication (ngp)
Book

Reference Type: Report
Record Number: 274
Year: 1972
Title: Lakeport Lake Project, Scotts Creek, California
Type: Draft environmental impact statement
Short Title: Lakeport Lake Project, Scotts Creek, California
Accession Number: EISCA725528D
Call Number:call # - DOC D 103.62:L 34/FINALx Shields UCD gov info stacks
Keywords: Environmental surveys; Dams; California; Multiple purpose reservoirs;
Construction; Flood control; Water supply; Recreational facilities;
Land use; Runoff
Environmental impact statements; Land inundation
68 Environmental Pollution & Control
Abstract: The project consists of construction of a rolled earth and rockfill dam and creation of a multiple purpose reservoir in Lake County, California, for the purpose of flood protection, water supply, and recreation. Environmental effects include land inundation and increase in agricultural runoff into a lake.
Notes: tributary
Performer: Army Engineer District, Sacramento, Calif. Aug 1972. 77p. Report: ELR5528

Reference Type: Book
Record Number: 275
Year: 1972
Title: Water quality study : effects of Lakeport Project on Scotts Creek and Clear Lake
Place Published: San Francisco, Calif.
Publisher: Brown and Caldwell
Number of Pages: ii, 44, [6] leaves
Short Title: Water quality study : effects of Lakeport Project on Scotts Creek and Clear Lake
Accession Number: OCLC: 14269605 Provider: OCLC
Call Number: call # - DOC D 103.62:L 34/FINALx Shields UCD gov info stacks

LC: TD224 .C3
Keywords: Lakeport Project (Calif.)
Clearlake (Calif.)
Scotts Creek (Calif.)
Abstract: need abstract
Notes: tributary
Brown and Caldwell. ; United States.; Army.; Corps of Engineers.; Sacramento District.
ill., map ; 28 cm.
Report prepared for U.S. Army Engineer District, Sacramento, California./ October 1972./
Includes bibliographical references.
Brown and Caldwell.
Government publication (gpb); National government publication (ngp)
Book

Reference Type: Book
Record Number: 278
Year: 1973
Title: Lakeport Lake, Scotts Creek, California, general design
Place Published: Sacramento
Publisher: U.S. Army Corps of Engineers, Sacramento District
Number of Volumes: 1
Short Title: Lakeport Lake, Scotts Creek, California, general design
Accession Number: OCLC: 31401724 Provider: OCLC
Call Number: call # - DOC D 103.62:L 34/FINALx Shields UCD gov info stacks

LC: TD221 .C3
Keywords: Scotts Creek (Calif.)
Clearlake (Calif.)
Notes: tributary
United States. Army. Corps of Engineers. Sacramento District.
maps, folded plates ; 27 cm.
Government publication (gpb); National government publication (ngp)
Book

Reference Type: Book
Record Number: 276
Year: 1973
Title: Offshore core drilling, Clear Lake, Lake County, W 9634, U.S. Department of Interior, Geological Survey, Branch of Western Environmental Geology
Place Published: [Sacramento?
Publisher: s.n.
Number of Pages: [1], 3 p.
Short Title: Offshore core drilling, Clear Lake, Lake County, W 9634, U.S. Department of Interior, Geological Survey, Branch of Western Environmental Geology
Accession Number: OCLC: 34452585 Provider: OCLC
Call Number: call # - L260 .E5 no.120 mainlib UCB Government Information Center, Calif and State lib CSL govt pubs

GovDoc: L260.E5 no.120
Keywords: Drilling and boring.
Clearlake (Calif.)
Abstract: need abstract
Notes: clear lake; mine
California. State Lands Commission. ; Geological Survey (U.S.)
Environmental impact report, 120.
Government publication (gpb); State or province government publication (sgp)
Book

Reference Type: Book
Record Number: 279
Year: 1973
Title: Supplement to the final environmental statement, Indian Valley Project, Yolo County Flood Control and Water Conservation District, Yolo County, California
Place Published: Sacramento, Calif.
Publisher: The Bureau
Number of Volumes: 1
Short Title: Supplement to the final environmental statement, Indian Valley Project, Yolo County Flood Control and Water Conservation District, Yolo County, California
Accession Number: OCLC: 25101957 Provider: OCLC
Call Number: call # - DOC I 27.70:Y 7/SUPP.x Shields UCD gov info stacks
Keywords: Environmental quality -- California.
Water resources development -- Environmental aspects.
Indian Valley Project (Calif.)
Clear Lake (Yolo County, Calif.)
Notes: clear lake; dam
United States. Bureau of Reclamation. ; Yolo County Flood Control and Water Conservation District (Calif.)
ill. ; 27 cm.
Includes Addendum, 5 p./ Cover title.
Government publication (gpb); National government publication (ngp)
Book

Reference Type: Report
Record Number: 277
Year: 1973
Title: Yolo County Flood Control and Water Conservation District (PL 84-984), Yolo County, California
Type: Supplement to Final environmental impact statement
Short Title: Yolo County Flood Control and Water Conservation District (PL 84-984), Yolo County, California
Accession Number: EISCA731673F
Call Number:call # - DOC I 27.70:Y 7/SUPP.x Shields UCD gov info stacks
Keywords: Environmental impact statements; Multiple purpose reservoirs;
California; Flood control; Water storage; Clear Lake
Indian Valley Dam; Yolo County(California); Lake County(California)
68H Environmental Pollution & Control: Environmental Impact
Statements
Abstract: The supplement to the final environmental statement for the Indian Valley Project of the Yolo County Flood Control and Water Conservation District addresses the question of whether or not the operation of the Indian Valley Project will adversely affect the water surface levels of Clear Lake in Lake County, California. The supplement concludes that the operation of the Indian Valley Dam and Reservoir will not affect the water surface levels of Clear Lake.

Notes: clear lake; dam
Performer: Bureau of Reclamation, Sacramento, Calif. Mid-Pacific Regional Office. 23 Oct 1973. 51p. Report: ELR73-1673,; FES73-61
See also PB-202 184-F.

Reference Type: Book
Record Number: 280
Year: 1974
Title: Flood plain information : Big Valley Streams (Manning, Adobe, Kelsey, and Cole Creeks), Kelseyville, California
Place Published: Sacramento, Calif.
Publisher: The District
Number of Pages: ii, 44 p., 21 leaves of plates (14 fold.)
Short Title: Flood plain information : Big Valley Streams (Manning, Adobe, Kelsey, and Cole Creeks), Kelseyville, California
Accession Number: OCLC: 5693168 Provider: OCLC
Call Number: call # - DOC D 103.47:K 44x Shields UCD gov info stacks

LC: TC423
Keywords: Floods -- California -- Kelseyville.
Flood control -- California -- Kelseyville.
Manning Creek Watershed (Calif.)
Abstract: need abstract
Notes: settlement; tributary; dam
United States. Army. Corps of Engineers. Sacramento District.
ill., maps ; 27 cm.
Cover title./ Part of illustrative matter in pocket.
Big Valley Streams (Manning, Adobe, Kelsey, and Cole Creeks), Kelseyville, California.
by the Department of the Army, Sacramento District, Corps of Engineers ; prepared for Lake County.
Government publication (gpb); National government publication (ngp)
Book

-plate 1
    -stream gauge on Adobe
-i
    -Manning, Adobe, Kelsey, Cole creeks subject to flood Kelseyville and surrounding area
    -damaged property from floods in 1955, 1958, 1964-1965
-pg 1
    -permanent occupation of Big Valley (1830's)
    -Salvador and Juan Vallejo herded long horn cattle for hide and tallow
    -1847, Vallejos sold cattle to four Americans
    -mid 1850's, entire valley floor occupied
    -dry farmed wheat, dairying, barley, oats, corn, milk (cheese)
    -1880's, prunes

-1885, Bartlett pear introduction
-1857, general store, blacksmith-wagon making shop built
-1864, two stores and boarding house built
-1880's, post office in Finley

-pg 3
-original vegetation (valley oak, native grasses) modified by agriculture (clearing)
-climate, dry summer and wet winters
-precipitation: 25 inches in Clear Lake to 60 inches at Cobb Mountain
-temperature: about 40s in January to about 70s in July
-pear and walnut orchards

-pg 7
-stream gauges:
    -Highland Creek above Highland Creek dam (October 1962-)
    -Adobe near Kelseyville (October 1954-)
    -Kelsey near Kelseyville (October 1946-)

-pg 8
-Clear Lake Highlands, normal annual precipitation is 23.6 inches

-pg 10
-structures across Big Valley streams (Table 4)

-pg 19
-floods: 1861-1862, 1881, 1889-1890, 1895, 19 more from 1902-1974
-stage of 7.56 feet on rumsey gage exceeded 47 times. Nine feet exceeded 23 times since 1874

-pg 21
-largest floods
    -December 22, 1964 and January 23, 1970: 1500 cfs on Adobe
    -December 21, 1955: 8800 cfs on Kelsey
-highest rumsey, 13.66 feet

-pg 33
-table 8, obstructions

Reference Type: Book
Record Number: 281
Year: 1975
Title: The fish and wildlife resources of Anderson Marsh, Clear Lake, Lake County
Place Published: [Sacramento, Calif.]
Publisher: State of California, Dept. of Fish and Game
Number of Pages: iii, 21 leaves
Short Title: The fish and wildlife resources of Anderson Marsh, Clear Lake, Lake County
Accession Number: OCLC: 21647772 Provider: OCLC
Call Number: call # - QL84.22.C2 F5 Shields UCD
Keywords: Wildlife conservation -- California -- Anderson Marsh.
Zoology -- California -- Anderson Marsh.
Freshwater fishes -- California -- Anderson Marsh.

Abstract: need abstract
Notes: fish
California.; Dept. of Fish and Game.
map ; 28 cm.
"January 1975."/ "Resources report."/ Includes bibliographical references (leaf 20). More Records: Show record information
Government publication (gpb); State or province government publication (sgp)
Book

- i
- Anderson marsh is about 50% of valuable natural resources left at Clear Lake
- Riparian woodland and marshes, 2 of the most biotically productive habitat types
- Pg 2
- Anderson march ~560 acres marsh and riparian vegetation
- Pg 5
- Importance of tule marsh for feeding and spawning (Puckett 1972)
- 900 acres of marshland in CL (2% of CL's surface area)
- Pg 7
- Anderson marsh creek census (1973)
  - 97% brown bullhead, 3% carp/crappie/bluegill/green sunfish
- Pg 8
- Electrofishing results (1973)
  - 92.5% carp/brown bullhead/goldfish, also included bluegill, largemouth bass, white catfish, black crappie, hitch, sacrmento perch

Reference Type: Newspaper Article
Record Number: 115
Year: 1976
Title: Special historical section
Newspaper: Clear Lake Observer-American
Place Published: Clearlake Highlands, Calif.
Publisher: Clear Lake Observer American
Pages: 24 p.
Short Title: Special historical section
Accession Number: OCLC: 19520144 Provider: OCLC
Call Number: call # - pff F868.L2C48 Bancroft UCB
Keywords: American Revolution Bicentennial, 1776-1976 -- California -- Lake County.
Newspapers -- California.
Lake County (Calif.)
Abstract: need abstract
Notes: clear lake
ill. ; 39 cm.
The special section of the July 1, 1976 issue of the Clear Lake Observer American.
Clear Lake Observer American.
Clear Lake Observer American. More Records: Show record information

Book

Reference Type: Book
Record Number: 282
Year: 1979
Title: Phase I inspection report for Adobe Creek Dam
Series Title: National dam inspection program.;
Place Published: [Sacramento]
Publisher: Calif. Dept. of Water Resources. Div. of Safety of Dams
Number of Volumes: 1
Number of Pages: (various pagings)
Short Title: Phase I inspection report for Adobe Creek Dam
Accession Number: OCLC: 31916184 Provider: OCLC
Call Number: call # - US ARMY CORPS OF ENG, SACRAMENTO

LC: TC557
Keywords: Dams -- California -- Lake County -- Inspection.
Dam safety -- California -- Lake County.
Abstract: need abstract
Notes: tributary; dam; flood control
California. Dept. of Water Resources. Division of Safety of Dams. ; California.; Dept. of Water Resources.; Division of Safety of Dams. ; United States.; Army.; Corps of Engineers.; Sacramento District.
ill., photos, charts, maps ; 28 cm.
prepared for Department of the Army, the Corps of Engineers, Sacramento District by State of California, the Resources Agency, Department of Water Resources, Division of Safety of Dams.
Government publication (gpb); State or province government publication (sgp)
Book

Reference Type: Newspaper Article
Record Number: 283
Year: 1980
Title: Clear Lake Bass Record Set
Newspaper: Oakland Post (1968-1981)
Pages: 8
Short Title: Clear Lake Bass Record Set
Abstract: Fish and Game planted Florida-strain bass for three years, 1969, 1970, and 1971, in an attempt to create a trophy-size population of largemouth bass in Clear Lake. The southern bass live longer, grow bigger, and are harder to catch than the northern strain of bass which were originally placed in the lake prior to 1900. The record fish was the second known bass weighing more than 10 pounds to be taken in the lake this summer.
Notes: html online; fish
588-589

URL:
http://proquest.umi.com/pqdweb?did=492028411&Fmt=7&clientId=1567&RQT=309&VName=PQD

Reference Type: Unpublished Work
Record Number: 555
Year: 1981-2000
Title of Work: Clear Lake Commercial Catch Records
Place Published: Yountville
Institution: State of California- The Resources Agency
Department: California Department of Fish and Game
Short Title: Clear Lake Commercial Catch Records
Abstract: Commercial catch and by-catch records recorded by individual anglers, years dating 1962-1980. Species recorded include: Carp, Blackfish, Hitch, Channel catfish, White catfish, Brown bullhead, Crappie, Bluegill, Largemouth Bass, Sacramento Perch.

Research Notes: Catch records were photocopied from the California Department of Fish and Game. Assisted by Jay Rowan and DFG Volunteer Gary Sypnicki.
North Central Regional Office
1701 Nimbus Road
Rancho Cordova, CA 95670
Access Date: 7/7/2011

Reference Type: Book
Record Number: 284
Year: 1986
Title: Lake County flood control study : Forbes Creek and Cole Creek
Place Published: [Sacramento]
Publisher: California Dept. of Water Resources, Northern District
Number of Pages: viii, 83 p.
Short Title: Lake County flood control study : Forbes Creek and Cole Creek
Accession Number: OCLC: 14232227 Provider: OCLC
Call Number: call # - W750 .L22 State lib CSL

LC: GB1399.4.U676
Keywords: Flood control -- California -- Lake County.
Floodplain management -- California -- Lake County.
Abstract: need abstract
Notes: tributary; flood control
California.; Dept. of Water Resources.; Northern District. ; Lake County (Calif.).; Flood Control and Water Conservation District.
graphs, maps ; 28 cm.

At head of title: State of California, The Resources Agency, Department of Water Resources, Northern District./ "April 1986."/ Funding: Cooperative study by the Department of Water Resources and the Lake County Flood Control and Water Conservation District.
[prepared by Mark R. Stuart, August J. Bill ; assisted by Glen S. Pearson ... et al.]. More
Records: Show record information
Government publication (gpb); State or province government publication (sgp)
Book

Reference Type: Book
Record Number: 285
Year: 1987
Title: Numerical simulation of the response of Cache Creek to the modification of the Clear Lake Outlet
Place Published: Sacramento CA
Publisher: U.S. Army Corps of Engineers
Number of Volumes: 1
Number of Pages: (various pagings)
Short Title: Numerical simulation of the response of Cache Creek to the modification of the Clear Lake Outlet
Accession Number: OCLC: 32371501 Provider: OCLC
Call Number: call # - QE75 .P7 no.562A PhySciEng UCD

LC: TC425 .C3
Keywords: Sediment transport -- California -- Cache Creek.
Sedimentation and deposition -- Mathematical models.
Abstract: need abstract
Notes: soil; clear lake
United States.; Army.; Corps of Engineers.; Sacramento District.
ill., charts ; 29 cm.
prepared by the Hydrologic Engineering Center for U.S. Army Engineer District, Sacramento.
Government publication (gpb); National government publication (ngp)
Book

Reference Type: Book
Record Number: 556
Year: 1990
Title: Clear Lake Fish Plantings and Funding
Publisher: California Department of Fish and Game
Short Title: Clear Lake Fish Plantings and Funding
Abstract: DFG Memo listing # of Northern black bass, Channel catfish, Florida black crappie, and Florida black bass from 1968-1990. Sources of funding include: Department of Fish and Game, Private funding, Clear Lake Bass Masters, County of Lake (Lakebed Management), AB 1905 funds

Research Notes: Photocopied from the California Department of Fish and Game. Assisted by Jay Rowan and DFG Volunteer Gary Sypnicki.
North Central Regional Office
1701 Nimbus Road
Rancho Cordova, CA 95670

Reference Type: Book
Record Number: 286
Year: 1997
Title: First annual Clear Lake Science and Management Symposium, September 13, 1997 : proceedings volume
Place Published: Lakeport, Calif.
Publisher: The Center
Number of Pages: 181 p.
Short Title: First annual Clear Lake Science and Management Symposium, September 13, 1997 : proceedings volume
Accession Number: OCLC: 44175500 Provider: OCLC
Keywords: Hydrology -- California -- Clear Lake (Lake County)
Water quality -- California -- Clear Lake (Lake County)
Limnology -- California -- Clear Lake (Lake County)
Aquatic pests -- California -- Clear Lake (Lake County)
Notes: clear lake symposium; contains many articles
University of California, Davis.; Clear Lake Environmental Research Center. Conf Author(s): Clear Lake Science and Management Symposium (1st : 1997 : Lakeport, Calif.)
ill., maps ; 28 cm.
Cover title./ Includes bibliographical references.
prepared by the U.C. Davis Clear Lake Environmental Research Center.
Conference publication (cnp)
Book

Reference Type: Book
Record Number: 288
Year: 1998
Title: Clear Lake dam modification : safety of dams program : draft environmental assessment
Place Published: Klamath Falls, Or.
Publisher: U.S. Dept. of the Interior, Bureau of Reclamation, Mid-Pacific Region
Number of Pages: 35 p.
Short Title: Clear Lake dam modification : safety of dams program : draft environmental assessment
Accession Number: OCLC: 181597321 Provider: OCLC
Call Number: call # - DOC I 29.79/5:C 58x Shields UCD gov info stacks
Keywords: Dams -- Modification -- California -- Clear Lake (Modoc County : Reservoir)
Dam safety -- California -- California -- Clear Lake (Modoc County : Reservoir)

Clear Lake (Modoc County, Calif. : Reservoir)
Abstract: need abstract
Notes: This document refers to Clear Lake in Modoc County, not in Lake County
clear lake; dam
United States.; Bureau of Reclamation.; Mid-Pacific Regional Office.
ill., maps ; 28 cm.
"December 2, 1998"--Cover./ Includes bibliographical references (p. 34-35).
Clear Lake safety of dams draft EA
Government publication (gpb); National government publication (ngp)
Book

Reference Type: Generic
Record Number: 557
Year: 1998
Title: Clear Lake Electrofishing Data 1998
Secondary Author: C. D. o. F. a. Game
Place Published: North Central Regional Office
Date: November 2-3, 1998
Subsidiary Author: C. D. o. F. a. Game
Short Title: Clear Lake Electrofishing Data 1998
Reviewed Item: Clear Lake, Lake County, California
Abstract: 1998 Electroshock data listing 17 species recorded and length (mm). Sample sites, Dates, Time, and Water Temperature are listed.
Research Notes: Electroshock data photocopied from the California Department of Fish and Game. Assisted by Jay Rowan and DFG Volunteer Gary Sypnicki.
North Central Regional Office
1701 Nimbus Road
Rancho Cordova, CA 95670

Access Date: 7/7/2011

Reference Type: Book
Record Number: 287
Year: 1998
Title: Value engineering, final report, Clear Lake Dam modifications
Place Published: Denver, Colo.
Publisher: U.S. Dept. of the Interior, Bureau of Reclamation
Number of Pages: 24 p.
Short Title: Value engineering, final report, Clear Lake Dam modifications
Accession Number: OCLC: 43361706 Provider: OCLC
Call Number: call # - US BUR OF RECLAMATION, DENVER OFF LIBR

LC: TS168.4.V215
Keywords: Value analysis (Cost control)

Dams -- Modification -- California -- Lost River.
Clear Lake Dam (Calif.)
Abstract: need abstract
Notes: settlement; dam
Tule Lake Basin Reclamation Project (U.S.) ; United States.; Bureau of Reclamation.
ill., maps, plans ; 28 cm.
Cover title./ "(A50-1360-0001-002-25-0-J (8) and CJCAC)."/ "December 15, 1998."/ "Conducted for Bureau of Reclamation, Mid-Pacific Region."
Clear Lake Dam modifications
Bureau of Reclamation.
Government publication (gpb); National government publication (ngp)
Book

Reference Type: Book
Record Number: 290
Year: 1999
Title: Clear Lake Basin watershed analysis
Place Published: Lakeport, CA
Publisher: County of Lake Public Works Dept.
Number of Volumes: 1
Number of Pages: (various pagings)
Short Title: Clear Lake Basin watershed analysis
Accession Number: OCLC: 42399841 Provider: OCLC
Call Number: call # - DOC-STA CA/LAK P8 C53 Shields UCD gov info stacks
Keywords: Water quality -- California -- Clear Lake Watershed (Lake County)
Watershed management -- California -- Clear Lake Watershed (Lake County)
Clear Lake Watershed (Lake County, Calif.) -- Environmental conditions.
Abstract: need abstract
Notes: clear lake; tributary
Lake County (Calif.).; Dept. of Public Works.; Water Resources Division. ; California.; State Water Resources Control Board.
ill. (some col.), maps (some col.) ; 28 cm.
"Submitted to State Water Resources Control Board"--Added t.p./ "May 1999."/ Includes bibliographical references.
Final project report, 205(j) contract #5-157-250-0, Lake County water quality grant; Lake County water quality (205) grant
Lake County Water Resources Division.
Government publication (gpb); Local government publication (lgp)
Book

Reference Type: Report
Record Number: 289
Year: 1999

Title: Implement Riparian Protection, Project Monitoring and Monitoring Information Management in the Lost River/Clear Lake Watershed
Short Title: Implement Riparian Protection, Project Monitoring and Monitoring Information Management in the Lost River/Clear Lake Watershed
Accession Number: PB2001102826
Call Number:call # - DOC I 49.2:L 89/4 mf11 Shields UCD microcopy collection
Keywords: Watersheds; Monitoring; Livestock; Fencing; Information management; Project monitoring; Improvement; Restoration; California; Grazing; Data collection
Riparian protection; Lost River; Clear Lake; Forest Service; Streamside habitats
48B Natural Resources & Earth Sciences: Natural Resource Management; 57H Medicine & Biology: Ecology
Abstract: In September of 1998, the United States Forest Service, Modoc National Forest, and the United States Fish and Wildlife Service, Yreka Fish and Wildlife Office, entered into an interagency agreement to implement and administer watershed improvement and restoration within the Lost River/Clear Lake watershed of northern California. Fifteen thousand dollars of funding for this project was provided by a 319(h) grant awarded through the North Coast Water Quality Control Board of the State of California. The program agreement recognizes that livestock grazing is a major resource use impacting watershed conditions and that proper grazing practices are key to watershed maintenance, improvement and restoration. Therefore, a project designed to facilitate proper use of key streamside habitats by livestock was implemented through the agreement. The project specifically provides for the construction of approximately 10 miles of riparian fencing to control timing, intensity, and duration of cattle grazing along Lost River and Rock Creek within the Clear Lake grazing allotment of the Modoc National Forest.
Notes: This document refers to Clear Lake in Modoc County, not in Lake County; tributary
Performer: Fish and Wildlife Service, Yreka, CA. Klamath Fisheries Restoration Program.; Modoc National Forest, Alturas, CA. 1999. 42p.
Prepared in cooperation with Modoc National Forest, Alturas, CA.

Reference Type: Generic
Record Number: 558
Year: 2000
Title: Clear Lake Electrofishing Data 2000
Secondary Author: C. D. o. F. a. Game
Place Published: North Central Regional Office
Date: October 17-18, 2000
Subsidiary Author: C. D. o. F. a. Game
Short Title: Clear Lake Electrofishing Data 2000
Reviewed Item: Clear Lake, Lake County, California
Abstract: 2000 Electroshock data listing 17 species length (mm) and weight (g) recorded. Sample sites, Dates, Time, and Water Temperature are listed.

Research Notes: Electroshock data photocopied from the California Department of Fish and Game. Assisted by Jay Rowan and DFG Volunteer Gary Sypnicki.

North Central Regional Office
1701 Nimbus Road
Rancho Cordova, CA 95670
Access Date: 7/7/2011

Reference Type: Report
Record Number: 291
Year: 2004
Title: Stabilization of Mercury in Waste Material from the Sulfur Bank Mercury Mine. Innovative Technology Evaluation Report
Short Title: Stabilization of Mercury in Waste Material from the Sulfur Bank Mercury Mine. Innovative Technology Evaluation Report
Accession Number: PB2005109276
Keywords: Mercury; Mining wastes; Leaching; Water pollution monitoring; Water samples; Contaminants; Toxicity; Analytical methods; Analytical procedures; Filtration; Waste materials; Immobilization; Mine tailings
Sulfur Bank Mercury Mine; Stabilization technologies; Lake County(California)
68D Environmental Pollution & Control: Water Pollution & Control; 57Y Medicine & Biology: Toxicology; 48A Natural Resources & Earth Sciences: Mineral Industries
Abstract: This report summarizes the findings of an extensive treatability study of three stabilization technologies for mercury immobilization on materials collected from the Sulfur Bank Mercury Mine (SBMM), located north of San Francisco, in Lake County, California. The SBMM site is believed to be contaminating the adjacent Clear Lake environment with mercury derived from historic mining practices at the site. The study was conducted as a joint effort between EPA's Superfund Innovative Technology Evaluation (SITE) Program and the Mine Waste Technology Program (MWTP). Two mercury contaminated materials were selected for treatment by three types of stabilization technologies.

The purpose of the study was to determine the effectiveness of the three stabilization technologies for immobilizing mercury in the waste rock materials and therefore reducing leachable mobile mercury in the effluent. Several mercury-bearing materials from the site were considered for testing. A material with high levels of leachable mercury was selected as the primary target of the study, and is referred to as "Mercury Ore". As a secondary objective, treatment effectiveness was evaluated on material that was lower in mercury concentration, but present in large quantities and is referred to as "Waste Rock".

Three stabilization technologies were evaluated as part of this study: (1) a Silica Micro Encapsulation (SME) process developed by Klean Earth Environmental Company (KEECO), (2) an inorganic sulfide stabilization technology (ENTHRALL®) developed by E&C Williams, and (3) a generic phosphate treatment.

The primary objective of this study was to determine the effectiveness of the three stabilization technologies (silica encapsulation, phosphate, and sulfide) in reducing the quantity of leachable mercury from SBMM material. Waste material evaluated in this study consisted of "mercury ore" from the south white gate pile and "waste rock" from the north yellow pile. The mercury ore was the primary test material due to its demonstrated ability to produce consistent and detectable levels of leachable mercury. The waste rock was included because it is a common material at the site, even though it yields lower levels of leachable mercury. In order to evaluate the performance of the three technologies, the leachable and mobile mercury (defined as the mercury in the <25µ filtered leachate fraction) from control columns receiving no treatment was compared to the leachable and mobile mercury in the treatment columns. Specifically, the objective was to achieve a 90% reduction in the total mass of mercury leached from each treatment relative to the control over a 12-week continuous column leaching study.

Leachability results from the no treatment control columns revealed that the predominant source of leachable mercury was found in the particulate fraction, i.e. approximately 96%. The phosphate treatment dramatically increased the levels of both the particulate and dissolved fractions (<0.45µm) over the course of the 12-week study. The dramatic rise in leachable mercury brought about by the phosphate treatment invalidates its utility as a remedial alternative for materials at the SBMM site. The E&C William's ENTHRALL® Technology did not appear to be effective in reducing the levels of mobile mercury in the mercury ore column tests. The total mass of mercury in both the particulate and dissolved fractions are statistically similar to the control. KEECO's Silica Micro Encapsulation Technology applied both in situ and ex situ, was effective in reducing mobile mercury (<25 µm) very close to the 90% reduction goal of the study. However, there was a significant increase in the mass mercury levels in the dissolved fraction (<0.45µm). The in situ applications exhibited a 198% increase relative to the control, and the ex situ exhibited a 238% increase.
Notes: mine; pollution; ONLINE
Performer: Science Applications International Corp., Cincinnati, OH. Sponsor: National Risk Management Research Lab., Cincinnati, OH. Office of Research and Development. Jul 2004. 72p. Report: EPA/540/R04/502A
Sponsored by National Risk Management Research Lab., Cincinnati, OH. Office of Research and Development.
Contracts EPA-68-C5-0036 , EPA-58-COO-179
URL: http://firstsearch.oclc.org/WebZ/FSPage?pagetype=return_frameset:sessionid=fsapp1-49132-fiqi43q9-8mdyae:entitypagenum=37:0:entityframedurl=http%3A%2F%2Fwww.epa.gov%2FORD%2FNRMRL%2Fpubs%2F540r04502%2F540r04502.htm:entityframedtitle=WorldCat:entityframedtimeout=5:entityopenTitle=:entityopenAuthor=:entityopenNumber=:

Reference Type: Newspaper Article
Record Number: 293
Year: 2005
Title: Bass fishing slows on Clear Lake
Newspaper: Lake County Record Bee (Lakeport, CA)
Short Title: Bass fishing slows on Clear Lake

Abstract: need abstract
Notes: fish; html online via newsbank
Provider: NewsBank, SQN: 2793247
Research Notes: fish

Reference Type: Book
Record Number: 292
Year: 2005
Title: Health advisory : fish consumption guidelines for Clear Lake, Cache Creek, and Bear Creek (Lake, Yolo, and Colusa Counties)
Place Published: [Sacramento, CA]
Publisher: Pesticide and Environmental Toxicology Branch, Office of Environmental Health Hazard Assessment, California Environmental Protection Agency
Number of Pages: 66 p.
Short Title: Health advisory : fish consumption guidelines for Clear Lake, Cache Creek, and Bear Creek (Lake, Yolo, and Colusa Counties)
Accession Number: OCLC: 173382103 Provider: OCLC
Call Number: call # - CAL EP 1.2:H 34/5 San Diego Public Library Reference Government Pub Storage
Keywords: Water pollution -- California -- Lake County.
Water pollution -- California -- Yolo County.
Water pollution -- California -- Colusa County.
Fishes -- Effect of water pollution on -- California -- Lake County.
Fishes -- Effect of water pollution on -- California -- Yolo County.
Fishes -- Effect of water pollutin on -- California -- Yolo County.
Abstract: need abstract
Notes: fish; pollution
California Environmental Protection Agency.; Office of Environmental Health Hazard Assessment.
col. ill. ; 28 cm.
Title from cover./ "January 2005."/ Includes bibliographical references./ Also available on the Internet.
Government publication (gpb); State or province government publication (sgp)
Book
URL: Host: http://www.oehha.ca.gov/fish/so_cal/pdf_zip/ClearLake0105.pdf

Reference Type: Newspaper Article
Record Number: 192
Year: 2007
Title: Efforts of environmentalists have paid off in health of Clear Lake
Newspaper: Clear Lake Observer-American (CA)
Short Title: Efforts of environmentalists have paid off in health of Clear Lake
Abstract: need abstract
Notes: clear lake; ONLINE

Provider: NewsBank, SQN: 6560947
URL: http://infoweb.newsbank.com/iw-search/we/InfoWeb?p_product=AWNB&p_theme=aggregated5&p_action=doc&p_docid=11AE5DEF701BE330&p_docnum=1&p_queryname=1

Reference Type: Journal Article
Record Number: 514
Year: 2008
Title: Dedication
Journal: Ecological Applications
Volume: 18
Issue: sp8
Pages: A2-A2
Short Title: Dedication
DOI: doi:10.1890/1051-0761-18.sp8.A2
URL: http://www.esajournals.org/doi/abs/10.1890/1051-0761-18.sp8.A2

Reference Type: Journal Article
Record Number: 552
Year: 2008
Title: List of Plates
Journal: Ecological Applications
Volume: 18
Issue: sp8
Pages: ii-ii
Short Title: List of Plates
DOI: doi:10.1890/1051-0761-18.sp8.ii
URL: http://www.esajournals.org/doi/abs/10.1890/1051-0761-18.sp8.ii

Reference Type: Journal Article
Record Number: 550
Year: 2008
Title: PLATE 10
Journal: Ecological Applications
Volume: 18
Issue: sp8
Pages: A297-A297
Short Title: PLATE 10
DOI: doi:10.1890/1051-0761-18.sp8.A297
URL: http://www.esajournals.org/doi/abs/10.1890/1051-0761-18.sp8.A297

Reference Type: Journal Article

Record Number: 526
Year: 2008
Title: PLATES 1 and 2
Journal: Ecological Applications
Volume: 18
Issue: sp8
Pages: A88-A88
Short Title: PLATES 1 and 2
DOI: doi:10.1890/1051-0761-18.sp8.A88
URL: http://www.esajournals.org/doi/abs/10.1890/1051-0761-18.sp8.A88

Reference Type: Newspaper Article
Record Number: 193
Year: 2008
Title: Setting the record straight on plight of hitch
Newspaper: Clear Lake Observer-American (CA)
Short Title: Setting the record straight on plight of hitch
Abstract: need abstract
Notes: hitch; ONLINE
Provider: NewsBank, SQN: 8608890
URL: http://infoweb.newsbank.com/iw-search/we/InfoWeb?p_product=AWNB&p_theme=aggregated5&p_action=doc&p_docid=11F7E1F083404A68&p_docnum=1&p_queryname=3

Reference Type: Journal Article
Record Number: 295
Author: M. E. Aceituno and S. J. Nicola
Year: 1976
Title: Distribution and Status of the Sacramento Perch Archoplites-Interruptus in California
Journal: California Fish and Game
Volume: 62
Issue: 4
Pages: 246-254
Type of Article: Article
Short Title: Distribution and Status of the Sacramento Perch Archoplites-Interruptus in California
ISSN: 0008-1078
Accession Number: BIOSIS:PREV197763007420
Call Number: call # - SK351 .C3 Shields UCD
Abstract: California's only native centrarchid is virtually nonexistent in its native habitat: the waters of the Central Valley, the Clear Lake basin, and Pajaro and Salinas rivers. It has been introduced and successfully established in a number of artificial environments and natural waters outside its native range; it is in no danger of becoming extinct. The history of its decline and transplanting is traced.

Notes: fish

-sacramento perch is native to central valley, clear lake basin, pajaro, Salinas rivers (not present here)
-successfully established in non native areas, no danger of extinction
-only native sunfish west of the rockies
-pg 248
    -first collected in 1895
    -late 1800's, population in high numbers
    -1931, commercial fishing prohibited
-pg 249
    -1900, now uncommon and population declining
    -1940, scarce
    -not major sport fish
    -native to clear lake
    -1941, begin to plant fish in ponds and reservoirs
    -1955, present in brickyard pond, Washington lake, artificial lakes and ponds, possible sacramento-san Joaquin delta and Russian river and clear lake (rather than clear lake basin)
-pg 250
    -1973, clear lake population able to maintain
    -decline due to predation, habitat alteration, competition (food and space, fishing, decrease in water clarity, exotic introductions)
    -sight feed predators
-pg 252
    -bluegill responsible for clear lake decline (Moyle)
URL: <Go to ISI>://BIOSIS:PREV197763007420

Reference Type: Journal Article
Record Number: 296
Author: D. P. Adam
Year: 1988
Title: Pollen Zonation and Proposed Informal Climatic Units for Clear Lake, California, Cores CL-73-4 and CL-73-7
Short Title: Pollen Zonation and Proposed Informal Climatic Units for Clear Lake, California, Cores CL-73-4 and CL-73-7
Accession Number: 8910142
Keywords: Lake basins; Tectonics; Palynology; Cores; Paleoclimatology; Paleolimnology; California; Lake sediments; Glaciation; Geothermal studies; Geologic history; Paleohydrology; Paleolimnology; Stratigraphy; Sedimentology; Quaternary Period; Cenozoic Era; Holocene Epoch; Pleistocene Epoch; Dating; Correlation analysis; Bioindicators; Pollen; Oak trees; Pine trees; Vegetation; Zoning
SW 0870 Erosion and sedimentation; SW 0850 Lakes
Abstract: Clear Lake occupies a structural depression in the northern California Coast Ranges at an elevation of 404 meters. Eight sediment cores were taken from the lake in 1973 and the

palynology of cores CL-73-4 and CL-73-7 are reported. The former is 115 meters long, and is interpreted to cover the entire last glacial cycle; the latter is 27.5 meters long and covers at least the last 40,000 radiocarbon years. The pollen records of both cores are dominated by three pollen types (oak, pine, and TCT (Taxodiaceae, Cupressaceae, and Taxaceae) that together account for between 75 and 99 percent of the pollen in each sample. The present pollen rain around Clear Lake is dominated by oak pollen. During the cooler parts of the last glacial cycle , oak pollen influx to the sediments of Clear Lake was largely or entirely replaced by coniferous pollen (mostly pine and TCT) in response to vertical migration of vegetation belts caused by climatic changes. Pollen data were reduced using a Q-mode factor analysis. Five factors were defined that account for more than 98 percent of the variance. Zoning of the pollen diagrams was accomplished using an iterative program. The 21 pollen zones of core CL-73-4 are used to propose a series of informal climatic units that include the time interval from the penultimate glaciation to the present. The major units proposed, from oldest to youngest, are: (1) Tsabal cryomer, (2) Konocti thermomer, (3) Pomo cryomer, and (4) Tuleyome thermomer (Holocene). The record in the sediments of algae with acid-resistant remains indicates that lake productivity was relatively high during warm intervals in the past, and that overall productivity increased as the lake became shallower and its thermal inertia decreased. The lake waters were probably transparent during the cooler parts of the last glacial cycle, but Clear Lake has probably not been as clear a lake during the Holocene. (See also W89-10137) (Author 's abstract)
Notes: Late Quaternary Climate, Tectonism, Sedimentation in Clear Lake, Northern California Coasts. Geological Society of America, Boulder CO. 1988. p 63-80, 2 fig, 4 tab, 26 ref, 1 append.
Author Address: Geological Survey Menlo Park, CA

Reference Type: Journal Article
Record Number: 297
Author: D. P. Adam, J. D. Sims and C. K. Throckmorton
Year: 1981
Title: 130,000-Yr Continuous Pollen Record from Clear Lake, Lake County, California
Journal: Geology
Volume: 9
Issue: 8
Pages: 373-377
Type of Article: Article
Short Title: 130,000-Yr Continuous Pollen Record from Clear Lake, Lake County, California
ISSN: 0091-7613
Accession Number: ISI:A1981LY09600012
Abstract: Pollen analysis of a 115-m sediment core from Clear Lake, Lake County, California, provides a climatic record that is continuous for the past 130,000 yr. The pollen record reflects migrations of the tree species of the California Coast Ranges in response to the climatic changes of the last glacial cycle. During interglacials, the Clear Lake pollen rain was dominated by Quercus (oak) pollen. During cooler periods, oak pollen was replaced by pollen of coniferous species. The curve for Quercus pollen strongly resembles and is used to correlate with both deep-sea oxygen-isotope curves and the climatic record from certain European pollen studies.
Notes: climate; ONLINE

- Pg 373
- Interglacials-quercus dominated
- Cooler periods-coniferous species dominated
- Dominated by quercus, pinus, TCT (taxodiaceae, cupressaceae, taxaceae)
URL: <Go to ISI>://A1981LY09600012
http://www.gsajournals.org/archive/0091-7613/9/8/pdf/i0091-7613-9-8-373.pdf

Reference Type: Journal Article
Record Number: 493
Author: D. P. G. J. W. Adam
Year: 1983
Title: Temperature and Precipitation Estimates through the Last Glacial Cycle from Clear Lake, California, Pollen Data
Journal: American Association for the Advancement of Science
Volume: 219
Issue: No. 4581
Pages: 168-170
Start Page: 168
Date: Jan. 14, 1983
Short Title: Temperature and Precipitation Estimates through the Last Glacial Cycle from Clear Lake, California, Pollen Data
Abstract: Modern pollen surface samples from six lake and marsh sites in the northern California Coast Ranges establish a linear relation between elevation and the oakl(oak + pine) pollen ratio. Modern temperature and precipitation lapse rates were used to convert variations in the pollen ratio into temperature and precipitation changes. Pollen data from two cores from Clear Lake, Lake County, California, spanning the past 40,000 and 130,000 years were used to estimate temperature and precipitation changes through the last full glacial cycle. The maximum glacial cooling is estimated to be 7 to 8C; the last full interglacial period was about 1.5C warmer than the Holocene, and a mid-Holocene interval was warmer than the present. The estimated precipitation changes are probably less reliable than the estimated temperature changes.
Notes: climate; botany

- Pg 169
- During full glacial conditions
  - Max temperature decrease of 7-8C
  - Little oak at this time
  - Figure 2-temperature and precipitation changes since 128,000BP
- Last interglacial (5e) `1-1.5C warmer than Holocene and probably drier
- Early wisconsonian (5a0d) 2-4C cooler than Holocene(~8,000BP-present)
- Pg 170
- Water temperature warmer during mid Holocene based on tule perch scales
- “summer droughts persisted in the north coast ranges throughout last glacial cycle” due to increase in spruce pollen

Reference Type: Generic
Record Number: 494
Author: D. P. S. W. R. Adam
Year: 1988
Title: Palynology of Two Upper Quaternary Cores from Clear Lake, Lake County, California
Publisher: U.S. Geological Survey Professional Paper 1363, 86 p., 24 text-figs., 7 pls., 5 fossil pls., 16 tbls. Includes a chapter on dating (p. 41-49) by S. W. Robinson.
Short Title: Palynology of Two Upper Quaternary Cores from Clear Lake, Lake County, California
Abstract: need abstract
Notes: botany

Reference Type: Journal Article
Record Number: 542
Author: D. W. Anderson, T. H. Suchanek, C. A. Eagles-Smith and T. M. Cahill
Year: 2008
Title: MERCURY RESIDUES AND PRODUCTIVITY IN OSPREY AND GREBES FROM A MINE-DOMINATED ECOSYSTEM
Journal: Ecological Applications
Volume: 18
Issue: sp8
Pages: A227-A238
Short Title: MERCURY RESIDUES AND PRODUCTIVITY IN OSPREY AND GREBES FROM A MINE-DOMINATED ECOSYSTEM
DOI: doi:10.1890/06-1837.1
URL: http://www.esajournals.org/doi/abs/10.1890/06-1837.1

Reference Type: Journal Article
Record Number: 298
Author: C. S. Apperson, R. Elston and W. Castle
Year: 1976
Title: Biological Effects and Persistence of Methyl Parathion in Clear Lake, California
Journal: Environmental Entomology
Volume: 5
Issue: 6
Pages: 1116-1120
Type of Article: Article
Short Title: Biological Effects and Persistence of Methyl Parathion in Clear Lake, California
ISSN: 0046-225X
Accession Number: ISI:A1976CP54400019
Call Number: call # - QL461 .E76 Shields UCD
Abstract: Methyl parathion was applied to Clear Lake at a rate of 3.3 ppb for control of Chaoborus astictopus Dyar & Shannon. Three treatments at 20-day intervals had no lasting

impact on zooplankton. Recovery to near or above pretreatment numbers was rapid for the organisms examined., including copepod nauplii, Diaptomus franciscanus Lilljeborg, Cyclops sp., Mesocyclops spp., Daphnia spp., Bosmina longirostris (O.F. Muller), Diaphanosoma brachyurum (Lieven) and Ceriodaphnia reticulate (Jurine).

No residues were detected in lake sediments. Highest residues in water were found 8 and 24 hr after the treatments, varying from 0.5-5.4 ppb, and generally declining after each treatment. However, generally larger residues were found with each successive treatment. Residues in bluegill sunfish, Lepomis macrochirus Rafinesque, exposed to the treatments in live cars, varied from 11-110 ppb. A significant correlation was found between the methyl parathion levels in fish and water collected simultaneously.
Notes: clear lake; chemistry

-pg 1116
    -no lasting impact on zooplankton
    -no residue in sediment
    -high residue in bluegill
    -methyl parathion applied annually since 1962. three to four times per summer (3.3 ppb)
-pg 1117
    -recovery of pretreatment insect levels not uncommon
-pg 1118
    -no residues in sediment therefore methyl parathion degrades rapidly
-pg 1119
    -fish residues (11-110 ppb)
-pg 1120
    -decrease in water methyl parathion and animal methyl parathion
URL: <Go to ISI>://A1976CP54400019

Reference Type: Thesis
Record Number: 299
Author: C. E. Asher
Year: 2003
Title: Sulfate reduction in the sediments of Clear Lake, California
Number of Pages: 129 leaves
Date: 2003
Thesis Type: Book; Archival Material Date of Entry: 20040622
Short Title: Sulfate reduction in the sediments of Clear Lake, California
Accession Number: OCLC: 55693695 Provider: OCLC
Call Number: call # - LD781.D5j 2003 A834 Shields UCD
Abstract: The environmental impacts of mercury (Hg) contamination from gold, silver and mercury mining in the western United States is actively being researched by a diverse consortium of scientists including the UC Davis (UCD) mercury group and the California Bay Delta Authority. Previously the atmospheric deposition of Hg, primarily from power generating industries, had been the focus of studies on the environmental impacts and distribution of Hg. However, in the western region of the United States, the signal from atmospheric deposition of

Hg is frequently overwhelmed by Hg contamination from mining activities. The California Coast Range in general, and in particular the Clear Lake and Cache Creek watersheds (Fig. 1), are major sources of Hg contamination. The Coast Range of California contains over 300 previously active mines that were responsible for nearly ninety percent of the Hg produced in the United States between 1850-1980 (Suchanek et a/., 1997). Among the most productive were mines in the Clear Lake and Cache Creek watersheds. The Sulphur Bank Mercury Mine (SBMM), located on the banks of Clear Lake, CA, produced ca. 5,000 tons of Hg, and mines in the Cache Creek watershed produced ca. 7,600 tons equaling more than twelve percent of all California production (Slotton, 1995). Further exacerbating Hg contamination within California" and contributing to an ongoing problem, was the transportation from the Coast Range to the Sierra Nevada Mountains of Hg that was used in gold and silver mining operations. Some of the original Hg mined in the Coast Range continues to contaminate Clear Lake and Cache Creek and to be transported downstream to the San Francisco Bay-Delta where it is reunited with Hg that was transported to the Sierras.
Notes: soil, chemistry
ill. Dissertation: Thesis (M.S.)--University of California, Davis, 2003.
Degree granted in Microbiology.
by Chance E. Asher.
Thesis/dissertation (deg); Manuscript (mss)

-pg 1
-clear lake watershed, major source of mercury contamination
-sulphur bank mercury mine produced 5,000 tons of mercury (slotten 1995)
-pg 3
-clear lake drainage from mostly Kelsey, adobe, middle, and scotts creek
-drained by cache creek
-one of most mercury contaminated lakes in the world
-1872-1957 sulphur bank mercury mine under operation
-1990, Sulphur bank mercury mine becomes and environmental protection agency (epa) superfund site after discovery of elevated mercury levels in fish (channel catfish and largemouth bass)
-1980’s, health advisories set
-increased mercury poses a risk to wildlife (birds)
-pg 4
-1865, begin mining for Sulphur
-1872-1897, 1899-1902, 1915-1918, 1927-1947, 1955-1957, mining for mercury (chamberlain 1990 et al, Suchanek 2000)
-sulphur bank mercury mine produced between 4,400-7,000 metric tons of mercury (chamberlain et al 1990, Suchanek 1998 et al)
-about 100 metric tons of mercury in clear lake
-lakebed sediment 450 ppm (mg/kg) to <1.0 ppm (Suchanek et al 1997, Suchanek et al 1998)
-open pit mine separated by earthen dam (made of deposited waste rock and overburden)
-pH=3
-pg 5

-core profile measurements shoe increase of methyl mercury in sediments at time of mining (richerson et al 2000)
-pg 7
-ware draining from clear lake is five fold higher in methyl mercury than the water coming into the lake (Suchanek 1997)
-concentration of mercury decreases as you move from Sulphur bank mercury mine
-pg 8
-abandoned pits and mines fill with water and overflow into the clear lake
-pg 22
-acid mine drainage environmental impacts:
-decrease ecological diversity, habitat elimination, niche reduction, substrate modification, toxicity of sediments, bioaccumulation
-pg 84
-table I, pH, total mercury, sulfate (at clear lake, near Sulphur bank mercury mine, at Sulphur bank mercury mine)
-pg 85
-table J, precipitation, 1998-2001
-pg 91
-figure 6, major effects of acid mine drainage on a system
-pg 92
-figure 7, decreased pH effects on a system

Reference Type: Book
Record Number: 300
Author: P. K. Bairrington
Year: 1995
Title: Clear Lake fishery management plan - Preliminary Report
Place Published: Yountville, CA
Publisher: State of California, Resources Agency, California Dept. of Fish and Game, Fisheries Programs Branch [Central Coast Region
Short Title: Clear Lake fishery management plan - Preliminary Report
Keywords: Fishery management -- California -- Clear Lake.
Abstract: Introduction
Often called the "bass capital of the West," Clear Lake, Lake County supports one of the best warmwater fisheries in California. The record angler caught largemouth bass Micropterus salmoides is 17.52 pounds and was caught February 1990. The catch broke the seven-week record-sized fish of 15.32 pounds. In 1969, Clear Lake supported 340,000 angler-days of effort and produced a gamefish yield of 34.7 Kg/ha (31 lb/acre) (Puckett 1972); one can only surmise that, with the dramatic population increase since 1969 in nearby urban areas, the lake has seen a likewise increase in the number of angler days of effort. Proper management is crucial in the face of this kind of pressure in order to maintain and enhance the Clear Lake fishery.
Notes: settlement; fish; clear lake
California.; Fisheries Programs Branch.; Central Coast Region.
28 cm.
Cover title./ "January 1999."/ Includes bibliographical references (p. 76-80).

by Philip K. Bairrington.
Government publication (gpb); State or province government publication (sgp)
Book

-pg 4
-average depth is 21.3 feet, deepest is 59 feet
-pg 5
-1840, European settlers arrive
-clear land for farming
-nutrient level of lake increases
-1920's, tule lake and robinson lake drained and converted to agriculture
-1976, Anderson marsh temporarily converted to agriculture
-pg 6
-october to april is rainy season
-shallow soil mantle (0-6 inches) therefore little water retention in watershed
-pg 8
-major tributaries, Kelsey, adobe, highlands, seigler canyon, manning, burns valley, clover, scotts (23.4% of run off), middle (29.8% of run off) creeks
-cache creek once met with the sacramento river
- pg 9
-seigler contributes concentrations of boron to clear lake
-surface temperature, winter (48 F), summer (80 F)
-pg 10
-map with sulphur bank mercury mine
-pg 12
-31 species in clear lake
-inland silverside, threadfin shad, pumpkinseed not authorized by the department of fish and game (dfg)
-pg 13
-table
-pg 14
-chub, splittail, stickleback, rainbow and brown trout gone
-1930's-1940's, catfish are 80% of the catch
-1950's, 80% centrarchids except perch
-pg 15
-table 2, composition of fish caught in 1994 and 1995
-pg 16
-cache creek dam managed by YCFCWCD
-pg 17
-fishing regulations
-pg 18
-1895, 13 native and 4 introduced
-1950, 12 native and 8 introduced
-1964, 12 native and 12 introduced (table on pg 19)
-pg 20
-1988-1989, shad population boom, food for bass

-1993-1995, no shad found
-yearly plantings of fingerling bass, crappie and catfish
-pg 21
-black crappie introduced (1985)
-pg 24
-about 300 catfish spawning in structures in the lake
-pg 29
-1988, shad abundant but by 1991 they die off
-pg 30
-with crash of shad, bigger bass fed on juvenile bass and catfish
-silversides increase which means more food for bass
-pg 33
-since European settlers, 85% of riparian habitat has been lost
-pg 39
-1987 (RWQCB), five miles squared in oaks arm has sediment levels over 20 ppm mercury. Other arms are lower but still higher than other lakes
-1988, environmental protection agency (epa) put clear lake on its superfund list
-pg 40
-1990, reported that Sulphur bank mercury mine dumps 242-330 pounds of toxic metal into clear lake per year
-pg 41
-crappie decline information
-pg 45
-clearer water means more vegetation
-1994, hydrilla found in clear lake
-pg 46-51
-action plan

Reference Type: Book
Record Number: 301
Author: P. K. Bairrington
Year: 1999
Title: Clear Lake fishery management plan
Place Published: Yountville, CA
Publisher: State of California, Resources Agency, California Dept. of Fish and Game, Fisheries Programs Branch [Central Coast Region
Number of Pages: iii, 88 p.
Short Title: Clear Lake fishery management plan
Accession Number: OCLC: 56823925 Provider: OCLC
Call Number: call # - 338.3727 BAIRRINGTON Lakeport Lib, Upper Lake Lib, Redbud Lib, Middletown Lib

Dewey: 338.3727
Keywords: Fishery management -- California -- Clear Lake.

Abstract: This document presents information on the management of fisheries at Clear Lake. A review of the past and present biological and social information develop the environmental setting and enable logical fishery management recommendations to be made. The fisheries action plan utilizes background information to suggest ways to implement and evaluate management recommendations with quantifiable milestones. Where more information is needed before recommendations can be made, the action plan identifies areas that need more attention and suggests a design for assessing the situation. The fisheries management plan is an evolving document that reflects upon the past, illuminates current issues, and focuses strategies for the future. This management plan was developed to meet the goals and objectives of the California Department of Fish and Game, fishery managers, and the desires of the angling public.
Notes: fish; clear lake
California.; Fisheries Programs Branch.; Central Coast Region.
28 cm.
Cover title./ "January 1999."/ Includes bibliographical references (p. 76-80).
by Philip K. Bairrington.
Government publication (gpb); State or province government publication (sgp)
Book

-pg 1
- -elevation 402 meters
- -100 miles north of san Francisco
- -80 miles northwest of sacramento

-pg 3
- - 18 miles long, 8 miles wide at widest
- -1.1 million acre-feet of water at gross storage capacity
- -cache creek dam built in 1915
- -43,663 surface acres
- -average 21.3 feet deep, deepest is 59 feet
- -71 miles of shore
- -1840, Europeans, etc (see Bairrington 1995)

-pg 5
- -climate, precipitation, 24-65 inches per year
- -clear lake is highly eutrophic and polymitic

-pg 11
- -shad extirpated in 1990, illegal reintroduced in 1997
- -1999, some sacramento perch being caught
- -22 nongame species (7 introduced)

-pg 14
- -1999, hardhead and splittail extirpated
- -1941, catfish fishing banned
- -1932-1962, 295,000 pounds per year
- -1991, no bait fish harvesters (live bait) on clear lake since then (hitch, silverside, shad)
- -collect with beach seines (dead bait)

-pg 16
- -management at clear lake
  - -cache creek dam (YCFCWCD), downstream irrigation

-lake county flood control and water conservation district
-county and city planning department
-fish and wildlife advisory committee
-lake county vector control
-algae abatement committee
-lakebed management department
-LCCRMC, etc

-game fish stocking

-pg 17

-1991, channel catfish using spawning structures

-pg 19

-1998 clear lake fish:

-native-pacific lamprey, rainbow trout, sacramento sucker, blackfish, hitch, Pikeminnow, splittail, chub, tule perch, California roach, prickly sculpin, three spined stickleback

-introduced-carp, goldfish, brown bullhead, channel catfish, white catfish, largemouth bass, smallmouth bass, bluegill, redear sunfish, green sunfish, black crappie, white crappie, golden shiner, mosquitofish, silverside, shad

-pg 22-23

-stocking numbers of largemouth bass, channel catfish, and black crappie

-pg 29

-table, beach seines via vector control (1998)

-pg 31

-1991, shad die off due to freezing
-1998, vector control beach seines (no shad)
-late 1980's, few juvenile bass

-pg 39

-1991, boom for juvenile fish. Silversides increase

-pg 45

-1993, placement of spawning gravel at Anderson marsh and clear lake state park
-october to December 1993, transplanting tules to shore between nice and Lucerne

-pg 87-88

-creel survey

Reference Type: Book
Record Number: 559
Author: P. H. Baker
Title: Clear Lake Largemouth Bass Program
Place Published: Yountville, California
Publisher: California Department of Fish and Game
Short Title: Clear Lake Largemouth Bass Program
Abstract: 1.2 million recreation days per year, with 343,000 angler days. Historically sport fishery composed of Sacramento perch and rainbow trout. Late thirties and early forties ictalurids provided 70% of catch. Shift towards centrarchids and Largemouth bass during the 1950s. Paper worked to provided suggestions to improve the bass fishery.

Research Notes: photocopied from the California Department of Fish and Game. Assisted by Jay Rowan and DFG Volunteer Gary Sypnicki.
North Central Regional Office
1701 Nimbus Road
Rancho Cordova, CA 95670

Access Date: 7/7/2011

Reference Type: Journal Article
Record Number: 302
Author: K. M. Batten and K. M. Scow
Year: 2003
Title: Sediment microbial community composition and methylmercury pollution at four mercury mine-impacted sites
Journal: Microbial Ecology
Volume: 46
Issue: 4
Pages: 429-441
Date: Nov
Type of Article: Article
Short Title: Sediment microbial community composition and methylmercury pollution at four mercury mine-impacted sites
ISSN: 0095-3628
Accession Number: ISI:000187875800005
Keywords: SULFATE-REDUCING BACTERIA; PHOSPHOLIPID FATTY-ACID; ESTUARINE SEDIMENT;
LAKE-SEDIMENTS; CLEAR LAKE; METHYLATION; SULFIDE; BIOAVAILABILITY; DEMETHYLATION; CALIFORNIA
Abstract: Mercury pollution presents a globally significant threat to human and ecosystem health. An important transformation in the mercury cycle is the conversion of inorganic mercury to methylmercury, a toxic substance that negatively affects neurological function and bioaccumulates in food chains. This transformation is primarily bacterially mediated, and sulfate-reducing bacteria (SRB) have been specifically implicated as key mercury methylators in lake and estuarine sediments. This study used phospholipid fatty acid (PLFA) analysis to investigate sediment microbial community composition at four abandoned mercury mine-impacted sites in the California Coast Range: the Abbott, Reed, Sulphur Bank, and Mt. Diablo mines. Differences in watershed and hydrology among these sites were related to differences in microbial community composition. The Abbott and Sulphur Bank mines had the highest levels of methylmercury. Floc (a type of precipitate that forms when acid mine drainage contacts lake or river water) and sediment samples differed in terms of several important environmental variables and microbial community composition, but did not have statistically different methylmercury concentrations. Quantification of PLFA biomarkers for SRB (10Mel6:0 for Desulfobacter and i17:1 for Desulfovibrio) revealed that Desulfobacter and Desulfovibrio organisms made up higher percentages of overall microbial biomass at the Sulphur Bank and Mt. Diablo mines than at the Abbott and Reed mines. Correlations between these SRB biomarker fatty acids and

methylmercury concentrations suggest that Desulfobacter and Desulfovibrio organisms may contribute to methylmercury production in the Abbott, Reed, and Sulphur Bank mines but may not be important contributors to methylmercury in the Mt. Diablo Mine.
Notes: mine; chemistry; soil; ONLINE

- Pg 430
- MeHg - toxic to microorganisms, negative impact on growth, reproduction and survival
URL: <Go to ISI>://000187875800005
http://www.springerlink.com/content/ahwq84fqmyhfxn09/fulltext.pdf

Reference Type: Newspaper Article
Record Number: 303
Reporter: H. W. a. H. M. Benson
Year: 1974
Title: When spawning fish died by millions
Newspaper: Pomo Bulletin
Place Published: Lake County
Pages: 8298-8300
Short Title: When spawning fish died by millions
Call Number: call # - University of Wisconsin-Madison
Notes: fish
In Mauldin's History of Lake County, Lake County Museum

-pg 9
-tributaries overcrowding at times
-kelsey creek ideal for spawning
-tribes set up camps during runs
-clubs, bare hands, spears, drag/dip nets, soap root/dove mullen to stupefy
-pg 10
-hitch was greater proportion of catch along with high numbers of chi and chub (sacramento tui chub)
-great numbers of Pikeminnow (chapaul)
-some western sucker and western roach
-1974, observations of fish kills due to drying creeks
-lange brothers gravel plant on Kelsey creek
-dead fish over five feet deep
-large runs no more
-pg 12
-1925, at the lake at clear lake oaks
-streams and tule swamps filled side to side with fish. Could walk upon them
-carp raising
-1878, large carp ponds in cob mountain, Anderson springs, boggs mill (between Glenbrook and Kelseyville)

Reference Type: Journal Article
Record Number: 499
Author: D. J. Blunt, K. A. Kvenvolden and J. D. Sims
Year: 1981
Title: Geochemistry of Amino-Acids in Sediments from Clear Lake, California
Journal: Geology
Volume: 9
Issue: 8
Pages: 378-382
Type of Article: Article
Short Title: Geochemistry of Amino-Acids in Sediments from Clear Lake, California
ISSN: 0091-7613
Accession Number: ISI:A1981LY09600013
Keywords: Lake sediments; Geochemistry; Amino acids; Pollen; Geologic history; Clear Lake; California; Sampling; Sediments; Cores
SW 0880 Chemical processes
Abstract: The results of amino acid geochemistry are reported with application to deochronology in core 4 sediments of Clear Lake (California). Aspartic acid and alanine were considered in detail to clarify uncertainties in correlations of ash beds and pollen spectra in lacustrine sediment. Relative concentrations of aspartic acid decreased with depth, probably due to diagenesis and to preferential adsorption and hydrolysis in clay. Alanine increased with depth, probably because of the generation of alanine during diagenesis of other amino acids. When age assessment is based on alanine, results support a time-depth curve obtained from oak pollen and oxygen isotopes over a span of about 130,000 years. (Small-FRC)
Notes: soil; chemistry; ONLINE
Geology Vol 9, No 8, p 378-382, August, 1981. 3 Fig, 3 Tab, 21 Ref.

- Pg 378
- [aspartic acid] decreases with depth, [ala] increases with depth
- northwestern-trending faults that dissect CL volcanic fields (Donnelly et al 1976, 1981, Goff et al 1976)
- Pg 379
- Gly, Ala, Asp, Glu (most abundant amino acids)
- Pg 380
- Asp decreases due to diagenetic processes which remove Asp over time
URL: <Go to ISI>://A1981LY09600013
http://www.gsajournals.org/archive/0091-7613/9/8/pdf/i0091-7613-9-8-378.pdf

Reference Type: Book
Record Number: 305
Author: J. E. Broadway
Year: 1978
Title: Feeding ecology of the prickly sculpin (Cottus asper) in Clear Lake, Lake County, California
Place Published: [Davis

Publisher: Calif.]
Number of Pages: 27 leaves. ill. Dissertation: Thesis (M.S.)--U. of Calif., Davis.
Short Title: Feeding ecology of the prickly sculpin (Cottus asper) in Clear Lake, Lake County, California
Accession Number: OCLC: 78893189 Provider: OCLC
Call Number: call # - LD781.D5j 1978 B758 Shields UCD micro copy and special collections
Keywords: Dissertations, Academic -- California -- Ecology.
Abstract: need abstract
Notes: fish
SPEC. COLL. HAS ARCHIVAL COPY; MICRO. ROOM HAS CIRCULATING MICROFICHE COPY (1 SHEET)./ Typescript./ Degree granted in Ecology.
Thesis/dissertation (deg)
Book

Reference Type: Journal Article
Record Number: 306
Author: J. E. Broadway and P. B. Moyle
Year: 1978
Title: Aspects of the ecology of the prickly sculpin, Cottus asper Richardson, a persistent native species in Clear Lake, Lake County, California
Journal: Environ. Biol. Fish.
Volume: 3
Issue: 4
Pages: 337-343
Short Title: Aspects of the ecology of the prickly sculpin, Cottus asper Richardson, a persistent native species in Clear Lake, Lake County, California
Accession Number: 06320423
Keywords: feeding behaviour; endemic species; ecology; Cottus asper; USA, California, Clear L.
competition; predation; introduced species
Freshwater
Q1 01341 General
Abstract: The biology of the prickly sculpin was investigated in Clear Lake, Lake County, California in order to determine how it has persisted in the face of introductions of numerous exotic species when most other native species have declined in abundance or have become extinct. Sculpins over 15 mm SL inhabited all types of benthic habitats in the lake, while post-larval sculpins were pelagic when the postlarvae of exotic species were absent. The feeding ecology of sculpins was distinct from the other fishes in the lake in that they fed largely on amphipods and chironomid midge larvae regardless of the time of year, time of day, or habitat. Sculpins were uncommon in the stomach of piscivorous fishes, except juvenile largemouth bass (Micropterus salmoides). It is concluded that prickly sculpin have persisted in Clear Lake in part because they are ecologically distinct from the exotic species and are not preyed upon by them to any great extent, and in part because they have managed to survive other man-related perturbations of this ecosystem.
Notes: fish; ONLINE

Journal Article
URL: http://springerlink.metapress.com/content/748501m322810708/fulltext.pdf
Author Address: Calif. Dep. Fish and Game, 4001 Wilson Way, Stockton, CA 95205, USA

Reference Type: Book
Record Number: 127
Author: C. Brown
Year: 1868
Title: Report to the Clear Lake Water Company, in relation to a canal for irrigation, and the water supply of San Francisco
Place Published: San Francisco
Publisher: Edward Bosqui & Co., Printers
Number of Pages: 26, [2] p. 22 cm.
Short Title: Report to the Clear Lake Water Company, in relation to a canal for irrigation, and the water supply of San Francisco
Accession Number: OCLC: 21622228 Provider: OCLC
Call Number: call # - Box 567:16 or MICROFILMF858.C21 v.9:10 Bancroft UCB
Keywords: Irrigation canals and flumes.
Irrigation -- California.
Abstract: need abstract
Notes: settlement
Clear Lake Water Company.
California pamphlets, v. 9, no. 10./ MICROFILM ONLY TO BE USED./ Bancroft has positive microfilm./ Master negative available (Box 567:16).
by Calvin Brown. More Records: Show record information
Book

Reference Type: Book
Record Number: 307
Author: J. K. Brown
Year: 1979
Title: Lagenidium giganteum, an aquatic fungus, as a potential biological control agent against the Clear Lake gnat Chaoborus astictopus in Lake County, California
Place Published: [Davis
Publisher: Calif.]
Number of Pages: 45 leaves. ill. Dissertation: Thesis (Ph.D.)--U. of Calif., Davis.
Short Title: Lagenidium giganteum, an aquatic fungus, as a potential biological control agent against the Clear Lake gnat Chaoborus astictopus in Lake County, California
Accession Number: OCLC: 84200761 Provider: OCLC
Call Number: call # - LD781.D5j 1979 B752 Shields UCD special collections
Keywords: Dissertations, Academic -- California -- Entomology.
Abstract: need abstract
Notes: insects; clear lake
SPEC. COLL. HAS ARCHIVAL COPY./ Typescript./ Degree granted in Entomology.

Thesis/dissertation (deg)
Book

Reference Type: Book
Record Number: 481
Author: V. a. D. A. Brown
Year: 1969
Title: The Pomo Indians of California and Their Neighbors
Series Editor: D. A. B. Elsasser
Place Published: Healdsburg, Ca
Publisher: Naturegraph Publishers
Number of Pages: 64
Short Title: The Pomo Indians of California and Their Neighbors
ISBN: 911010-30-0
911010-31-9
Call Number: call # - E 75 A53 v.1 c.2
Notes: native american

-pg 9
-appear to be peaceful people (before whites)
-1823, mission san Francisco Solano de Sonoma founded. Convert pomo and others
-pg 10
-1849, stone-kelsey ranchers executed by shuk and xasis (pomo) due to bad treatment. White army attacks killing men, women and children (bloody island)
-map-natives around clear lake include (eastern, southeastern, pomo, northern) pomo, wappo
-pg 11
-northern pomo, around clear lake lived by shore. Ate acorns, fish, other plants. tule boats. Marshes for wild food
-pg 12
-eastern and southeastern pomo, dense populations because of food sources. Tule boats helped gather food
-pg 16
-soap plant as fish poison
-manzanita berries made into drink
-pg 20
-ducks and wild geese eaten
-pg 22
-nets, fish traps for fishing
-men who specialized in fishing did only this and traded for other goods
-fish hooks, spearing, nets, weirs, seine nets, gill nets
-fish were grilled or baked and dried or smoked for reserve food supply

Reference Type: Book

Record Number: 308
Author: R. Bruer
Year: 1939
Title: [Diaries.]
Place Published: Santa Rosa
Publisher: Calif.
Number of Pages: 23 v.
Short Title: [Diaries.]
Accession Number: OCLC: 46853167 Provider: OCLC
Call Number: call # - R 639.9 BRUER Central Library: Santa Rosa Annex Sonoma County Library
Keywords: Fishing -- California -- Sonoma County.
Fishing -- California -- Lake County.
Hunting -- California -- Sonoma County.
Hunting -- California -- Lake County.
Game wardens -- California -- Sonoma County.
Game wardens -- California -- Lake County.
Abstract: Diaries record daily work of Bruer as fish and game warden in Clear Lake area and in Sonoma County. Includes fish counts and game spotted. Years missing are 1940, 1945, 1948, 1950-1953.
Notes: fish; clear lake
Book

Reference Type: Journal Article
Record Number: 309
Author: H. W. Brydon
Year: 1956
Title: The Clear Lake Gnat and Its Control in Clear Lake, California During 1954
Journal: Journal of Economic Entomology
Volume: 49
Issue: 2
Pages: 206-209
Type of Article: Article
Short Title: The Clear Lake Gnat and Its Control in Clear Lake, California During 1954
ISSN: 0022-0493
Accession Number: ISI:A1956WX61600017
Call Number: call # - SB599 .J6 Shields UCD
Abstract: Clear Lake, California, is one of the major recreational areas of the West Coast. The economics of Lake County, of which Clear Lake is a part, is primarily based upon the recreational attraction that is created by Clear Lake. However, Clear Lake is inhabited by a small white non- biting gnat commonly called the Clear Lake gnat (Chaoborus astictopus D. and S.). This bothersome gnat has, when its numbers become too great, created a tre- mendous adverse economic effect upon the County. Lindquist (1942, 1943, 1946, 1951), Roth (1948), and several other entomologists (Herms 1937, Deonier 1943, Walker 1949) spent several years in studying this gnat and developing a method of controlling it. As a result of this work a method of control

was developed, and in Sep- tember 1949 the Lake was chemically treated with 14,000 gallons of a TDE formulation. The treatment was tre- mendously successful and Clear Lake's large resort busi- ness once more prospered.

For almost 2 years no larvae of the Clear Lake gnat were found in Clear Lake. In July 1951, however, they were again collected by means of a plankton net. From that date on the population steadily increased until the gnat was once more affecting the county's resort business, and a second control measure was carried out in Septem- ber 1954.
Notes: insects; clear lake
URL: <Go to ISI>://A1956WX61600017

Reference Type: Journal Article
Record Number: 310
Author: T. M. Cahill, D. W. Anderson, R. A. Elbert, B. P. Perley and D. R. Johnson
Year: 1998
Title: Elemental profiles in feather samples from a mercury-contaminated lake in central California
Journal: Archives of Environmental Contamination and Toxicology
Volume: 35
Issue: 1
Pages: 75-81
Date: Jul
Type of Article: Article
Short Title: Elemental profiles in feather samples from a mercury-contaminated lake in central California
ISSN: 0090-4341
Accession Number: ISI:000074020800013
Keywords: HEAVY-METALS; ACCUMULATION; REGION; MOLT
Abstract: Flight feathers from six bird species at Clear Lake, CA were analyzed to determine the extent and distribution of mercury contamination from an abandoned mercury mine and associated levels of 14 other elements. Feather samples were collected from adult and juvenile osprey (Pandion haliaetus), including juvenile osprey from three additional comparison sites; adult western grebes (Aechmophorus occidentalis); adult great blue herons (Ardea herodias); adult mallards (Anas platyrhynchos); adult turkey vultures (Cathartes aura); and juvenile double-crested cormorants (Phalacrocorax auritus). Samples were analyzed by a multielemental x-ray fluorescence method. The osprey from Clear Lake showed significantly elevated mercury concentrations relative to the comparison sites, Different species at Clear Lake had different mercury concentrations based on trophic status; osprey exhibited the highest mercury concentrations and the mallards showed the lowest, Lastly, we quantified differences in elemental concentrations, including mercury, between adult and juvenile osprey from Clear Lake. Elements known to be nutrients, such as sulfur and zinc, did not vary significantly among species or sites. Reproductive success of osprey at Clear Lake was monitored from 1992 to 1996 to determine if osprey reproduction was depressed. During this five-year period, the breeding population grew from 10 to 20 nesting pairs and the average reproductive rate was 1.4 fledglings

per nesting attempt. Although the osprey showed the highest mercury levels of any species sampled, their reproduction does not appear to be depressed.
Notes: ONLINE; birds; bioaccumulation
URL: <Go to ISI>://000074020800013
http://springerlink.metapress.com/content/f71nhytca5nx574w/fulltext.pdf

Reference Type: Journal Article
Record Number: 311
Author: T. Cairns and C. H. Parfitt
Year: 1980
Title: Persistence and Metabolism of Tde in California Clear Lake Fish
Journal: Bulletin of Environmental Contamination and Toxicology
Volume: 24
Issue: 4
Pages: 504-510
Type of Article: Article
Short Title: Persistence and Metabolism of Tde in California Clear Lake Fish
ISSN: 0007-4861
Accession Number: ISI:A1980JM15800002
Abstract: Clear Lake is a naturally occurring lake located in northern California in the inner coastal range of mountains. It is shallow (mean depth of 8 meters), has a surface area of approximately 42,000 acres and shows no thermal stratification. On three occasions in 1949, 1954, and 1957 a total of over 120,000 ibs. of TDE [l,l,-dichloro-2,2-bis-(chlorophenyl)- ethane] was applied to control the substantial population of Clear Lake gnats (Chaoboras astictopus) . A second and indirect source of additional contamination is the possible run off from numerous neighboring orchards (pears, almond, and walnut) and grape vineyards into creeks and streams feeding Clear Lake itself. In spite of the approximately 500,000 ibs of DDT applied agriculturally during 1949-1964, the observed residue levels in the lake proper does not indicate that this route of contamination was of any major proportions (RUDD and HERMAN 1972, and HERMAN et al. 1969). Additionally, these authors reported residue levels of TDE and isomers in the top 5 inches of sediment ranged from 0.05 ppm to 1.0 ppm. This TDE in the bottom sediments of the lake infers that bottom feeding species would probably suffer from greater exposure to such high levels of TDE.
Notes: ONLINE; fish; hitch; birds; clear lake; chemical
-pg 504
    -1949, 1954, 1957, 120,000 pounds of TDE into clear lake
    -plus additional run off from orchards
    -1949-1964, 500,000 pounds of DDT applied (agriculture)
        -doesn't appear to have contaminated lake much
    -TDE throughout lake
        -.05-1.0 ppm in top 5 inches of sediment (harmful for benthic species)
    -western grebe decline connected to TDE
    -high concentration of TDE also found in fish (1958, 1965) but shown to be declining since last application in 1957
-pg 505

-commercial fishing permits for carp, blackfish and hitch
-pg 509
-persistence of TDE in lake 19 years later
-high levels in carp show benthic species suffer greatest (highest concentration in sediment)
-appears older (bigger) fish have higher TDE levels
-pg 506
-table 1, TDE residues by species
URL: <Go to ISI>://A1980JM15800002
http://springerlink.metapress.com/content/g118q372g62585p1/fulltext.pdf

Reference Type: Edited Book
Record Number: 465
Editor: A. Calhoun
Year: 1966
Title: Inland Fisheries Management
Publisher: California Department of Fish and Game
Short Title: Inland Fisheries Management
Call Number: call # - SH 222 C3 C35 Shields UCD
Notes: fish

Reference Type: Book
Record Number: 312
Author: D. Cannon
Year: 1970
Title: Clear Lake weather and climate study : summary of findings for years 1966-1969
Place Published: [S.l.
Publisher: s.n.
Number of Pages: 113 leaves
Short Title: Clear Lake weather and climate study : summary of findings for years 1966-1969
Accession Number: OCLC: 24369245 Provider: OCLC
Call Number: call # - G4581 K WRCA UCB
Keywords: Weather.
Climatology.
Irrigation water -- California.
Water-supply -- California.
Clearlake (Calif.)
Lake County (Calif.)
Abstract: need abstract
Notes: clear lake; climate
University of California Agricultural Extension Service.
ill. ; 28 cm.
by Dale Cannon ... [et al.].
Book

Reference Type: Report
Record Number: 313
Author: H. J. Carney, Neo Martinez and Brian Feifarek
Year: 1994
Title: Food web biodiversity, patterns and interactions in complex natural ecosystems
Short Title: Food web biodiversity, patterns and interactions in complex natural ecosystems
Abstract: Food webs for three California lakes (Tahoe, Castle, Clear) have been assembled with some of the most detailed and complete data available to date. With this information we have constructed complete descriptive webs, which include all species, and functional webs, which include the abundant and other important species. These webs include up to 794 species in five major categories: algae, macrophytes, microheterotrophs, invertebrates, and fishes. There are clear and signi ficnnt departures of the California lake food webs from earl ier generalizations about trophic architecture and Iinks which were based on smaller and less complete webs. They include high proportions of basal species, low proportions
of top species, and much more complex webs with many links per species. These differences are readily explained by the improved information, and by the biology of lake ecosystems. The functional food webs show that strong species interactions, including trophic cascades, are most prevalent at intermediate productivities,
Notes: clear lake; fish; birds; insects

Reference Type: Journal Article
Record Number: 314
Author: E. J. Carpenter, R. E. Storie and S. W. Cosby
Year: 1931
Title: Soil survey of the Clear Lake Area, California
Journal: Field Oper U S Bur Chem & Soils
Volume: 1927
Issue: (13)
Pages: 1-45
Date: 1931
Type of Article: Article
Short Title: Soil survey of the Clear Lake Area, California
Accession Number: BIOSIS:PREV19320600019898
Call Number: call # - S592 .C623 Shields UCD
Keywords: Soils -- California -- Clear Lake Region.
Soil surveys -- California -- Clear Lake Region.
Clear Lake Region (Calif.)
Notes: soil; clear lake
United States.; Bureau of Chemistry and Soils. ; California Agricultural Experiment Station.
ill., col. map ; 24 cm.
Cover title./ "In cooperation with the University of California Agricultural Experiment Station."/
Includes bibliographical references.
by E.J. Carpenter and R. Earl Storie and Stanley W. Cosby.

Government publication (gpb); National government publication (ngp)
Book

-pg 1
- -70 miles north of san Francisco bay
- -12 miles long, 1-6 miles wide
- -mount konokti, 4,100 feet on south shore of clear lake

-pg 2
- -1,300 feet elevation

-pg 3
- -climate
  - -summers dry with moderately high temperatures, winters are mild with moderate rainfall (October to may)

-pg 4
- -agriculture-citrus, figs, pears, walnuts, alfalfa, grain (1868), apple, peach, prunes, grapes
- -1811, first trappers
- -1840, Salvador Vallejo started agriculture

-pg 5
- -1850, real settlement
- -1854, settlers arrive in higher numbers
- -may 20, 1861, lake county organized
- -cattle, oats, barely, corn

-pg 6
- -soils of the
  - -rincon, cole, clear lake, Dublin, yolo for pears
  - -aiken, konokti, Rincon, yolo for walnuts
  - -manzanita, pinole for grapes and prunes
  - -bayside for truck gardening
  - -yolo for alfalfa and hops

-pg 12
- -yolo fine sandy loam (well drained but when very wet takes awhile) on some stream bottoms

-pg 22
- -clear lake clay adobe (poor drainage), adjoins clear lake

-pg 24
- -dublin clay adobe (bad drainage), borders clear lake

-pg 26
- -manzanita gravely fine sand loam (well drained), headwaters of Kelsey creek and borders cold creek

-pg 28
- -pinole gravelly fine sandy loam, mouth of scotts creek and borders clear lake

-pg 31
- -hugo clay loam (good drainage), along middle creek

-pg 32
- -aiken clay loam, borders alluvial soils along clear lake

-pg 33

-aiken gravelly clay loam, borders clear lake paks and konokti bay
-pg 34
-bayside silty clay loam, bottom of lake
-pg 35
-butte gravelly sand (good drainage), clear lake park
URL: <Go to ISI>://BIOSIS:PREV19320600019898

Reference Type: Book
Record Number: 315
Author: R. W. Casteel
Year: 1977
Title: Fish remains from core 6, Clear Lake, Lake County, California
Series Title: Reports-Open file series - United States Geological Survey ;; 77-639;
Place Published: Menlo Park, Calif.
Publisher: U.S. Geological Survey
Number of Pages: ii, 154 p.
Short Title: Fish remains from core 6, Clear Lake, Lake County, California
Accession Number: OCLC: 3582590 Provider: OCLC
Call Number: call # - QE75 .O7 no.77-639 Main Lib UCSB
Abstract: need abstract
Notes: fish; archaeological
Geological Survey (U.S.)
ill., map ; 27 cm.
Bibliography: p. 11-12.
by Richard W. Casteel... [et al.].
Government publication (gpb); National government publication (ngp)
Book

Reference Type: Book
Record Number: 316
Author: R. W. Casteel
Year: 1979
Title: Fish remains from core 8, Clear Lake, Lake County, California
Series Title: Reports-Open file series - United States Geological Survey ;; 79-1148;
Place Published: [Reston, Va.]
Publisher: U.S. Geological Survey
Number of Pages: ii, 98 leaves
Short Title: Fish remains from core 8, Clear Lake, Lake County, California
Accession Number: OCLC: 6207646 Provider: OCLC
Call Number: call # - QE75 .O7 no.79-1148 Main Lib UCSB
Keywords: Fishes, Fossil -- California -- Clear Lake.
Abstract: need abstract
Notes: fish; arcaeological
Geological Survey (U.S.)

28 cm.
Chiefly tables./ Includes bibliographical references (leaves 12-14).
by Richard W. Casteel ... [et al.].
Government publication (gpb); National government publication (ngp)
Book

Reference Type: Journal Article
Record Number: 506
Author: R. W. Casteel, D. P. Adam and J. D. Sims
Year: 1977
Title: LATE-PLEISTOCENE AND HOLOCENE REMAINS OF HYSTEROCARPUS-TRASKI (TULE PERCH) FROM CLEAR LAKE, CALIFORNIA, AND INFERRED HOLOCENE TEMPERATURE-FLUCTUATIONS
Journal: Quaternary Research
Volume: 7
Issue: 1
Pages: 133-143
Type of Article: Article
Short Title: LATE-PLEISTOCENE AND HOLOCENE REMAINS OF HYSTEROCARPUS-TRASKI (TULE PERCH) FROM CLEAR LAKE, CALIFORNIA, AND INFERRED HOLOCENE TEMPERATURE-FLUCTUATIONS
Alternate Journal: Quat. Res.
ISSN: 0033-5894
Accession Number: ISI:A1977CV28700006
Call Number: call # - UCD PhySciEng QE699.A1 Q2
Abstract: The remains of scales of Hysterocarpus traski Gibbons (Tule perch) were found throughout a 27.44-m core from Clear Lake. Most scales occurred between the mud surface and deposits approximately 11,000 years old. Changes in growth rates of the animals were examined by measuring scale annuli and applying an empirically established regression of fish length on scale radius. The data indicate a pattern of accelerating growth rates, reaching a peak between reverse similar, equals4000 and 2800 BP. After reverse similar, equals2800 BP, growth rates decline markedly. Because the growth rates of these animals are essentially dependent on temperature, the changes observed in the patterns of growth probably reflect changes in climate in the northern Coast Range. The general pattern of inferred temperature increase during the early and middle Holocene, ending between reverse similar, equals4000 and 2800 BP, is consistent with evidence from tree-line studies and palynology indicating higher temperatures in parts of the western United States during this period.
Notes: ISI Document Delivery No.: CV287
Times Cited: 8
Cited Reference Count: 47
ACADEMIC PRESS INC JNL-COMP SUBSCRIPTIONS
URL: <Go to ISI>://A1977CV28700006
Author Address: SIMON FRASER UNIV,DEPT ARCHAEOL,BURNABY V5A 1S6,BRITISH COLUMBI,CANADA. US GEOL SURVEY,MENLO PK,CA 94025.
Language: English

Reference Type: Journal Article
Record Number: 317
Author: R. W. Casteel and M. J. Rymer
Year: 1975
Title: Fossil Fishes from the Plicene or Pleistocene Cache Formation, Lake County, California
Short Title: Fossil Fishes from the Plicene or Pleistocene Cache Formation, Lake County, California
Accession Number: 7602495
Keywords: *lakes; *fish; *geologic time; *pleistocene epoch; *california;
freshwater fish; *lake county(calif); *fossil fishes; cache formation;
fossil-current fish relationships
SW 0850 Lakes
Abstract: The remains of fossil fishes comprising three species were found in the cache formation in lake county, calif. the rocks containing the fossils are considered to be late pliocene or early pleistocene. the species are all freshwater and primarily quiet-water types that now live in clear lake and the waters of the surrounding area, suggesting continuity between the present lake and a lake represented by the rocks of the cache formation. (woodard-usgs)
Notes: fish; archaeological
Journal of research of the u s geological survey, vol 3, no 5, p 619-622, september-october 1975. 2 fig, 26 ref.
Author Address: GEOLOGICAL SURVEY, MENLO PARK, CALIF

Reference Type: Book
Record Number: 318
Author: R. W. A. D. P. S. J. D. Casteel
Year: 1975
Title: Fish remains from core 7, Clear Lake, Lake County, California
Series Title: Open-file report ;; 75-173; Variation: U.S. Geological Survey open-file report ;; 75-173.
Place Published: [Reston, VA?]
Publisher: United States Geological Survey
Number of Pages: ii, 67 leaves
Short Title: Fish remains from core 7, Clear Lake, Lake County, California
Accession Number: OCLC: 65642312 Provider: OCLC
Call Number: call # - QE75 .O7 75-173 Main Lib UCSB
LC: QE75
Keywords: Fishes, Fossil -- California -- Clear Lake.
Abstract: need abstract
Notes: fish; archaeological
ill. map ; 27 cm.
Cover title/ Chiefly tables./ Includes bibliographical references (leaf 6).
by Richard W. Casteel, David P. Adam, and John D. Sims.
Government publication (gpb); National government publication (ngp)
Book

Reference Type: Book
Record Number: 135
Author: W. A. Cattell
Year: 1909
Title: Report on the Clear Lake power and irrigation project
Place Published: San Francisco
Publisher: Cal., [The Stanley-Taylor Company]
Number of Pages: 55 p. incl. tables. map, 2 diagrs. 28 cm.
Short Title: Report on the Clear Lake power and irrigation project
Accession Number: OCLC: 11092681 Provider: OCLC
Call Number: call # - CAL 15:26 Shields UCD special collections
LC: TK1425.C4
Abstract: need abstract
Notes: clear lake
by W.A. Cattell ... More Records: Show record information
Book

Reference Type: Report
Record Number: 560
Author: J. Cech
Year: 1978
Title: Collecting Permit Summary
Series Editor: C. D. o. P. a. Recreation and C. D. o. F. a. Game
Place Published: University of California-Davis
Date: November 15, 1978
Short Title: Collecting Permit Summary
Abstract: Memo to Mr. Phillips L. Claud of the CA Dept. of Parks and Recreation from Joseph J. Cech. Collecting Permit summary for Clear Lake State Park. Silversides, Sculpins, and Hitch most abundant...1978
Research Notes: Collecting Permit photocopied from the California Department of Fish and Game. Assisted by Jay Rowan and DFG Volunteer Gary Sypnicki.
North Central Regional Office
1701 Nimbus Road
Rancho Cordova, CA 95670

Access Date: 7/7/2011

Reference Type: Journal Article
Record Number: 319
Author: J. J. Cech and M. J. Massingill
Year: 1995

Title: Tradeoffs between Respiration and Feeding in Sacramento Blackfish, Orthodon Microlepidotus
Journal: Environmental Biology of Fishes
Volume: 44
Issue: 1-3
Pages: 157-163
Date: Oct
Type of Article: Article
Short Title: Tradeoffs between Respiration and Feeding in Sacramento Blackfish, Orthodon Microlepidotus
ISSN: 0378-1909
Accession Number: ISI:A1995TA16700012
Keywords: GILL VENTILATION; HYPOXIA; RESPIRATION; SUSPENSION FEEDING EFFICIENCY;
CYPRINIDAE
TROUT SALMO-GAIRDNERI; DYNAMIC ACTION; ABRAMIS-BRAMA; BLOOD-FLOW; GILLS; OXYGEN; FISH; CYPRINIDAE; HYPOXIA; BREAM
Abstract: Suspension-feeding fishes use gill structures for both respiration (lamellae) and food capture (rakers). During hypoxic exposure in eutrophic lakes or poorly circulated sloughs, many fishes, including Sacramento black-fish, Orthodon microlepidotus, increase their gill water flows, in part by increasing ventilatory stroke volumes. Stroke volume increases could compromise particle sieving efficiency by spreading interdigitated gill rakers from adjacent gill arches, although blackfish capture food particles by raker-guided water flows to a sticky buccal roof. Using van Dam-type respirometers, blackfish respiratory variables and feeding efficiency (Artemia nauplii) were measured under normoxia (>130 torr PO2) and hypoxia (60 torr PO2). Compared with non-feeding, normoxic conditions, gill ventilation volume, frequency, stroke volume, and gape all increased, while O-2, uptake efficiency decreased, during hypoxia and during feeding. O-2, consumption increased during feeding treatments, and % uptake of nauplii showed no difference between normoxic and hypoxic groups. Thus, blackfish display respiratory adaptations, including increased ventilatory stroke volumes, to survive in hypoxic environments such as Clear Lake, California. Importantly, they have also evolved a particle capture mechanism that allows efficient suspension-feeding under both normoxic and hypoxic conditions.
Notes: ONLINE; fish

-pg 157
    -blackfish have respiratory adaptations to survive in hypoxic environments (eg clear lake)
    -have particle capture mechanisms for normoxic and hypoxic conditions
-pg 158
    -native, planktivorous of warm water in central California (including clear lake)
    -commercially fished in clear lake
-pg 162
    -appears as though blackfish should be able to feed in all portions of clear lake
URL: <Go to ISI>://A1995TA16700012
http://springerlink.metapress.com/content/wn187h3tw8t4t55r/fulltext.pdf

Reference Type: Journal Article
Record Number: 511
Author: J. J. J. Cech, Michael J . Massingill & Henrietta Sterna
Year: 1982
Title: Growth of juvenile sacramento blackfish, Orthodon microlepidotus
Journal: Hydrobiologia
Volume: 97
Pages: 75-80
Start Page: 75
Short Title: Growth of juvenile sacramento blackfish, Orthodon microlepidotus
Abstract: Growth rates of juvenile (1-8 g) Sacramento blackfish, an omnivorous California cyprinid which grows to >1 .5 kg, were measured at three temperature ranges in laboratory aquaria where several diets were offered ad lib . and at four stocking densities in small ponds where natural food was available . Growth rates generally increased with elevations in environmental temperature . Growth in aquaria was possible with strictly plant-based diets, but was faster with pelleted diets higher in protein, lipids, and total calories . Growth rates in ponds increased with decreased stocking densities and approximated or exceeded those measured in laboratory aquaria for blackfish fed pelleted diets . The data also support the importance of energy-rich food organisms (e.g., zooplankton) in the diet of young-of-the-year blackfish in Clear Lake, California .
Notes: fish

Reference Type: Report
Record Number: 495
Author: R. C. Chamberlin, B. Finney, M. Hood, P. Lehman, M. McKee, & R. Willis
Year: 1990
Title: Abatement & Control Study: Sulphur Bank Mercury Mine & Clear Lake, California
Institution: Regional Water Quality Control Board: Central Valley Region
Document Number: Contract # - 7-703-150-0
Short Title: Abatement & Control Study: Sulphur Bank Mercury Mine & Clear Lake, California
Abstract: need abstract
Notes: mine; clear lake

Reference Type: Book
Record Number: 320
Author: H. M. Choi and J. J. Cech, Jr.
Year: 1994
Title: Methyl mercury uptake by the gills of Sacramento blackfish (Orthodon microlepidotus)
Series Editor: D. D. MacKinlay
Short Title: Methyl mercury uptake by the gills of Sacramento blackfish (Orthodon microlepidotus)
ISBN: 0969863101
Accession Number: 3809043

Call Number: call # - LD781.D5j 1997 C465 Shields UCD micro copy collections and special collections
Keywords: Article Subject Terms: bioaccumulation; gills; methyl mercury; mining;
Article Taxonomic Terms: Orthodon microlepidotus; Article Geographic
Terms: USA, California, Clear L.
Freshwater
Q5 01504 Effects on organisms
Abstract: The Clear Lake basin, like others in Northern California, is rich in mercury-containing cinnabar ore. Mercury from the Lake sediment and water is taken up by organisms and accumulates to levels detrimental to humans. For example, fish muscle tissue concentrations exceed USFDA safe limits (1 ppm) in bass Micropterus and catfish Ictalurus. It had been found that mercury is present in freshwater fish species almost all as methyl mercury. While it is well documented that mercury accumulates in animal tissues after exposure, mechanisms underlying the uptake of mercury by fish are not fully understood. There have been numerous direct toxicity studies as well as studies of biochemical and physiological effects of mercury in fish. Many studies have demonstrated experimentally that fish accumulate mercury directly from the surrounding water as well as from food. In many studies, it has been demonstrated that the accumulation of heavy metals in aquatic organisms can be affected by the presence of suspended or dissolved substances, such as sediment, humic substances and other sources of dissolved organic carbon (DOC). About 50% of the DOC in uncolored surface waters of the U.S. consist of humic substances. It has been well established that this aquatic humus, apparently in solution, complexes with or chelates heavy metal ions in natural waters and thereby changes the state of trace metals in solution. This reduces the amount of metal that is "freely dissolved" and therefore the amount bioavailable to fish. During the past 10 years, there have been several reports on the influence of inorganic and organic chelators on the uptake, accumulation and toxicity of heavy metals to living organisms.
Notes: fish; chemistry
Fish physiology association, vancouver, bc (canada). 1994.
International Fish Physiology Symposium, Vancouver, BC (Canada), 16-21 Jul 1994
Incl. 27 ref.
Book Monograph; Conference
Author Address: Dep. Wildl. and Fish. Biol., Univ. California, Davis, CA 95616, USA

Reference Type: Journal Article
Record Number: 321
Author: M. H. Choi, J. J. CECH, JR., & M.C. LAGUNAS-SOLAR
Year: 1998
Title: Bioavailability of methylmercury to Sacramento Blackfish (Orthodon microlepidotus): dissolved organic carbon effects
Journal: Environmental Toxicology and Chemistry
Volume: 17
Issue: 4
Pages: 695–701
Short Title: Bioavailability of methylmercury to Sacramento Blackfish (Orthodon microlepidotus): dissolved organic carbon effects

Keywords: Methylmercury, Bioavailability, Complexation, Sacramento blackfish, Dissolved organic carbon
Abstract: The effect of dissolved organic carbon (DOC) on methylmercury (MeHg) uptake across the gills of Sacramento blackfish (Orthodon microlepidotus) was investigated using the Hg-203 radioisotope (half life 5 46.9 d). The efficiency of fish gills in extracting MeHg (1.4 ng/L) from water was measured using a McKim-type fish respirometer that separated exposure (inspired) water from expired water. Blackfish gill ventilation and oxygen consumption rates remained constant, while Me203Hg uptake was decreased significantly (p , 0.05) in the presence of DOC (2 and 5 mg C/L). Mean Me203Hg extraction efficiency, uptake rate constant, and blood to inspired water ratio decreased 78%, 73%, and 63%, respectively, with 2 mg C/L of DOC, and 85%, 82%, and 70% with 5 mg C/L DOC, compared to the Me203Hg reference treatment group. Because respiratory parameters remained unchanged, reductions in Me203Hg uptake indicate strong interactions between DOC and Me203Hg. Methyl203Hg levels in fish gills, kidney, and spleen from 2 and 5 mg C/L were significantly lower (p , 0.05) than those observed from the reference treatment group. These reductions in uptake (bioavailability) support the hypothesis that trans-gill transport of Me203Hg is inhibited when it is complexed by DOC in the aqueous medium, decreasing Me203Hg uptake and accumulation in fish organs
Notes: fish; pollution; ONLINE

Reference Type: Journal Article
Record Number: 322
Author: G. A. Coleman
Year: 1930
Title: A biological survey of Clear Lake, Lake County [California]
Journal: California Fish and Game
Volume: 16
Issue: (3)
Pages: 221-227
Date: 1930
Type of Article: Article
Short Title: A biological survey of Clear Lake, Lake County [California]
Accession Number: BIOSIS:PREV19330700015273
Call Number: call # - SK351 .C3 Shields UCD
Abstract: Physio-graphic and hydrobiological conditions, with lists of algae, crustaceans, insects, and fish.
Notes: clear lake; fish

-pg 221
    -“enormous” amounts of young fish
-pg 223
    -kelsey, scott, middle, cold creeks feed clear lake
    -cache creek is only outlet, intermittent
    -springs carry in borax, iron, soda, sulfur
    -small stream flows through old sulfur banks (via cinnabar mine), lower part of northeast arm-turns water milky

-1926, fish kill due to sulphuric acid
-shore line
-variety, tule is abundant
-shelter for fish
-bass fond of tules around islands
-bottom
-level, fine silt (volcanic sand, etc)
-temperature
-january, 45-47 F (surface), 30 ft 2 F less
-february, surface 50-52 F
-march, 55 F
-april, 57-60 F
-summer/fall 60-70 F, occasionally 75-80 F
-dissolved oxygen in January, 100-210% saturation
-high carbon dioxide, 15-45 ppm
-rain
-previous to 1925, drought, dropped 1.7 feet
-1924-1925, heavy rain
-lots of plankton, insects (good fish food)
-fish
-native-sacramento perch, hitch (most abundant), blackfish, sacramento sucker, squawfish, sacramento chub, splittail, minnows, silversides
-introduced-european carp, catfish, brown spotted catfish, bass (small and large, calico), crappie, bluegill, trout, steelhead
-recommended introductions, Louisiana sunfish
URL: <Go to ISI>://BIOSIS:PREV19330700015273

Reference Type: Generic
Record Number: 508
Author: T. S. Collin Eagles-Smith, Art Colwell, Norm Anderson, and Peter B. Moyle
Title: Changes in Fish Diets and Mercury Bioaccumulation in Clear Lake, California: Effects of an Invasive Planktivorous Fish
Secondary Title: American Fisheries Society conference presentation
Type of Work: Presentation
Short Title: Changes in Fish Diets and Mercury Bioaccumulation in Clear Lake, California: Effects of an Invasive Planktivorous Fish

Reference Type: Book
Record Number: 323
Author: S. F. Cook
Year: 1943
Title: The Conflict Between the California Indian and White Civilization, I-IV
Series Title: Ibero-Americana
Publisher: University of California Press, Berkeley, CA

Volume: 21-24
Short Title: The Conflict Between the California Indian and White Civilization, I-IV
Call Number: call # - F1401 .C3 no.21-24 Shields UCD and Special Collections Harrison Collection no.21-24***no.24: See Accompanying Materials File under call number
Abstract: need abstract
Notes: settlement

- Pg 205
- 1841-vallejo went to CL and slaughtered 150 people “CL massacre)
- 1833-southern pomo attackes by father Mercado, 21 killed
- Pg 213
- 1837-smallpox epidemic
- Pg 269
- 1860’s-american invasion leads to natives with venereal diseases
- Pg 296
- 1865 article-indians eat fish and waterfowl, tule roots, grass seeds
- Pg 305
- Kelseys-brutal repressive measures: starving, beating, murdering Indian workmen
  - Natives resorted to murder
- Pg 310
- Indian slave trading
- Pg 317
- 1862-CL Indians worked as migrant harvesters

Reference Type: Journal Article
Record Number: 324
Author: S. F. Cook, Jr., J.D. Connors and R.L. Moore
Year: 1964
Title: The impact of the fishery upon the midge populations of Clear Lake, Lake County, California
Journal: Ann Entomol Soc Amer
Volume: 57
Pages: 701-707
Short Title: The impact of the fishery upon the midge populations of Clear Lake, Lake County, California
Call Number: call # - QL461.E57
Abstract: The midge, or gnat, of primary concern in this study was the Clear Lake gnat, Chaoborus astictopus Dyar and Shannon (Culicidae: Chaoborinae) , a species of considerable economic concern to this area. Despite its great abundance in this environment, this gnat species was found in less than 16% of the 1940 stomachs examined from representatives of virtually every fish species occurring in Clear Lake. Chironomid midges, on the other hand, though far less abundant than chaoborids in this lake, were found in 43% of the stomachs examined. From an overall evaluation of the results obtained, an attempt was made to explain possible reasons why the Clear Lake gnat was not more heavily utilized for food. This information will provide a basis to be used in evaluating those characteristics most potentially desirable in any alien fish

species under consideration for introduction into Clear Lake as a possible biological control agent of the Clear Lake gnat.
Notes: insects; fish

-pg 701
-clear lake gnat in 16% of fish stomachs (1940). Midge in 43% of fish stomachs (1940)
-both a serious nuisance
-contains nutritional status of fish
-clear lake gnat found in 16% of stomachs
-midges found in 63% of stomachs
-gnat densities in clear lake are largest
-pg 702
-C. astictopus is dominate midge species although they are chemically controlled
-have always existed in great numbers
-life history
-become planktonic, disperse
-fishery (much change in 50 years)
-increase alien species, decrease natives
-1964, no stickleback, chub (not since 1938, extinct in area), roach
-riffle=prickly sculpin
-since 1951-1964, introduction of white crappie, golden shiner, channel catfish
-*table 1, fish abundances
-pg 703
-did not observe three spined stickleback (stream fish), western roach (stream fish), thick tailed chub (not since 1938), as Murphy did in 1951
-white crappie, golden shiner, channel catfish have been introduced since murphy
-table of fish in clear lake as of 1963
-total fry catch
-bluegill 75%, hitch/blackfish 20%, all others 5%
-pg 704
-fry and juveniles (littoral)
-75% bluegill, 20% hitch/blackfish
-may, fish occupy littoral zone due to spawning
-august, fish occupy profundal zone
-pg 705
-chironomids utilized more than Chaoborus (higher population numbers)
-crappie/sacramento perch eat most of Chaborus
-table 3 (pg 706)
-table 2, percentage of midge/gnat consumption
-pg 706
-sacramento perch numbers very low die to introductions. Appear to once have been main midge predators
-midge appear to be large part of nutrition

Reference Type: Journal Article
Record Number: 325
Author: S. F. Cook, Jr. and R.L. Moore
Year: 1970
Title: Mississippi silverside (Menidia audens) established in California
Journal: Transactions of the American Fisheries Society
Volume: 99
Issue: 1
Pages: 70-73
Short Title: Mississippi silverside (Menidia audens) established in California
Call Number: call # - SH1.A5 Shields UCD
Abstract: Menidia audens were introduced into Upper and Lower Blue Lakes, and in Clear Lake, Lake County, during the fall of 1967, as a result of previous study indicating a high potential for this species as a biological control agent for aquatic midges, and as a forage species for game fishes. Although the species has not as yet been recovered from Upper Blue Lake, it is doing well in Lower Blue Lake, and has already become a predominant component of the fish fauna of Clear Lake.
Notes: fish; insects

-pg 70
-fall 1967, silverside introduced as midge control and forage fish and plankton reduction
-pg 71
-october 1967, 3,000 placed in clear lake. Not endorsed by California department of fish and game (DFG)
-1968, massive seine hauls of silverside

Reference Type: Journal Article
Record Number: 326
Author: S. F. Cook, Jr.
Year: 1981
Title: The Clear Lake Example: An Ecological Approach to Pest Management
Journal: Environment
Volume: 23
Issue: 10
Pages: 25-30
Short Title: The Clear Lake Example: An Ecological Approach to Pest Management
ISSN: 0013-9149
Accession Number: 232047
Keywords: Article Subject Terms: algal blooms; biological control; freshwater lakes; introduced species; predation; Article Taxonomic Terms: Chaoborus astictopus; Menidia audens; Article Geographic Terms: USA, California, Clear L.
effects on; freshwater lakes
Freshwater
D 04710 Control; Q1 01485 Species interactions: pests and control; D

04310 Freshwater
Abstract: After repeated failures to control midges and algae at Clear Lake, California, through conventional methods, a small fish, the Mississippi Silverside, was introduced into the lake in 1967 as a possible means of biological control. Algal levels in the lake have since declined and the Clear Lake "Gnat" appears to be contained. Clear Lake may thus prove to be one of the first examples of successful ecological pest management.
Notes: fish; clear lake; insects
1981.
Journal Article
Author Address: Evergreen State Coll., Olympia, WA 98505, USA

Reference Type: Journal Article
Record Number: 327
Author: S. F. Cook and J. D. Conners
Year: 1963
Title: The short-term side effects of the insecticidal treatment of Clear Lake, Lake County, California, in 1962
Journal: Ann Entomol Soc Amer
Volume: 56
Issue: (6)
Pages: 819-824
Date: 1963
Type of Article: Article
Short Title: The short-term side effects of the insecticidal treatment of Clear Lake, Lake County, California, in 1962
Accession Number: BIOSIS:PREV19644500040784
Call Number: call # - QL461 .E57 Shields UCD
Abstract: Clear Lake, Lake County, California, was treated to control the Clear Lake gnat, Chaoborus astictopus Dyar and Shannon, during the summer of 1962 with 3 ppb methyl parathion. Concurrent with this control project, information was gathered on representatives of the major trophic groups. This data was compared with similar data gathered at the same time the previous non-treatment year to determine if any immediate side effects of the insecticide were manifest. Although it was impossible to study all the organisms involved with the treatment, results indicated a possible depressing effect only upon the zooplankton levels. No direct effects on the bottom fauna, other than C. astictopus, or on the fishery were observed. || ABSTRACT AUTHORS: Authors
Notes: insects; fish; bioaccumulation; birds

-pg 819
-summer 1962, clear lake treated with 3 ppb methyl parathion (Chaoborus astictopus control)
-direct effect on zooplankton and gnat, not on fishery or other bottom fauna
-1949, briefly treated with DDD (TDE)
-summer 1954, gnats came back and lake re-retreated
-1957, treated again (failure)

-accumulation of poison in species
-1962, alternative used by mosquito abatement (methyl parathion)
-article focuses on immediate direct effects
-pg 820
-no permanent inflow streams
-methyl parathion deteriorates 50% in 48 hours, within 2 weeks it's nearly gone
-can be metabolized and excreted
-3 total treatments during larval stage
-pg 821
-during treatment year, immediate decrease in zooplankton
-1962, Anabaena blooms but zooplankton low
-pg 822
-oligochaetes remained constant
-chironomids decrease rapidly after second treatment
-hitch and blackfish abundant
-star of summer, regular fish die offs
-more dead fish seen before treatment
-no affect on fish
-pg 823
-western grebe hurt most by DDD treatments. 1,000 nesting pairs to 25
-no physical adverse symptoms to methyl parathion observed
URL: <Go to ISI>://BIOSIS:PREV19644500040784
Author Address: Lake County Mosquito Abatement Dist., Lakeport, Calif., USA

Reference Type: Journal Article
Record Number: 329
Author: S. F. Cook and R. L. Moore
Year: 1969
Title: The Effects of a Rotenone Treatment on the Insect Fauna of a California Stream
Short Title: The Effects of a Rotenone Treatment on the Insect Fauna of a California Stream
Accession Number: 7003624
Keywords: *rotenone; *aquatic insects; water pollution effects; diptera; caddisflies; mayflies; persistence; larvae; treatment; fish control agents; *recovery; *insect fauna; russian river; california; ephemeroptera; trichopters; simuliids
SW 3030 Effects of pollution
Abstract: The population levels of the major insect groups subsequent to rotenone treatment in the treated and untreated zones in robinson creek were examined in both pools and riffles. a great resurgence of insect fauna after their initial near annihilation in the treated zone was noticed. the simuliids were the first major group to make a comeback in the treated riffles. within two weeks they had taken over all available attachment space in the riffles. the authors feel that elimination of potential predators may account for this resurgence. it appears as if rotenone treatment had little lasting effect upon the non-target insect fauna of significance as fish forage. the authors caution relating these data to other instances of stream poisoning, since only a portion of robinson creek was treated. season of treatment, sampling biases, and possible undetected

species shifts are other points to be considered in evaluation of such projects. (sjolseth-washington)
Notes: insects; fish; tributary
Transactions of american fisheries society, vol 98, no 3, p 539-544, 1969. 3 ref, 6 fig.
Author Address: CALIFORNIA UNIV., DAVIS. DEPT. OF ZOOLOGY; AND CALIFORNIA STATE DEPT. OF FISH AND GAME, SAN FRANCISCO

Reference Type: Journal Article
Record Number: 330
Author: S. F. Cook, R. L. Moore and J. D. Conners
Year: 1966
Title: The status of the native fishes of Clear Lake, Lake County. California
Journal: Wasmann J Biol
Volume: 24
Issue: (1)
Pages: 141-160
Date: 1966
Type of Article: Article
Short Title: The status of the native fishes of Clear Lake, Lake County. California
Accession Number: BIOSIS:PREV19674800109303
Call Number: call # - SIO 1 WA38 Scripps UCSD; QH1.W39 S&E lib UCSC
Notes: fish; clear lake

-pg 141
- -stone (1874), first collection of clear lake fishes
- -1895, 13 fishes in clear lake
- -changes since 1895
  - -land use practices and increased water demands causing reduction in the period of flow and inflow streams
  - -introduction of 12 exotic fishes
  - -sedimentation, siltation, pollution, shoreline filling. All causing increased eutrophication of the lake

-pg 143
- -table, species abundance (1961-1963)
  - -hitch>blackfish>prickly sculpin>tule perch>splittail>squawfish>sacramento perch> sucker>rainbow trout

-pg 144
- -stream spawners have declined more than lake spawners
- -lack of fires to burn shrubs means more water taken by shrubs therefore less water into the watershed

-pg 145
- -STREAM SPAWNERS
  - -hitch
    - -most abundant native in clear lake
    - -1938 abundant, 1948 rare

-shows they depend on rainfall
-will also spawn in lake
-1961-1963, ascending every stream possible. Spill out onto roads
-1964, dry spring, few fish
-1957ish, January 3, enter creeks but major runs occur in march and april
-pg 146
-early june, many fry seined
-first week of june, young hitch gone from scotts creek
-splittail
-found in clear lake, middle creek
-summer die offs
-1930 and 1941, very abundant
-early 1940's, see reduction
-pg 147
-not rare in 1966 but stressed
-sacramento squawfish
-1895 and 1938, abundant
-15-20 pounds
-large runs in Kelsey creek
-1946-1947 in decline. Crash in 1940's
-65-166 mm long
-pg 148
-some populations are upstream and go to clear lake in rains
-these populations appear to keep species alive
-western sucker
-1930's, relatively common
-migration back to lake by june 1
-young are 65-166 mm, adults are 275-376 mm
-still occurs in permanent water of watershed. Population numbers depend on water
-rainbow trout
-1914, cache creek dam built
-before many trout went to clear lake to spawn
-face parasitization
-spring 1963, large runs on scotts creek and other tributaries
-6-14 inches long
-maintain populations in watersheds (eg scotts creek)
-numbers are not good
-pg 151
-LAKE SPAWNERS
-besides sacramento perch, populations are stable
-12 introductions to clear lake (1966)
-blackfish
-still in large numbers
-2-3 pounds
-large die offs and commercial fishing occurs

-eat plankton

-pg 153

-forage species

-adhesive eggs, 15 days to hatch (58 F)

-prickly sculpin

-pg 154

-active at night

-second most common item in bass

-1.5-12 inches long

-population not in danger

-tule perch

-reasonably abundant

-spawn in june or july

-pg 155

-sacramento perch

-1895, becoming scarce due to competition with carp

-1930, abundant

-1943, moderately abundant

-1946-1947, small but healthy population

-don't guard eggs (Murphy 1951), but hopkirk says males are defensive

-pg 156

-mid 1950's, taken commonly by anglers, rarely taken by 1966

-bluegill overrun lake

-recent introduction of redear sunfish

-thicktail chub, three spined stickleback and western roach not observed

-pg 157

-chub

-was abundant, now appears extinct

-1938, last one taken from the lake

-1895 and 1925, common

-roach

-in watershed but not clear lake

-stickleback

-1965, april, two individuals taken in tributary

-pacific lamprey

-not observed

-hardhead and speckled dace

-taken in watershed below dam

-pg 158

-probably never in clear lake

-summary

-ok species-hitch, blackfish, tule perch, prickly sculpin

-not ok species-chub, trout, sucker, squawfish, splittail, perch

URL: <Go to ISI>://BIOSIS:PREV19674800109303

Author Address: Lake County Mosquito Abatement Dist., Lakeport, Calif., USA

Reference Type: Audiovisual Material
Record Number: 331
Author: H. M. P. Curdts
Year: 1991
Title: Where do we fit in?
Publisher: Santa Rosa, Calif. : Palmer Video Productions
Extent of Work: 1 videocassette (9 min.)
Type: Videorecording (vid); Videocassette (vca); VHS tape (vhs)
Short Title: Where do we fit in?
Accession Number: OCLC: 61391785 Provider: OCLC
Call Number: call # - 979.417 WHERE Videocassettes Redbud Lib
Keywords: Nature -- Effect of human beings on -- California -- Clear Lake Region.
Natural history -- California -- Clear Lake Region.
Clear Lake (Calif.) Region -- Environmental conditions.
Abstract: Discusses the widespread impact of humans on Clear Lake, Calif., and its surrounding landscapes as development increases.
Notes: clear lake; settlement
Palmer Video Productions.
sd., col. ; 1/2 in.
VHS, hi-fi.
Participants: Narrator, Paul MacCready.
Palmer Media Productions. Director/producer/videographer, Heath Curdts ; music, Jim Brown, Sr., Brian Whistler.
Visual Material

Reference Type: Journal Article
Record Number: 332
Author: B. Curtis
Year: 1949
Title: The warm water game fishes of California
Journal: California Fish and Game
Volume: 35
Issue: 4
Pages: 255-274
Short Title: The warm water game fishes of California
Call Number: call # - SK.351.C3 Shields UCD
Abstract: When Nature was handing out her gifts so generously to California she was guilty of one oversight: she left a serious scarcity of game fishes in the warmer inland waters of the State. The salmon swarmed through San Francisco Bay and the Delta to their spawning grounds in the cooler tributaries above, and the steelhead swam up the coastal streams to lay their eggs and return to the sea. But when the first white man came there was only one game fish which resided permanently in the warm inland waters-the Sacramento perch, confined mostly to the

Sacramento-San Joaquin River system. The striped bass, the black basses, the sunfishes, the catfishes, which are now so widespread and furnish so much fishing, are not native sons; they have been brought by man from east of the Rockies since 1870.

The purpose of this article is to tell something of the habits and the geographical range of these fishes, and to enable anglers and others to identify them. It is based to some extent on original observation and experience, but also draws on the published work of others (see "References" at end). In its preparation, valuable technical advice has been received from several members of the Bureau of Fish Conservation of the California State Division of Fish and Game, particularly from William A. Dill, Chester A. Woodhull, and Garth I. Murphy; and valuable suggestions from Dr. R. W. Eschmeyer the Tennessee Valley authoritv.
Notes: fish

-pg 259
    -perch information
-pg 260
    -black basses
-pg 263
    -sunfishes
-pg 264
    -crappies
-pg 265
    -sacramento perch, significant numbers in clear lake (1949)
        -june 15, 1947, spawning in clear lake
-pg 268
    -catfish
-pg 269
    -perch

Reference Type: Journal Article
Record Number: 333
Author: L. Darling
Year: 1940
Title: Protocoronospora on Phora-dendron flavescens in California
Journal: Madrono
Volume: 5
Issue: (8)
Pages: 241-246
Date: 1940
Type of Article: Article
Short Title: Protocoronospora on Phora-dendron flavescens in California
Accession Number: BIOSIS:PREV19411500002738
Call Number: call # - QK1 .M3 One Day Loan Shields UCD

Abstract: Protocoronospora phoradendri infects Phora dendron flavescens var. macrophyllum which is parasitic on willows and poplars growing on the shore of Clear Lake, Lake County, California.-L. Darling.
Notes: botany; clear lake
URL: <Go to ISI>://BIOSIS:PREV19411500002738

Reference Type: Journal Article
Record Number: 334
Author: S. P. Davis
Year: 1963
Title: Commercial freshwater fisheries of California
Journal: California Fish and Game
Volume: 49
Issue: (2)
Pages: 84-94
Date: 1963
Type of Article: Article
Short Title: Commercial freshwater fisheries of California
Accession Number: BIOSIS:PREV19634400004905
Call Number: call # - SK351 .C3 Shields UCD
Abstract: Seven species of true freshwater fish (Sacramento blackfish. Orthodon microlepidotus; big mouth buffalo, Ictiobus cyprinella; carp, Cyprinus carpio; hardhead, Mylopharodon conocephalus; hitch, Lavinia exilicauda; splittail, Pogonicthys macrolepidotus; western sucker, Catostomus occidentalis) are taken commercially in California. Rough fish landings in 1960 amounted to nearly a half million pounds worth about $55,000 to the fisherman. Lakes and reservoirs yielded 91% of all commercial landings with rivers and irrigation canals supplying the remainder. Clear Lake, the main producer, contributed 57% of the 1960 catch. Three types of gear are used to harvest commercial rough fish; shore seines accounted for the largest poundage followed by traps, and hook and line. The best season for shore seining is during fall and winter when reservoirs are shallow, water temperatures drop, and canals are drained. Carp are more readily taken by trap from Aug. through Nov. No seasonal pattern is evident for best hook and line fishing. || ABSTRACT AUTHORS: S. P. Davis
Notes: fish; hitch; settlement

-pg 84
    -commercial take in California waters
        -blackfish, bigmouth buffalo (1942?), carp (1812), hardhead, hitch, splittail, western sucker
-pg 85
    -1960, clear lake provided 279,835 pounds of the 494,706 statewide
-pg 86
    -1932-1936, increase in rough fish catch due to clear lake. By 1937, no longer leader
    -take tables, numbers on rough fish caught in California
-pg 90
    -splittail in sacramento river

-pg 91
-blackfish seining in clear lake (October-april)
-pg 92
-fish taken to market in china town and other places
-pg 93
-money for fish (table)
URL: <Go to ISI>://BIOSIS:PREV19634400004905
Author Address: Calif. Dept. Fish and Game, Sacramento, Calif., USA

Reference Type: Report
Record Number: 335
Author: P. De Percin and P. M. Randall
Year: 2001
Title: Characterization and Eh/pH-Based Leaching Tests of Mercury-Containing Mining Wastes from the Sulfur Bank Mercury Mine, Lake County, California
Type: Final rept
Short Title: Characterization and Eh/pH-Based Leaching Tests of Mercury-Containing Mining Wastes from the Sulfur Bank Mercury Mine, Lake County, California
Accession Number: PB2003100710
Keywords: Leaching; Mercury; Mining wastes; Water pollution monitoring; Water samples; Contaminants; Toxicity; Analytical methods; Analytical procedures; Filtration; Waste materials; Fishes; Overburden; Mine tailings; Eh; pH
Clear Lake; Sulfur Bank Mercury Mine; Lake County(California)
68D Environmental Pollution & Control: Water Pollution & Control; 57Y Medicine & Biology: Toxicology; 48A Natural Resources & Earth Sciences: Mineral Industries
Abstract: Clear Lake in northern California has received inputs of mercury (Hg) mining wastes from the Sulfur Bank Mercury Mine (SBMM). About 1.2 million tons of Hg-contaminated overburden and mine tailings were distributed over a 50-ha surface area due to mining operations from 1865 to 1957 (Gerlach et al., 2001). The SBMM includes an open, unlined mine pit, Herman Pit, which covers approximately 23 acres and is 750 feet up gradient of Clear Lake. Reynolds et al. (1997) analyzed water samples collected from Herman Pit and Clear Lake and reported the pH values at those locations as 3 and 8, respectively. The SBMM was placed on the Final National Priorities List (NPL) list in 1990. The site has been under investigation as a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) site and has experienced some minor corrective actions. Clear Lake remains under a fish advisory due to the mercury contamination.
Notes: mine; clear lake; chemistry
Performer: Battelle, Columbus, OH.; Cincinnati Univ., OH. Sponsor: National Risk Management Research Lab., Cincinnati, OH. 27 Sep 2001. 24p. Report: EPA/600/R-02/032
Prepared in cooperation with Cincinnati Univ., OH. Sponsored by National Risk Management Research Lab., Cincinnati, OH.

Reference Type: Report
Record Number: 336
Author: W. A. A. J. C. Dill
Year: 1997
Title: History And Status of Introduced Fishes In California, 1871 – 1996
Institution: California Department of Fish and Game
Document Number: 178
Pages: 414
Short Title: History And Status of Introduced Fishes In California, 1871 – 1996
Keywords: Introduced fishes -- California
Animal introduction -- California -- History
Fish stocking -- California -- History
Abstract: Unlike previous histories on the subject (the last being in 1976), this one is fully documented by primary references to the original publication or other sources. There are also explanations as to why some of the previous errors occurred.

The detailed history of each introduction, including the primary references, is given. The subsequent history and status of each species in California is given. The attitude of administrators, ichthyologists, fish culturists, fishery biologists, fishermen, and the public toward each introduction is given, and there is a discussion of their value. There is, with respect to California, a review of the present regulations concerning introduced fishes, and a prognostication of the future concerning them.

Approximately 111 full species of freshwater and euryhaline fishes occur in California. (Salton Sea fishes are excluded.) of these, 53 have been introduced from without the state and have been established successfully. Another five subspecies or races have become established. Twelve introduced fishes have uncertain status. Thirty-nine, including one marine fish which was deliberately introduced, have achieved no lasting success. Eight introduced fishes are listed as "hypothetical." Five were scheduled for introduction, but the introductions were never completed. Three species have been listed erroneously in scientific papers as having been introduced. About 26 other species have been formally suggested as introductions. Three species are likely candidates for introduction.

Notes: ONLINE; fish
URL: http://content.cdlib.org/xtf/view?docId=kt8p30069f&query=&brand=calisphere

Reference Type: Book
Record Number: 337
Author: C. D. Doley
Year: 1999
Title: Community-Based Habitat Restoration Program
Short Title: Community-Based Habitat Restoration Program
ISBN: 0933957246
Accession Number: 4684092
Keywords: Article Subject Terms: Coastal zone management; Fishery management;

Fishways; Habitat improvement (physical); Nature conservation
Marine
Q2 02123 Conservation; O 6060 Coastal Zone Resources and Management;
Q5 01523 Conservation, wildlife management and recreation
Abstract: The Restoration Center is working to forge closer ties between NOAA and local constituencies. In FY96, the Restoration Center began a community-based restoration initiative to enable staff to become more directly involved in local habitat restoration activities that benefit NOAA trust resources. To date, this effort provided funds for 20 habitat restoration projects at the local or community level, where the Center participation served as a catalyst or essential element for project implementation. Through community-based restorations, the Center hopes to form strong partnerships with local government agencies and volunteer organizations, as well as promote stewardship and a community conservation ethic for natural resources. The Adobe Creek Fish Passage Project in California is an example of community-based partnership in which a permanent step-pool fish ladder system was constructed to provide passage for steelhead trout past a 12 foot blockage at the base of a culvert. The project involved a partnership with the United Anglers of Casa Grande, California Department of Fish and Game, and three Sonoma County Agencies. This solution makes it possible for fish to ascend the perched culvert and continue swimming upstream to spawn.
Notes: tributary; fish; hitch
PROCEEDINGS OF OCEANS '99. VOLUME 1. p. 409.
Mts/ieee
Oceans '99, Seattle, WA (USA), 13-16 Sep 1999
Available from: The Marine Technology Society, 1828 L. St., N.W., Suite 906, Washington, DC 20036, USA.
Book Monograph; Conference

Reference Type: Book
Record Number: 338
Author: P. Drucker
Year: 1948
Title: Appraisal of the archeological resources of Kelsey Creek reservoir, Lake County, California
Series Title: Appraisal of the archeological resources ... ;; no. 9
Place Published: Washington D.C.
Number of Pages: 4 l. fold. map. 27 cm.
Short Title: Appraisal of the archeological resources of Kelsey Creek reservoir, Lake County, California
Accession Number: OCLC: 80390498 Provider: OCLC
Call Number: call # - HARVARD UNIV, TOZZER LIBR
Abstract: need abstract
Notes: tributary; archaeological
Mimeographed./ "Prepared by Pacific Coast area ... ". More Records: Show record information
Book

Reference Type: Book
Record Number: 339
Author: K. S. S. Dybeck
Year: 1995
Title: A survey of plant life, Rodman Slough, Clear Lake
Place Published: [California?
Publisher: s.n.
Number of Pages: [16], 30 leaves
Short Title: A survey of plant life, Rodman Slough, Clear Lake
Accession Number: OCLC: 46541440 Provider: OCLC
Call Number: call # - 581.9794 DYBECK Lakeport Lib, Redbud Lib, Middletown Lib, Upper Lake Lib; QK149 D93 1995 Regional Coll. 3rd floor Sonoma State lib use only

LC: QK149
Keywords: Botany -- California -- Rodman Slough.
Abstract: need abstract
Notes: botany; tributary
ill. ; 28 cm.
Cover title./ Includes bibliographical references (leaves [10-12]) and index.
Kathy Dybeck & Susan Sahl.
Book

Reference Type: Thesis
Record Number: 340
Author: C. A. Eagles-Smith
Year: 2006
Title: Mercury in fish: Food web structure, trophic transfer, and bioaccumulation in two California lakes
Place Published: United States -- California
University: University of California, Davis
Thesis Type: Ph.D.
Short Title: Mercury in fish: Food web structure, trophic transfer, and bioaccumulation in two California lakes
Accession Number: 3250788
Keywords: Ecology
Environmental science
Freshwater ecology
Abstract: Mercury contamination of aquatic habitats results in bioaccumulation in fishes to levels that threaten ecosystem function. For my dissertation research I explore how factors such as foraging habitat and temporal variability in food web structure can influence mercury concentrations in freshwater fish. In Chapter 1 I analyze diets of six fish species from a mine-impacted lake and show that mercury trophic transfer is positively related to the degree of profundal foraging. Further, I show that energy from pelagic autotrophs drives the benthic transfer of mercury to fishes, suggesting that pelagic detritus can be strongly coupled with benthic mercury accumulation. Next, in Chapter 2 I use 20 years of monitoring data and archived

fish samples to assess how a nonnative fish invasion affected food web structure and mercury accumulation in Clear Lake, California. I demonstrate that the invasion of a planktivorous fish resulted in a dramatic decline in pelagic prey densities, causing an energetic shift among fish to greater benthic reliance. Concomitant with this diet shift, mercury concentrations increased in fish that previously foraged on pelagic prey. Moreover, both diet and mercury concentrations returned to pre-invasion benchmarks following the planktivore's collapse. Thus, transient perturbations to a food web can shifts foraging habitats which can strongly determine mercury levels in fishes. Lastly, in Chapter 3 I examine how mercury concentrations vary in the food web of Eagle Lake, California and use an information theoretic approach to determine important variables determining mercury concentrations in fish. I show that fish length, date, pelagic reliance, and trophic position are all important but the rankings of importance differ among species. Overall, my dissertation highlights the need to incorporate the temporally dynamic energy-flow paradigm of food webs, rather than a static topological approach to understand mercury bioaccumulation in fishes. I show that foraging habitat can be as important as trophic position and that mercury concentrations can respond rapidly to transient food web perturbations. Thus, simplifying assumptions regarding temporal stability, and the direction and magnitude of energy flow can lead to spurious interpretation.
Notes: fish; algae; clear lake; ONLINE

- Pg 3
- Foraging habitat determines [Hg]
- Pg 4
- When shad are present [Hg] increases in other fish bc shad eat all pelagic prey therefore others must eat more benthic prey which contains more Hg
- Pg 9
- Older fish and top predators have highest [Hg]
- Pg 10
- Depends on what they eat
  - Linkages with +/- contaminated prey
- Pg 23
- Bioaccumulation influenced by foraging habit and trophic position, increasing with degree of benthic foraging and trophic position
- Pg 24
- Sediment samples near mine have higher [Hg]
- Pg 62
- 1988-shad dominate
- 1990-shad crash
- 1997-shad detected in lake
- winter 1997-shad die off
- 2001-2002-shad begin to increase appreciably
- shad affects on biomass and population of LMB, bluegill and prickly Sculpin
- Pg 64
- Zooplankton levels decrease quickly when silversides introduced
- Spiked when silversides disappeared followed by low densities in 1990’s
- 2000-2001- increase density
- 2002-decreae density as silverside increase

- changes in silverside, bluegill, LMB diets when shad present
  - increase benthic invertebrates, decrease zooplankton
- Pg 66
- Shad result in temporary increase in [Hg] on small fish
- Pg 67
- No affect on prickly Sculpin (obligatory benthic feeders)
- Other fish greatly reduced zooplankton density and biomass
- Great table regarding these topics

URL:
http://proquest.umi.com/pqdweb?did=1276394151&Fmt=7&clientId=1567&RQT=309&VName=PQD
http://proquest.umi.com/pqdweb?vinst=PROD&fmt=6&startpage=-1&clientid=1567&vname=PQD&RQT=309&did=1276394151&scaling=FULL&vtype=PQD&rqt=309&TS=1216054931&clientId=1567

Reference Type: Journal Article
Record Number: 468
Author: C. A. Eagles-Smith, Thomas H. Suchanek, Arthur E. Colwell, Norman L. Anderson & Peter B. Moyle
Year: 2007
Title: Changes in Fish Diets and Mercury Bioaccumulation in Clear Lake, California: Effects of an Invasive Planktivorous Fish
Journal: Ecological Applications
Short Title: Changes in Fish Diets and Mercury Bioaccumulation in Clear Lake, California: Effects of an Invasive Planktivorous Fish
Keywords: mercury, invasive species, invasions, non-native fishes, threadfin shad, inland silverside, largemouth bass, fish, bioaccumulation, stable isotopes
Abstract: The invasion, boom, collapse, and reestablishment of a population of the planktivorous threadfin shad in Clear Lake, California, were documented over a 20 year period, as were the effects of changing shad populations on diet and mercury (Hg) bioaccumulation in nearshore fishes. Threadfin shad competitively displaced other planktivorous fish in the lake, such as inland silversides, young-of-year (YOY) largemouth bass, and YOY bluegill by reducing zooplankton abundance. As a result, all three species shifted from a diet that was dominated by zooplankton to one that was almost entirely zoobenthos. Stable carbon isotopes corroborated this pattern with each species becoming approximately 3% enriched in δ^13 C, which is elevated in benthic versus pelagic organisms. Concomitant with these changes, Hg concentrations roughly doubled in all three species. In contrast, obligate benthivores such as prickly sculpin showed no relationship between diet or δ^13 C and the presence of threadfin shad, suggesting that effects of the shad were not strongly linked to the benthic fish community. There were also no changes in Hg concentrations of prickly sculpin. The temporary extirpation of threadfin shad from the lake resulted in zooplankton densities, foraging patterns, isotope ratios, and Hg concentrations in pelagic fishes returning to pre-shad values. These results indicate that even transient perturbations of the structure of freshwater food-webs can result in significant alterations in the bioaccumulation of Hg and that food webs in lakes cam be highly resilient.
Notes: food web; fish; algae

Reference Type: Journal Article
Record Number: 469
Author: C. A. Eagles-Smith, Thomas H. Suchanek, Arthur E. Colwell & Norman L. Anderson
Year: 2007
Title: Mercury trophic transfer in a eutrophic lake: the importance of habitat-specific foraging
Journal: Ecological Applications
Short Title: Mercury trophic transfer in a eutrophic lake: the importance of habitat-specific foraging
Keywords: mercury, trophic transfer, foraging habitat, diet analysis, bioaccumulation, stable isotopes, food webs
Abstract: Mercury (Hg) trophic transfer and bioaccumulation in fish from a mine-impacted, eutrophic lake were examined in relation to foraging habitat, trophic position, and size. Diet analysis indicated that there were clear ontogenetic shifts in foraging habitats and trophic position. Pelagic diet decreased and benthic diet increased with increasing fish length in bluegill, black crappie, inland silverside, and largemouth bass, whereas there was no shift for prickly sculpin or threadfin shad. Stable carbon isotope values (δ^13 C) were inversely related to proportion of pelagic prey items in the diet, but there was no clear relationship with benthic foraging. There were distinct differences between pelagic and benthic prey basal δ^13 C values, with a range of ca. -28% in pelagic zooplankton to ca. -20% in benthic caddisflies. Profundal prey such as chironomid larvae had intermediate δ^13 C values of approximately -24%, reflecting the influence of pelagic detrital subsidies and suppressing the propagation of the benthic carbon isotope signal up the food chain. Fish total mercury (THg) concentrations varied with habitat-specific foraging, trophic position and size; however, the relationships differed among species and ages. When corrected for species, length, and trophic position, THg and δ^13m C were positively correlated, indicating that Hg trophic transfer is linked to benthic foraging. When examined on a species specific basis, THg was positively correlated with δ^13 C only for bluegill, largemouth bass, and threadfin shad. However, diet-based multiple regression analyses suggested that THg also increased with benthic foraging for inland silverside and black crappie. In both species, benthic prey items were dominated by chironomid larvae, explaining the discrepancy with δ^13 C. These results illustrate the importance foraging habitat to Hg bioaccumulation, and indicate that pelagic carbon can strongly subsidize the basal energy sources of benthic organisms.
Notes: food web; fish; algae; pollution

Reference Type: Journal Article
Record Number: 538
Author: C. A. Eagles-Smith, T. H. Suchanek, A. E. Colwell and N. L. Anderson
Year: 2008
Title: MERCURY TROPHIC TRANSFER IN A EUTROPHIC LAKE: THE IMPORTANCE OF HABITAT-SPECIFIC FORAGING
Journal: Ecological Applications
Volume: 18
Issue: sp8

Pages: A196-A212
Short Title: MERCURY TROPHIC TRANSFER IN A EUTROPHIC LAKE: THE IMPORTANCE OF HABITAT-SPECIFIC FORAGING
DOI: doi:10.1890/06-1476.1
URL: http://www.esajournals.org/doi/abs/10.1890/06-1476.1

Reference Type: Journal Article
Record Number: 540
Author: C. A. Eagles-Smith, T. H. Suchanek, A. E. Colwell, N. L. Anderson and P. B. Moyle
Year: 2008
Title: CHANGES IN FISH DIETS AND FOOD WEB MERCURY BIOACCUMULATION INDUCED BY AN INVASIVE PLANKTIVOROUS FISH
Journal: Ecological Applications
Volume: 18
Issue: sp8
Pages: A213-A226
Short Title: CHANGES IN FISH DIETS AND FOOD WEB MERCURY BIOACCUMULATION INDUCED BY AN INVASIVE PLANKTIVOROUS FISH
DOI: doi:10.1890/06-1415.1
URL: http://www.esajournals.org/doi/abs/10.1890/06-1415.1

Reference Type: Thesis
Record Number: 341
Author: R. A. Elbert
Year: 1996
Title: Reproductive performance and mercury exposure of birds at Clear Lake, CA
Number of Pages: 75 leaves
Date: 1996
Thesis Type: Book; Archival Material Date of Entry: 19990301
Short Title: Reproductive performance and mercury exposure of birds at Clear Lake, CA
Accession Number: OCLC: 40880910 Provider: OCLC
Call Number: call # - LD781.D5j 1996 E462 Shields UCD micro copy collections and special collections
Abstract: In the last century, mining activities in many areas have increased the likelihood of exposure to excessive amounts of mercury compounds through the release of previously hidden, naturally occurring mercury (cinnabar). An abandoned mercury mine site at Clear Lake. Lake County, CA has caused greatly elevated amounts of mercury in the sediments near the mine site (Suchanek, et al., 1993; Chamberlin, et al., 1990). Fish accumulate high concentrations of mercury (Suchanek. et al., 1993). Fish-eating (piscivorous) birds are exposed mainly via consumption of this contaminated food and the subsequent bioconcentration of mercury by partitioning phenomena; piscivorous birds therefore offer good bioindicators of mercury exposure. However, Clear Lake also has many other factors that could affect survival, behavior, and reproduction of birds.

This study focuses on Clear Lake (high levels of mercury) and two other study sites (Eagle Lake and Tule Lake with lower levels of mercury), each of whid'1 ext1ibits different combinations of environmental stressors. The wildlife of Clear Lake may be exhibiting Icwer reproductive output than the other two lakes because of the combination of stressors. Eagle Lake and Tule Lake, have a different combination of environmental stressors. This paper examines the possibility that mercury is causing or exacerbating reproductive problems of piscivorous birds at Clear Lake.

Part I of this report is a literature review on the dynamics and effects of mercury in birds, as an introduction to understanding mercury as an environmental contaminant. Possible effects of mercury will be addressed along with an evaluation of levels that may cause those effects. Part II describes the field study results, as well as pertinent conclusions.
Notes: chemistry; pollution; birds; clear lake; bioaccumulation
ill. Dissertation: Thesis (M.S.)--University of California, Davis, 1996.
Degree granted in Ecology.
by Ruth Anne Elbert.
Thesis/dissertation (deg); Manuscript (mss)

Reference Type: Journal Article
Record Number: 342
Author: R. A. Elbert and D. W. Anderson
Year: 1998
Title: Mercury levels, reproduction, and hematology in western grebes from three California lakes, USA
Journal: Environmental Toxicology and Chemistry
Volume: 17
Issue: 2
Pages: 210-213
Date: Feb
Type of Article: Article
Short Title: Mercury levels, reproduction, and hematology in western grebes from three California lakes, USA
ISSN: 0730-7268
Accession Number: ISI:000071690700012
Keywords: western grebe; mercury; Clear Lake; phosphorus; potassium
Abstract: Twenty-three healthy adult western and Clark's grebes (Aechmophorus occidentalis and Aechmophorus clarkii) were collected at three study sites in California, USA, in 1992: Clear Lake, Lake County; Eagle Lake, Lassen County; and Tule Lake, Siskiyou County. Liver, kidney, breast muscle, and brain were analyzed for total mercury (Hg) concentration (ppm wet weight), and blood was analyzed for various blood parameters. Clear Lake birds (n = 13) had greater Hg concentrations in kidney, breast muscle, and brain than birds from the other two lakes ($p < 0.05$), whereas liver concentrations were not statistically different ($p > 0.05$). Average concentrations for Clear Lake birds were 2.74 ppm for liver, 2.06 ppm for kidney, 1.06 ppm for breast muscle, and 0.28 ppm for brain. The tissue levels of kidney, breast muscle, and brain at the other two study sites were one half the levels found at Clear Lake. These mean tissue levels were near, but below, those known to cause adverse effects. When data from all sites were merged. kidney,

breast muscle, and brain concentrations are positively correlated to each other ($p < 0.05$). Liver concentrations were not correlated to any other value. Brain Hg concentrations were also negatively correlated to blood potassium and blood phosphorus levels ($n = 11$, $p < 0.05$). Kidney Hg levels were positively correlated to percent blood heterophils and negatively correlated to percent eosinophils ($n = 13$, $p < 0.05$), suggesting that mercury levels might be affecting immune function. These biomarkers could not be related to any obvious ecological effects.
Notes: birds; bioaccumulation; chemistry; pollution; ONLINE
URL: <Go to ISI>://000071690700012
http://www.setacjournals.org/archive/1552-8618/17/2/pdf/i1552-8618-17-2-210.pdf

Reference Type: Book
Record Number: 343
Author: J. J. Elser, H. J. Carney and C. R. Goldman
Year: 1990
Title: The zooplankton-phytoplankton interface in lakes of contrasting trophic status: An experimental comparison
Series Editor: R. D. Gulati, E. Lammens, M. L. Meijer and E. Donk
Short Title: The zooplankton-phytoplankton interface in lakes of contrasting trophic status: An experimental comparison
ISBN: 0018-8158
Accession Number: 3651819
Keywords: Article Subject Terms: biomass; eutrophic lakes; grazing; phytoplankton; population density; trophic relationships; zooplankton; Article Taxonomic Terms: Daphnia; Article Geographic Terms: USA, California
biomanipulation
Freshwater
Q1 01461 Plankton; Q5 01521 Mechanical and natural changes
Abstract: We report here the results of an experimental study designed to compare algal responses to short-term manipulations of zooplankton in three California lakes which encompass a broad range of productivity (ultra-oligotrophic Lake Tahoe, mesotrophic Castle Lake, and strongly eutrophic Clear Lake). To assess the potential strength of grazing in each lake, we evaluated algal responses to a 16-fold range of zooplankton biomass. To better compare algal responses among lakes, we determined algal responses to grazing by a common grazer (Daphnia sp.) over a range of Daphnia densities from 1 to 16 animals per liter. Effects of both ambient grazers and Daphnia were strong in Castle Lake. However, neither ambient zooplankton nor Daphnia had much impact on phytoplankton in Clear Lake. In Lake Tahoe, no grazing impacts could be demonstrated for the ambient zooplankton but Daphnia grazing had dramatic effects. These results indicate weak coupling between phytoplankton and zooplankton in Clear Lake and Lake Tahoe, two lakes which lie near opposite extremes of lake trophic status for most lakes. These observations, along with work reported by other researchers, suggest that linkages between zooplankton and phytoplankton may be weak in lakes with either extremely low or high productivity. Biomanipulation approaches to recover hypereutrophic lakes which aim only to alter zooplankton size structure may be less effective if algal communities are dominated by large, inedible phytoplankton taxa. (DBO)

Notes: algae
BIOMANIPULATION -- TOOL FOR WATER MANAGEMENT. pp. 69-82. Hydrobiologia. Vol. 200-201.
Conf. on Biomanipulation, Tool for Water Management, Amsterdam (Netherlands), 8-11 Aug 1989
Book Monograph; Conference
Author Address: Grad. Group in Ecol., Div. Environ. Stud., Univ. California-Davis, Davis, CA 95616, USA

Reference Type: Book
Record Number: 344
Author: R. A. Elston
Year: 1975
Title: Ontogeny of size selective predation and feeding habits of the Mississippi silverside, Menidia audens, in Clear Lake, California
Place Published: [Davis
Publisher: Calif.]
Number of Pages: 284 l. illus. Dissertation: Thesis (M.S.)--University of California, Davis.
Short Title: Ontogeny of size selective predation and feeding habits of the Mississippi silverside, Menidia audens, in Clear Lake, California
Accession Number: OCLC: 81846615 Provider: OCLC
Call Number: call # - LD781.D5j 1975E58 Shields UCD special collections
Keywords: Dissertations, Academic -- California -- Ecology.
Abstract: need abstract
Notes: fish; clear lake
Thesis/dissertation (deg)
Book

Reference Type: Journal Article
Record Number: 345
Author: M. A. Engle, F. Goff, D. G. Jewett, G. J. Reller and J. B. Bauman
Year: 2008
Title: Application of environmental groundwater tracers at the Sulphur Bank Mercury Mine, California, USA
Journal: Hydrogeology Journal
Volume: 16
Issue: 3
Pages: 559-573
Date: May
Type of Article: Article
Short Title: Application of environmental groundwater tracers at the Sulphur Bank Mercury Mine, California, USA
Alternate Journal: Hydrogeol. J.
ISSN: 1431-2174

Accession Number: ISI:000255032600012
Keywords: groundwater flow; stable isotopes; water budget; USA; hydrochemistry
CLEAR LAKE; WATERS; POLLUTION; GEYSERS; BORON
Abstract: Boron, chloride, sulfate, delta D, delta O-18, and H-3 concentrations in surface water and groundwater samples from the Sulphur Bank Mercury Mine (SBMM), California, USA were used to examine geochemical processes and provide constraints on evaporation and groundwater flow. SBMM is an abandoned sulfur and mercury mine with an underlying hydrothermal system, adjacent to Clear Lake, California. Results for non-H-3 tracers (i.e., boron, chloride, sulfate, delta D, and delta O-18) identify contributions from six water types at SBMM. Processes including evaporation, mixing, hydrothermal water input and possible isotopic exchange with hydrothermal gases are also discerned. Tritium data indicate that hydrothermal waters and other deep groundwaters are likely pre-bomb (before similar to 1952) in age while most other waters were recharged after similar to 1990. A boron-based steady-state reservoir model of the Herman Impoundment pit lake indicates that 71-79% of its input is from meteoric water with the remainder from hydrothermal contributions. Results for groundwater samples from six shallow wells over a 6-month period for delta D and delta O-18 suggests that water from Herman Impoundment is diluted another 3% to more than 40% by infiltrating meteoric water, as it leaves the site. Results for this investigation show that environmental tracers are an effective tool to understand the SBMM hydrogeologic regime.
Notes: ONLINE; mine

- Pg 560
- Max dissolved groundwater [Hg] exceed EPA max contaminent level (20 micrograms per liter) by more than 2 orders of magnitude (Jewtt et al 2000a)
- Hg is seen as MeHg
- 1990-SBMM becomes superfund site
- “metals and acid released for oxidation of sulfide materials during water-rock interaction in the mine waste and hydrothermally alters rocks impact surface and groundwater” (Suchanek et al 2000, Jewett 2006b)
- Hg-emitting thermal reservoir alters water quality (White and Roberson 1962)
- Pg 561
- Mine at intersection of 3 faults
- Upwelling hydrothermal fluids deposited Hg and S altered minerals
- 1864-1957-mined for S then Hg
- pit filled with hydrothermal fluids, meteoric groundwater, surface water runoff (White and Roberson 1962)
- 1950’s-waste rock dam built to decrease flows to CL
URL: <Go to ISI>://000255032600012
http://www.springerlink.com/content/c66404546n4303r2/fulltext.pdf

Reference Type: Online Multimedia
Record Number: 474
Created By: EPA
Year: 1999,October
Title: Interim construction work begins at Sulphur Bank Mercury Mine superfund site

Date Accessed: August 27, 2008
Type of Work: Fact Sheet
Notes: mine; ONLINE
URL:
http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/c000880de6ae67ff882570070063c2d4/$FILE/SBnk1099.pdf

Reference Type: Online Multimedia
Record Number: 475
Created By: EPA
Year: 2000, October-November
Title: EPA is closing geothermal wells near the Herman Pit
Date Accessed: August 27, 2008
Type of Work: Fact Sheet
Notes: mine; ONLINE
URL:
http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/09948528f0aefa66882570070063c350/$FILE/sbmm%2011_00.pdf

Reference Type: Online Multimedia
Record Number: 476
Created By: EPA
Year: 2006, June-October
Title: FAQs Elem Indian colony mine waste removal action
Date Accessed: August 27, 2008
Type of Work: Fact Sheet
Notes: mine; ONLINE
URL:
http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/5d11901e879204498825719500 2bfe52/$FILE/Sulphur%20Bank%206_06%20118kb.pdf

Reference Type: Online Multimedia
Record Number: 477
Created By: EPA
Year: 2007, February
Title: Cleanup progress update: Elem Indian Colony mine waste removal action
Date Accessed: August 27, 2008
Type of Work: Fact Sheet
Notes: mine; ONLINE
URL:
http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/f3c844a609ba12288825729d002bf6cb/$FILE/SulphurBank2_07%20549kb.pdf

Reference Type: Web Page
Record Number: 470
Author: EPA
Year: 2008
Title: Sulphur Bank Mercury Mine
Publisher: EPA
Access Year: 2008
Access Date: August 27, 2008
Short Title: Sulphur Bank Mercury Mine
Notes: mine; ONLINE
URL:
http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/vwsoalphabetic/Sulphur+Bank+Mercury+Mine?OpenDocument

Reference Type: Online Multimedia
Record Number: 478
Created By: EPA
Year: 2008, January
Title: Sulphur Bank Mine road: removal action
Date Accessed: August 27, 2008
Type of Work: Fact Sheet
Notes: mine; ONLINE
URL:
http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dc283e6c5d6056f88257426007417a2/fe96a433b68e0ecb882573de00700d9a/$FILE/SulphurBank1_08%2069kb.pdf

Reference Type: Journal Article
Record Number: 346
Author: B. W. a. H. W. C. Evermann
Year: 1931
Title: A distributional list of the species of freshwater fishes known to occur in California
Journal: DIVISION OF FISH AND GAME OF CALIFORNIA
Volume: 35
Date: 1931
Short Title: A distributional list of the species of freshwater fishes known to occur in California
Notes: fish; html online
URL:
http://content.cdlib.org/xtf/view?docId=kt7f59n8qw&brand=calisphere&doc.view=entire_text

Reference Type: Generic
Record Number: 500
Author: U. Fehn, E. K. Peters, S. Tullai-Fitzpatrick, P. W. Kubik and P. Sharma

Year: 1992
Title: 129-I and 36-Cl Concentrations in Waters of the Eastern Clear Lake Area, California: Residence Times and Source Ages of Hydrothermal Fluids
Short Title: 129-I and 36-Cl Concentrations in Waters of the Eastern Clear Lake Area, California: Residence Times and Source Ages of Hydrothermal Fluids
Accession Number: 9210157
Keywords: *Geochemistry; *Groundwater dating; *Residence time; *Groundwater chemistry; *Iodine radioisotopes; *Chlorine radioisotopes; Clear Lake; *California; *Geothermal waters; Gold; Silver; *Hot springs; Mineral springs; Meteoric water; Uranium; Thorium
SW 0840 Groundwater; SW 0850 Lakes
Abstract: The Clear Lake area of northern California is the location of hot spring activity, some of which is associated with the formation of Au and Hg deposits. 129-I/I and 36-Cl/Cl ratios were measured in nine warm springs (formation springs), six cold springs with elevated levels of Cl and I (mineral springs), and five springs of recent meteoric origin. Dating of the I in the formation waters indicated that sources of I in these waters are formations with minimum ages between 60 and 80 Ma. This age range is in good agreement with the ages of the Franciscan Complex and the Great Valley Sequence, the dominant formations in this area. Because the mineral waters are essentially formation waters diluted with meteoric water, I in these waters is of the same origin. Residence times of the waters were calculated based on the build-up of 129-I and 36-Cl as a consequence of the presence of U and Th in the crust. The residence time of the formation waters in the Great Valley Sequence, the location for most of these springs, was probably not longer than 84,000 yr. The concentrations found for 36-Cl and 129-I in the mineral waters indicate that these waters have residence times of similar magnitude in formations such as the Franciscan Complex or the Clear Lake Volcanics, which have slightly higher levels of U and Th than the Great Valley Sequence. (Author's abstract)
Notes: geochemistry; clear lake
Geochimica et Cosmochimica Acta GCACAK, Vol. 56, No. 5, p 2069-2079, May 1992. 17 fig, 1 tab, 50 ref. NSF Grant Nos. EAR-8617715 and EAR-8803803.
Author Address: Department of Geological Sciences, Univ. of Rochester, Rochester , NY

Reference Type: Newspaper Article
Record Number: 347
Reporter: P. Fisher
Year: 2004
Title: Interior Secratary Announces $9 Million in Grants to Tribes to Help Fund Fish and Wildlife Conservation Projects
Newspaper: US Fed News-Hindustan Times
Issue Date: August 26, 2004
Short Title: Interior Secratary Announces $9 Million in Grants to Tribes to Help Fund Fish and Wildlife Conservation Projects
Abstract: WASHINGTON, Aug. 26 -- The U.S. Department of the Interior's U.S. Fish & Wildlife Service issued the following press release: Interior Secretary Gale Norton today announced that the U.S. Fish and Wildlife Service is awarding 53 grants, totaling nearly $9

million, to help 48 federally recognized Indian tribes conserve and recover endangered, threatened and at-risk species and other wildlife on tribal lands in 22 states.

* Clear Lake Hitch Study and Recovery Project - (Robinson Rancheria of Pomo Indians)- ($249,511) This grant supports efforts to establish a three part study and recovery program for the benefit of the Clear Lake Hitch, a culturally significant species endemic to Clear Lake in partnership with the Lake County Public Works Department.
Notes: native american; grant

Reference Type: Journal Article
Record Number: 348
Author: E. J. Fleming, E. E. Mack, P. G. Green and D. C. Nelson
Year: 2006
Title: Mercury methylation from unexpected sources: Molybdate-inhibited freshwater sediments and an iron-reducing bacterium
Journal: Applied and Environmental Microbiology
Volume: 72
Issue: 1
Pages: 457-464
Date: Jan
Type of Article: Article
Short Title: Mercury methylation from unexpected sources: Molybdate-inhibited freshwater sediments and an iron-reducing bacterium
ISSN: 0099-2240
Accession Number: BIOSIS:PREV200600206976
Abstract: Methylmercury has been thought to be produced predominantly by sulfate-reducing bacteria in anoxic sediments. Here we show that in circumneutral pH sediments (Clear Lake, CA) application of a specific inhibitor of sulfate-reducing bacteria at appropriate concentrations typically inhibited less than one-half of all anaerobic methylation of added divalent mercury. This suggests that one or more additional groups of microbes are active methylators in these sediments impacted by a nearby abandoned mercury mine. From Clear Lake sediments, we isolated the iron-reducing bacterium Geobacter sp. strain CLFeRE, which can methylate mercury at a rate comparable to Desulfobulbus propionicus strain 1pr3, a sulfate-reducing bacterium known to be an active methylator. This is the first time that an iron-reducing bacterium has been shown to methylate mercury at environmentally significant rates. We suggest that mercury methylation by iron-reducing bacteria represents a previously unidentified and potentially significant source of this environmental toxin in iron-rich freshwater sediments.
Notes: mine; clear lake; pollution; chemistry; ONLINE
URL: <Go to ISI>://BIOSIS:PREV200600206976
http://aem.asm.org/cgi/reprint/72/1/457
Author Address: Nelson, Douglas C.; Univ Calif Davis, Microbiol Sect, 357 Briggs Hall, Davis, CA 95616 USA

Reference Type: Thesis

Record Number: 349
Author: B. A. Follansbee
Year: 1996
Title: Wetland restoration at Clear Lake, California : species selection, phosphorous monitoring, and coordinated resource management planning
Number of Pages: 106 leaves
Date: 1996
Thesis Type: Book; Archival Material Date of Entry: 19990302
Short Title: Wetland restoration at Clear Lake, California : species selection, phosphorous monitoring, and coordinated resource management planning
Accession Number: OCLC: 40889906 Provider: OCLC
Call Number: call # - LD781.D5j 1996 F659 Shields UCD micro copy collections and special collections
Abstract: Chapter 1 - The effect of Azolla filliculoides (Azfi) on the nutrient budgets of Scirpus acutus, S. tuberosus. and Typha latifolia was investigated using mesocosms and a mass balance approach. Nutrient levels remained low throughout the experiment because no added nutrients were used and the macrophytes placed heavy demands on the available nutrient pools. Azfi productivity and hence N contribution to the system was severely limited under the oligotrophic conditions. The three emergent macrophyte species: 1) produced significantly different quantities of biomass based on their colonizing abilities and growth characteristics, 2) had significantly different root:shoot ratios, and 3) had significantly different tissue content of N and P. The mass balance analysis along with the other analyses indicated that the significant differences between macrophyte species in nutrient uptake, nutrient partitioning, resource allocation and biomass were due to the growth characteristics of the macrophytes. The addition of Azfi produced only limited changes in these parameters.

Chapter 2 - Anion exchange membranes (AEMs) were used for measuring soluble reactive phosphorus (SRP) in sediments of Clear Lake, CA. The results of AEM sampling were correlated with the results of the dilute-acid Truog's P extraction and a sequential P extraction (NH.CI, NaOH, HCI, and total). AEMs were also used to measure the relative quantities of SRP at five paired lakeshore sites with and without Scirpus acutus. A method for inserting AEMs in situ to measure deep lakebed sediment SRP was developed. The only significant correlation was between the NaOH extraction and the AEM results ($r^2=0.835$, $P<0.0001$). The negative correlation indicates that as the amount of iron- and aluminum-bound P decreases, more SRP is adsorbed by the AEMs.

Chapter 3 - The Coordinated Resource Management and Planning (CRMP) process is being used in Lake County by a group of government agency and citizen group representatives to formulate long term, integrated and sustainable solutions to a variety of environmental problems. The group makes recommendations for implementing those solutions to the county Board of Supervisors. Examples of changes in policy and regulations, and restoration projects that are specifically related to the authors research are presented
Notes: clear lake; pollution
ill. Dissertation: Thesis (Ph. D.)--University of California, Davis, 1996.
Degree granted in Ecology.
by Bruce Allen Follansbee.

Thesis/dissertation (deg); Manuscript (mss)

-pg 2
-environmental impacts at clear lake
-erosion and transport to the lake of solids. Extra phosphorus and iron resulted in eutrophy and cyanophyte blooms
-eutrophy occurs in spring, summer, fall
-when they die, tons of nitrogen rich materials produced
-oxygen in the water column is dpleted resulting in fish kills
-DDD applications
-mercury and arsenic via Sulphur bank mercury mine
-introduction of fishes (sport), decline/extinction of natives
-1966-1986, county population tripled

Reference Type: Web Page
Record Number: 350
Author: D. H. Fry
Year: 1979
Title: Anadromous fishes of California
Publisher: [Sacramento, Calif.] : Dept. of Fish and Game, Resources Agency
Description: 112 p. : ill. ; 17 cm.
Edition: Rev.
Type of Medium: Book; Internet Resource Date of Entry: 19810109
Short Title: Anadromous fishes of California
Accession Number: OCLC: 7055579 Provider: OCLC
Call Number: call # - QL628.C2 F7 1979 Shields UCD
Keywords: Anadromous fishes.
Fishes -- California.
Abstract: need abstract
Notes: fish
California.; Dept. of Fish and Game.
Includes bibliographical references (p. 104-105) and index./ Also issued online.
LC: SH167.A7; Dewey: 597.09794; GovDoc: F650.A65
by Donald H. Fry. More Records: Show record information
Government publication (gpb); State or province government publication (sgp); Internet resource (url)
URL: http://bibpurl.oclc.org/web/7696
http://bibpurl.oclc.org/web/7696 http://www.dfg.ca.gov/nafwb/pubs/anadfish.pdf

Reference Type: Book
Record Number: 351
Author: C. D. o. F. a. Game
Year: 1973
Title: Warmwater game fishes of California

Publisher: Sacramento : Dept. of Fish and Game
Short Title: Warmwater game fishes of California
Call Number: call # - F650 W34 1973 SSH UCSB Documents California
Keywords: Fishes -- California
Freshwater fishes -- California -- Anderson Marsh.
Abstract: need abstract
Notes: fish

Reference Type: Book
Record Number: 352
Author: R. E. Geary
Year: 1978
Title: Life history of the Clear Lake hitch (Lavinia exilcauda chi) typescript, 1978
Number of Pages: v, 27 leaves
Short Title: Life history of the Clear Lake hitch (Lavinia exilcauda chi) typescript, 1978
Accession Number: OCLC: 42376815 Provider: OCLC
Call Number: call # - LD781.D5j 1978 G445 Shields UCD micro copy collections and special collections

LC: QL638.C94
Keywords: Cyprinidae -- California -- Clear Lake (Lake County)
Abstract: The life history of the Clear Lake hitch (Lavinia exilicauda) is examined by study of age, growth, size, fecundity, food habits, and spawning behavior. This study is compared with a study of hitch biology in Beardsley Reservoir and an earlier study of the Clear Lake hitch done in 1947. Growth of Clear Lake hitch has remained about the same in the Clear Lake studies. Both growth and maximum size of Clear Lake hitch are greater than that of Beardsley hitch, as is fecundity. Clear Lake hitch spawn in both the Lake and its tributaries; however, hitch recruitment. comes entirely from stream spawning. Clear Lake hitch less than 50 mm are found inshore, feeding on insects and zooplankton, while fish larger than 50 mm become limnetic and exclusive zooplanktivores.
Notes: hitch
ill., map. Dissertation: Thesis (M.S.)--University of California, Davis, 1978.
Includes bibliographical references (leaf 27)./ Reproduction: Microfiche./ [Davis, Calif. :/ University Library, University of California, Davis,/ 1978?]./ 1 microfiche : negative.
Clear Lake hitch
by Ralph Eugene Geary.
Thesis/dissertation (deg); Microfiche (mfc)
Book

-pg iv
    -hitch spawn in lakes and tributaries but recruitment entirely from streams
    -<50 mm length, inshore feed on insects (36%, pg 24) and zooplankton
    ->50 mm, limnetic eat zooplankton
-pg 1
    -1967, silverside introduced

-silversides now most abundant species in littoral zone
-other species decreased number of juveniles
-hitch and blackfish (from 20% in 1961-1962 to <1% in 1973 in seine hauls)
-pg 3
-clear lake tributaries (figure 1)
-pg 25
-1976, silverside populations low therefore not as much competition
-pg 26
-shad introduction threatens hitch because they occupy same niche

Reference Type: Journal Article
Record Number: 353
Author: R. E. Geary and P. B. Moyle
Year: 1980
Title: Aspects of the Ecology of the Hitch, Lavinia exilicauda (Cyprinidae), a Persistent Native Cyprinid in Clear Lake, California
Volume: 25
Issue: 3
Pages: 385-390
Short Title: Aspects of the Ecology of the Hitch, Lavinia exilicauda (Cyprinidae), a Persistent Native Cyprinid in Clear Lake, California
ISSN: 00384909
PMCID: Copyright Â© 1980 Southwestern Association of Naturalists
Abstract: Growth, diet, and fecundity of Clear Lake hitch (Lavinia exilicauda chi) were investigated to see if any changes had taken place following the establishment of a large population of Mississippi silversides (Menidia audens) in the lake. No changes were found. Hitch seem to avoid competing with silversides for zooplankton by being limnetic in all except the early life history stages. Fecundity was found to be higher than that of Beardsley Reservoir hitch, but considerably lower than a previous estimate had indicated.
Notes: ONLINE; hitch; fish
ArticleType: primary_article / Full publication date: Nov. 14, 1980 / Copyright Â© 1980 Southwestern Association of Naturalists

-pg 385
-hitch don’t compete with silversides except in early life stages, otherwise limnetic
-hitch are one of four natives to persist in clear lake in large numbers since introduction of 16 species
-small commercial fishery for hitch
-35 cm long, plankton feeding
-silversides, small planktivore, dominate shore
-pg 386
-hitch growth rate same as in 1947
-pg 387
-young, grow 0.45 mm per day (40 mm) by 80 days
-fecundity, about 36,000

-9,000 (212 mm), 63,000 (312 mm)
-pg 388
-food
-all fish taken from spawning and fish taken in early morning had empty stomachs. Afternoon and evening contained food
-19-30 mm, adult and larval chironomids
-31-50 mm, Daphnia
-50 mm +, become limnetic, Daphnia, zooplankton, adult midges
-appears hitch and silversides don't compete much because hitch becomes limnetic before silverside population increases
-pg 389
-likely become limnetic to avoid competition with splittail and not due to silversides
URL: http://www.jstor.org/stable/3670695
http://www.jstor.org/stable/pdfplus/3670695.pdf

Reference Type: Book
Record Number: 354
Author: E. W. Gifford
Year: 1923
Title: Pomo lands on Clear Lake
Series Title: University of California publications in American archaeology and ethnology ;; v. 20, no. 5; Variation: University of California publications.; American archaeology and ethnology ;; v. 20, no. 5.
Place Published: Berkeley
Publisher: University of California Press
Number of Pages: p. 77-92
Short Title: Pomo lands on Clear Lake
Accession Number: OCLC: 55015228 Provider: OCLC
Call Number: call # - CILC G53 P6 1923 State Lib CSL

LC: E51
Keywords: Pomo Indians.
Clear Lake (Calif. : Township)
Abstract: need abstract
Notes: native american
26 cm.
by Edward Winslow Gifford.
Book

Reference Type: Journal Article
Record Number: 53
Author: C. R. Goldman and R. G. Wetzel
Year: 1963
Title: A Study of Primary Productivity of Clear Lake Lake County, California

Journal: Ecology
Volume: 44
Issue: 2
Pages: 283-&
Type of Article: Article
Short Title: A Study of Primary Productivity of Clear Lake Lake County, California
ISSN: 0012-9658
Accession Number: ISI:A1963P326000010
Notes: ONLINE; clear lake
URL: <Go to ISI>://A1963P326000010
http://www.jstor.org/stable/pdfplus/1932175.pdf

Reference Type: Book
Record Number: 355
Author: E. C. Haderlie
Year: 1948
Title: A preliminary survey of the internal helminth parasites of some Clear Lake fishes
Place Published: [Berkeley
Publisher: Calif.
Number of Pages: [2], 94 l. illus., map. 28 cm. Dissertation: Thesis (M.A.)--Univ. of California, June 1948.
Short Title: A preliminary survey of the internal helminth parasites of some Clear Lake fishes
Accession Number: OCLC: 25545817 Provider: OCLC
Call Number: call # - 308t.H128 NRLF C 2 891 602
Abstract: need abstract
Notes: fish; clear lake
"Literature cited": p. 80-94. More Records: Show record information
Thesis/dissertation (deg); Government publication (gpb); State or province government publication (sgp)
Book

Reference Type: Journal Article
Record Number: 356
Author: M. Harnly, Seidel, S., Rojas, P., Fornes, R., Flessel, P., Smith, D., Kreutzer, R. and Goldman, L.
Year: 1997
Title: Biological monitoring for mercury within a community with soil and fish contamination
Journal: Environmental Health Perspectives
Volume: 105
Issue: 4
Pages: 424-429
Date: Apr
Short Title: Biological monitoring for mercury within a community with soil and fish contamination

Alternate Journal: Environ. Health Perspect.
ISSN: 0091-6765
Accession Number: 4105779
Keywords: Article Subject Terms: Pisces; bioaccumulation; bioindicators; blood levels; dust; environmental health; ethnic groups; fish; fish consumption; food organisms; human food; mercury; pisces; pollution indicators; public health; seafood; soil contamination; soil pollution; urine; Article Taxonomic Terms: Pisces; pisces; Article Geographic Terms: USA, California, Clear L. Native Americans; Pisces; bioindicators; blood levels; dust; environmental health; ethnic groups; fish; fish consumption; food organisms; human food; mercury; pisces; pollution indicators; soil contamination; soil pollution Freshwater P 6000 TOXICOLOGY AND HEALTH; X 24166 Environmental impact; Q5 01524 Public health, medicines, dangerous organisms; SW 3030 Effects of pollution
Abstract: To assess the impact of elevated levels of inorganic mercury in soil and dust and organic mercury in fish, biological monitoring was conducted among Native Americans living next to an inactive mercury mine in Clear Lake, California. Of resident tribal members, 46% (n = 56) participated in biomonitoring. Urine mercury levels are equivalent to background, indicating that soil and dust exposures among study participants are not substantial. The average blood organic mercury level among study participants is 15.6 plus or minus 8.8 mu g/l (n = 44), which is higher than levels reported by others among those who do not consume fish (2 mu g/l). Consistent with results from other studies, a correlation between fish consumption and blood organic mercury is observed (p = 0.03). The margin between observed and established adverse effect levels for adults is examined for blood organic mercury and found to be less than 10-fold for 20% of the study population. Protective public health efforts for the study population and other similarly exposed populations, notably those who consume commercial fish products, are considered.
Notes: ONLINE; mine; native american; fish
Journal Article

-pg 424
- -correlation between fish consumption and blood organic mercury
- -native Americans were the study group
- -high concentrations of mercury in humans can result in death and cerebral palsy
- -1870-1957, cinnabar mined at Sulphur bank mercury mine
- -rancheria soil averages 50 micrograms of mercury per gram
- -8-18% of top predators in clear lake exceed 1 microgram of mercury per gram
- -1992, meetings about mercury contamination raised awareness

-pg 425
- -table, mercury levels by lake and fish

-pg 427
- -inorganic mercury, population is 25 times lower
- -organic mercury
  - -tribal participants are 15.6 micrograms per liter. Higher than others who eat fish (8 micrograms per liter) or those who don’t eat fish (2 micrograms per liter)

URL: http://www.jstor.org/stable/pdfplus/3433340.pdf
Author Address: Environ. Health Investigations Branch, California Dep. Health Serv., 151 Berkeley Way, Annex 10, Berkeley, CA 94704, USA

Reference Type: Journal Article
Record Number: 150
Author: S. P. Hayes, III
Year: 1974
Title: An Evaluation of the Trophic Status of Upper Blue Lake Lower Blue Lake and the Oaks Arm of Clear Lake in Lake County California
Journal: ASB Bulletin
Volume: 21
Issue: 2
Pages: 60
Type of Article: Article
Short Title: An Evaluation of the Trophic Status of Upper Blue Lake Lower Blue Lake and the Oaks Arm of Clear Lake in Lake County California
ISSN: 0001-2386
Accession Number: BIOSIS:PREV197511074433
Call Number: call # - QH301 .A14 Biosci UCB
Abstract: The purpose of this study was to evaluate the trophic status of three natural lakes in Lake County, California. From February through October 1972, monthly samples of water (surface, mid-depth, and bottom) were collected from a selected station on each lake and analyzed for temperature, dissolved oxygen, carbon dioxide, orthophosphate, metaphosphate, nitrite nitrogen, nitrate nitrogen, and phytoplankton and zooplankton. Plankters were classified to genus or species and the numbers per cubic meter of water calculated. Partial correlations were obtained between the number of plankters in each major taxonomic grouping (i.e. Cyanophyta, Chlorophyta, Rotatorla, etc..) and each water quality measurement. Significant positive correlations were found between measurements of Cyanophyta density and dissolved oxygen, Chlorophyta density and orthophosphates, Bacillariophyceae density and dissolved carbon dioxide, Ciliata density and temperature, and Copepoda density and oxygen. Based on water quality and plankton studies and basin morphology, Upper Blue Lake has the least amount of enrichment, Lower Blue Lake has a slightly greater amount of enrichment, and the Oaks Arm of Clear Lake has the greatest amount of enrichment.
This work was part of the M.S. Thesis presented by the author to the Graduate School, University of the Pacific Stockton, California.
Notes: clear lake
URL: <Go to ISI>://BIOSIS:PREV197511074433

Reference Type: Thesis
Record Number: 24
Author: S. P. Hayes
Year: 1974
Title: A quantitative study of the water quality and plankton of Upper Blue Lake, Lower Blue Lake, and the Oaks Arm of Clear Lake in Lake County, California
Place Published: [Stockton, Calif.]
University: S.P. Hayes

Number of Pages: 90 leaves
Date: 1974
Thesis Type: Book; Archival Material Date of Entry: 19960425
Short Title: A quantitative study of the water quality and plankton of Upper Blue Lake, Lower Blue Lake, and the Oaks Arm of Clear Lake in Lake County, California
Accession Number: OCLC: 34630845 Provider: OCLC
Call Number: call # - TD224 .C2 L2 H41 Main Lib archives & stacks UOP
Keywords: Water quality -- California -- Lake County.
Plankton -- California -- Lake County.
Notes: clear lake
ill., map ; 28 cm. Dissertation: Theses (M.S.)--University of the Pacific, 1974.
Includes abstract./ Includes bibliographical references (leaves : 47-50).
Stephen Patrick Hayes.
Thesis/dissertation (deg); Manuscript (mss)

Reference Type: Journal Article
Record Number: 510
Author: K. Hayhoe, Daniel Cayan, Christopher B. Field, Peter C. Frumhoff, Edwin P. Maurer, Norman L. Miller, Susanne C. Moser, Stephen H. Schneider, Kimberly Nicholas Cahill, Elsa E. Cleland, Larry Dale, Ray Drapek, R. Michael Hanemann, Laurence S. Kalkstein, James Lenihan, Claire K. Lunch, Ronald P. Neilson, Scott C. Sheridan, and Julia H. Verville
Year: 2004
Title: Emissions pathways, climate change, and impacts on California
Journal: PNAS
Volume: 101
Issue: 34
Pages: 12422-12477
Start Page: 12422
Short Title: Emissions pathways, climate change, and impacts on California
Abstract: The magnitude of future climate change depends substantially on the greenhouse gas emission pathways we choose. Here we explore the implications of the highest and lowest Intergovernmental Panel on Climate Change emissions pathways for climate change and associated impacts in California. Based on climate projections from two state-of-the-art climate models with low and medium sensitivity (Parallel Climate Model and Hadley Centre Climate Model, version 3, respectively), we find that annual temperature increases nearly double from the lower B1 to the higher A1fi emissions scenario before 2100. Three of four simulations also show greater increases in summer temperatures as compared with winter. Extreme heat and the associated impacts on a range of temperature-sensitive sectors are substantially greater under the higher emissions scenario, with some interscenario differences apparent before midcentury. By the end of the century under the B1 scenario, heatwaves and extreme heat in Los Angeles quadruple in frequency while heat-related mortality increases two to three times; alpine-subalpine forests are reduced by 50–75%; and Sierra snowpack is reduced 30–70%. Under A1fi, heatwaves in Los Angeles are six to eight times more frequent, with heat-related excess mortality increasing five to seven times; alpine-subalpine forests are reduced by 75–90%; and snowpack declines 73–90%, with cascading impacts on runoff and streamflow that, combined with

projected modest declines in winter precipitation, could fundamentally disrupt California's water rights system. Although interscenario differences in climate impacts and costs of adaptation emerge mainly in the second half of the century, they are strongly dependent on emissions from preceding decades.
Notes: climate

Reference Type: Journal Article
Record Number: 357
Author: D. A. Heeraman
Year: 1999
Title: Arsenic and mercury biogeochemistry in relation to revegetation treatments at the Sulphur Bank Mercury Mine, Clear Lake, California
Journal: Dissertation Abstracts International Part B: Science and Engineering
Volume: 60
Issue: 10
Pages: 4979
Date: Apr
Short Title: Arsenic and mercury biogeochemistry in relation to revegetation treatments at the Sulphur Bank Mercury Mine, Clear Lake, California
Alternate Journal: Diss. Abst. Int. Pt. B - Sci. & Eng.
Accession Number: 4756931
Keywords: Article Subject Terms: Arsenic; Bioaccumulation; Biogeochemistry;
Fertilizers; Heavy metals; Liming; Mercury; Mine tailings; Mining;
Organic matter; Plant populations; Pollution effects; Restoration;
Soils; Article Taxonomic Terms: Plantae; Quercus; Vulpia myuros;
Article Geographic Terms: USA, California, Clear L.
Annual Fescue grasses; Oaks
Freshwater
Q5 01503 Characteristics, behavior and fate; Q2 02123 Conservation
Abstract: The Sulphur Bank Mercury Mine (SBMM) is an abandoned open pit mine located on the eastern shore of Clear Lake, California where mining operations resulted in deposits of waste material (overburden, tailings) stockpiled along the shoreline. Because of Hg pollution of Clear Lake, SBMM is listed as an Environmental Protection Agency (EPA) Superfund site. A survey was conducted at SBMM to examine mercury (Hg) and arsenic (As) concentrations in plants and sods. Compared to native soil, the waste materials had elevated concentrations of Hg and As. Soils on the bare areas of the overburden material had much higher Hg and As concentrations compared to vegetated areas. However, tissue concentrations of Hg and As in oak and annual grasses were lower than levels considered to cause toxicity in many species. A greenhouse study examined interacting effects of lime, fertilizer and organic matter (OM) additions on soil solution chemistry and As and Hg uptake by Zorro fescue (Vulpia myuros L.). Fescue was grown on three mine-soils from SBMM containing high (164 mg/kg) (S-H), medium (123 mg/kg) (S-M) and low (31 mg/kg) (S-L) As. Mercury in these sods ranged between 1700-3000 mg/kg. Lime and OM additions were negatively correlated with soluble Hg and Hg tissue concentration. Mercury uptake was more strongly related to root length density (RLD) than to soluble Hg indicating that plant root characteristics are an important factor affecting uptake. Compared to

total As, extractable As decreased in the order: total-As > oxalate-As > dithionite-As > mixed acid-As > water soluble-As. Oxalate extractable Fe correlated well with total As and As extracted by oxalate, dithionite and mixed acid methods. Soluble As was strongly correlated with soluble P and DOC for the sods. The effect of soluble P on soluble As was much greater in S-H than in S-M or S-L; while the effect of DOC on soluble As was similar in S-H and S-M but considerably lower than in S-L Since the solution phase was undersaturated with respect to possible solid phase As containing solids, adsorption/desorption reactions appear to control solution As in these soils.
Notes: mine; botany; pollution; chemistry; clear lake; soil; ONLINE
Dissertation
Journal Article

- ii
- SBMM on eastern shore of CL
- Due to Hg pollution it's listed as an EPA superfund site
- Waste materials had elevated Hg, As and Al vs native soils
- Bare soil had higher Hg and As vs vegetated areas
- "tissue [ ]'s of Hg and As in oak and annual grasses lower than toxic levels"
- Pg 1
- 1957-SBMM abandoned
- S oxidation has resulted in extreme acidity
- Hg and As accumulation due to geothermal activity
- Pg 2
- 1856-1957-SBMM under operation
  - largest productive hot spring mineral deposit in world, one of largest Hg producers in California (White and Roberson 1994)
- herman impoundment-mine pit, pH=3.0 (US EPA, 1994)
- 1871-end of rail cars hauling surface S deposits away
- native soil was altered during excavations covered with mining waste
  - tailings-reddish, brown or gray (17 acres)
  - overburden-lighter color, clay, silt, sand, boulders, waste from trying to reach richer Hg bearing ore (90 acres)
    andesite, crystalline HgS (US EPA 1994)
  - undifferentiated-mine waste, tailings, debris (7 acres) (US EPA 1994)
- soil-low fertility, acidic, low organic matter, elevated As and Hg, heterogeneity of surface materials
  - makes revegetation difficult
- Pg 31
- Lime and fertilizer to help with low fertility and acidity
- Pg 38
- Soil texture ranges: sand (39-74%), silt (17-40%), clay (8-30%)
- Pg 40
- N and C: native C=higher than mine soil
  native N=lower than mine soil
- Pg 42
- Acidity: native pH=6, mine pH=3.4-4.5

- Pg 132
- revegetation will help prevent erosion
- Pg 179
- Movement of sediment into CL, erosion, contamination of surrounding areas, health risks
- Pg 180
- Overburden-lacks Ca, Mg, K, increased N
URL:
http://proquest.umi.com/pqdweb?index=0&did=730218601&SrchMode=1&sid=1&Fmt=6&VInst=PROD&VType=PQD&RQT=309&VName=PQD&TS=1216060232&clientId=1567
Author Address: University of California, Davis, CA, USA

Reference Type: Book
Record Number: 358
Author: S. G. Herman, R. L. Garret and R. Rudd
Year: 1969
Title: Pesticides and the western grebe: A Study of Pesticide Survival and Trophic Concentration at Clear Lake, Lake County, California
Series Editor: M. W. Miller and G. G. Berg
Short Title: Pesticides and the western grebe: A Study of Pesticide Survival and Trophic Concentration at Clear Lake, Lake County, California
Accession Number: 5834780
Keywords: Article Subject Terms: Aquatic birds; Biology; Chlorinated hydrocarbons; DDT; Distribution; Feeding; Nesting; Pesticides; Pollutant persistence; Pollution effects; Pollution indicators; Population control; Article Taxonomic Terms: Aechmophorus occidentalis; Article Geographic Terms: USA, California, Clear L. Marine
Q5 01503 Characteristics, behavior and fate
Abstract: One of the best-known examples of trophic concentration of pesticide residues occurs in Clear Lake, California. The entire lacustrine ecosystem contains chlorinated hydrocarbon residues, chiefly of the DDT series. The effects of trophic concentration are most obvious in the Western grebe (Aechmophorus occidentalis), a fish-eating bird, in which both acute mortality and reproductive inhibition, presumably attributable to high residue loads, have combined to cause population declines. This report centers on probable pathways of residue transfer and on the precise manner in which reproduction might be affected. Various aspects of the population biology of the Western grebe and its prey species are described. The breeding population of this colonially nesting species is approximately 150 pairs. Regular aerial censusing shows variation in total numbers throughout the year as well as differential distribution in the lake. Residue loads in grebe tissues have remained relatively high over several years, averaging, as examples, in 1967 in DDD alone 544 ppm (wet weight) in subcutaneous fat, 296 ppm (lipid weight) in eggs, and 546 ppm (lipid weight) in the yolk sacs of hatchling grebes. All fishes contain DDD and other residues. Residues in grebes vary seasonally and appear strongly correlated with feeding rates and selection of prey types. Comparison with another breeding population of grebes at Topaz Lake, California reveals a different distribution and abundance of tissue residues and a different seasonal variability. Maintenance of captive grebes has given precise information on rates of growth and on feeding characteristics. Various components of physiological, biological,

and trophic concentration are described in detail. Studies will continue for two additional reproductive seasons.
Notes: birds; bioaccumulation; clear lake; chemical; pollution
Chemical Fallout: Current Research on Persistent Pesticides. pp. 24-23. 1969.
Physical medium: Printed matter
Book Monograph
Author Address: Department of Zoology, University of California Davis, California USA

Reference Type: Book
Record Number: 359
Author: W. B. Herms
Year: 1937
Title: The Clear Lake gnat
Publisher: Berkeley, Cal. : Agricultural Experiment Station
Short Title: The Clear Lake gnat
Call Number: call # - MS 77/2 321-1 WRCA UCB
Keywords: Diptera -- California.
Diptera -- Control -- California.
Abstract: need abstract
Notes: insects

Reference Type: Book
Record Number: 561
Author: R. Hinton
Title: Estimated Percentage Compositoin of Sport Catch by Species at Clear Lake, California 1936-1961
Publisher: California Department of Fish and Game
Short Title: Estimated Percentage Compositoin of Sport Catch by Species at Clear Lake, California 1936-1961
Abstract: Table # 2 listing Estimated Percentage Composition of Sport Catch by Species from 1936 to 1969. Shows increase in Largemouth Bass during the 1950s, catfish very abundant in thirties and forties. 56% crappie catch in 1969.
Research Notes: photocopied from the California Department of Fish and Game. Assisted by Jay Rowan and DFG Volunteer Gary Sypnicki.
North Central Regional Office
1701 Nimbus Road
Rancho Cordova, CA 95670

Access Date: 7/7/2011

Reference Type: Book
Record Number: 360
Author: R. N. Hinton

Year: 1971
Title: A study of the impact of water quality on recreation use of Clear Lake, California
Place Published: [Sacramento
Publisher: Dept. of Parks and Recreation, Contract Services Section?]
Number of Pages: 63, [15] leaves
Short Title: A study of the impact of water quality on recreation use of Clear Lake, California
Accession Number: OCLC: 24311559 Provider: OCLC
Call Number: call # - G4581 K1-2 WRCA UCD
Keywords: Water quality -- California -- Clear Lake.
Clearlake (Calif.)
Abstract: need abstract
Notes: settlement; pollution
California.; Dept. of Parks and Recreation.; Contract Services Section. ; California.; Dept. of Water Resources.
28 cm.
Cover title./ "August 1971."/ Prepared for the Dept. of Water Resources under Interagency Agreement no. B50070./ Includes bibliographical references.
by Ralph N. Hinton.
Book

Reference Type: Book
Record Number: 361
Author: N. J. Holzhauser
Year: 1976
Title: Factors affecting the diet and growth of largemouth bass in Clear Lake, Lake County, California
Place Published: [Davis
Publisher: Calif.]
Number of Pages: 34 l. illus. Dissertation: Thesis (M.S.)--University of California, Davis.
Short Title: Factors affecting the diet and growth of largemouth bass in Clear Lake, Lake County, California
Accession Number: OCLC: 81775986 Provider: OCLC
Call Number: call # - LD781.D5j 1976 H548 Shields UCD special collections
Keywords: Dissertations, Academic -- California -- Ecology.
Abstract: need abstract
Notes: fish
Thesis/dissertation (deg)
Book

Reference Type: Book
Record Number: 362
Author: L. W. Hom
Year: 1966

Title: Evaluation of water pollution potential of the Clear Lake area of Lake County : final report, 1 July 1965 through 31 March 1966, standard agreement no. 12-10
Place Published: Sacramento
Publisher: [Sacramento State College]
Number of Pages: 230 p. in various pagings
Short Title: Evaluation of water pollution potential of the Clear Lake area of Lake County : final report, 1 July 1965 through 31 March 1966, standard agreement no. 12-10
Accession Number: OCLC: 4325569 Provider: OCLC
Call Number: call # - G4581 J6 WRCA UCB

LC: TD788.4.C32
Keywords: Water -- Pollution -- California -- Lake County.
Sewage disposal -- California -- Lake County.
Abstract: need abstract
Notes: pollution; clear lake
Sacramento State College Foundation. ; California.; State Water Quality Control Board. ; California.; Central Valley Regional Water Quality Control Board.
ill., maps ; 28 cm.
Submitted to State Water Quality Control Board and Central Valley Regional Water Quality Control Board./ Includes bibliographical references.
by Sacramento State College Foundation ; Leonard W. Hom, principal investigator.
Government publication (gpb); State or province government publication (sgp)
Book

Reference Type: Journal Article
Record Number: 363
Author: J. Hopkirk
Year: 1973
Title: Endemism in fishes of the Clear Lake region of Central California.
Journal: Publ. Zool., Univ. Calif.
Issue: 96
Pages: 1-137
Type of Article: Journal Article
Short Title: Endemism in fishes of the Clear Lake region of Central California.
Call Number: call # - QL1 .C3 v.96 Shields UCD
Keywords: clear lake, california, fish, Endemism
Abstract: The complex geological history of the Clear Lake region, which is given, has influenced the evolution of fishes in the Clear Lake Basin. Of the 8 fams of fish native to the area 3 include endemic spp. These are the Cyprinidae, Embiotocidae and Cottidae. Details of subspp observed are given. All endemics are derivatives of lowland spp common in the warm waters near the Delta, and are the result of fluviolacustrine speciation. Intraspecific competition is considered to be the most important selective pressure operative in the evolution of lacustrine adaptations. The major adaptive difference between lake and river populations in the region is in gillraker number. It is noted, however, that minor differences in morphology and behaviour can reproductively and ecologically isolate symapatric populations of lake-and river-adapted fishes.

Notes: fish; clear lake

-pg 18-20
-clear lake basin endemics
-Pogonichthys ciscoides (clear lake splittail)
-hitch
-Endemichthys grandipinnis (clear lake minnow)
-H. traskii lagunae (clear lake tuleperch)
-C. asper (clear lake prickly sculpin)
-14 natives, 5 endemics
-1894, Entosphenus tridentatus (pacific lamprey) occasionally taken. Not since then, rainbow trout, thicktail chub, sacramento Pikeminnow, hardhead, California roach, sacramento blackfish, California sucker, stickleback, sacramento perch
-pg 111
-1973, bluegill is dominant
-catch records (1936-1963)
-pg 114
-1925, splittail very abundant (coleman 1930)
-1938, splittail most abundant (Lindquist 1943)
-1946 and 1961, splittail almost absent (Murphy 1951 and cook 1964)
-1940's, decline of sucker, Pikeminnow, splittail, chub, clear lake minnow
-reasons for decline

Reference Type: Journal Article
Record Number: 364
Author: J. D. Hopkirk
Year: 1988
Title: Fish Evolution and the Late Pleistocene and Holocene History of Clear Lake, California
Journal: Geological Society of America
Pages: 183-193
Short Title: Fish Evolution and the Late Pleistocene and Holocene History of Clear Lake, California
Accession Number: 8910150
Keywords: California; Cores; Paleolimnology; Fish; Lake basins; Geologic history; Paleoclimatology; Lake sediments; Geothermal studies; Paleohydrology; Palynology; Stratigraphy; Sedimentology; Quaternary Period; Cenozoic Era; Holocene Epoch; Pleistocene Epoch; Spawning; Trophic levels; Benthic fauna; Perch; Correlation analysis; Bioindicators; Pollen; Oak trees
SW 0850 Lakes; SW 0870 Erosion and sedimentation
Abstract: Clear Lake in Lake County, California, has an endemic fish fauna composed of five lake-adapted forms derived from lowland stream-adapted forms present in surrounding drainage basins. Two of the five endemic forms are extinct. The three remaining endemics maintain themselves despite the destruction of sloughs and tule beds surrounding Clear Lake that are used for spawning and nursery areas. Trophic specializations of the endemic fishes indicate past

selection for feeding on small benthic and pelagic invertebrates. The presence of fine particles in the substrate and the reduced activity of tributary streams for at least the past 10,000 years are major hydrographic features contributing to the evolution of these trophic adaptations. Subfossil scales of the endemic Clear Lake tuleperch (Hysterocarpus traskii lagunae), present in three U.S. Geological Survey cores (CL-73-7 , -6, and -8), removed from the bottom of Clear Lake in 1973 were analyzed by for age and growth rate. Periods of increased scale growth were inferred to represent warming of the lake. Comparison of the scale data with pollen data indicate that maximum scale growth (core CL-75-8) occurred at about 19 ka, or 15 ka, during a cold interval. Fluctuations in scale density in cores CL-73-4 and CL-73-7, however, seem to follow fluctuations in oak pollen. It is therefore concluded that maximum-scale growth represents cool periods, whereas maximum-scale density represents warm periods in the history of the lake. During the period that maximum-scale growth occurred, Clear Lake basin may have also been closed off from surrounding basins and the lake enriched with nutrients. (See also W89-10137) (Author 's abstract)
Notes: fish; clear lake; arcaeological
Late Quaternary Climate, Tectonism, Sedimentation in Clear Lake, Northern California Coasts. Geological Society of America, Boulder CO. 1988. p 183-193, 4 fig, 4 tab, 50 ref.
Author Address: Sonoma State Univ. Rohnert Park, CA

Reference Type: Book
Record Number: 365
Author: A. J. Horne
Year: 1975
Title: The ecology of Clear Lake phytoplankton
Place Published: [Lakeport, Calif.]
Publisher: Clear Lake Algal Research Unit
Number of Pages: vi, 116 p.
Short Title: The ecology of Clear Lake phytoplankton
Accession Number: OCLC: 2639662 Provider: OCLC
Call Number: call # - QK935 .H67 Shields UCD

LC: QK571.5.C3
Keywords: Freshwater algae -- California -- Clear Lake.
Cyanobacterial blooms -- California -- Clear Lake.
Algal blooms -- California -- Clear Lake.
Plankton blooms -- California -- Clear Lake.
Algae -- Control -- California -- Clear Lake.
Abstract: need abstract
Notes: algae; clear lake
Clear Lake Algal Research Unit.
ill. ; 28 cm.
Includes bibliographical references (p. 107-116).
by A.J. Horne.
Book

Reference Type: Journal Article
Record Number: 366
Author: A. J. Horne
Year: 1979
Title: Nitrogen-Fixation in Clear Lake, California .4. Diel Studies on Aphanizomenon and Anabaena Blooms
Journal: Limnology and Oceanography
Volume: 24
Issue: 2
Pages: 329-341
Type of Article: Article
Short Title: Nitrogen-Fixation in Clear Lake, California .4. Diel Studies on Aphanizomenon and Anabaena Blooms
ISSN: 0024-3590
Accession Number: ISI:A1979GS84700010
Abstract: Day and night measurements of Nz fixation (as acetylene reduction) were made during spring blooms of Aphanixomenonjlos-aquae and two autumn blooms of Anabaena spp. From 9 to 23% of the 24-h fixation occurred between 1100 and 1300 hours. Nitrogen fixation in spring showed complex, physically shallow but optically deep and mobile subsurface peaks of nitrogenase activity, which were totally unrelated to Aphanixomenon biomass but may have been due to diel changes in light penetrating the relatively clear water. Nocturnal fixation was uniformly distributed with depth and accounted for t/J to $5 of daylight fixation. In more turbid autumn waters, the pattern of N2 fixation for Anabaena blooms was simpler, with a surface (or near-surface) peak decreasing with depth. Nocturnal fixation was more uniformly distributed with depth. The difference in fixation patterns between the two species is attributable to the interactions of oxygen with the nitrogenase enzyme system. The diel changes in nitrogenase activity suggest a need to establish whether the precursors of nitrogenase accumulate in an oxygen-stable form.
Notes: ONLINE; nitrogen fixation
URL: <Go to ISI>://A1979GS84700010
http://aslo.org/lo/toc/vol_24/issue_2/0329.pdf

Reference Type: Journal Article
Record Number: 367
Author: A. J. Horne, J. E. Dillard, D. K. Fujita and C. R. Goldman
Year: 1972
Title: Nitrogen-Fixation in Clear-Lake, California .2. Synoptic Studies on Autumn Anabaena Bloom
Journal: Limnology and Oceanography
Volume: 17
Issue: 5
Pages: 693-703
Type of Article: Article

Short Title: Nitrogen-Fixation in Clear-Lake, California .2. Synoptic Studies on Autumn Anabaena Bloom
ISSN: 0024-3590
Accession Number: ISI:A1972O375900005
Abstract: Nitrogen fixation at three stages of an autumnal bloom of Anabaena circinalis was measured after almost simultaneous collection at up to 32 stations in Clear Lake and algal heterocysts, phytoplankton cell numbers, N03-N, NH4-N, dissolved organic-N, P04-P, Fe, primary production, particulate carbon, and chlorophyll a were also measured. Nitrogen fixation was significantly and positively correlated to Anabaena heterocyst numbers (P >0.001), negatively correlated to N03-N (P> 0.01), and positively correlated to dissolved organic-N (P > 0.01) and P04-P (P > 0.05). A negative correlation with NH4 is probable; no significant relationship was found with the other variables measured. An explanation of the apparent restriction of substantial cyanophycean N2 fixation to nonoligotrophic waters is proposed. The results are consistent with the theory that heterocysts are responsible for N2 fixation in situ under oxic conditions.
Notes: ONLINE; nitrogen fixation
URL: <Go to ISI>://A1972O375900005
http://www.jstor.org/stable/pdfplus/2834719.pdf

Reference Type: Journal Article
Record Number: 368
Author: A. J. Horne and C. R. Goldman
Year: 1972
Title: Nitrogen-Fixation in Clear-Lake, California .1. Seasonal-Variation and Role of Heterocysts
Journal: Limnology and Oceanography
Volume: 17
Issue: 5
Pages: 678-692
Type of Article: Article
Short Title: Nitrogen-Fixation in Clear-Lake, California .1. Seasonal-Variation and Role of Heterocysts
ISSN: 0024-3590
Accession Number: ISI:A1972O375900004
Abstract: The annual contribution of N2 fixation to Clear Lake in 1970 was about 550 tonnes, 500 Mg (megagrams) or 18 kg ha-\ 43% of the lake's yearly nitrogen inflow. Biological N2 fixation can provide the nitrogen for almost half the blue-green algal standing crop during blooms and is implicated as the main cause of large algal nuisance blooms on this lake. The large quantity of nitrogen fixed may be typical for large, shallow, cyanophyceandominated lakes. A sustained spring peak of fixation was associated with a simultaneous bloom of Aphanizomenon flos-aquae in all three basins, an autumn peak with an ephemeral bloom of Anabaena circinaliY occurring at a different time in each basin. A stepwise multiple regression analysis showed that fluctuations in N2 fixation were best described by variations in heterocysts, quantities of blue-green algae, P04-P, NOs-N, and temperature. Annual rates of N2 fixation were correlated with the proportion of heterocysts to vegetative cells in Aphanizomenon and with total number of

heterocysts in Anabaena. Previous nitrogen budgets for Clear Lake have shown a large excess of nitrogen in outflow over inflow, which is accounted for by the levels of N2 fixation measured.
Notes: ONLINE; nitrogen fixation
URL: <Go to ISI>://A1972O375900004
http://www.jstor.org/stable/pdfplus/2834718.pdf

Reference Type: Journal Article
Record Number: 369
Author: A. J. Horne, J. C. Sandusky and C. J. W. Carmiggelt
Year: 1979
Title: Nitrogen-Fixation in Clear Lake, California .3. Repetitive Synoptic Sampling of the Spring Aphanizomenon Blooms
Journal: Limnology and Oceanography
Volume: 24
Issue: 2
Pages: 316-328
Type of Article: Article
Short Title: Nitrogen-Fixation in Clear Lake, California .3. Repetitive Synoptic Sampling of the Spring Aphanizomenon Blooms
ISSN: 0024-3590
Accession Number: ISI:A1979GS84700009
Abstract: Nitrogen fixation (as acetylene reduction) and factors most likely to influence it were estimated simultaneously for 31 sites at eight stages of the 1971 and 1972 spring blooms of Aphanixomenon in naturally eutrophic Clear Lake. The major factor controlling rates of N2 fixation was the number of Aphanixomenon heterocysts ($P < 0.001$). Environmental influences on fixation were largely mediated through heterocyst induction or repression. Regression analysis showed heterocysts highly negatively related to NO3 ($P < 0.05$). At high (linear regressions) but not at low (log-transformed regressions) numbers, heterocysts were positively correlated with phosphate ($P < 0.05$). At low rates of Nz fixation, heterocysts were also positively related to water clarity, chlorophyll (both $P < 0.05$), and temperature ($P < 0.01$). The role of very low levels of nitrate (2-22 pg. liter-l NO,-N) in (apparently) indirectly suppressing heterocyst induction was unexpected. Only at high rates was N, fixation correlated with phosphate. Presumably at low rates sufficient phosphorus is available in this P-rich lake (14- 43 pg*liter-’ PO,-P) to permit repression of heterocyst formation by low NO, levels. Ammonium suppressed N, fixation and heterocyst formation only where it was present in relatively large quantities (20-170 pgmliter-’ NH,-N). Early in the blooms, low rates of vegetative (i.e. nonheterocyst) N, fixation were indicated in the “flake colonies of Aphanixomenon. These may have an anoxic center like that of Trichodesmium.
Notes: ONLINE; nitrogen fixation
URL: <Go to ISI>://A1979GS84700009
http://www.jstor.org/stable/pdfplus/2835496.pdf

Reference Type: Journal Article
Record Number: 370

Author: A. Houck and J. J. Cech
Year: 2004
Title: Effects of dietary methylmercury on juvenile Sacramento blackfish bioenergetics
Journal: Aquatic Toxicology
Volume: 69
Issue: 2
Pages: 107-123
Date: Aug
Type of Article: Article
Short Title: Effects of dietary methylmercury on juvenile Sacramento blackfish bioenergetics
ISSN: 0166-445X
Accession Number: ISI:000223021200001
Keywords: methylmercury (MeHg); fish bioenergetics; MeHg assimilation; bioaccumulation
TROUT ONCORHYNCHUS-MYKISS; CRAB CALLINECTES-SAPIDUS; METHYL MERCURY CHLORIDE; AMINO-ACID CARRIER; RAINBOW-TROUT; SALMO-GAIRDNERI; ORTHODON-MICROLEPIDOTUS; INORGANIC MERCURY; LAKE TROUT; FISH
Abstract: Although much is known about the biogeochemical cycling of mercury in the environment, relatively little is known about methylmercury (MeHg) bioaccumulation in fishes and how chronic sub-lethal exposures affect their functioning. Several species of fish in Clear Lake, California have high MeHg tissue levels, including Sacramento blackfish, Orthodon microlepidotus, a large native cyprinid that is fished commercially. We fed juvenile blackfish one of four diets containing MeHg (0.21 mg/kg control; 0.52 mg/kg low; 22.2 mg/kg medium; and 55.5 mg/kg high treatments) for 70 days. There were no statistical differences ($P > 0.05$) in food consumption among the treatment groups. By 35 days the high treatment group had a significantly depressed growth rate when compared to the control group ($P < 0.05$) and by 70 days both the medium and the high groups had significantly lower growth rates ($P < 0.05$). The high-dose group had a significantly ($P < 0.05$) lower specific growth rate (SGR) compared all other treatment groups at 35 days, although by 70 days these differences were not significant. The wet/dry muscle mass and muscle mass/total mass ratios, condition factor, and resting routine metabolic rates at both 35 and 70 days were statistically indistinguishable ($P > 0.05$) between treatment groups. All treatment groups assimilated the dietary MeHg into muscle tissue in a dose-dependent fashion. Percent assimilation was significantly lower ($P < 0.05$) in the high-dose group compared to the low-dose group at 35 days, (control 53%, low-dose 61%, medium-dose 50%, and high-dose 40%) but at 70 days assimilation was lower (35, 43, 42, and 32%, respectively) and statistically indistinguishable ($P > 0.05$) among the treatment groups. Dietary MeHg concentrations and bioaccumulation rates were correlated ($r(2) = 0.98$ at 35 days, 0.99 at 70 days). These results may contribute to construction of ecosystem mercury models and more informed natural resources management at Clear Lake.
Notes: ONLINE; fish, bioaccumulation

-pg 107
    -blackfish with higher methyl mercury uptake had lower growth rates at 35 days
    -by 70 days no differences
-pg 108

-in freshwater systems, majority og methyl mercury is generated by bacteria in surface sediments and transferred by trophic processes
-pg 113
-figures 2 &3, growth (weight)
-Day 35 significant difference between high and control
-day 70 significant differences between high/medium and control
-pg 116
-figure 7, bioaccumulation
URL: <Go to ISI>://000223021200001
http://www.sciencedirect.com/science?_ob=MImg&_imagekey=B6T4G-4CTCXGS-1-1J&_cdi=4974&_user=4421&_orig=search&_coverDate=08%2F10%2F2004&_sk=999309997&view=c&wchp=dGLbVlW-zSkWA&md5=b71af5a88bfeeaf19a30cc0eae22af65&ie=/sdarticle.pdf
Language: ONLINE

Reference Type: Journal Article
Record Number: 371
Author: R. W. Howarth and R. Marino
Year: 1990
Title: Nitrogen-Fixing Cyanobacteria in the Plankton of Lakes and Estuaries - Reply to the comment by Smith
Journal: Limnology and Oceanography
Volume: 35
Issue: 8
Pages: 1859-1863
Date: Dec
Type of Article: Note
Short Title: Nitrogen-Fixing Cyanobacteria in the Plankton of Lakes and Estuaries - Reply to the comment by Smith
ISSN: 0024-3590
Accession Number: ISI:A1990FE65500019
Keywords: FIXATION ACETYLENE-REDUCTION; MARINE ECOSYSTEMS; FRESH-WATER; CLEAR-LAKE; PHYTOPLANKTON; BLOOMS; HETEROCYSTS; CALIFORNIA; LIMITATION; NODULARIA
Notes: ONLINE; nitrogen fixation
REPLY
URL: <Go to ISI>://A1990FE65500019
http://www.jstor.org/stable/pdfplus/3096616.pdf

Reference Type: Journal Article
Record Number: 372
Author: E. G. A. L. B. Hunt
Year: 1960
Title: Inimical effects on wildlife of periodic ddd applications to clear lake
Journal: California Fish and Game

Volume: 46
Issue: 1
Pages: 91-106
Short Title: Inimical effects on wildlife of periodic ddd applications to clear lake
Call Number: call # - SK351 .C3 Shields UCD
Notes: pollution; insects; clear lake; fish; birds, bioaccumulation

-pg 95
- -september 1949, 14,000 gallons of DDD (TDE) used
  - -6 barges applied the chemicals
  - -few gnats for two years
- -july 1951, gnat larvae found
- -september 1954, second DDD treatment
- -december 1954, 100 western grebe deas
- -march 1955, more dead grebes
- -1955-1956, gnat population increases
- -september 1957, thirds DDD treatment
- -december 1957, 75 grebes dead. 16,000 ppm

-pg 96
- -march 1958, 40 ppm in carp to 2,500 ppm in bullhead

-pg 97
- -DDD breaks down slowly

-pg 98
- -bull frogs, 5 ppm
- -july 1958, highest ppm in white catfish and largemouth bass

-pg 100
- -before treatments (1949) 1,000 pairs of nesting grebes
  - -less than 25 in 1958 and 1959

Reference Type: Report
Record Number: 373
Author: A. R. Jager
Year: 1996
Title: Surface water supply for the Clearlake, California Hot Dry Rock Geothermal Project
Short Title: Surface water supply for the Clearlake, California Hot Dry Rock Geothermal Project
Accession Number: DE96009085
Keywords: Geothermal Power Plants; Geothermal Energy; Hot-Dry-Rock Systems; Surface Waters; Water Quality; Water Supply; Water Use
edb/150200
48F Natural Resources & Earth Sciences: Geology & Geophysics;
97P Energy: Geothermal Energy
Abstract: It is proposed to construct a demonstration Hot Dry Rock (HDR) geothermal plant in the vicinity of the City of Clearlake. An interim evaluation has been made of the availability of surface water to supply the plant. The evaluation has required consideration of the likely water consumption of such a plant. It has also required consideration of population, land, and water

uses in the drainage basins adjacent to Clear Lake, where the HDR demonstration project is likely to be located. Five sources were identified that appear to be able to supply water of suitable quality in adequate quantity for initial filling of the reservoir, and on a continuing basis, as makeup for water losses during operation. Those sources are California Cities Water Company, a municipal supplier to the City of Clearlake; Clear Lake, controlled by Yolo County Flood Control and Water Conservation District; Borax Lake, controlled by a local developer; Southeast Regional Wastewater Treatment Plant, controlled by Lake County; and wells, ponds, and streams on private land. The evaluation involved the water uses, water rights, stream flows, precipitation, evaporation, a water balance, and water quality. In spite of California's prolonged drought, the interim conclusion is that adequate water is available at a reasonable cost to supply the proposed HDR demonstration project.
Notes: water rights; clear lake; ONLINE
Performer: Los Alamos National Lab., NM. Sponsor: Department of Energy, Washington, DC.
Mar 1996. 39p. Report: LA-12718-HDR
Sponsored by Department of Energy, Washington, DC.
Contract W-7405-ENG-36
URL: http://www.osti.gov/energycitations/servlets/purl/219402-fcsgjY/webviewable/219402.PDF

Reference Type: Web Page
Record Number: 374
Author: S. Jahagirdar
Year: 2006
Title: A clean water future for California : how California's water boards can clean up nine of the state's biggest polluted rivers, lakes and bays
Publisher: [Los Angeles, Calif.] : Environment California
Description: [100] p. : ill. ; 28 cm.
Type of Medium: Book; Internet Resource Date of Entry: 20060210
Short Title: A clean water future for California : how California's water boards can clean up nine of the state's biggest polluted rivers, lakes and bays
Accession Number: OCLC: 63680694 Provider: OCLC
Keywords: Water resources development -- California.
Environmental policy -- California.
Water-supply -- California.
Environmental protection -- California.
Abstract: need abstract
Notes: pollution; clear lake; ONLINE
Environment California.
Introduction -- Waterway profiles -- The bays -- San Francisco Bay -- Humboldt Bay -- Santa Monica Bay -- Clean water success story: Shelter Island Yacht Basin -- The rivers -- Sacramento River -- Klamath River -- San Joaquin River -- Clean water success story: Garcia River -- The lakes -- Clear lake -- Lake Tahoe -- Eagle Lake -- Policy recommendations -- Conclusion.
"February 2006."/ Includes bibliographical references.
LC: TD224 .C3
Sujatha Jahagirdar.

Internet resource (url)
URL:
http://www.environmentcalifornia.org/uploads/Dn/BA/DnBAEp3UOs8KlWBgwnMVDg/clean%5Fwater%5Ffuture.pdf
Materials specified: Full report
http://www.environmentcalifornia.org/uploads/Dn/BA/DnBAEp3UOs8KlWBgwnMVDg/clean%5Fwater%5Ffuture.pdfMaterials specified:
Summaryhttp://www.environmentcalifornia.org/reports/clean-water/clean-water-program-reports/a-clean-water-future-for-california-how-californias-water-boards-can-clean-up-nine-of-the-states-biggest-polluted-rivers-lakes-and-bays

Reference Type: Journal Article
Record Number: 487
Author: J. Joaquin
Year: 1989
Title: Traditional Pomo Fishing
Journal: News from Native California
Volume: 3
Issue: 3
Pages: 1
Start Page: 12
Date: July/August 1989
Short Title: Traditional Pomo Fishing
Notes: native american

-pg 12
-salmon, steelhead, trout, pike, suckers, hitch, etc
-fish dams, weirs, basketry traps, poisons, seine nets, dip nets, harpoons, hooks and lines
-fish divers, caught fish and scared them towards fish dams

Reference Type: Audiovisual Material
Record Number: 377
Author: D. B. J. R. T. E. S. Jolliffe
Year: 2006
Title: Hinth'el Gaahnula (Talking Indian) : a narrative history of Lake County Pomo history through 1900
Publisher: [Lake County, CA]. : Big Valley Rancheria
Extent of Work: 1 videodisc (72 min.)
Type: Videorecording (vid)
Short Title: Hinth'el Gaahnula (Talking Indian) : a narrative history of Lake County Pomo history through 1900
Alternate Title: Talking Indian
Accession Number: OCLC: 77499759 Provider: OCLC

Call Number: call # - 970.3 HINTH'EL Lakeport Lib, Redbud Lib, Middletown Lib, Upper Lake Lib; E99 P65 H56 2006 Media Discs 2nd Fl CSUC
Keywords: Pomo Indians -- California -- Lake County.
Pomo Indians -- Culture.
Pomo Indians -- History.
Indians of North America -- California -- Lake County.
Abstract: Presented by the Big Vallye Rancheria in association with the Administration for Native Americans, this program covers 12,000 years of Pomo history and culture in the Clear Lake area, up to about 1900, including basketry, traditional foods, language and trade networks. Discusses contact and conflict with Europeans and Americans, including the Spanish, Mexicans and Russians in California, with attention to the Bloody Island Massacre (Bo-No-Po-Ti), Bear Flag Rebellion, Gold Rush, and treatires. Includes voiceovers of family traditions and memories.
Notes: native american; settlement
Big Valley Rancheria.
4 3/4 in.
Participants: Narrated by James BlueWorlf. Additional voiceovers by Tim Ramos, David Jolliffe and Steven Elias./ Audience: Rated PG-13.
Big Valley Rancheria; directed by David Jolliffe; written and produced by James BlueWolf.
Visual Material

Reference Type: Generic
Record Number: 491
Author: T. L. J. F. H. Jones
Year: 1993
Title: Problems and Prospects in Sonoma County Archaeology, in There Grows a Green Tree: Papers in
Honor of David A. Fredrickson
Place Published: Center for Archaeological Research at Davis, Publication 11, Davis, California
Short Title: Problems and Prospects in Sonoma County Archaeology, in There Grows a Green Tree: Papers in
Honor of David A. Fredrickson
Abstract: need abstract
Notes: native american

Reference Type: Thesis
Record Number: 378
Author: W. J. Jones
Year: 2001
Title: DNA sequence divergence and speciation in two California minnows (Cyprinidae: Lavinia exilicauda and L. (= Hesperoleucus) symmetricus)
Place Published: United States -- California
University: University of California, Santa Cruz
Thesis Type: Ph.D.

Short Title: DNA sequence divergence and speciation in two California minnows (Cyprinidae: Lavinia exilicauda and L. (= Hesperoleucus) symmetricus)
Accession Number: 3032263
Keywords: Genetics
Molecular biology
Abstract: The general objective of this research was to understand the phylogenetic relationships among two closely related freshwater minnows (Cyprinidae; Lavinia symmetricus and L. exilicauda) in California. In particular, the aims were to (1) establish a phylogenetic hypothesis of relationships among currently recognized subspecies of Lavinia ; (2) use molecular systematics and morphological characters to define the evolutionary distinct Red Hills L. symmetricus ; and (3) use a suite of molecular markers to document levels of hybridization and introgression between L. symmetricus and L. exilicauda . Phylogenetic relationships among Lavinia subspecies were estimated using two mitochondrial genes and one nuclear intron. In the majority of cases, recognized subspecies of Lavinia formed reciprocally monophyletic groups for mitochondrial DNA (nDNA) and appeared fixed for subspecies-specific nuclear DNA alleles (nDNA). In populations where L. symmetricus and L. exilicauda have been known to hybridize (Monterey Bay Rivers and the Sacramento-San Joaquin Rivers), mtDNA haplotypes and nuclear alleles were shared across species boundaries. Molecular phylogenetics and multivariate analysis of morphological data for the Red Hills subspecies of L. symmetricus were used to better understand the historical relationships and the extent of gene flow between the state-protected Red Hills populations and their widespread congeners. As in a previous study, the Red Hills population was distinct morphologically from neighboring populations. Molecular data further suggested that the Red Hills populations are reciprocally monophyletic for mitochondrial DNA and thus form an evolutionary unique assemblage. Hybridization between L. symmetricus and L. exilicauda was estimated using three nuclear markers and one mitochondrial marker. Lavinia symmetricus and L. exilicauda occur sympatrically in three independent river drainages. The influence of drought conditions and low rainfall were investigated to see if there was a correlation between these environmental factors with either hybrid abundance or spawning between L. symmetricus and L. exilicauda . Introgression of "alien" alleles were similar for species, drainages, and nuclear markers. However, mitochondrial DNA introgressed across species boundaries to a higher degree. Drought conditions appear to play a role in that hybrids were more common when there was no drought (as indicated by the Palmer Index). Spawning between L. symmetricus and L. exilicauda appeared more common in years when there were drought or low rainfall conditions.
Notes: genetics; hitch; ONLINE

- Pg 1
- L. symmetricus and L. exilicauda haven’t all merged into a hybrid
- Pg 4
- CL hitch is only known subspecies to spawn in streams
- Decreased spawning runs (dam, pollution, habitat loss) (Macedo 1994)
- Pg 20
- Low divergence between them
  - Possibly because exilicauda recently diverged from symmetricus in order to adapt to a new environment (CL). Had more gill rakers than other exilicauda subspecies, behavioral traits (spawn in streams), increased growth rate (Pg 21)

- Pg 25
- In CL, represent distinct gene pools
- Pg 109
- No known hybrids in CL except possible hybrid between blackfish and hitch
- Ph 131
- CL important region for CL hitch evolution (appears they evolved while in CL)

URL:
http://proquest.umi.com/pqdweb?did=726096931&Fmt=7&clientId=1567&RQT=309&VName=PQD
http://proquest.umi.com/pqdweb?vinst=PROD&fmt=6&startpage=-1&clientid=1567&vname=PQD&RQT=309&did=726096931&scaling=FULL&vtype=PQD&rqt=309&TS=1216916177&clientId=1567

Reference Type: Thesis
Record Number: 379
Author: T. S. Kaufman
Year: 1980
Title: Early Prehistory of the Clear Lake Area, Lake County, California
Place Published: United States -- California
University: University of California, Los Angeles
Thesis Type: Ph.D.
Short Title: Early Prehistory of the Clear Lake Area, Lake County, California
Accession Number: 8111240
Call Number: call # - LD791.9.A6 K164 SRLF
Keywords: Archaeology
Abstract: Beginning with M. R. Harrington's controversial 1948 report on the Borax Lake Site, the Clear Lake area of Lake County, northern California has been of considerable interest as a candidate for early human occupation in western North America. Both new and existing archaeological evidence have been examined with the objective of elucidating the chronology and adaptations of early human populations in the Clear Lake basin. Obsidian hydration dating and radiocarbon dating constitute the primary analytical procedures. The research also emphasizes studies of specific problems intrinsic to the successful application of obsidian hydration and radiocarbon dating. The asemblages analysed consisted primarily of local obsidian materials and included specimens from the Mostin Site and several other contexts near Clear Lake. Obsidian hydration dating reveals a general occupation of the study area at a time level equivalent to the earliest use of the Borax Lake Site reported by Meighan and Haynes (1970). Source characterization analysis indicates an overall predominance of Borax Lake obsidian although Mt. Konocti and Napa sources were also utilized. Obsidian hydration seriation of bifacial artifact specimens suggests potential chronological significance for many of the types analysed, although most tool categories exhibited considerable hydration range and overlap. Hydration data from the Houx Site suggest that the Houx and Borax Lake components are of nearly the same maximum age. Data also indicate some possibility for variation in hydration rates due to microenvironmental conditions and intra-source variation in obsidian composition. Analysis of contemporary lake shells provides evidence of minor contamination of Clear Lake by magmatic carbon emitted from gaseous springs. Most importantly, analysis of the Mostin Site

reveals an extensive burial population as well as considerable evidence for habitation activities. Radiocarbon dating of Mostin Site human bone collagen and charcoal results in ages between approximately 7000 and 11,000 radiocarbon years B.P. The association of a conical stone pestle with a ca. 10,000 B.P. dated Mostin Site burial implies substantially greater antiquity than is normally attributed to this artifact form. Overall, the data provide extensive evidence for widespread human occupation of the Clear Lake basin during terminal Pleistocene and early Holocene times and confirm major importance for this area in the study of early human populations in the New World.
Notes: settlement; clear lake
URL:
http://proquest.umi.com/pqdweb?did=751970211&Fmt=7&clientId=1567&RQT=309&VName=PQD

Reference Type: Book Section
Record Number: 503
Author: W. Kienle
Year: 1990
Title: Volcanoes of North America: United States and Canada
Book Title: Volcanoes of North America: United States and Canada
Publisher: Cambridge University Press
Pages: 354 p. total, p.149
Short Title: Volcanoes of North America: United States and Canada

Reference Type: Journal Article
Record Number: 380
Author: J. G. Kim
Year: 1999
Title: Paleoecological studies for assessment of anthropogenic impacts in Montane, Mediterranean, and tropical marshes
Journal: Dissertation Abstracts International Part B: Science and Engineering
Volume: 60
Issue: 10
Pages: 4995
Date: Apr
Short Title: Paleoecological studies for assessment of anthropogenic impacts in Montane, Mediterranean, and tropical marshes
Alternate Journal: Diss. Abst. Int. Pt. B - Sci. & Eng.
Accession Number: 4756934
Keywords: Article Subject Terms: Anthropogenic factors; Climatic changes; Ecosystem management; Environment management; Environmental impact; Human impact; Introduced species; Man-induced effects; Marshes; Mountains; Nutrients; Palaeoecology; Paleoecology; Plant communities; Plant populations; Pollen; Population-environment relations; Restoration; Sedimentation; Tropical environment; Water quality;

Wetlands; Article Geographic Terms: Belize; USA, California, Clear L.;
USA, Sierra Nevada Mts.
Freshwater
Q5 01521 Mechanical and natural changes; M1 220 Human
Population-Hydrosphere Interactions
Abstract: Wetlands are valuable as sources, sinks and transformers of a multitude of chemical and biological materials. Since the Industrial Revolution, wetlands in many regions have been lost or changed their roles at an exponential rate mostly due to human activities. These anthropogenic impacts should be evaluated in the sense of wetland structure and function. Sediment cores were collected from three montane marshes in the Northern Sierra Nevada, two mediterranean inland marshes around Clear Lake, CA and six tropical inland marshes in Belize to assess the impact of watershed environmental conditions altered by human activities and climatic change. Pollen analysis was conducted in montane marshes and physico-chemical characteristics were determined in all marshes. Cores were <super>210</super>Pb dated with the Constant Rate of Supply model or the Constant Initial Concentration model. Pollen analyses indicated changes in plant communities caused by human activities. It was possible to track the arrival time of introduced species from the combined pollen record and <super>210</super>Pb date. Physico-chemical records documented human activities such as logging, road construction and maintenance. Establishment of unpaved roads in the marsh proximity was reflected in increased sedimentation rate. Road salt application increased the concentration of sodium and calcium. Water quality was responsible for the change of sedimentation rate in the mediterranean marsh. Water level was responsible for the change of plant community, resulting in the change of sediment characteristics and sedimentation rate in tropical marshes. Relative values, such as C/N, N/P, and P/Ca, as well as absolute concentrations of nutrients were useful tools to assess the response of wetland sediments to the increased nutrient input. Physical disturbance (road building) and vegetation change caused by variation in water quality and water level were most important for the change of sediment characteristics and sedimentation rate. This study suggests that sedimentation processes should be evaluated in the context of related physico-chemical and biological processes: change of water level, change of nutrient input, response of plant and microbial communities (production and decomposition). This work contributes to the fundamental biogeochemical knowledge of the sedimentation process and provides information potentially useful for wetland management and restoration.
Notes: botany; clear lake; settlement; ONLINE
Journal Article

- Pg 7
- Elevation 404 m, inner coast range
- Annual mean: Temp~16 C, precipitation=635 mm
- Anderson marsh, southeast, well preserved outlet
- Rodman slough, northwest inlet, diked, drained, ag for many years (1800’s)
- Pg 46
- Wetlands function in removal of “organic and inorganic nutrients through increases sedimentation from water column”
- The sediment records environmental changes
- Pg 47
- 30% of inflow via Scotts and Middle through Rodman

- marshes-sediment and nutrient removal
- changes of Rodman resulted increase of water speed which means particles don't get caught in marsh, goes to lake
- Pg 48
- 1958-stopped annual dredging for levee maintenance (Rodman)
- 1920's-Rodman lake reclaimed
- 1959-RS reclaimed for ag
- 1969-Scotts gravel mined for roads
- 1996-97-US ACE developed middle creek ecosystem restoration study to reduce nutrient input
- higher nutrient input has created increase in algal blooms
- 1925-1939-(Richerson 1994) blue green algae began to bloom
- 1984-1990-large algal bloom (Neale and Woodmansee 1994)
- 1987-since then P constant increase (Neale and Woddmansee 1994)
- Pg 53
- Sediment cores
  - Anderson-dark brown peat
  - Rodman-sand, fine sand, plant litter (willow and aspen leaves, small woody material)
- Pg 66
- 1977-severe drought, lake level lowest in 50 years
- Pg 72
- "major cation [ ]'s except Mg were higher in Anderson than in rodman sediment"

URL:
http://proquest.umi.com/pqdweb?index=0&did=730218711&SrchMode=1&sid=1&Fmt=6&VInst=PROD&VType=PQD&RQT=309&VName=PQD&TS=1216066814&clientId=1567
Author Address: University of California, Davis, CA, USA

Reference Type: Journal Article
Record Number: 381
Author: J. G. Kim
Year: 2003
Title: Response of sediment chemistry and accumulation rates to recent environmental changes in the Clear Lake watershed, California, USA
Journal: Wetlands
Volume: 23
Issue: 1
Pages: 95-103
Date: Mar
Type of Article: Article
Short Title: Response of sediment chemistry and accumulation rates to recent environmental changes in the Clear Lake watershed, California, USA
ISSN: 0277-5212
Accession Number: ISI:000181785300009
Keywords: Clear Lake; land-use change; nutrient analyses; sediment characteristics; sedimentation rate; Pb-210 dating NUTRIENT ACCUMULATION; ORGANIC-MATTER;

TAHOE BASIN; EVERGLADES; ACCRETION; MARSHES; DISTURBANCE; FLORIDA; RECORD
Abstract: The Clear Lake watershed, California, USA has been modified for agriculture since the arrival of Europeans in the early 1800s, and this has led to the deterioration of lake water quality. To assess the response of Clear Lake wetland sediments to recent environmental changes caused by watershed modification, physical and chemical properties of sediment cores at the inlet (Rodman Slough) and outlet (Anderson Marsh) were analyzed. Pb-210 dating showed increases of sedimentation rate for Anderson Marsh in the 1930s and 1980s, and those increases corresponded to algal blooms and the increase of P input into Clear Lake, respectively. Ranges of recent sedimentation and mass accumulation rates in Anderson Marsh were 0.41-0.52 cm/yr and 1070-1380 g m(-2) yr(-1). Accumulation rates-of P, Cal Mg, K, and Pb were slightly higher in Rodman Slough than in Anderson Marsh. Sediment analyses showed that the excess P originating from agricultural activities reach Clear Lake through Rodman Slough and were removed in the lake.
Notes: clear lake; settlement; soil; ONLINE
URL: <Go to ISI>://000181785300009
http://www.bioone.org/archive/0277-5212/23/1/pdf/i0277-5212-23-1-95.pdf

Reference Type: Journal Article
Record Number: 382
Author: J. B. Kimsey
Year: 1957
Title: Largemouth black bass tagging at Clear Lake, Lake County, California
Journal: California Fish and Game
Volume: 43
Issue: (2)
Pages: 111-118
Date: 1957
Type of Article: Article
Short Title: Largemouth black bass tagging at Clear Lake, Lake County, California
Accession Number: BIOSIS:PREV19573100033804
Call Number: call # - SK351 .C3 Shields UCD
Abstract: From a total of 333 disk dangler and staple tags inserted between June, 1953, and March, 1954, a 3-year return of 94 (28.2%) tags was received, 54 the 1st year, 37 the 2d year, and 3 the 3d year. Movements were undirected. Survival was calculated to be 44% and the annual expectation of death was 56%. Fishing mortality accounted for 20% of the annual expectation of death and natural causes for 36%. ABSTRACT AUTHORS: J. B. Kimsey
Notes: fish

-pg 111
    -1915, control of water by dam
-pg 113
    -mean length of largemouth bass is 9.4 inches
-pg 114
    -89% of fish in second or third summer

-pg 116
-average distance traveled is 4.5 miles
-annual survival rate is 44%, therefore 56% death rate (20% harvest, 36% natural)
-pg 117
-undirected migration
-over fishing not an issue
URL: <Go to ISI>://BIOSIS:PREV19573100033804

Reference Type: Journal Article
Record Number: 383
Author: J. B. Kimsey
Year: 1960
Title: Observations on the spawning of Sacramento hitch in a lacustrine environment
Journal: California Fish and Game
Volume: 46
Issue: 2
Pages: 211-215
Short Title: Observations on the spawning of Sacramento hitch in a lacustrine environment
Call Number: call # - SK351 .C3 Shields UCD
Notes: hitch; clear lake; tributaries

-pg 211
-hitch are too big in second year to be forage fish
-indications hitch can spawn in lakes
-1956, observations of hitch spawning in clear lake with carp feeding around them
-pg 212
-april 25, 1957, clear lake oaks, hitch spawning (6-14 inches)
-may 3, 1957, 7 pm fish spawning
-pg 213
-may 9, 1957, no hitch observed in schindler
-may 3, 1957, observation of hitch in middle and lyons creek
-1948, hitch planted in pond in schindler creek drainage (self sustaining but not connected to clear lake)
-pg 215
-not obligatory stream spawners

Reference Type: Book
Record Number: 384
Author: E. Knapp
Year: 1855
Title: Gold rush letter, 1855 May 27
Number of Pages: 2 items.
Date: 1855
Type of Work: Book; Archival Material Date of Entry: 20011002

Short Title: Gold rush letter, 1855 May 27
Abbreviation: Eli Knapp gold rush letter,; 1855 May 27.
Accession Number: OCLC: 58948758 Provider: OCLC
Call Number: call # - MANUSCRIPT SMCII Box 13 Folder 16 State lib CSL Ca Manuscripts
Keywords: Pioneers -- California -- Clear Lake -- Correspondence.
Knapp, Eli -- Correspondence.
Clear Lake (Calif.) -- History.
Abstract: Letter dated May 27, 1855, written by Eli Knapp to his wife, Mabel, no address. One folded sheet of four closely-written pages, it begins with "Clear Lake Nappa Co Cal"and the salutation "Dear Mabel" and ends abruptly with Knapp's signature. Transcription included. Eli describes his journey to Clear Lake: "I Left Grass valley for the purpose of viewing on May the 8th went on foot to Mariesville at which place I bought a Mule Saddle & Bridle & rope Called here Lassso or Lariat for stakeing out animals in this country and some provisions necessary." In the "Seaport town on the sacramento river (Collousa)", Knapp takes up with Mr. Stewart, Mr. Rawlens and Mr. Handy and they jointly venture to Clear Lake where they intend to stake out claims and settle down to farm and ranch. Settlement at Clear Lake is just beginning: "... first settlers came in last summer." Knapp comments on the fine prospects there as if to justify his extended stay away from home. His plan is to ranch, perhaps begin a dairy. "I feel queer to step out of my Cabin Because I cant walk without treading on Claover and Oats eaqual in quantity to any I have eaver Cultivated my range in preferable to any I have seen ... " He talks also of the abundance of game and fish, including mention of the Indians fishing with scoop nets. He is most anxious to have family join him "At a proper time after Indian difficulties are settles I want my family here I want you fathers family here Mother knapp Elliott & horace and all good neighbors ... " He sends a message to his children "tell children I have got a spoted watch puppy that will stay all day to the cabin and watch and will sleep out with my little mule if i want him to whose back is about as high as Ellies Head and who will let children ride him as well as any boddy." He ends with "if we succeed i hoap for better Digings on Deck than I have long since been accustomed to I will try and write often Mr H will remail yours by order I trust I have you co-operation. ... I have written bad on bad paper which i have carried some 150 [miles?]"
Notes: settlement; native american; fish, mine
Bio/History: There is little biographical information about Eli Knapp beyond what can be deduced from this letter. He evidently came to California somewhat prior to 1855, possibly from a town called Windsor, state unknown, and had spent some time in Grass Valley. He left a family including his wife, Mabel, and two sons, Elliott and Horace. There is also a reference to extended family members, "Mother Knapp", "Pa", "Brother Alexander and Lady(?)", "Paul Grant", etc. Nor can we determine anything about his fate after 1855. There are several E. Knapps and variants in later census (1860 and 1870) -- but no definite identification is possible.
Unrestricted. Please credit California State Library. Preferred citation: Eli Knapp gold rush letter, 1855 May 27.
Biography (bio); Manuscript (mss)

Reference Type: Book Section
Record Number: 489
Author: F. Kniffen
Year: 1939

Title: Pomo Geography
Editor: v. M. L. C. History
Short Title: Pomo Geography
Notes: hitch; fish; native american

Reference Type: Thesis
Record Number: 385
Author: N. J. Knight
Year: 1985
Title: Microhabitata and Temperature Requirements of Hardhead (Mylopharodon Conocephalus) and Sacramento Squawfish (Ptyvhocheilus Grandis), with Notes for some Other Native California Stream Fishes
Place Published: United States -- California
University: University of California, Davis
Thesis Type: Ph.D.
Short Title: Microhabitata and Temperature Requirements of Hardhead (Mylopharodon Conocephalus) and Sacramento Squawfish (Ptyvhocheilus Grandis), with Notes for some Other Native California Stream Fishes
Accession Number: 8607598
Call Number: call # - LD781.D5j 1985 K654 Shields UCD micro copy collections and special collections
Keywords: Ecology
Aquaculture
Fish production
Abstract: Hardhead (Mylopharodon conocephalus) and Sacramento squawfish (Ptychocheilus grandis) are large cyprinids native to the Sacramento-San Joaquin river system in California. Although squawfish are widely distributed, hardhead are more restricted and found only where squawfish are present. The microhabitats and temperature requirements of both species were studied to determine reasons for this phenomenon. Microhabitat data from 17 stream sites were compiled, including measurements on fish size, total water depth, fish focal point depth, focal point velocity, and substrate composition. The data were divided (120 mm SL) into two fish size categories. Total water depths were greater for adults over juveniles of both species. Substrates were primarily of the gravel-boulder range, with few differences between species or size classes. Principal components analyses were similar for both species--water velocity variables were important primarily and depth variables were important secondarily. Both species were found in slow water (<15 cm/s) of moderate depths (mostly 0.5-2.0 m) with most fish near the bottom or less than halfway up in the water column. Squawfish were observed in shallower water and closer to the substrate than hardhead. Temperature requirements of both species were determined by laboratory studies of acute temperature preferences, routine metabolic rates, and critical thermal maxima. Acute final temperature preferenda for hardhead and squawfish were 28.4 and 26.0(DEGREES)C, respectively, determined by linear regressions of preferred against five acclimation temperatures. Squawfish had higher and more variable metabolic rates at every acclimation temperature above 10(DEGREES)C. Partial results for hitch (Lavinia exilicauda), California roach (L. symmetricus), Sacramento blackfish (Orthodon microlepidotus), Sacramento perch (Archoplites interruptus), tule perch (Hysterocarpus traski) and Sacramento

sucker (Catostomus occidentalis) are also presented. Critical thermal maxima were very consistent (e.g. low variability), ranging from 28.3(DEGREES)C for squawfish at 10(DEGREES)C to 38.1(DEGREES)C for hitch at 30(DEGREES)C. The laboratory results generally agree with field observations of activities and macrohabitats. Successful management of these native fishes depends on maintaining adequate summer stream temperatures (25-30(DEGREES)C). Although the hardhead-Sacramento squawfish association phenomenon could not directly be explained, this study is the first to quantitatively describe the microhabitat and temperature requirements of hardhead.
Notes: hitch; fish

-pg ii
-hardhead and squawfish both native to sac-san Joaquin river system
-hardhead only found where squawfish present (not vice versa)
-preferred temperature, 28.4 C (hardhead), 26 C (squawfish)
-pg 33
-slow moving water (less than 15 centimeters per second) except foraging and moving
-occupy 50-200 cm depths
-pg 37
-gravel-boulder substrate
-juveniles like finer, shallower water
-pg 44
-table 5, hardhead and squawfish comparisons
-pg 109
-hitch, “warm, low elevation lakes, ponds and slow moving stretches of streams and rivers”
URL:
http://proquest.umi.com/pqdweb?did=752976011&Fmt=7&clientId=1567&RQT=309&VName=PQD

Reference Type: Personal Communication
Record Number: 563
Author: T. Knight
Year: 2011
Title: Phone Interview
Description: Phone Interview of Terry Knight, outdoor sports writer for the Lake County Record-Bee, by Ryan Keiffer, RREA Intern
Date: 6/29/2011
Type: Phone Interview
Short Title: Phone Interview
Abstract: Bass feed heavily on Hitch, as shown in stomach contents of lake record Largemouth bass. Anglers use lures that imitate hitch, 5 inches long, technique known as "hitching or ripping". Bass are opportunistic predators and the bass population is cyclical. DFG has been conducting electroshocking for 20 years on lake. Silverside introduced by vector control. Plankton drift on the lake, hitch and silversides follow. Threadfin shad, cyclical fish as well with current low numbers. He feels that the # of birds represents # of bait fish present. Pelicans can

consume 4 lbs. of fish a day, currently low numbers of pelicans and cormorants. Ospreys, grebes, etc. Told to look up commercial fishing harvest for blackfish and carp, knows of a father and son team.Very minimal tribal fishing recently.
Research Notes: Continued to correspond via email after the phone interview.

Reference Type: Journal Article
Record Number: 386
Author: E. F. Knipling
Year: 1950
Title: Some personal observations on the treatment of Clear Lake, California for the control of the Clear Lake gnat
Journal: Mosquito News
Volume: 10
Issue: (1)
Pages: 16-19
Date: 1950
Type of Article: Article
Short Title: Some personal observations on the treatment of Clear Lake, California for the control of the Clear Lake gnat
Accession Number: BIOSIS:PREV19502400038064
Call Number: call # - QL461 .M6 Shields UCD
Abstract: TDE used as an emulsion concentrate containing 30% TDE, 10% Triton X-100 and 60% xylene was applied at the rate of 14.000 gals. in 2 days for the control of Chaoborus asticopus. A good kill was obtained and early indications were that the gnat had been brought under control, possibly for one year. || ABSTRACT AUTHORS: Irving Fox
Notes: insects; pollution

-pg 16
-clear lake gnat (Chaoborus astictopus)
-nuisance in summer months, evenings
-causes increase in spiders
-1938, “congress funds bureau of entomology and plant quarantine to study control and biology of gnat”
-pg 17
-1 part to 100 million parts water, DDT and TDE are effective
-september 15, 1949, first treatment on the lake (14,000 gallons)
URL: <Go to ISI>://BIOSIS:PREV19502400038064

Reference Type: Book
Record Number: 387
Author: D. L. C. J. J. C. G. P. K. V. Koch
Year: 1975
Title: Survey of the fishes of the Clear Lake Reservoir drainage

Series Title: Project report ;; no. 37; Variation: Project report (University of Nevada System. Water Resources Center) ;; no. 37.
Place Published: Reno
Publisher: Center for Water Resources Research, Desert Research Institute, University of Nevada System
Number of Pages: vi, 38 p.
Short Title: Survey of the fishes of the Clear Lake Reservoir drainage
Accession Number: OCLC: 22348811 Provider: OCLC
Call Number: call # - G370 XU2 no.37 WRCA UCD

LC: TC424.N3
Keywords: Catostomidae -- Geographical distribution.
Fishes -- California -- Clear lake Reservoir -- Geographical distribution.
Abstract: need abstract
Notes: fish; clear lake
ill. ; 28 cm. + 1 map.
Folded map in pocket./ "October 1975."
by David L. Koch, James J. Cooper, Glen P. Contreras and Vernon King.
Book

Reference Type: Book
Record Number: 388
Author: A. L. Kroeber and L. R. Harry
Year: 1965
Title: University of California publications in American archaeology and ethnology. Volume 18 (XVIII) 1922-1926
Place Published: New York
Publisher: Kraus Reprint
Number of Pages: 411 p.
Short Title: University of California publications in American archaeology and ethnology. Volume 18 (XVIII) 1922-1926
Accession Number: OCLC: 39294250 Provider: OCLC
Call Number: call # - 94-3352 Arcv Neg UCB and E51 .C3 Main UCB and E51 .C3 set 2 Main UCB BOUND 1:2(1904)-50(1964)//At NRLF: v.1:2

LC: E51
Keywords: Pomo Indians.
Miwok Indians -- Rites and ceremonies.
Miwok Indians -- Religion.
Miwok dance.
Indian mythology -- California.
Indians of North America -- Languages.
Indians of North America -- Social life and customs.
Indians of North America -- California.
Abstract: need abstract

Notes: native american
maps ; 24 cm.
No. 1. California kinship terminologies / Edward Winslow Gifford -- no. 2. Clear Lake Pomo society / Edward Winslow Gifford -- no. 3. Miwok cults / Edward Winslow Gifford.
Reprint of v. 18 of the periodical originally published by the University of California, 1922-1926./ Includes bibliographical references and index.
American archaeology and ethnology
editors, A.L. Kroeber, Robert H. Lowie.
Book

Reference Type: Book
Record Number: 162
Author: R. D. Lallatin
Year: 1975
Title: Clear Lake water quality data
Place Published: [s.l.]
Publisher: State of California, The Resources Agency, Dept. of Water Resources, Northern District
Number of Pages: vi, 321 p.
Short Title: Clear Lake water quality data
ISBN: LCCN: 76-621855
Accession Number: OCLC: 2440985 Provider: OCLC
Call Number: call # - TD224.C3 C22 PhySciEng UCD

LC: TD224.C3; Dewey: 333.9/163/0979417
Keywords: Water quality -- California -- Clear Lake.
Abstract: need abstract
Notes: clear lake
California. Dept. of Water Resources. Northern District.
ill. ; 28 cm.
Cover title./ Prepared by R. D. Lallatin./ Bibliography: p. 19-20.
Government publication (gpb); State or province government publication (sgp)
Book

Reference Type: Generic
Record Number: 501
Author: P. J. Lechler and D. G. Jewett
Year: 1999
Title: Geochemical Features of Water-Rock Interactions at the Sulphur Bank Mercury Mine, Lake County, California
Type of Work: Symposium paper
Short Title: Geochemical Features of Water-Rock Interactions at the Sulphur Bank Mercury Mine, Lake County, California
Accession Number: PB2000101743

Keywords: Clear Lake; Water chemistry; Oxidation reduction reactions;
Remediation; Acid mine drainage; Geochemistry; Ground water;
Subsurface drainage; Rock-fluid interactions; Chemical reactivity;
Water pollution control
Sulphur Bank Mercury Mine; Lake County(California); Herman Pit
68D Environmental Pollution & Control: Water Pollution &
Control; 48A Natural Resources & Earth Sciences: Mineral
Industries; 99F Chemistry: Physical & Theoretical Chemistry
Abstract: The Sulphur Bank Mercury Mine on the eastern shore of Clear Lake is the source of poor quality acid mine drainage seeping into Clear Lake. Lateral and vertical geochemical trends in ground water composition point to a number of redox reactions taking place as a function of subsurface water-rock interactions. An understanding of these reactions suggests opportunities to remediate the acid mine drainage through suppression of undesirable geochemical reactions. Two geochemically based remediation steps are proposed.
Notes: geochemical; mine; pollution; clear lake
Performer: Nevada Bureau of Mines and Geology, Reno. Sponsor: National Risk Management Research Lab., Ada, OK. Subsurface Protection and Remediation Div. 1999. 10p. Report: EPA/600/A99/078
This document has been reproduced from the best copy furnished by the Source Agency.
Sponsored by National Risk Management Research Lab., Ada, OK. Subsurface Protection and Remediation Div.

Reference Type: Book
Record Number: 389
Author: Lee
Year: 1980
Title: California roach in d.s. lee, ed atlas of North American freshwater fishes
Publisher: North Carolina State Museum of Natural History, Raleigh
Short Title: California roach in d.s. lee, ed atlas of North American freshwater fishes
Call Number: call # - Ql625.a84 Shields UCD
Abstract: need abstract
Notes: fish
Pg 200

Reference Type: Journal Article
Record Number: 390
Author: H. W. Li, P. B. Moyle and R. L. Garrett
Year: 1976
Title: Effect of Introduction of Mississippi Silverside (Menidia-Audens) on Growth of Black Crappie (Pomoxis-Nigromaculatus) and White Crappie (Pomoxis-Annularis) in Clear Lake, California
Journal: Transactions of the American Fisheries Society
Volume: 105
Issue: 3

Pages: 404-408
Type of Article: Article
Short Title: Effect of Introduction of Mississippi Silverside (Menidia-Audens) on Growth of Black Crappie (Pomoxis-Nigromaculatus) and White Crappie (Pomoxis-Annularis) in Clear Lake, California
ISSN: 0002-8487
Accession Number: ISI:A1976CG14100008
Call Number: call # - SH1 .A5 Shields UCD
Abstract: The growth of black crappie (Pomoxis nigromaculatus) and of white crappie (P. annularis) before a new forage fish, the Mississippi silverside (Menidia audens), became established in Clear Lake, California, was compared to their growth after the silverside had become established. Following the establishment of the silverside, growth rates of both species were slower than the presilverside growth rates for the first two years of life, and were apparently faster beyond year II. No correlation was found between changes in climatological conditions and crappie growth patterns. The overall impact of the silverside on the crappie fishery in Clear Lake may be negative if increased juvenile mortality rates result from the smaller sizes observed at the younger age classes.
Notes: fish

-pg 404
    -younger age class of crappies are smaller
    -1967, silverside introduced to control gnats and midges and as a forage fish
-pg 406
    -table 3, lengths before and after introductions
    -ages 1-3, crappie smaller after introductions
    -ages 4-8, crappe larger after introductions
-pg 407
    -silverside introduction did effect crappie growth
    -gave more food for older crappie (ate silversides) but harmed younger due to competition for zooplankton
    -can create problems with fecundity, juvenile mortality
    -crappie fishing is big
    -1915, black crappie introduced
    -1950’s, white crappie introduced
URL: <Go to ISI>://A1976CG14100008

Reference Type: Newspaper Article
Record Number: 6
Reporter: J. Lindblom
Year: 2004
Title: A break for the hitch
Newspaper: Lake County Record Bee (Lakeport, CA)
Issue Date: December 28, 2004
Short Title: A break for the hitch
Abstract: need abstract

Notes: hitch; html via newsbank; see "newspapers"
Provider: NewsBank, SQN: 2622004

Reference Type: Journal Article
Record Number: 391
Author: A. W. Lindquist, C. C. Deonier and J. E. Hancey
Year: 1943
Title: The relationship of fish to the Clear Lake Gnat, in Clear Lake, California
Journal: California Fish and Game
Volume: 29
Issue: 4
Pages: 196-202
Date: 1943
Type of Article: Article
Short Title: The relationship of fish to the Clear Lake Gnat, in Clear Lake, California
Accession Number: BIOSIS:PREV19441800002106
Call Number: call # - SK351 .C3 Shields UCD
Abstract: 17 spp. of fish taken in Clear Lake are listed. The digestive tracts from 355 fish comprising 10 spp. were examined. All stages of Chaoborus were found in 9 spp. of fish, but it is believed that all spp. feed on this insect at some time during their life. The fork-tail catfish, square-tail catfish and split-tail are important feeders on all stages of the gnat. As many as 1,076 larvae have been found in the stomach of a 9-inch fish; several thousands have been estimated in the intestine. Nearly 77% of the stomachs of the square-tail catfish that contained food material had Chaoborus larvae; 100% of the intestines showed larval remains. Indications of abundance of various species of fish were sought from gill net catches, spawning runs, commercial seining, and illegal fishing. Clear Lake apparently harbors an enormous fish population. Data on the water chemistry are given. ABSTRACT AUTHORS: A. W. Lindquist
Notes: fish; insects; clear lake

-pg 196
    -about 40,000 acres (clear lake area)
    -greatest depth is 27 feet (upper), 50 feet (lower)
    -fish as control of gnats
-pg 197
    -fishes present in clear lake
        -white catfish, bluegill, black crappie, sacramento perch, hitch, splittail, german carp, largemouth black bass, green sunfish, blackfish, sacramento chub, squawfish, sacramento sucker, sculpin, perch
-pg 199
    -hitch young eat gnat
-pg 200
    -reports of fish kills (1 ft high, several ft wide)
    -thousands on shore in 1940
    -splittail and hitch runs are large
        -tens of thousands

-solid mass up a 4 ft wide creek
-abundances (1938)
-splittail>hitch>carp>fork tailed catfish>sacramento perch
-pg 201
-chemical analysis of water
URL: <Go to ISI>://BIOSIS:PREV19441800002106
Author Address: U. S. Dept. Agric.

Reference Type: Journal Article
Record Number: 392
Author: A. W. Lindquist, A. R. Roth and J. R. Walker
Year: 1951
Title: Control of the Clear Lake Gnat in California
Journal: Journal of Economic Entomology
Volume: 44
Issue: 4
Pages: 572-577
Type of Article: Article
Short Title: Control of the Clear Lake Gnat in California
ISSN: 0022-0493
Accession Number: ISI:A1951UJ47500028
Call Number: call # - SB599 .J6 Shields UCD
Notes: insects; pollution

-pg 572
-TDE, effective vs gnats, ok for fish
-treatment September 15, 1949
-larvae still migrating from mud to water each night
-adult activity over
-water level low
-think this is less harmful time for fish
-14,000 gallons
-specifics of chemicals and application
-pg 573
-also treated 20 ponds, reservoirs, small lakes within 15 miles of clear lake during September, October and November
-once killed, float on surface for about 11 days
-by 13th day few adults seen around lights (due to treatment and normal decline)
-pg 574
-10-18 days after treatment, most parts of clear lake <0.0025 ppm
-this still kills gnat larvae
-75 days, bottom mud samples, no larvae kill
-within 28 days, some TDE settled at bottom
-between 4-24 days, 100% kill
-11th day, no gnat larvae

-pg 576
-apparent eradication for at least one season
-late summer, did find some larvae
-lake is retreated
-no apparent injury to other aquatic insects, fish, plankton, oligochaetes
-biological unbalance?
-gnat eats rotifera and copepoda
-gnat as food
URL: <Go to ISI>://A1951UJ47500028

Reference Type: Journal Article
Record Number: 393
Author: J. D. Linn and R. L. Stanley
Year: 1969
Title: Tde Residues in Clear Lake Animals
Short Title: Tde Residues in Clear Lake Animals
Accession Number: 7001935
Call Number: call # - SK351 .C3 Shields UCD
Keywords: *chlorinated hydrocarbon pesticide; *pesticide residues; bass; bullheads; gulls; california; catfishes; plankton; sunfishes; gas chromatography; water pollution sources; water pollution effects; *ddd; *tde; black crappie; goldeneye; grebe; merganser; sacramento perch; clear lake(calif); tetrachloro-diphenyl-ethane; dichloro-diphenyl-dichlorethane
SW 3030 Effects of pollution; SW 3010 Identification of pollutants
Abstract: Thirteen collections taken from clear lake, california, between 1959 and 1965, comprising eight fish species, four bird species and one plankton sample, were analyzed for tde (ddd) residues. colorimetric method (before 1962) and electron capture gas chromatography were used to determine concentrations of pesticide. no well-defined year-to-year trend in residue levels was noted when all samples were examined together. white catfish showed some tendency toward increased residue levels with increasing age, while mean annual tde residue in largemouth bass (1958 year class) decreased from 23.5 parts/million (ppm) in 1958 to 7 ppm in 1963. evidence indicates that tde contamination, originating from three applications for insect control in 1949, 1954 and 1957, is declining. mean annual levels in white catfish have declined from 85.7 ppm (1958) to 9.6 ppm (1965) and levels in largemouth bass have declined from 40.9 ppm (1958) to 12.2 ppm (l963). tabular data include results of flesh and fat analyses for all collections and a comparison of data derived by colorimetric and gas chromatographic methods. (voigtlander-wisconsin)
Notes: fish; pollution; birds; chemistry
California fish and game, vol 55, no 3, p 164-178, 1969. 1 fig, 13 tab, 5 ref.

-pg 164
-levels declined through the years
-1,000 ppm TDE reported in some fish and birds (grebes, bass, catfish)
-pg 165

-sample collection
-largemouth bass, white catfish, brown bullhead, black crappie, green sunfish, sacramento perch, sacramento blackfish, hitch
-western grebe, gulls, common goldeneye, common merganser
-plankton
-tables of tissue analysis
-pg 167
-variety of TDE presence in each individual
-pg 168
-no grebe die offs since 1957
-decrease in TDE levels since 1958 in bass
-white catfish, TDE levels fluctuate, older fish have higher levels
-pg 171
-TDE contamination in animals is decreasing
Author Address: CALIFORNIA STATE DEPT. OF FISH AND GAME, SACRAMENTO. WILDLIFE MANAGEMENT BRANCH; AND CALIFORNIA STATE DEPT. OF PUBLIC HEALTH, SACRAMENTO. FOOD AND DRUG LAB

Reference Type: Journal Article
Record Number: 394
Author: E. E. Littrell
Year: 1991
Title: Mercury in Western Grebes at Lake Berryessa and Clear Lake, California
Journal: California Fish and Game
Volume: 77
Issue: 3
Pages: 142-144
Date: Sum
Type of Article: Article
Short Title: Mercury in Western Grebes at Lake Berryessa and Clear Lake, California
ISSN: 0008-1078
Accession Number: ISI:A1991HG21100002
Call Number: call # - SK351 .C3 Shields UCD
Keywords: BIRDS
Abstract: Mortalities of western grebes(Aechmophorus occidentalis) occurred at Lake Berryessa, Napa County, California in 1982 and 1986. Kidney and liver tissues of those birds and others from Lake Berryessa and Clear Lake were analyzed to determine if mercury, known to occur in these locations, was present at deleterious levels. Residue analyses indicated mercury was present at hazardous levels (20 ppm, wet weight) in the two instances.
Notes: birds; bioaccumulation; clear lake
URL: <Go to ISI>://A1991HG21100002

Reference Type: Book
Record Number: 395

Author: D. L. Luce
Year: 1977
Title: Clear Lake, California water problems
Place Published: [Marysville, Calif.]
Publisher: Yuba Community College District
Number of Pages: 1 v. (various pagings)
Short Title: Clear Lake, California water problems
Accession Number: OCLC: 56823900 Provider: OCLC
Call Number: call # - 333.91 LUCE Lakeport Lib, Redbud Lib

Dewey: 333.91
Keywords: Water-supply -- California -- Clear Lake.
Abstract: need abstract
Notes: water rights; clear lake
Yuba Community College District (Calif.)
28 cm.
Cover title.
[David L. Luce].
Book

Reference Type: Generic
Record Number: 507
Author: M. G. Lynch
Year: 1996
Title: Seasonal variations in lake mixing : Clear Lake, California
Pages: 90 leaves
Date: 1996
Type of Work: Book; Archival Material Date of Entry: 19990420
Short Title: Seasonal variations in lake mixing : Clear Lake, California
Accession Number: OCLC: 41220817 Provider: OCLC
Call Number: call # - LD781.D5j 1996 L962 Shields UCD micro copy collections and special collections
Abstract: need abstract
Notes: clear lake
ill. Dissertation: Thesis (M.S.)--University of California, Davis, 1996.
Degree granted in Civil and Environmental Engineering.
by Michelle Gwen Lynch.
Thesis/dissertation (deg); Manuscript (mss)

Reference Type: Journal Article
Record Number: 505
Author: J. L. Macalady, E. E. Mack, D. C. Nelson and K. M. Scow
Year: 2000

Title: Sediment microbial community structure and mercury methylation in mercury-polluted Clear Lake, California
Journal: Applied and Environmental Microbiology
Volume: 66
Issue: 4
Pages: 1479-1488
Date: Apr
Type of Article: Article
Short Title: Sediment microbial community structure and mercury methylation in mercury-polluted Clear Lake, California
Alternate Journal: Appl. Environ. Microbiol.
ISSN: 0099-2240
Accession Number: ISI:000086284700035
Keywords: SULFATE-REDUCING BACTERIA
CANONICAL CORRESPONDENCE-ANALYSIS
PHOSPHOLIPID FATTY-ACID
DESULFOVIBRIO-DESULFURICANS
MULTIVARIATE-ANALYSIS
ESTUARINE SEDIMENT
COMPOSITIONAL DATA
RIBOSOMAL-RNA
POPULATIONS
BIOMARKERS
Abstract: Spatial and temporal variations in sediment microbial community structure in a eutrophic lake polluted with inorganic mercury were identified using polar lipid fatty acid (PLFA) analysis, Microbial community structure was strongly related to mercury methylation potential , sediment organic carbon content, and lake location. Pore a ater sulfate, total mercury concentrations, and organic matter C/N ratios showed no relation ships with microbial community structure. Seasonal changes and changes potentially attributable to temperature regulation of bacterial membranes were detectable but were less important influences on sediment PLFA composition than were differences due to lake sampling location. Analysis of biomarker PLFAs characteristic of Desulfobacter and Desulfovibrio groups of sulfate-reducing bacteria suggests that Desulfobacter-like organisms are important mercury methylators in the sediments, especially in the Lower Arm of Clear Lake.
Notes: algae

ISI Document Delivery No.: 300ZY
Times Cited: 38
Cited Reference Count: 49
AMER SOC MICROBIOLOGY
URL: <Go to ISI>://000086284700035
Author Address: Univ Calif Davis, Dept Land Air & Water Resources, Davis, CA 95616 USA.
Univ Calif Davis, Dept Microbiol, Davis, CA 95616 USA.
Macalady, JL, Univ Calif Davis, Dept Land Air & Water Resources, 1 Shields Ave, Davis, CA 95616 USA.
Language: English

Reference Type: Report
Record Number: 396
Author: J. Macclanahan, E. W. Danley, H. F. Dewitt and W. Wolber
Year: 1972
Title: Flood Control Project Maintenance and Repair -- 1971 Inspection Report
Short Title: Flood Control Project Maintenance and Repair -- 1971 Inspection Report
Accession Number: 7401945
Call Number:call # - ERA
Keywords: *flood control; *levees; *california; engineering structures; maintenance; repairing; channel improvement; flood protection; data collections
SW 6040 Soil mechanics; SW 2010 Control of water on the surface
Abstract: In 1971, flood control levees extending 1,540 miles were maintained under cooperative state and federal agreements in the sacramento and san joaquin valleys and in lake and placer counties. such flood control projects include the sacramento, american, san joaquin, calaveras, and truckee rivers; littlejohns and middle creeks; merced county stream group; sacramento river bank protection project, and the lower san joaquin flood control project; and the fresno county stream group. twice during 1971, department of water resources specialists inspected and classified the quality of levee maintenance performed by maintaining agencies. this bulletin reports both the 1971 ratings and the method of rating, discusses proper maintenance procedures, and reports levee construction by the u.s. army corps of engineers, channel maintenance, applications for levee encroachments, and the condition of the flood control project structures. maps locate project levees and local maintenance agencies. (woodard-usgs)
Notes: flood control; tributary
Available from state of calif, documents section, p.o. box 20191 sacramento, calif. 95820 price $1.00. bulletin no. 149-71, june 1972. 29 p, 8 tab.

- Pg 6
- Summary of maintenance ratings by project (table 1). Middle creek, 14.3 miles of levee. Maintenance rating (% of miles) 49% good, 51% fair
- Pg 17
- 20 year levee maintenance record (1951-’70) (table 3). 1971 good
- Pg 24
- Levee maintenance (table 5). Middle, scotts, clover
- Pg 26
- Project structures (table 7)
  - Middle creek pumping plant. Gravity control gate not repaired
  - Clover outlet structure (Lake County FCD controls)
- Pg 29
- Channel clearance and condition. Middle maintained by DWR

Author Address: CALIFORNIA STATE DEPT. OF WATER RESOURCES, SACRAMENTO

Reference Type: Report
Record Number: 397

Author: R. Macedo
Year: 1991
Title: Creel Survey at Clear Lake, California, March-June, 1988
Institution: California Department of Fish and Game
Document Number: 91-3
Date: 1991
Short Title: Creel Survey at Clear Lake, California, March-June, 1988
Call Number:call # - F660 .A3 91-3 CSL
Keywords: creel census; habitat alterations; lakes; management/research; shoreline development; stocking/introductions
Abstract: Clear Lake is the largest and oldest lake completely within the California border. It supports a complex warmwater fishery and is a popular lake for both novice and professional anglers. The objective of this study was to update the description of the spring sport fishery of Clear Lake by documenting catch composition by size and species, angler success, angler origin, and tournament activity. Boat anglers were interviewed from March 2 through June 26, 1988. Of the 31 fish species which inhabit Clear Lake, 11 were noted during this survey. Largemouth bass dominated the catch (67%), followed by bluegill (15%), and crappie (6%). Catfishes, Sacramento hitch, carp and Sacramento perch together comprised 12% of the total sport catch. Catch per unit effort for largemouth bass taken in Clear Lake is 0.21 fish/h. Catch per unit effort is 0.25 fish/h when largemouth bass is the target species.
Notes: fish

-pg 1
- percent of species by catch
- bass (67%), bluegill (15%), crappie (6%), catfish/hitch/carp/perch (12%)

-pg 2
-about 2.5 million years old
-elevation is 1,319 feet
-surface area is 43,663 acres
-average depth is 21.3 feet with a max of 59 feet
-18 miles long, 7 miles wide at its widest

-pg 3
-clear lake had green, yellow-green, and blue-green algae (~100 species total)
-table 1, list of fish species in clear lake

-pg 7
-11 of 31 fish in clear lake accounted for

-pg 8
-species composition (1969 and 1988)

-pg 10-11
-pie charts, species compositions by quadrant

-pg 12-21
-fig 6, species composition

-pg 22
-table 3, fork lengths by species and quadrant

-pg 27
-splittail and threespine stickleback may be extinct

-trout may only be there if water is warm enough
-pg 28
-resurgence of sacramento perch to 1% in 1988 from <1% in 1976 and 1969
-recent decline in crappie density
-bluegill, crappie, and catfish eat perch eggs
-1972, crappie is 56% of catch, 1988 they are 6%
-1969, crappie and bluegill are 79% of catch, 1988 they are 21%
-pg 29
-silverside introduction may be reason for crappie decline
-1985, introduction of florida black crappie

Reference Type: Journal Article
Record Number: 398
Author: R. Macedo
Year: 1994
Title: Swimming Upstream without a Hitch
Journal: Outdoor California
Volume: 55
Pages: 1-5
Date: January-February 1994
Short Title: Swimming Upstream without a Hitch
Abstract: Found only in California's oldest and largest natural lake, the Clear Lake hitch is a little known member of the minnow family. Fishery biologist Richard Macedo talks about what we're doing to help this fish survive.
Notes: hitch

-"trash fish," seemingly useless
-minnow family, Lavinia exilicauda chi
-adults, 14 inches, greater than 1 pound
-2 other subspecies in drainages of sacramento-san Joaquin rivers and Monterey bay
-differences
-larger eyes, deeper body (better for clear lake environment)
-possibly some in russian river, nearly entire population in clear lake and tributaries
-species of special concern
-life history
-diet
-plankton, gnats, midges, etc
-spawning, draws predators
-spring, mid February to july head up tributaries
-female seeks shallow area near bank with silt free gravel, overhanging vegetation (willow, blackberry)
-1 female and 5 males, fertilization
-return spawn unlikely due to stress and predation
-not nest builders

-eggs swell four times and sink to stream bed, eggs settle along bed, some swept to clear lake (low survival rate)
-egg hatches 5-10 days
-need 5-10 days to become proficient swimmer
-then juveniles migrate to clear lake
-in clear lake juveniles stay along shore, concealed (few months)
-80 days, 2 inches, leave shore to roam
-male, sexual maturity 1-2 years
-female, 2-3 years
-live 5 or more years
-tributaries dry in summer therefore hitch must beat this
-threats
-dams (because build up of eggs, eggs on bottom die), bridges (not designed with hitch in mind)
-introduction of non native fish
-agricultural irrigation and diversions (homes)
-dams
-adobe, highland creeks, block upstream access
-kelsey, open during spawning, still alters stream morphology

Reference Type: Generic
Record Number: 498
Author: H. K. Mauldin
Title: Lake County History
Short Title: Lake County History
Call Number: found in Lake County Museum`
Notes: - Pg 505
- 1910-very big run of hitch on Kelsey at spawning time. Stream dried up and they died
- Pg 522
- Indians caught fish with spear and mullen root
- Pg 742
- Hitch in Kelsey so abundant, boy spears 9 with a pitch fork
- Pg 841
- Indians camped along creek, caught hitch (very thick) by long seine
  - 2 on each side and pull seine through deep hole (get lots of fish)
  - dry and cure fish by sticking in tules
  - there as long as run went, came from everywhere, mostly upper lake
- Pg 1088
- 1900-carp thick in lake
- 1930's-good hitch run in Kelsey, last mile of stream had many dead fish. Not sure why, not due to low water
- 1912-pike/Pikeminnow thickest in Kelsey
- Pg 1154
- 1951-spawning for fish between march and june
- Pg 1230

- Splittail (chai) went up cole and hitch went up Kelsey
- Pg 1552
- Fish important part of diet
- had fishing poles
- Pg 1744
- Early 1900's-big hitch run on Kelsey but stream ran dru and many died
- (Murphy 1948 "Perch")-hitch young move offshore in middle of summer
- Pg 1853
- 1911-24,000 rainbow trout, 68,000 steelhead distributed
- 1912-30,000 rainbow trout in kelsey
- 1913-10,000 eastern brook trout in kelsey
- 1916-46,500 rainbow trout, 48,000 eastern brook trout, 148,500 steelhead
- Ph 1855
- 1922-60,000 rainbow trout
- 1923-50,000 german brown, 60,000 mackinaw, 20,000 rainbow trout, 250,000 steelhead
- 1924-55,000 rainbow trout, 150,000 lock leven, 15,000 steelhead, 100,000 german brown, 75,000 mackinaw
- 1928-4,000 channel catfish
- Pg 1856
- 1927-12,000 rainbow trout, 49,000 lock leven, 175,000 german brown
- 1926-20,000 rainbow trout, 12,000 lock leven, 15,500 eastern brook trout, 310,000 german brown, 120,000 steelhead
- Pg 2027
- Fish clubs via indians
- Pg 2563
- 1948-hitch numbers very low
- Pg 5013
- 1896-big mouth bass, yellow perch, banded pickerel, green sunfish introductions
- Pg 5089
- Fish taken by Indians with traps and sedge net seines
- Pg 5538
- 1971-many hitch in Kelsey
- Pg 6533
- Picture by father of Wallace Meddough april 29, 1899 (of fish stranded)
- Pg 8149
- June 3, 1880-104 lbs perch caught
- Pg 8378
- 1922-1930-2 ft high dam (un named creek) on vest pond (terraces-by metaxes estate) had hitch
- Pg 8405
- 1894-CL fish: pacific lamprey. Rainbow trout, splittail, blackfish, hitch, Pikeminnow, chub, sacramento sucker, three spine stickleback, perch, Sculpin
- 1878-1000 catfish place in Clear Lake (ok by cfc)

Reference Type: Book
Record Number: 399

Author: H. K. Mauldin
Year: 1968
Title: History of Clear Lake, Mt. Konocti and Lake County cattle industry
Series Editor: A. B. Shannon
Place Published: Kelseyville
Publisher: Calif., Anderson Printing
Number of Pages: 79 p. illus. 22 cm.
Short Title: History of Clear Lake, Mt. Konocti and Lake County cattle industry
Accession Number: OCLC: 70430817 Provider: OCLC
Call Number: call # - F868.L2 M3 1968 Shields UCD and CAL 3:19 Shields UCD special collections
Keywords: Lake County, California -- History.
Konocti, Mt.
Clear Lake, California.
Abstract: need abstract
Notes: settlement
Cover title.
[Edited by Ben Shannon Allen. Rev.
Book

- Pg 7
- Clear Lake overflow into east fork of Russian river
- Pg 8
- Cache Creek flows to Sac River, drained lower portion of lake
- There was an upper and lower portion of the lake
- Pg 9
- Upper portion drainage by cold creek into Russian river
- Pg 10
- Landslide filled gorge of cold creek, result was a connection of upper and lower portions of the lake

Reference Type: Manuscript
Record Number: 400
Author: C. F. May
Year: 1917
Title: Conservation, flood controll [sic] and irrigation, 1917 July 10
Pages: 8 leaves ; 34 cm.
Date: 1917
Type of Work: Book; Archival Material Date of Entry: 19980501
Short Title: Conservation, flood controll [sic] and irrigation, 1917 July 10
Abbreviation: Conservation, flood control and irrigation
Accession Number: OCLC: 39048632 Provider: OCLC
Call Number: call # - MS 86/7 459.3.8c WRCS UCB
Keywords: Water conservation -- California -- Lake County.
Flood control -- California -- Lake County.

Irrigation -- California -- Lake County.
Water rights -- California -- Lake County.
Water rights -- California -- Yolo County.
Yolo Power and Water Company.
Clear Lake (Lake County, Calif.) -- Water rights.
Abstract: need abstract
Notes: flood control; settlement
Typescript (carbon).
[Chas. F. May].
Manuscript (mss)

Reference Type: Book
Record Number: 168
Author: R. McAlear
Year: 1982
Title: 1860 census, Clear Lake Township, Napa County, California : with additions and corrections
Place Published: Decorah, Iowa (108 Washington St., Decorah 52101)
Publisher: Anundsen Pub. Co.
Number of Pages: ii, 16 leaves
Short Title: 1860 census, Clear Lake Township, Napa County, California : with additions and corrections
ISBN: LCCN: 82-134611
Accession Number: OCLC: 9155019 Provider: OCLC
Call Number: call # - F869.C562 M36 1982 State lib CSL Ca Non Circ

LC: F869.C57; Dewey: 929/.379417
Keywords: Registers of births, etc. -- California -- Clear Lake (Township)
Registers of births, etc. -- California -- Lake County.
Clear Lake (Calif. : Township) -- Genealogy.
Lake County (Calif.) -- Genealogy.
Clear Lake (Calif. : Township) -- Census, 1860.
United States -- Census, 8th, 1860.
Abstract: need abstract
Notes: clear lake; settlement
28 cm.
Includes index.
compiled by Robert McAlear. More Records: Show record information
Book

Reference Type: Journal Article
Record Number: 401
Author: G. W. McCammon, D. A. La Faunce and C. M. Seeley
Year: 1964

Title: Observations on the food of fingerling largemouth bass in Clear Lake, Lake County, California
Journal: California Fish and Game
Volume: 50
Issue: (3)
Pages: 158-169
Date: 1964
Type of Article: Article
Short Title: Observations on the food of fingerling largemouth bass in Clear Lake, Lake County, California
Accession Number: BIOSIS:PREV19644500094338
Call Number: call # - SK351 .C3 Shileds UCD
Abstract: During mid-Aug. of 1948, 1956, 1957, and 1958, fingerling largemouth bass (Micropterus salmoides) were collected and their stomach contents analyzed. Mean fork lengths ranged from 2.1 inches in 1956 to 3.6 inches in 1958. Plankton and insects were the most important foods for bass under 2.5 inches fork length, while fish became the major food for larger bass. In 1948, Sacramento blackfish (Orthodon microlepidotus) were the major food item with bluegills (Lepomis macrochirus) of only minor importance. In all later collections, blue-gills constituted over half of the fish consumed, and were the most important single item. Blackfish, with one exception, were not found in any of the stomachs examined during the later studies. ABSTRACT AUTHORS: Authors

Notes: fish; clear lake

-pg 158
	-1948, blackfish fishery banned to leave them for bass food
	-1950, golden shiner introduced
-pg 160
	-fish were main food for bass
	-change in food with growth
		-2-4 inches they begin to eat fish, if small enough forage fish available they will eat it
-pg 163
	-figure, food of bass in clear lake
-pg 164
	-table, food of bass in clear lake
-pg 168
	-2.5 inches eat plankton and insects
	-range 2.1-3.6 inches
	-1948, blackfish most important food, next is bluegill
URL: <Go to ISI>://BIOSIS:PREV19644500094338
Author Address: Calif. Dep. Fish and Game, Sacramento, Calif., USA

Reference Type: Journal Article
Record Number: 402

Author: G. W. McCammon and C. M. Seeley
Year: 1961
Title: Survival, mortality, and movements of white catfish and brown bull-heads in Clear Lake California
Journal: California Fish and Game
Volume: 47
Issue: (3)
Pages: 237-255
Date: 1961
Type of Article: Article
Short Title: Survival, mortality, and movements of white catfish and brown bull-heads in Clear Lake California
Accession Number: BIOSIS:PREV19613600070964
Call Number: call # - SK351 .C3 Shields UCD
Abstract: In August and September of 1952, 722 white catfish and 724 brown bullheads were single-tagged with disk-dangler, staple, or hydrostatic tags. Anglers voluntarily returned 15.2% of the white catfish tags and 6.5% of the brown bullhead tags. Additional tagging was done in 1954-55. It was found that huge underfished stocks of these fish exist in Clear Lake. Hydrostatic tags proved unsuitable for long-term mortality studies. || ABSTRACT AUTHORS: C. M. Ferrel
Notes: fish; clear lake

-pg 237
    -white catfish and brown bullhead (more abundant), important part of fishery
-pg 238
    -successful depth was 15-30 feet
-pg 239
    -white catfish, 6.3-18.5 inches (10.4 inch mean) length
    -brown bullhead, 6.6-13.9 inches (9.8 inch mean) length
-pg 244
    -white catfish have high survival rate
-pg 246
    -white catfish and brown bullhead, no seasonal and annual movement but do disperse
-pg 255
    -huge stocks of white catfish and brown bullhead in clear lake
URL: <Go to ISI>://BIOSIS:PREV19613600070964

Reference Type: Book
Record Number: 403
Author: S. M. McGinnis
Year: 1984
Title: Freshwater fishes of California
Publisher: Univ. calif. Press, Berkeley.
Number of Pages: 316 p
Short Title: Freshwater fishes of California
Call Number: call # - QL628.C2 M37 1984 Shields UCD

Abstract: need abstract
Notes: fish

Reference Type: Book
Record Number: 404
Author: S. a. M. J. L. McLendon
Title: Eastern Pomo and Southeastern Pomo
Series Title: In Handbook of North American Indians
Publisher: Smithsonian Institution. Washington D.C.
Volume: Volume 8, pp 306-323
Short Title: Eastern Pomo and Southeastern Pomo
Abstract: need abstract
Notes: native american

Reference Type: Newspaper Article
Record Number: 8
Reporter: K. Mintz
Year: 2006
Title: River restoration projects celebrated
Newspaper: Ukiah Daily Journal (CA)
Short Title: River restoration projects celebrated
Abstract: need abstract
Notes: html online via newsbank
Provider: NewsBank, SQN: 3976907

Reference Type: Journal Article
Record Number: 562
Author: J. Moreau, Ligtvoet, W., Palomares, M.L.D.
Year: 1993.
Title: Trophic Relationship in the Fish Community of Lake Victoria, Kenya, with Emphasis on the Impact of Nile Perch (Lates niloticus)
Journal: In V. Christensen and D. Pauly (Eds)
Volume: Trophic Models of Aquatic Ecosystems
Pages: 144-152
Short Title: Trophic Relationship in the Fish Community of Lake Victoria, Kenya, with Emphasis on the Impact of Nile Perch (Lates niloticus)
Original Publication: ICLARM
Research Notes: Manila

Reference Type: Journal Article
Record Number: 488
Author: J. Moss

Year: 1989
Title: Hitching
Journal: News from Native California
Volume: 3
Issue: 3
Pages: 1
Start Page: 13
Date: July/August 1989
Short Title: Hitching
Notes: hitch; native american

-pg 13
    -people would collect enough hitch in 10 days (usual length of a run) to last a year
    -catch with both hands, don't club them because it ruins the meat
    -1989, over three days a class caught over 100 hitch

Reference Type: Journal Article
Record Number: 405
Author: P. B. Moyle, S.B. Mathews and N. Bonderson
Year: 1975
Title: Feeding habits of the Sacramento perch, Archoplites interruptus
Journal: Transactions of the American Fisheries Society
Volume: 103
Issue: 2
Pages: 399-402
Short Title: Feeding habits of the Sacramento perch, Archoplites interruptus
Call Number: call # - SH1.A5
Abstract: Examination of 510 stomachs of Sacramento perch from five localities showed that they feed primarily by picking insect larvae and snails from the bottom and aquatic plants or by capturing zooplankton, fish, or emerging insects in midwater. The diet varies with season and size of fish but no daily feeding rhythms were found. Similarity of their diet to that of bluegill indicates that Sacramento perch may have been eliminated from their native habitat through competitive interactions with bluegill.
Notes: fish

-pg 399
    -sacramento perch eat
        -larvae, snails, zooplankton, fish
-pg 400
    -diet varies with the season
    -may have been out competed by bluegill

Reference Type: Report
Record Number: 406

Author: P. B. Moyle, R.M. Yoshiyama, J.E. Williams and E.D. Wikramanayake
Year: 1995
Title: Fish Species of Special Concern in California
Series Editor: S. Edition
Series Title: Prepared for the State of California, The Resources Agency, Department of Fish and Game, Inland Fisheries Division Rancho Cordova.

Short Title: Fish Species of Special Concern in California
Call Number:call # - DOC-CA F660 .S63 1995 Shields UCD gov info stacks
Notes: fish

-HITCH
- Pg 153
- 1992-hitch run in mid February to may/june when streams dried
- Pg 154
- 1995-Major streams for hitch spawning (Kelsey>adobe>seigler>middle>scotts>manning>cole)
- 1993-spawning in ditches (wet year)
- 1990-excellent run in Kelsey
- 1991-weaker run but substantial numbers persist
- 1995-still common in lake
- 1992-good runs in seigler, Kelsey, adobe
- 1993-fewer in each creek bc they were more dispersed between more creeks
- Pg 155
- 1988-shad 70% of catch in LCVC seines
- Kelsey 6 barriers
  - Retention dam (2-3 miles from lake)
  - Further, a concrete bridge with culverts
  - Main street Kelseyville bridge
  - “drop structures” for gravel aggradations
- seigler barriers
  - exposed sewer pipe
  - one road crossing
- adobe has one barrier
-California Roach (Pg 158)
-Splittail
- Pg 164
- Early 1970’s-extinct from CL
-Sac Perch
- Pg 227
- Spawn May-June (Murphy 1948b)

Reference Type: Book
Record Number: 407
Author: P. B. Moyle
Year: 2002

Title: Inland fishes of California
Publisher: Berkeley : University of California Press, c2002
Edition: Rev. and expanded
Short Title: Inland fishes of California
Call Number: call # - QL628.C2 M68 2002 Shields UCD
Notes: fish; hitch

Reference Type: Book Section
Record Number: 564
Author: P. B. Moyle
Year: 2002
Title: Inland Fishes of California
Book Title: Inland Fishes of California

Place Published: Berkeley
Publisher: University of California Press-Berkeley
Pages: 49
Edition: Revised and Expanded
Short Title: Inland Fishes of California

Reference Type: Journal Article
Record Number: 408
Author: P. B. Moyle and N. J. Holzhauser
Year: 1978
Title: Effects of Introduction of Mississippi Silverside (Menidia-Audens) and Florida Largemouth Bass (Micropterus-Salmoides-Floridanus) on Feeding-Habits of Young-of-Year Largemouth Bass in Clear Lake, California
Journal: Transactions of the American Fisheries Society
Volume: 107
Issue: 4
Pages: 574-582
Type of Article: Article
Short Title: Effects of Introduction of Mississippi Silverside (Menidia-Audens) and Florida Largemouth Bass (Micropterus-Salmoides-Floridanus) on Feeding-Habits of Young-of-Year Largemouth Bass in Clear Lake, California
ISSN: 0002-8487
Accession Number: ISI:A1978FS34600010
Call Number: call # - SH1 .A5 Shields UCD
Abstract: Young-of-year largemouth bass in Clear Lake, California, switched from feeding largely on bluegill (Lepomis
macrochirus) to feeding largely on Mississippi silverside or on a mixture of prey species following the establishment of
the silverside in the lake in 1967. Choice of prey, however, was influenced by relative abundance of the prey, the

habitat occupied by the bass, time of day, and size of the bass. The bass usually switched to a predominantly fish diet at
a smaller size when silversides were the main prey than when bluegill or Sacramento blackfish (Orthodon microlepidotus) were the main prey. The success of the introduction of small numbers of Florida largemouth bass into the lake in 1969-1971 was demonstrated by the presence of significant numbers of bass that could be classified as intergrades between Florida and northern largemouth bass (M.s. salmoides), the subspecies originally introduced into Clear Lake. No meaningful differences in the feeding habits or average lengths of the intergrades and "pure" northern bass were found.
Notes: fish; hitch

-pg 574
-1967, silversides introduced
-bass switched from feeding mostly on bluegill to mostly silversides or a mixture
-choice of prey depends on abundance of prey, habitat occupied by bass, time of day, size of bass
-bass ate fish if prey was small enough
-1969-1971, florida largemouth bass introduction by department of fish and game (DFG), 1436 total
-1880, start of introductions
-originally 13 species
-now 14 introduced species (9 game fish)
-1950, golden shiner introduced as forage fish but failed to become abundant
-1948, commercial blackfish banned, 1954 reinstated
-by 1968, silversides most abundant in lake, is major prey of game fishes
-pg 575
-1975, 40,000 northern bass planted by resort owners
-table 1, percentage of fishes in seines by species
-pg 576
-results, more silversides than bluegills
-table 2, diet data by species (1948-1975)
-pg 579
-most feeding occurs during the day (diurnal)
-morning, zooplankton important to diet rest of day for fish
-ultimately they will eat what’s present (opportunistic)
-pg 581
-crappie growth rates lower after silverside introduction in 1st 2 years of life
-competition for zooplankton. Then they switch to silversides
URL: <Go to ISI>://A1978FS34600010

Reference Type: Journal Article
Record Number: 409
Author: P. B. Moyle and M. Massingill
Year: 1981

Title: Hybridization between Hitch, Lavinia-Exilicauda, and Sacramento Blackfish, Orthodon-Microlepidotus, in San Luis Reservoir, California
Journal: California Fish and Game
Volume: 67
Issue: 3
Pages: 196-198
Short Title: Hybridization between Hitch, Lavinia-Exilicauda, and Sacramento Blackfish, Orthodon-Microlepidotus, in San Luis Reservoir, California
ISSN: 0008-1078
Accession Number: ISI:A1981LX48400005
Call Number: call # - SK351 .C3 Shields UCD
Abstract: Introduction
Hybridization between species of Cyprinidae is'a comm~n occurrence in North America, but large numbers of any hybrid combination are rarely found (Schwartz 1972). Few hybrids have been found among the 10 species of native cyprinids found in the Sacramento-San joaquin drainage of central California. Alii known cases of hybridization involve the hitch, Lavinia exilicauda, which has been reported to hybridize with thicktail chub, Gila crassicauda (Miller 1963); California roach, Lavinia symmetricus 1 (Avise, Smith, and Ayala 1975); and Sacramento blackfish, Orthodon microlepidotus (Hopkirk 1973). While hitch- roach hybrids may be locally abundant, the other hybrids are known only from a few individuals. The hitch-blackfish hybrid combination has been previously represented by a single juvenile individual from Coyote Creek, Alameda County (Hopkirk 1973). This note reports the presence of adult hitch-blackfish hybrids in the catches of commercial blackfish fishermen from San Luis Reservoir, Merced County. The hybrids are common and distinct enough that they wer noticed by the fishermen and consequently called to our attention.
Notes: genetics; hitch; fish
notes

-not specifically clear lake
-pg 196
	-known hybridizations between hitch and thicktail chub, California roach (abundant), sacramento blackfish
	-hitch-blackfish found in February 1977
-pg 197
		-believe hybrids are sterile
	-due to accidental mixing of gametes
		-share similar spawning areas
URL: <Go to ISI>://A1981LX48400005

Reference Type: Journal Article
Record Number: 410
Author: P. B. Moyle and R. D. Nichols
Year: 1973
Title: Ecology of some native and introduced fishes of the Sierra Nevada foothills in Central California

Journal: Copeia
Issue: 3
Pages: 478-490
Short Title: Ecology of some native and introduced fishes of the Sierra Nevada foothills in Central California
Alternate Journal: Copeia
Accession Number: 4835001
Keywords: Freshwater
Q1 01381 General
Abstract: Collections were made of fishes occurring in the streams of the Sierra Nevada foothills in Central California. Environmental factors associated with each collection were recorded. Correlation analyses indicated which environmental factors affected the distribution of 11 of the 21 spp collected: Micropterus salmoides, Lepomis cyanellus, L. macrochirus, Gambusia affinis, Notemigonus crysoleucas, Lavinia exilicauda, Ptychocheilus grandis, Mylopharodon conocephalus, Hesperoleucus symmetricus, Catostomus occidentalis and Salmo gairdneri. The fishes were found to belong to 4 distinct fish associations, each found in a distinctive set of environmental conditions. The Rainbow Trout Association was found in the cold, clear permanent streams of the higher elevations. The California Beach Association was found in the small, warm Intermittent tributaries to the larger streams. The Native Cyprinid-Catostomid Association was found in the larger low elevation streams. The Introduced Fishes Association was found in low elevation intermittent streams that had been highly modified by man's activities.
Notes: hitch; fish; ONLINE
records keyed from 1974 ASFA printed journals
Journal Article
URL: http://www.jstor.org/stable/pdfplus/1443113.pdf
Author Address: Univ. California, Dep. Anim. Physiol. Davis, CA 95616 USA

Reference Type: Conference Paper
Record Number: 411
Author: P. B. R. M. Y. Moyle
Year: 1992
Title: Fishes, aquatic diversity management areas, & endangeres species: A plan to protect california’s native aquatic biota
Conference Name: The California policy seminar
Publisher: University of California, Berkeley, Ca
Date: 1992
Keywords: 222 p
Abstract: Sacramento splittail were once widely distributed throughout the Central Valley, to which the species is endemic. Splittail have disappeared from much of their native range because of the loss or alteration of lowland habitats following dam construction, water diversion, and agricultural development. They are now largely confined to the Sacramento-San Joaquin estuary. Population levels appear to have fluctuated strongly over the past two decades, with a general decline since 1986, the last year of strong recruitment. Recruitment of young to the population evidently is episodic and depends upon sufficient flows in the lower reaches of rivers during

spawning and subsequent high outflows through the Delta. Principal spawning areas and juvenile rearing habitat need to be identified and protected. Water management to maintain adequate water flows throughout the Delta at appropriate times will be necessary to promote successful population recruitment and, hence, preservation of the species.
Notes: fish

call # - QH76.5. C2 M6 1992

-not specifically clear lake
-pg 63
    -splittail endemic to central valley
    -now confined to sacramento-san Joaquin estuary
    -general decline in 1986
    -description
    -taxonomic relationships
-pg 64
    -early 1970's P. ciscoides gone from clear lake
    -life history
    -habitat requirements
-pg 65
    -historic and current distribution and abundance
-pg 66
    -nature and degree of threat

Reference Type: Journal Article
Record Number: 413
Author: G. I. Murphy
Year: 1948
Title: A contribution to the life history of the Sacramento perch (Archoplites interruptus) in Clear Lake, Lake County, California
Journal: California Fish and Game
Volume: 34
Issue: (3)
Pages: 93-100
Date: 1948
Type of Article: Article
Short Title: A contribution to the life history of the Sacramento perch (Archoplites interruptus) in Clear Lake, Lake County, California
Accession Number: BIOSIS:PREV19492300000237
Call Number: call # - SK351 .C3 Shields UCD
Abstract: The Sacramento perch, a primitive centrarchid, is restricted to the Sacramento-San Joaquin and allied drainages. At the present time its numbers are greatly reduced. A brief study of the life history of this fish was made in 1947 The principal departure from the life histories of other members of the family Centrarchidae lies in the spawning behavior. Spawning Sacramento perch aggregate into schools and deposit their eggs on plants, bare rock, and algae covered rock

without prior nest-building activity. Subsequent guarding of the eggs is probably non-existent, or at best, weakly developed, with the exception of territoriality of the males during spawning. It is possible that the failure of this fish to guard its exposed eggs is responsible for its marked reduction subsequent to the introduction of several possible "egg eating" spp. into California waters. || ABSTRACT AUTHORS: G. I. Murphy
Notes: fish

-pg 93
    -scarce
    -reduced numbers since introductions
    -young in littoral zone, likely feed on zooplankton and insects
-pg 94
    -spawning
        -mid june in lake
        -1-2 feet water at 75 F
        -eggs adhesed on rock with algae and plants
-pg 97
    -growth at 2 inches leave shore for open water
-pg 99
    -no nest building, no parental care
    -decline possible due to egg predation by introduced species (bluegill)
URL: <Go to ISI>://BIOSIS:PREV19492300000237

Reference Type: Journal Article
Record Number: 412
Author: G. I. Murphy
Year: 1948
Title: Notes on the biology of the Sacramento hitch (Lavinia e exilicauda) of Clear Lake, Lake County, California
Journal: California Fish and Game
Volume: 34
Issue: (3)
Pages: 101-110
Date: 1948
Type of Article: Article
Short Title: Notes on the biology of the Sacramento hitch (Lavinia e exilicauda) of Clear Lake, Lake County, California
Accession Number: BIOSIS:PREV19492300002843
Call Number: call # - SK351 .C3 Shields UCD
Abstract: The Sacramento hitch (Lavinia exilicauda) is restricted to the Sacramento-San Joaquin drainage. A brief study of its life history was made in 1947 Hitch deposit non-adhesive eggs over gravel riffles of slight gradient in the streams tributary to Clear Lake during Mar. and Apr/ The eggs lodge in crevices and hatch in about 10 days at 62 F. At a length of 2.5 cm. the young migrate downstream to the lake. They range the littoral zone until Aug. when they move into off-shore waters. Their principal food is plankton. Males first spawn at the end of their 1st yr. at a

length of 10 cm.; females first spawn at the end of their 3d year of life at a length of 25 cm. Variations in rainfall as reflected in the condition of the spawning streams cause marked fluctuations in the success of hitch spawning. Under certain conditions hitch may be a valuable forage fish for warm water game fish. || ABSTRACT AUTHORS: G. I. Murphy
Notes: hitch

-rutter (1903), snyder (1913), miller (1945)
-pg 101
    -indigenous to sacramento-san Joaquin drainage basin
    -ecology
        -sluggish streams and sloughs. Sometimes in lakes and ponds
        -needs gravel, bottomed streams for spawning
-pg 102
    -good forage fish due to large numbers
    -few streams to spawn means easy to control
    -feeding, on midges (gnat), plankton (adults)
    -spawning
        -high fecundity
        -late march, april they move upstream a few miles
            -slight gradient, gravel
        -runs in decline
        -middle, clover, scotts (april 30, 1940)
        -spawning description
-pg 103
            -eggs are exposed
-pg 104
    -eggs lodge into crack (abundant)
    -seem to prefer certain stream flows
-pg 105
    -62 F, 10 days, 20 days to become free swimming
    -1946 and 1947, almost none spawned due to low stream flow
        -artificial freshet created, fish began to spawn
    -quickly dropping streams jeopardizes fish (Kelsey)
-pg 106
    -erosion, dredging hurt hitch
    -post larval
        -first week of june they're in clear lake, stay on shore until 2 inches long
-pg 109
    -not much successful spawning since 1943-1944
URL: <Go to ISI>://BIOSIS:PREV19492300002843

Reference Type: Journal Article
Record Number: 414
Author: G. I. Murphy
Year: 1949

Title: The food of young largemouth black bass (Micropterus salmoides) in Clear Lake, California
Journal: California Fish and Game
Volume: 35
Issue: (3)
Pages: 159-163
Date: 1949
Type of Article: Article
Short Title: The food of young largemouth black bass (Micropterus salmoides) in Clear Lake, California
Accession Number: BIOSIS:PREV19502400017443
Call Number: call # - SK351 .C3 Shields UCD
Abstract: Inspection of the stomachs of 264 largemouth bass ranging from 1.3 to 4.7 inches in fork length and collected in Aug. 10-12 showed that plankton and small insects were the chief foods of bass below 1.8 inches; insects for those between 1.8 and 2.8 inches; and fish almost exclusively for specimens over 2.8 inches. Greaser blackfish (Orthodon microlepidotus) were the most important forage fish, although bluegill (Lepomis macrochirus) were abundant, and corixids were the most important insect food. No evidence of inter-year-class predation in bass of the year (age 0) was detected. || ABSTRACT AUTHORS: G. F. Weisel
Notes: fish

-seined august 10-12, 1948
-pg 160
    -most prominent fish in area
        -largemouth bass, bluegill, sculpin, blackfish
        -lots of plankton and insects
    -what bass eat
        -blackfish taken most often, bluegill, sculpin, carp in 3 inch bass
        -water fleas, water boatmen, scuds, etc in 1.8-2.8 inch bass
        -plankton
URL: <Go to ISI>://BIOSIS:PREV19502400017443
Author Address: California Div. Fish and Game, San Francisco

Reference Type: Journal Article
Record Number: 415
Author: G. I. Murphy
Year: 1950
Title: The life history of the greaser blackfish (Orthodon microlepidotus) of Clear Lake, Lake County, California
Journal: California Fish and Game
Volume: 36
Issue: (2)
Pages: 119-133
Date: 1950
Type of Article: Article

Short Title: The life history of the greaser blackfish (Orthodon microlepidotus) of Clear Lake, Lake County, California
Accession Number: BIOSIS:PREV19502400031456
Call Number: call # - SK351 .C3 Shields UCD
Abstract: This cyprinid is native to the Sacramento-San Joaquin and Pajaro River drainage systems. Specimens from 1.6 to 3.0 in. in length appear to feed selectively on animal plankton, small midges, algae, etc., the selection varying from individual to individual. Fish over 3 in. long feed on plant and animal plankton, bottom detritus, and diatoms. Foods are extracted by brushlike branching gill rakers. Spawning takes place in April, May, and June. The eggs are adhesive and are placed on plant material at a depth of about 3 ft. A 17-in. female contained approx. 350,000 maturing eggs. The majority first spawn at the end of their 3d year and most fish die after their 2d spawning. Young blackfish occupy the littoral zone during their 1st summer. After their 1st year they leave the shore and do not return until they spawn. At 1 yr., blackfish are 4.3 in. long; at 2, males are 10 in. long, females 10.2; at 3, males are 13.6 in. long, females 14.3; at 4, males are 15.4 in. long, females 16.3; at 5, females are 17.2 in. long. The blackfish may prove useful as a forage fish in other waters, particularly fluctuating reservoirs. || ABSTRACT
AUTHORS: G. I. Murphy
Notes: fish; clear lake

-pg 119
    -natively restricted to sacramento-san Joaquin and pajaro river systems
-pg 120
    -lowland areas, shallow lakes and sluggish sloughs
    -lake spawner
    -good forage species
-pg 124
    -eat plankton and zooplankton, bottom materials (dietrus)
    -spawning
        -mid april to june, 3 feet of water
        -adhesive eggs, hatch 14 days at 58 F
        -temperature 39-72 F
-pg 125
        -high fecundity
        -thought to die after 2nd spawn
-pg 126
    -young occupy littoral zone (april and may)
    -young occupy shore during 1st summer
-pg 131
    -grows slowly in 1st year, grows most in 2nd, grows considerably in 3rd, little after 1st spawning
    -females grow faster in 1st year
    - 1948, take is prohibited
    -table of take per year
-pg 132
    -competition for game fish space
    -forage fish in 1st year

URL: <Go to ISI>://BIOSIS:PREV19502400031456
Author Address: California Div. Fish and Game, San Francisco

Reference Type: Journal Article
Record Number: 416
Author: G. I. Murphy
Year: 1951
Title: The fishery of Clear Lake. Lake county. California
Journal: California Fish and Game
Volume: 37
Issue: (4)
Pages: 439-484
Date: 1951
Type of Article: Article
Short Title: The fishery of Clear Lake. Lake county. California
Accession Number: BIOSIS:PREV19522600011059
Call Number: call # - SK351 .C3 Shields UCD
Abstract: The introduction of exotic fish, land cultivation, and intensified irrigation have changed considerably the fish population of Clear Lake. The stream-spawning cyprinids, which serve as forage fish, are greatly depleted, leading to increased predation on young game fish. There is now a poor production of fish per acre, although the growth of game fish is good. To increase the supply of forage fish, commercial fishing for the greaser blackfish was stopped and a lake-spawning shiner (Notemigonus crysoleucus) introduced. Angling has had no noticeable effect on the fish population except to reduce the number of old fish. || ABSTRACT AUTHORS: G. F. Weisel
Notes: fish; clear lake; settlement

-pg 440
    -list of fish in clear lake
-pg 441
    - about 40,000 acres
-pg 442-443
    -map of clear lake with months of tributaries
    -description of lake
    -1915, dam constructed for water storage
    -max storage is 319,000 acre-feet, lake level is 7.56 feet
    -three main tributaries, middle, scott, Kelsey, all permanent water. There are also manning, cole, adobe (south shore), Morrison, schindler (northeast shore). In higher reaches
-pg 444
    -limnology, fish growing season is 10 months because of temperatures
    -no true thermocline
    -temperature 35-85 F
-pg 448
    -volcano releases alkaline metals into the lake
    -2 borax lakes, many soda springs

-possible fish kills
-low water clarity (1-2 feet)
-pg 449
-10,000 residents
-problems with erosion
-most caught: largemouth black bass, black crappie, bluegill, sacramento perch, white catfish, brown bullhead
-occasional trout, squawfish
-limited carp
-steelhead once ascended cache creek and spawned in tributaries. Dam blocks now
-squawfish were abundant (practically extinct now)
-sacramento perch scarce and trout
-1880 captain floyd's carp got into clear lake
-pg 450
-1872, California fish commission (CFC) released 25,000 whitefish, not successful
-1880 and 1923, white catfish
-1880, brown bullhead
-1888, largemouth black bass, 160 by 1910 bass fishing was good in clear lake
-1909-1910, black crappie and bluegill (green sunfish?)
-pg 451
-1925, mosquitofish, 4,000
-table of introductions
-pg 452-454
-some information on catch in clear lake
-pg 454
-catch
-20 fish per acre or 20 pounds per acre (low)
-density of fish population is low
-rate of harvest is low
-growth rate is high
-pg 455
-catch data, department of fish and game (DFG), bureau of patrol, bureau of fish conservation, Calhoun (1950)
-pg 457
-table, estimate clear lake catch in pounds
-pg 458
-table, known commercial catch by fish
-pg 459
-table, sport catch by fish
-pg 460
-table, percentage of composition of sport catch
-pg 462
-table, monthly sport catch by fish
-pg 467
-drop in fishing quality after 1944
-white catfish

-70% of catch, 3-5 years old
-spawn, june and early july
-10-11 inches long

-pg 471

-brown bullhead
-2% total catch, population is low
-11-12 inches long

-largemouth black bass
-up to 21.4 inches in length
-10% of catch
-population not overfished

-pg 474

-bluegill
-8 inches in length (4th summer)
-spawn in lake at end of first year

-pg 475

-sacramento perch
-<1% of catch
-was abundant before introductions
-doesn't guard eggs
-14 inches is longest (mean is 9 inches)
-spawns at end of first summer

-pg 476

-black crappie
-grow rapidly in second year
-die in 5th year (13.8 inches long) 9-13 inches
-not over exploited

-pg 478

-"rough" fish abundant until 1942-1943 (hitch, splittail, blackfish, suckers, carp, squawfish)

-1946-1950, blackfish, carp, suckers in fair numbers
-hitch are scarce
-squawfish are rare
-splittail are few
-decline in forage fish affects fishery
-large runs no longer occur (picture on 479)
-bluegill took niche

-pg 480

-reasons for decline

-pg 482

-mention of Tde into lake
-angling, little affect in fish populations

URL: <Go to ISI>://BIOSIS:PREV19522600011059

Reference Type: Journal Article

Record Number: 417
Author: C. A. Myrick and J. J. Cech
Year: 2000
Title: Swimming performances of four California stream fishes: temperature effects
Journal: Environmental Biology of Fishes
Volume: 58
Issue: 3
Pages: 289-295
Date: Jul
Short Title: Swimming performances of four California stream fishes: temperature effects
ISSN: 0378-1909
Accession Number: ISI:000087591700003
Keywords: Cyprinidae, Catostomidae, hardhead, Mylopharodon conocephalus, hitch, Lavinia exilicauda, Sacramento pikeminnow, Ptychocheilus grandis, Sacramento sucker, Catostomus occidentalis, critical swimming velocity, water diversion
Abstract: The critical swimming velocity (Ucrit) of four California stream fishes, hardhead, Mylopharodon conocephalus, hitch, Lavinia exilicauda, Sacramento pikeminnow, Ptychocheilus grandis, and Sacramento sucker, Catostomus occidentalis was measured at 10, 15, and 20
C. Hardhead, Sacramento sucker, and Sacramento pikeminnow swimming performances tended to be lowest at 10
C, higher at 15
C, and then decreased or remained constant at 20
C. Hitch swimming performance was lower at 10
C than at 20
C. There were no significant differences among species at 10 or 15
C, although pikeminnow and hitch were ca. 20% slower than hardhead or sucker. At 20
C hardhead, Sacramento sucker, and Sacramento pikeminnow had remarkably similar Ucrit but hitch were significantly (by 11%) faster.We recommend that water diversion approach velocities should not exceed 0.3 ms−1 for hitch (20–30 cm total length) and 0.4 ms−1 for hardhead, Sacramento pikeminnow, and Sacramento sucker (20–30 cm TL).
Notes: ONLINE; hitch; fish

-not specifically clear lake
-sacramento-san Joaquin system
-pg 289
    -hardhead, hitch, sacramento Pikeminnow and sacramento sucker
    -hitch, lower than 10 C than at 20 C
    -hardhead, sacramento Pikeminnow, sacramento sucker, lowest at 10 C, higher at 15 C, lower or constant at 20 C
    -at 20 C hitch are fastest
-pg 291
    -table, native fishes (mean length, weight, critical swimming velocities. Based on temperature)
    -hardhead, hitch, sacramento Pikeminnow, swim steadily over tested speeds
-pg 293
    -hitch, impressive swimming at 20 C but could be due to it being smaller than 10 C hitch

-water diversion velocity shouldn't exceed .3 meters per second for hitch
URL: <Go to ISI>://000087591700003
http://springerlink.metapress.com/content/h171444802447537/fulltext.pdf

Reference Type: Journal Article
Record Number: 418
Author: G. Neale
Year: 1931
Title: Sacramento Perch
Spiny-rayed fresh water game fishes of California inland waters
Journal: California Fish and Game
Volume: 17
Issue: 4
Pages: 409-411
Short Title: Sacramento Perch
Spiny-rayed fresh water game fishes of California inland waters
Accession Number: OCLC: 11507878 Provider: OCLC
Call Number: call # - SK.351.C3 Shields UCD

LC: SH681
Keywords: Fishing.
Fresh-water fishing -- California.
Notes: fish
Reprint from California Fish and Game, v. 17, no. 1.
by George Neale.
Book

-pg 409
-only native freshwater perch west of the rockies
-suffer predation from introduced fish

Reference Type: Book
Record Number: 479
Author: J. S. Nelson, Edwin J. Crosmman, Hector Espinosa-Perez, Lloyd T. Findley, Carter R. Gilbert, Robert N. Lea and James D. Williams
Year: 2004
Title: Common and Scientific Names of Fishes from the United States, Canada, and Mexico
Place Published: Bethesda, Maryland
Publisher: American Fisheries Society
Number of Pages: 386
Edition: 6
Short Title: Common and Scientific Names of Fishes from the United States, Canada, and Mexico
ISBN: 1-888569-61-1

Call Number: call # - QL 618. C66 2004 Shields UCD
Notes: fish taxonomy

Reference Type: Newspaper Article
Record Number: 419
Reporter: B. Norrell
Year: 2006
Title: Pesticides don't know borders
Newspaper: Indian Country Today
Pages: B1
Edition: 26
Short Title: Pesticides don't know borders
ISSN: 10665501
Keywords: Pesticides
Native North Americans
Health risk assessment
Health hazards
Human exposure
Abstract: "The Yaqui farmers are forced to work as exploited laborers on their own land. They are provided virtually no information about the chemicals they apply," [Margaret Reeves] told Indian Country Today. Attracting about 300 people, the workshop was hosted by the North-South Indigenous Network Against Pesticides, a project of the International Indian Treaty Council. It was held in coordination with the Traditional Yaqui Authorities of Potam, Torim, Vicam, Rahum and Huirivis Pueblos and the local Yaqui organization, "Yaquis United for Mother Earth." "Three children were at the conference as testimony to the cruel and avoidable injustice wielded on the Yaqui people by those who own and control the local systems of agricultural production, by the chemical companies and by the negligent Mexican regulatory authorities," she said.
Notes: native american; chemistry; html online
URL:
http://proquest.umi.com/pqdweb?did=1097294761&Fmt=7&clientId=1567&RQT=309&VName=PQD

Reference Type: Journal Article
Record Number: 544
Author: D. A. Osleger, R. A. Zierenberg, T. H. Suchanek, J. S. Stoner, S. Morgan and D. P. Adam
Year: 2008
Title: CLEAR LAKE SEDIMENTS: ANTHROPOGENIC CHANGES IN PHYSICAL SEDIMENTOLOGY AND MAGNETIC RESPONSE
Journal: Ecological Applications
Volume: 18
Issue: sp8
Pages: A239-A256

Short Title: CLEAR LAKE SEDIMENTS: ANTHROPOGENIC CHANGES IN PHYSICAL SEDIMENTOLOGY AND MAGNETIC RESPONSE
DOI: doi:10.1890/06-1469.1
URL: http://www.esajournals.org/doi/abs/10.1890/06-1469.1

Reference Type: Journal Article
Record Number: 528
Author: S. O. Palmarsson and S. G. Schladow
Year: 2008
Title: EXCHANGE FLOW IN A SHALLOW LAKE EMBAYMENT
Journal: Ecological Applications
Volume: 18
Issue: sp8
Pages: A89-A106
Short Title: EXCHANGE FLOW IN A SHALLOW LAKE EMBAYMENT
DOI: doi:10.1890/06-1618.1
URL: http://www.esajournals.org/doi/abs/10.1890/06-1618.1

Reference Type: Unpublished Work
Record Number: 490
Author: J. L. J. Parker
Year: 1981
Title of Work: Osteoanalysis of Human Remains Recovered from Archaeological Sites CA-LAK-28 and CA-LAK-380
Institution: Dept. of Anthropology, U.C. Davis
Type of Work: Research Paper
Short Title: Osteoanalysis of Human Remains Recovered from Archaeological Sites CA-LAK-28 and CA-LAK-380
DOI: On file with Dept. of Anthropology, U.C. Davis
Abstract: need abstract
Notes: native american

Reference Type: Thesis
Record Number: 420
Author: J. W. Parker
Year: 1994
Title: Dots on a map: Using cultural resource management data to reconstruct prehistoric settlement patterns in the Clear Lake Basin, California
Place Published: United States -- California
University: University of California, Los Angeles
Thesis Type: Ph.D.
Short Title: Dots on a map: Using cultural resource management data to reconstruct prehistoric settlement patterns in the Clear Lake Basin, California

Accession Number: 9420535
Keywords: Archaeology
Cultural anthropology
Geography
Abstract: Since the advent of environmental land use planning laws in the 1970's, local, state, and federal agencies have been requiring the identification and protection of archaeological resources. This cultural resource management (CRM) activity has generated many volumes of reports listing properties inspected, prehistoric site locations, and other information needed to serve land use planning needs. This dissertation attempts to understand the type of data contained in these studies and develops a suite of analytical techniques which can utilize this information to generate meaningful inferences about prehistoric cultural and natural processes. The data used in the current study comes from the Clear Lake Basin, located in California's North Coast Range. The least cost model of subsistence economics is applied to ethnographic, paleo-environmental, and archaeological data in an effort to develop a hypothetical scenario outlining the periods and expected economic changes which occurred in the region. Archaeological expectations concerning settlement pattern, technology, and population for each period are developed. The CRM data from the Clear Lake Basin is studied using the concepts of constrained exploratory data analysis, remnant settlement patterns, and persistent place. A combination of obsidian hydration and diagnostic artifacts is used to place sites within a chronological framework. Patterns derived from the exploratory data analysis are then compared with the expectations which were derived based on previously existing data and the least cost model. Through the use of site distribution maps, changes in site area and site size over time, the current analysis succeeds in identifying the earliest evidence of settlement in the Clear Lake Basin, outlines periods of major economic change, and suggests various motivating factors which may have led to this change. The following aspects of Clear Lake Basin and surrounding regional prehistory are entertained: (1) Regional resource areas which were in use during various periods throughout prehistory; (2) Major technological/economic changes, when they occurred, and the circumstances which may have led to their inception, and; (3) The demographic history of the Clear Lake Basin (Pomo) inhabitants and how it effected the prehistory of surrounding regions.
Notes: settlement; ONLINE

- xvi
- 1800’s-salvador Vallejo
- Pg 31
- CL geology: existence at least 400,000 (Sims 1976)
- Pg 33
- Fig 2.2-CL basin and environs
- Pg 35
- Pollen records show shift from year round wetness to hot, dry summers and cool, wet winters (Adam and West 1983)
- Pg 36
- Today’s temperature-seldom below freezing, rarely above 38C
- 1820-european contact with pomo (eastern and southeastern) (McLendon 1977)
- Pg 37
- 1835-northern pomo move into the basin (Barrett 1908)
- 1850-wappo move into basin (Sawyer 1978)

- southeastern pomo area thought to be origin of pomo speakers (Halpern 1964)
- Pg 38
- Pomo inhabitants 6,000-8,000 BP (Parker and James 1981)
- Pg 41
- Early settlement at borax lake by pomo
- Contemporary conditions:
  - Agriculture and horticulture=80% of basins economy
- Pg 46
- Adam and Robinson 1988 (pollen records via cores)
  - Increase in grasses between 3,700 and 8,000 BP
  - Increase in rhamnaceae 4,000 and 7,000 BP
  - Increase in oak at 7,000 BP
  - Decrease in pine, redwood, cedar, cypress, yew, nutmeg at 7,000 BP
- Pg 47
- Altithermal lasted between 3,500 and 7,500 BP-shift in plant life
- Pg 48
- Settlement around areas of "highest density of energy efficient resources" (Jones and Hays 1993)
  - Eg water (Redman 1980)-most productive to least
    - Freshwater swamps/marshes>deciduous forests>open lakes and streams>ice/deserts (Wittaker and Likens 1975)
- Pg 50
- Likely settled around areas of high productivity
- 8,000-4,000 BP
  - milling slabs and manos (seed grinding technology) (White 1984)
  - more seeds from climate=increase in population
- Pg 52
- 4,000-3,000 BP-pomo speaking people spread westward from CL basin
- Pg 53
- 3,000-2,000 BP (contemporary climate)-diversification of resources
- Pg 54
- 2,000-1820's-trade seen between regions
- Pg 57
- 1832-33-american trappers pass though area with hudsons bay company (McLendon and Lowy 1978)
- Pg 58
- 1841-vallejo sent men to round up Indians to work on ranch
- natives continued to practice cultural ways until 1870's
- Pg 64
- Table 4.1-eat fish most often (November-august)
- Pg 66
- Lived in basin depending on time of year and resources needed (fig 4.1)
  - January-july-lakeshore
  - July-decemeber-upland
- Pg 69
- Fall-upper lake valley (gathering acorns, etc), September-october (Kniffen 1939)

- April and may-water camps for fishing
- Main village within walking distance of CL for the rest of the year
- Pg 83
- 1st colonization of CL basin during paleo-indian period
- Pg 116
- 31% of sites in study were within 1km of shore, showing lakes importance
- Pg 119
- Sites ideally would be close to lake to utilize resources
- Pg 122
- Fig 6.4-all sites and zone boundaries-settlement patterns
- Pg 124
- Fig 6.6-map with language, dialect, village community boundaries
- Pg 192
- Temperature gradient fig 8.11-three gradients of 1C that shifted at CL
- Pg 198
- >11,000 BP, no sign of settlement
- Pg 202
- 6,000-11,000 BP-scarce settlement along southeastern portion of lake. No upland sites (Knoxville zone)
- Pg 207
- 5,000-6,000 BP- entire shoreline utilized
- Pg 209
- 3,000-5,000 BP-use of uplands evident
  - Indian valley, upper Kelsey creek, upper squaw/sulphur creek, upper putah creek
- Pg 212
- Spatial pattering alonf lake is evident
  - Anderson marsh, CL oaks, north shore (Nice), big valley areas, Lucerne, upper lake
- Pg 223
- Population within 8km, stable population, dramatic increase ~6,000 BP
- Population beyond 8km, stable population, gradual increase ~8,000 BP
- Pg 225
- Cache creek drainage, stable population, dramatic increase between 6,000 and 7,000 BP
  - Upland, gradual increase, gains momentum in 3,000 BP
- Pg 228
- Upland outside cache creek drainage, gradual increase, with dramatic growth ~ 3,000 BP
- Pg 231
- Lake basin, 6,000 BP dramatic increase, 2,000 BP major decrease, then major increase
- Uplands, dramatic increase 3,000BP, decrease 2,000 BP
- Pg 255
- 10,000 BP earliest evidence of CL basin use (paleo-indian period)
- Pg 257
- Earliest settlement, borax lake, CL oaks, cache creek confluence zones (indicates they came from the east-keeping ties to parent communities)
- Pg 259
- Expansion of population 9,000 BP
- Stable population confined mostly to southeast

- Some sites in putah creek drainage but not much in uplands
- Pg 261
- 8,000+ BP stable population in southeast
- Pg 262
- 8,000-4,000 BP
  - by 6,000 BP entire shoreline utilized
  - 1st uplands use (upper cole, Kelsey creek) increase use of Knoxville zone
- Pg 266
- 3,500-4,000 BP (middle archaic)
  - upland use south of CL basin (squaw, sulphur creek, putah creek)
  - possibly cause of expansion of culture south and west
- Pg 269
- ~3,500 BP volcanic ash (last eruption?) (White 1984)
- Pg 270
- 2,000-3,000 BP
  - population decline
  - regional cooperation
- Pg 273
- 2,000-174 BP
  - no changes in settlement
  - major population increase

URL:
http://proquest.umi.com/pqdweb?did=746564451&Fmt=7&clientId=1567&RQT=309&VName=PQD
http://proquest.umi.com/pqdweb?vinst=PROD&fmt=6&startpage=-1&clientid=1567&vname=PQD&RQT=309&did=746564451&scaling=FULL&vtype=PQD&rqt=309&TS=1216075678&clientId=1567

Reference Type: Journal Article
Record Number: 565
Author: D. Pauly, Christensen V, Walters C
Year: 2000
Title: Ecopath, Ecosim, and Ecospace as tools for evaluating ecosystem impact of fisheries
Journal: ICES Journal of Marine Science
Volume: 57
Pages: 697-706
Short Title: Ecopath, Ecosim, and Ecospace as tools for evaluating ecosystem impact of fisheries
Alternate Journal: ICES J.Mar.Sci.
Accession Number: 324
Abstract: Since its development in the early 1980s, the mass-balance approach incorporated in the Ecopath software has been widely used for constructing food-web models of marine and other ecosystems. Generalizations on the structure and functioning of such ecosystems, relevant to the issue of fisheries impacts, have been developed and these have affected the evolution of the Ecopath approach. Thus, the description of the average state of an ecosystem, using Ecopath proper, now serves to parametrize systems of coupled difference and differential equations,

which are used to depict changes in biomasses and trophic interactions in time (Ecosim) and space (Ecospace). The outcomes of these simulations can then be used to modify the initial parametrization, and the simulations are rerun until external validation is achieved. This reconceptualization of the Ecopath approach as an iterative process, which helps address issues of structural uncertainty, does not increase its input requirements markedly. Rather, it has become possible, through a Bayesian resampling routine, to explicitly consider the numerical uncertainty associated with these inputs. We present the key features of the reconceptualized approach, and two indices based thereon for quantifying the ecosystem impacts of fisheries. We conclude with a brief discussion of its limitations, both present and intrinsic.
URL: http://www.ecopath.org/
Access Date: 8/24/2011

Reference Type: Journal Article
Record Number: 421
Author: R. J. Pelzman
Year: 1980
Title: Impact of Florida largemouth bass, Micropterus salmoides floridanus , introductions at selected northern California waters with a discussion of the use of meristics for detecting introgression and for classifying individual fish of intergraded populations
Journal: California Fish and Game
Volume: 66
Issue: 3
Pages: 133-162
Short Title: Impact of Florida largemouth bass, Micropterus salmoides floridanus , introductions at selected northern California waters with a discussion of the use of meristics for detecting introgression and for classifying individual fish of intergraded populations
Accession Number: 06365847
Call Number: call # - SK351 .C3 Shields UCD
Keywords: introduced species; population genetics; Micropterus salmoides floridanus; USA, California stock identification; freshwater fish; Pisces; Centrarchidae Freshwater
Q1 01582 Fish culture; Q1 01443 Population genetics; Q1 01604 Stock assessment and management
Abstract: M. salmoides floridanus had a notable genetic impact following their introduction into five northern California waters containing northern largemouth bass, M. s. salmoides , populations: Folsom Lake, New Hogan Reservoir, Lake Amador, Lake Isabella, and Clear Lake. Information from this study and from a similar study at southern California waters indicates that introductions of Florida bass into northern bass populations have generally been beneficial through reducing high exploitation rates, increasing the mean size of bass in the catch, and providing exceptional fishing for trophy-sized bass at some waters. Results of this study indicate that current largemouth bass populations possess a wider spectrum of performance capabilities through the inclusion of desirable traits attributed to Florida bass. This is particularly advantageous in the reservoir setting where heavy angling pressure, water level manipulation, competition of prey species with small bass, and other factors work against the maintenance of a bass population.
Notes: genetics; fish; clear lake

Journal Article

-pg 133
    -introduction of florida bass has
        -reduced high exploitation rates, increased mean size of bass, good fishing
-pg 134
    -april 1969, florida bass introduced into clear lake
-pg 135
    -may 1974, moratorium on stocking in northern California
-pg 142
    -florida bass had impact on bass genetics in each lake
-pg 146
    -fig 11
        -april 1969, 136 planted
        -may 1970, 242 planted
        -october 1971, 58 planted
        -with supplemental stocking of northern bass
-pg 147
    -fig 12, presence of bass via genetics
Author Address: Inland Fish. Branch, California Dep. Fish and Game, Rancho Cordova, CA 95670, USA

Reference Type: Report
Record Number: 566
Author: H. E. Pintler
Year: 1957
Title: A Summary of the 1956 Clear Lake Fishery, Lake County, California
Place Published: Region III
Institution: California Department of Fish and Game
Department/Division: I. Fisheries
Short Title: A Summary of the 1956 Clear Lake Fishery, Lake County, California
Report Number: 57-28
Abstract: Owner of Oaks Boat House, Mr. Nick Miholovich, recorded boat catches of anglers using his facilities. Only source of sport catch for 1956. Data has value for comparative purposes. Highest yields sport catch included Bluegill, White catfish, 11.5% Largemouth bass.
Research Notes: photocopied from the California Department of Fish and Game. Assisted by Jay Rowan and DFG Volunteer Gary Sypnicki.
North Central Regional Office
1701 Nimbus Road
Rancho Cordova, CA 95670
Access Date: 7/7/2011

Reference Type: Book
Record Number: 422

Author: D. G. K. P. F. Price
Year: 1976
Title: Inventory of fishery resources in the Kelsey Creek Drainage : the Geysers Known Geothermal Resources Area fishery investigations
Place Published: [Sacramento]
Publisher: Pacific Gas and Electric Co., Dept. of Engineering Research
Number of Volumes: 1
Number of Pages: (various foliations)
Short Title: Inventory of fishery resources in the Kelsey Creek Drainage : the Geysers Known Geothermal Resources Area fishery investigations
Accession Number: OCLC: 34293447 Provider: OCLC
Call Number: call # - SH222.C2 P75 1976 Regional Coll. 3rd floor Sonoma State Lib LIB USE ONLY

LC: SH222.C2
Keywords: Fishery management -- California -- Kelsey Creek.
Fish populations -- California -- Kelsey Creek.
Geysers, The (Calif.)
Kelsey Creek (Calif.)
Abstract: need abstract
Notes: tributary; fish
Pacific Gas and Electric Company.; Dept. of Engineering Research.
ill., map ; 28 cm.
Cover title./ "Report issued Feb. 26 1976."/ "Report 7784.5-76."/ Includes bibliographical references (leaves 72-73.).
Geysers Known Geothermal Resources Area fishery investigations
prepared by D.G. Price, P.F. Kubicek.
Book

Reference Type: Book
Record Number: 567
Author: L. Puckett
Year: 1972
Title: Fishery Survey at Clear Lake, Lake County, California
Place Published: Region III
Publisher: California Department of Fish and Game

Date: June 15, 1972
Short Title: Fishery Survey at Clear Lake, Lake County, California
Abstract: 16 species captured during 1972 survey including: Largemouth bass, bluegill, green sunfish, crappie, catfishes, blackfish, goldfish, hitch, carp, silversides, sculpins, tule perch, and one splittail. Commercial fishing for blackfish and carp has been to sustain numbers and large sizes of these species. Largemouth bass population is quite low. Young-of-year probably compete for same food items.

Research Notes: photocopied from the California Department of Fish and Game. Assisted by Jay Rowan and DFG Volunteer Gary Sypnicki.
North Central Regional Office
1701 Nimbus Road
Rancho Cordova, CA 95670
Access Date: 7/7/2011

Reference Type: Report
Record Number: 423
Author: L. K. Puckett
Year: 1972
Title: Estimated angler use and success at Clear Lake, Lake County, California in 1969
Series Title: Environmental services administrative report ;; number 72-1; Variation: Administrative report (California. Dept. of Fish and Game. Environmental Services Branch) ;; 72-1.
Institution: [Sacramento?] :
Pages: 26 p.
Short Title: Estimated angler use and success at Clear Lake, Lake County, California in 1969
Accession Number: OCLC: 34449032 Provider: OCLC
Call Number:call # - TD181.C3 W3 no.72-1 Shields UCD
Abstract: Fishing has long been a principal attraction at Clear Lake(Murphy, 1951; Hinton, 1971). Today Clear Lake supports one of the most important warmwater fisheries in California. Historically, the sport fishery was comprised of rainbow trout and Sacramento perch. Changes in the watershed however, have created a habitat suitable only for warmwater species, such as bass, catfish, and crappies.

Clear Lake is being considered as a route for exporting water, developed in the Eel River Basin, to southern conveyance systems. This could result in a diversion through the lake of over 1 million acre-feet per year. In order to evaluate the impact of this proposed routing on the Clear Lake sports fishery, it was necessary to gather information on current angler use and sport fish yield. These data will be used to demonstrate the value of the Clear Lake sports fishery and to provide a base for comparing changes in the fishery which may result from the diversion of water through the lake.

The objectives of this study were (1) to estimate the existing level and seasonal trends of use, and to determine the quality, pattern, and yield of the sport fishery; and (2) to provide basic data needed for developing management plans for the lake.
Notes: fish; clear lake; settlement
California.; Dept. of Fish and Game.
Government publication (gpb); State or province government publication (sgp)
Book

-pg 2

-1969, black crappie (36.9%), bluegill (22.8%), white crappie (19.1%), white catfish (13.1%), brown bullhead (6.9%), largemouth bass (.5%), carp (.2%), green sunfish (.2%), channel catfish (.1%), hitch/splittail/blackfish/sacramento perch/redear sunfish (<.1%) of catch
-mid 1930's-1951, catfish are 80% of catch
-1950's, centrarchids (80%), bass (5-10%), crappie (2-56%)
-1969, blackfish (195,000 pounds), carp (242,000 pounds) in commercial fishery
-pg 12
-table 1, fish in clear lake
-pg 14
-figure 4, percentage of catch
-pg 23
-1960, largemouth bass is 42% of catch
-pg 25
-1969, reduced largemouth bass population
-pg 26
-1970, silversides numerous

Reference Type: Report
Record Number: 424
Author: P. J. Richerson
Year: 1971
Title: The Role of Zooplankton in the Process of Eutrophication
Short Title: The Role of Zooplankton in the Process of Eutrophication
Accession Number: 7312397
Keywords: *water quality control; *zooplankton; *eutrophication; *grazing; algae; phytoplankton; crustaceans; copepods; rotifers; cyanophyta; productivity; california; nevada; daphina; bacteria; detritus; management; fish; kellicottia; asplanchna; diaptomus oregonesis; keratella; polyarthra; lake tahoe(cal.-nev.); bosmina; moina; lake erken(sweden); clear lake(calif.)
SW 3030 Effects of pollution
Abstract: The process of zooplankton grazing and its impact upon algal populations as a possible management technique to alleviate eutrophication problems is examined. grazing rates are expressed as clearing volumes--volume of water filtered (cleaned) of algae or other particles of a defined type per unit time--and are measured for common representatives of important freshwater zooplankton. zooplankton often exhibit considerable selectivity in their grazing and there are usually pronounced difference in feeding efficiency depending upon the size of the algae. many blue-green algae are not grazed at all, perhaps contributing to the obnoxious blooms. phytoplankton biomass seems to cause an increase in zooplankton, which then graze the phytoplankton intensely, reducing phytoplankton biomass, although other hypotheses could be operative. it appears from the estimations presented that grazing is more likely to be a dominant term in the biomass equation in eutrophic than oligotrophic lakes. zooplankton grazers may derive a significant proportion of their nutrition from sources other than algae, perhaps detritus and bacteria. several schemes are conceivable in considering zooplankton as populations whose manipulation might contribute to control of algal blooms. although management of zooplankton

for control of eutrophication symptoms is not impossible, no proven techniques exist at present. (see also w73-12391) (jones-wisconsin)
Notes: algae
In: seminar on eutrophication and biostimulation, october 19-21, 1971, clear lake, california, p 133-140. 1 fig, 1 tab, 10 ref.
Author Address: CALIFORNIA UNIV., DAVIS., DIV. OF ENVIRONMENTAL STUDIES

Reference Type: Book Section
Record Number: 496
Author: P. J. Richerson, T.H. Suchanek, J.C. Becker, A.C. Heyvaert, D.G. Slotten, J.G. Kim, X. Li, L.M. Meillier, D.C. Nelson & C.E. Vaughn
Year: 2000
Title: The history of human impacts in the Clear Lake watershed (California) as deduced from lake sediment cores
Editor: G. Fogg, D. Hinton, M. Johnson & K. Scow
Book Title: The Integrated Assessment of Ecosystem Health
Place Published: Chelsea, MI
Publisher: Ann Arbor
Pages: 119-145
Short Title: The history of human impacts in the Clear Lake watershed (California) as deduced from lake sediment cores
Abstract: need abstract
Notes: clear lake; mine

Reference Type: Journal Article
Record Number: 546
Author: P. J. Richerson, T. H. Suchanek, R. A. Zierenberg, D. A. Osleger, A. C. Heyvaert, D. G. Slotton, C. A. Eagles-Smith and C. E. Vaughn
Year: 2008
Title: ANTHROPOGENIC STRESSORS AND CHANGES IN THE CLEAR LAKE ECOSYSTEM AS RECORDED IN SEDIMENT CORES
Journal: Ecological Applications
Volume: 18
Issue: sp8
Pages: A257-A283
Short Title: ANTHROPOGENIC STRESSORS AND CHANGES IN THE CLEAR LAKE ECOSYSTEM AS RECORDED IN SEDIMENT CORES
DOI: doi:10.1890/06-1458.1
URL: http://www.esajournals.org/doi/abs/10.1890/06-1458.1

Reference Type: Book
Record Number: 425
Author: P. J. S. T. H. W. S. J. Richerson

Year: 1994
Title: The causes and control of algal blooms in Clear Lake : clean lakes diagnostic/feasibility study for Clear Lake, California
Place Published: Lakeport, Calif.
Publisher: Lake County, Public Works Dept.
Number of Volumes: 2
Short Title: The causes and control of algal blooms in Clear Lake : clean lakes diagnostic/feasibility study for Clear Lake, California
Accession Number: OCLC: 30763704 Provider: OCLC
Call Number: call # - G4581 N4 WRCS UCB

Dewey: 589.3
Keywords: Freshwater algae -- California -- Clear Lake.
Cyanobacterial blooms -- California -- Clear Lake.
Algal blooms -- California -- Clear Lake.
Plankton blooms -- California -- Clear Lake.
Algae -- Control -- California -- Clear Lake.
Abstract: This document explores the effects of algae blooms on Clear Lake, especially the impacts of erosion which may cause increased iron and phosphorus levels.
Notes: algae; clear lake
Lake County. Flood Control and Water Conservation District. ; California.; Water Resources Control Board. ; United States.; Environmental Protection Agency. ; University of California, Berkeley.; Davis.
ill. ; 28 cm.
[V. 1] Draft final report -- [v. 2] Special summary./ "Prepared for Lake County Flood Control and Water Conservation District, California State Water Resources Control Board, United States Environmental Protection Agency."/ Running title: Lake County/UCD clean lakes project: Draft final report, April 1994.
Lake County/UCD clean lakes project.
Peter J. Richerson, Thomas H. Suchanek, Stephen J. Why, University of California, Davis.
Government publication (gpb); Local government publication (lgp)
Book

Reference Type: Newspaper Article
Record Number: 426
Reporter: W. L. Rideout
Year: 1899
Title: A fish jam on Kelsey Creek
Newspaper: Overland monthly and Out West magazine
Volume: Vol. 34, Issue:202

Issue Date: Oct 1899
Short Title: A fish jam on Kelsey Creek

Call Number: call # - AP2 .O9 Shields UCD v.4,6,9,11-15(1868-1875);ser.2:v.1-35,37 45,47,49,68,81,93(1883-1935)***Some issues missing Status: Ceased publication or Special Collections v.10(1873),v.40:no.3(1902) Status: Ceased publication
Notes: fish

-fish crowding eachother out of rivers
-tons and tons of fish (hitch)
-kelsey creek in particular
-lasts several days
URL: In Making of America Journal Articles Website
http://quod.lib.umich.edu/cgi/t/text-idx?c=moajrnl&idno=ahj147.2-34.201

Reference Type: Magazine Article
Record Number: 509
Author: R. W. K. Robison
Year: 2008
Title: California's Western & Clark's Grebes are Uner Pressure
Magazine: Outdoor California
Pages: 20-25
Start Page: 20
Date: September-October 2008
Short Title: California's Western & Clark's Grebes are Uner Pressure
Notes: birds

Reference Type: Newspaper Article
Record Number: 429
Reporter: J. Ross
Year: 2001
Title: Changing Waters
Newspaper: News from Native California
Volume: 15
Start Page: 1
Pages: 32
Short Title: Changing Waters
Keywords: Air pollution
Endangered & extinct species
Environment
Fishing
Health
Poisons
Preventive medicine
Public health
Recreation

Sports
Water pollution
Abstract: PCBs, like some other contaminants, both bioaccumulate and biomagnify. They settle in fatty tissue in their animal and human hosts. It is suspected that PCBs can be passed from human mothers to babies in the womb through the placenta. It is known that PCBs pass from mothers to nursing babies through breast milk, which is a rich fluid high in fat. This is not a reason not to breastfeed your child. If you suspect you have had significant levels of PCB exposure, you should talk to your doctor about breastfeeding. Women of childbearing age and pregnant and nursing mothers are urged to be extremely cautious about eating fish from tainted areas. Some cautionary notices advise that women stop eating fish for up to a year prior to an anticipated pregnancy. Young children and babies have much lower tolerance for toxins than do adults and are at higher risk. According to the OEHHA, suspected effects of PCB contamination in humans include cancer, gastrointestinal discomfort, anemia, fatigue, and acne-like skin irritations. In children, lighter birth weights and delayed development of mental function and muscle coordination are suspected. In animals, PCBs affect the liver, stomach, thyroid glands, and reproduction. The other big culprit is mercury, which appears in California waters as methylmercury. This means that it has gone through a methylization process and is now part of a larger hydrocarbon molecule. There are also inorganic forms of mercury (elemental mercury). The OEHHA states "mercury is released from the earth as a vapor, condenses in clouds, and then falls in rain. Rain water runs off the land, also carrying with it mercury from soil and rocks, and particularly from tailings from abandoned mercury mines." In California, especially in the Coastal Range, mercury was mined in the form of cinnabar ore. This was converted to liquid metallic mercury that was then used to extract small amounts of gold from ore in the Sierras. Now there is contamination at many of these mining sites in both the Coastal Range and the Sierras. Industrial sources such as paper making, burning of fossil fuels, and large-scale earth disturbances such as mining and dam building can also increase the amount of mercury in our environment. Different advisories have been issued for different parts of California. In Clear Lake and Lake Berryesa, due to elevated mercury levels, nine fish species are on the advisory list. These include largemouth and small-mouth bass, white and channel catfish, rainbow trout, brown bullhead, Sacramento blackfish, crappie, and hitch. Carp is not listed here for Clear Lake but some people do eat them. Carp appear as a "less safe" fish on a cautionary notice for the Lake Erie Basin. An advisory exists for the San Francisco Bay and Delta Region because of mercury, PCBs and other chemicals, with sturgeon and striped bass as named species. In the Salton Sea (Imperial and Riverside Counties), croaker, orangemouth, corvina, sargo, and tilapia are listed. Los Angeles and Long Beach harbor have recommended limits for white croaker, queenfish, surfperches, and black croaker. The overall list is daunting and more than a little discouraging, yet not having this information can be dangerous. If you or your tribe are not sure about the water in your area, seek testing. If you feel like a "lone wolf" in your concern about water contaminants, there are private companies that analyze water samples for a fee. Before you take this step, contact a state office such as the OEHHA to see if testing is in progress or planned for your area.
Notes: hitch; fish; native american; clear lake; birds; bioaccumulation; html ONLINE
10405437

-Hg appears as MeHg+

-Hg mined in form of cinnabar ore then converted to liquid metallic Hg and used to extract gold from ore
-Advisory list: LMB, SMB, white and channel catfish, rainbow trout, brown bullhead, Sacramento blackfish, crappie, hitch
-If there is water, people with fish
-Contaminants: MeHg+, pesticides, herbicides, fuel additives, chemical spills, ag runoff, dumping of hazardous materials
-Hg bioaccumulates
- Top of food chain carries heavy loads
- Long lived species carry heavy loads (eg channel catfish)
URL:
http://proquest.umi.com/pqdweb?did=592437741&Fmt=7&clientId=1567&RQT=309&VName=PQD

Reference Type: Report
Record Number: 568
Author: J. Rowan
Year: 2008
Title: Clear Lake, Lake County
Series Editor: N. C. R. California Dept. of Fish and Game
Institution: California Department of Fish and Game
Date: January 25, 2008
Short Title: Clear Lake, Lake County
Abstract: Summary of 2007 electrofishing on Clear Lake. 26 sites sampled by three boats over period of two nights. Table 2 shows length and "Relative Stock Density" (RSD) for Largemouth bass. No Threadfin shad in 2007 whereas 2006 shad had been too abundant to count (Bill Cox, Memorandum to file, June 18, 2006). Black Bass fishing contests showed extremely high average weight, close to 3 lbs per fish. Possible apex in LMB fishery either in 2006 or 2007 could lead to possible decline in size and numbers of fish in the future.
Research Notes: photocopied from the California Department of Fish and Game. Assisted by Jay Rowan and DFG Volunteer Gary Sypnicki.
North Central Regional Office
1701 Nimbus Road
Rancho Cordova, CA 95670
Access Date: 7/7/2011

Reference Type: Journal Article
Record Number: 430
Author: F. J. Rueda and S. G. Schladow
Year: 2003
Title: Dynamics of Large Polymictic Lake. II: Numerical Simulations
Journal: Journal of Hydraulic Engineering
Volume: 129
Issue: 2

Pages: 92-101
Date: Feb
Short Title: Dynamics of Large Polymictic Lake. II: Numerical Simulations
Alternate Journal: J. Hydraul. Eng.
ISSN: 0733-9429
Accession Number: 5566920
Keywords: Article Subject Terms: Baroclinic motion; Circulation; Cyclonic motion; Eutrophic lakes; Eutrophication; Finite difference method; Freshwater lakes; Hydrodynamic equations; Hydrodynamics; Lake dynamics; Lakes; Modelling; Simulation; Surface circulation; Temperature; Water Circulation; Water circulation; Water temperature; Wind; Wind stress; Winds; Article Geographic Terms: USA, California, Clear L.
Polymictic lakes; USA, California, Clear L.
Freshwater
Q2 02171 Dynamics of lakes and rivers; SW 0850 Lakes; AQ 00002 Water Quality
Abstract: The internal dynamics of Clear Lake, California-a large, multibasin and polymictic lake-are examined using simulations conducted with a three-dimensional (3D) hydrodynamic model. The model is based on an accurate and efficient semi-implicit finite difference algorithm for the hydrodynamic equations, that has been previously subject to extensive verification with analytical test cases. The high level of agreement-without extensive calibration-between the model results and the observations at several locations in the lake is comparable with previously published 3D modeling results. The model results confirm the baroclinic-pumping model of circulation proposed for the Oaks Arm of Clear Lake in Part I. The simulations show that the interaction of stratification, periodic wind forcing, and Coriolis effects drive this circulation. The diurnal readjustment of the circulation from being wind driven to baroclinically driven is examined and shown to vary spatially. This transition in circulation-type has a wavelike nature, with a distinct frontal structure and converging currents at the surface. Asymmetries in the forcing and response, combined with rotational effects, impart a cyclonic residual circulation on the flow.
Notes: clear lake; ONLINE
Journal Article

- Pg 92
- CL mixes full depth several times per year
- Partially mixes almost daily
- CL is a shallow polymictic lake
- Northwesterly winds
- Cyclonic circulation-night and early morning, currents flow westward at the surface and eastward near the bottom
- Pg 100
- Winds act during afternoon and evening, generates horizontal temperature gradients throughout oaks arm
- “reasons for cyclonic baroclinic pumping circulation-stratification, periodic and predominately uniform longitudinal winds, coriolis effects (earth’s rotation)

URL:
http://scitation.aip.org/getpdf/servlet/GetPDFServlet?filetype=pdf&id=JHEND80001290000020000092000001&idtype=cvips
Author Address: School of Civil and Environmental Engineering, Cornell Univ., Ithaca, NY 14853, USA, [mailto:gschladow@ucdavis.edu]

Reference Type: Journal Article
Record Number: 524
Author: F. J. Rueda, S. G. Schladow and J. F. Clark
Year: 2008
Title: MECHANISMS OF CONTAMINANT TRANSPORT IN A MULTI-BASIN LAKE
Journal: Ecological Applications
Volume: 18
Issue: sp8
Pages: A72-A88
Short Title: MECHANISMS OF CONTAMINANT TRANSPORT IN A MULTI-BASIN LAKE
DOI: doi:10.1890/06-1617.1
URL: http://www.esajournals.org/doi/abs/10.1890/06-1617.1

Reference Type: Journal Article
Record Number: 522
Author: S. G. Schladow and J. F. Clark
Year: 2008
Title: USE OF TRACERS TO QUANTIFY SUBSURFACE FLOW THROUGH A MINING PIT
Journal: Ecological Applications
Volume: 18
Issue: sp8
Pages: A55-A71
Short Title: USE OF TRACERS TO QUANTIFY SUBSURFACE FLOW THROUGH A MINING PIT
DOI: doi:10.1890/06-0998.1
URL: http://www.esajournals.org/doi/abs/10.1890/06-0998.1

Reference Type: Journal Article
Record Number: 432
Author: P. D. Schulz
Year: 1979
Title: Fish Remains from a historic central California indian village
Journal: California Fish and Game
Volume: 65
Pages: 273-276
Short Title: Fish Remains from a historic central California indian village

Call Number: call # - SK351 .C3 Shields UCD
Abstract: The fauna of California has undergone marked changes In the last 125 years, and this is especially true of the fishes of the Sacramento-San Joaquin Valley. Many of the native fish species have become severely depleted, and a few have been brought to the verge of extinction. Little quantitative information is avail- able from which to judge either the early abundance of these depleted forms or the rapidity of their decline. Since archaeology can provide one source of such information, fish remains from a historic Indian midden in the Sacramento Valley were investigated.
Notes: fish

-pg 273
    -chub (41%)>sacramento perch>hitch>sacramento blackfish>splittail
-pg 274
    -chub (now extinct), sacramento perch (nearly gone)
-pg 275
    -table 1, percentage of fish

Reference Type: Book
Record Number: 433
Author: K. M. Scow
Year: 2000
Title: Integrated assessment of ecosystem health
Place Published: Boca Raton [Fla.]
Publisher: Lewis Publishers
Number of Pages: 358 p.
Short Title: Integrated assessment of ecosystem health
ISBN: ISBN: 1566704537 (alk. paper); 9781566704533 (alk. paper); 0849341140 (alk. paper); 9780849341144 (alk. paper) LCCN: 99-29645
Accession Number: OCLC: 41211611 Provider: OCLC
Call Number: LC: QH541; Dewey: 577; NAL: QH541
Keywords: Ecosystem health -- Congresses.
Ecological assessment (Biology) -- Congresses.
Environmental toxicology -- Congresses.
Abstract: need abstract

The new approach to ecosystem health is proactive. As a result, the scope of environmental studies is growing and the methods are evolving. Integrated Assessment of Ecosystem Health aggressively broadens the range of ecotoxicology to include its related fields. The book begins with John Cairns, Jr.'s predictions and recommendations for the future ecotoxicology: "New goals must lead to new techniques.... the field of ecotoxicology is in the early stages of a major paradigm shift that is driven by three interrelated forces: 1) heightened interest in sustainable use of the planet, 2) protection of ecosystem , and 3) the shift from emphasis on avoiding deleterious effects to maintaining them in robust health." Later chapters explore the integration of data, intrinsic remediation studies and the ever- increasing number of associated disciplines that are improving our environmental potential. Methodology, itself, is considered as an evolving tool,

always in need examination and revision. Cairns, and his co-authors all advocate a constructive, offensive new form of ecoscience. The consensus of scientists is clear: toxic threat and, especially, habitat destruction are the most important environmentl issues, today. The mandate from Integrated Assessment of Ecosystem Health is also decisive: expand the parameters of ecoscience. The future of life on earth depends upon our ability to grow and learn.
Notes: settlement; clear lake; soil; ONLINE
ill., maps ; 25 cm.
The genesis and future of the field of ecotoxicology / John Cairns, Jr. -- A predictor of seasonal nitrogenous dry deposition in a mixed conifer forest stand in the San Bernardino Mountains / Michael J. Arbaugh, Andrzej Bytnerowicz, and Mark E. Fenn -- Integrating chemical, water quality, habitat, and fish assemblage data from the San Joaquin River drainage, California / Larry R. Brown, Charles R. Kratzer, and Neil M. Dubrovsky -- Subsurface contaminant fate determination through integrated studies of intrinsic remediation / Scott W. Hooper ... [et al.] -- The Cantara spill : a case study--pesticide transport in a riverine environment / Camilla M. Saviz ... [et al.] -- Distribution and transport of air pollutants to vulnerable California ecosystems / Andrzej Bytnerowicz ... [et al.] -- The history of human impacts in the Clear Lake watershed (California) as deduced from lake sediment cores / Peter J. Richerson ... [et al.]. The development of cumulative effects assessment tools using fish populations / Kelly R. Munkittrick ... [et al.] -- Air pollutants and forests : effect at the organismal scale / Teresa W.-M. Fan and Richard M. Higashi -- DNA fingerprinting as a means to identify sources of soil-derived dust : problems and potential / Mary Ann Bruns and Kate M. Scow -- Microbial proteins as biomarkers of ecosystem health / Oladele A. Ogunseitan -- Application of a random amplified polymorphic DNA (RAPD) method for characterization of microbial communities in agricultural soils / Padma Sudarshana, Jessica R. Hanson, and Kate M. Scow -- Air pollution and forests : effects at the landscape level / Paul R. Miller ... [et al.] -- Mercury in lower trophic levels of the Clear Lake aquatic ecosystem, California / Thomas H. Suchanek ... [et al.] -- Resources at risk : a forest fire-based hazard/risk assessment / Timothy A. Burton ... [et al.] -- Uncovering mechanisms of interannual variability from short ecological time series / Alan D. Jassby -- Developing realistic air pollution exposure/dose criteria for ecological risk assessments / Allen S. Lefohn -- Survey methodologies for the study of ecosystem restoration and management : the importance of Q-methodology / John T. Woolley, Michael V. McGinnis, and William S. Herms -- The California water quality assessment spatial database : a preliminary look at Sierra Nevada riverine water quality / Anitra L. Pawley ... [et al.].
Principally proceedings from a conference entitled "From Cumulative Impacts Toward Sustainable Solutions: Critical Methodologies for the Study of Ecosystem Health," held at the University of California, Davis, September 8-10, 1996./ Includes bibliographical references and index.
edited by Kate M. Scow ... [et al.]. More Records: Show record information
Conference publication (cnp)
Book
URL: http://www.loc.gov/catdir/enhancements/fy0744/99029645-d.html
Materials specified: Publisher description
http://www.loc.gov/catdir/enhancements/fy0744/99029645-d.html
http://www.sci-technetbase.com/books/832/LA4114_119_146_ch07.pdf

Reference Type: Book
Record Number: 434
Author: W. H. Shebley
Year: 1917
Title: History of the introduction of food and game fishes into the waters of California
Series Title: California fish and game ;; v.3, no.1.;
Place Published: [Sacramento
Publisher: California Dept. of Fish and Game]
Number of Pages: p. 3-12.
Short Title: History of the introduction of food and game fishes into the waters of California
Accession Number: OCLC: 123758538 Provider: OCLC
Call Number: call # - SK.351.C3 Shields UCD
Keywords: Fisheries -- California -- History
Abstract: need abstract
Notes: fish; settlement
Reproduction: Microfiche./ 1 fiche.
W. H. Shebley.
Microfiche (mfc)
Book

-1872-1883-1,500,00 eggs of whitefish (Coregonus clupeiformis), some hatched on temporary structure on CL

Reference Type: Journal Article
Record Number: 520
Author: W. G. Shipp and R. A. Zierenberg
Year: 2008
Title: PATHWAYS OF ACID MINE DRAINAGE TO CLEAR LAKE: IMPLICATIONS FOR MERCURY CYCLING
Journal: Ecological Applications
Volume: 18
Issue: sp8
Pages: A29-A54
Short Title: PATHWAYS OF ACID MINE DRAINAGE TO CLEAR LAKE: IMPLICATIONS FOR MERCURY CYCLING
DOI: doi:10.1890/06-1497.1
URL: http://www.esajournals.org/doi/abs/10.1890/06-1497.1

Reference Type: Book
Record Number: 435
Author: F. J. Simoons
Year: 1952
Title: The settlement of the Clear Lake Upland of California
Place Published: Sacramento, Calif.

Publisher: Great Valley History Co.
Number of Pages: 221 leaves
Short Title: The settlement of the Clear Lake Upland of California
Accession Number: OCLC: 8254057 Provider: OCLC
Call Number: call # - F868.L2 S5 Shields UCD

LC: F868.L2
Keywords: Lake County (Calif.)
Abstract: need abstract
Notes: settlement; clear lake
ill., maps ; 30 cm. Dissertation: Thesis (M.A)--University of California, 1949.
A xerox copy of the original thesis.
by Frederick John Simoons.
Thesis/dissertation (deg)
Book

- Pg 2
- 1833-american trappers reach CL
- Pg 3
- 1850's-permanent ag settlers enter region
- 1864-1st American borax
- Pg 4
- 1865-1st western sulfur
- 1/10 of California quicksilver
- 1870-health seekers ascend
- Pg 22
- Prairie and the red and yellow podzolic (soils)
- 4 soil types
  - residual soils from sedimentary rocks (dull brown, light grayish-brown, shallow, stony, steep slopes)
  - residual soils from volcanic flows (red, brown-red, clay loam or gravelly clay loam)
  - soils from old valley filling material or from recent alluvium (former and present stream deposits)
  - serpentine soils
- Pg 25
- Climate
  - Hot dry summers-mild, rainy winters
  - Avg summer temp 70-75F, max 100F in late July, early August
  - January 40-45F
  - October-April, 90% of the precipitation
- Pg 26
- Orange, lemon, grapefruit, citrus trees (50 years)
- Pg 27
- 1948-1/3 chapparal
  28% hardwood woodland or woodland grass
  27% commercial forest or non commercial coniferous woodland

10% grass, cultivated, urban, industrial areas
- Pg 27-30
- Specific plant species listed
- Pg 28
- Marshland at south exit and north tip (Middle Creek) of lake , margins of Big Valley
- Pg 36
- Changes in vegetation are evident
- Pg 38
- Early settlement since 1840's

Reference Type: Book Section
Record Number: 436
Author: J. D. Sims
Year: 1976
Title: Paleo Limnology of Clear Lake California USA
Book Title: Horie, Shoji
Pages: 658-702
Short Title: Paleo Limnology of Clear Lake California USA
Accession Number: BIOSIS:PREV197916011418
Keywords: Radiation biology - Radiation and isotope techniques; Ecology: environmental biology - Limnology; Ecology: environmental biology - Water research and fishery biology; Temperature - General measurement and methods; Development and Embryology - Morphogenesis; Paleobotany; Palynology; Soil science - General and methods; Paleozoology;Geological periods - Pleistocene; Geological periods - Recent
Abstract: need abstract
Notes: clear lake
Book
ED.
URL: <Go to ISI>://BIOSIS:PREV197916011418

Reference Type: Book
Record Number: 437
Author: J. D. Sims
Year: 1978
Title: Mercury analysis of sediments from cores in Clear Lake, Lake County, California
Series Title: Reports-Open file series - United States Geological Survey ;; 78-116;
Place Published: [Reston, Va.]
Publisher: U.S. Geological Survey
Number of Pages: [7] leaves
Short Title: Mercury analysis of sediments from cores in Clear Lake, Lake County, California
Accession Number: OCLC: 3751441 Provider: OCLC
Call Number: call # - 3701s VAR .U5 78-116 Main lib UCSB Map & Imagery Lab
Abstract: need abstract
Notes: chemistry; pollution; soil; clear lake

ill., map ; 28 cm.
Bibliography: leaf [7].
by John D. Sims.
Government publication (gpb); National government publication (ngp)
Book

Reference Type: Journal Article
Record Number: 438
Author: A. J. Slowey, S. B. Johnson, M. Newville and G. E. Brown
Year: 2007
Title: Speciation and colloid transport of arsenic from mine tailings
Journal: Applied Geochemistry
Volume: 22
Issue: 9
Pages: 1884-1898
Date: Sep
Type of Article: Article
Short Title: Speciation and colloid transport of arsenic from mine tailings
ISSN: 0883-2927
Accession Number: ISI:000249906600004
Keywords: RAY-ABSORPTION SPECTROSCOPY; ORGANIC-ACIDS; EXAFS SPECTROSCOPY;
CHEMICAL EXTRACTIONS; MERCURY SPECIATION; CONTAMINATED SOILS; SYNTHETIC
JAROSITE; FINE-STRUCTURE; IRON-OXIDE; SEDIMENTS
Abstract: In addition to affecting biogeochemical transformations, the speciation of As also influences its transport from tailings at inoperative mines. The speciation of As in tailings from the Sulfur Bank Mercury Mine site in Clear Lake, California (USA) (a hot-spring Hg deposit) and particles mobilized from these tailings have. been examined during laboratory-column experiments. Solutions containing two common, plant-derived organic acids (oxalic and citric acid) were pumped at 13 pore volumes d(-1) through 25 by 500 mm columns of calcined Hg ore, analogous to the pedogenesis of tailings. Chemical analysis of column effluent indicated that all of the As mobilized was particulate (1.5 mg, or 6% of the total As in the column through 255 pore volumes of leaching). Arsenic speciation was evaluated using X-ray absorption spectroscopy (XAS), indicating the dominance of arsenate [As(V)] sorbed to poorly crystalline Fe(III)-(hydr)oxides and coprecipitated with jarosite [KFe3(SO4, ASO(4))(2)(OH)(6)] with no detectable primary or secondary minerals in the tailings and mobilized particles. Sequential chemical extractions (SCE) of <45 mu m mine tailings fractions also suggest that As occurs adsorbed to Fe (hydr)oxides (35%) and coprecipitated within poorly crystalline phases (45%). In addition, SCEs suggest that As is associated with 1 N acid-soluble phases such as carbonate minerals (20%) and within crystalline Fe-(hydr)oxides (10%). The finding that As is transported from these mine tailings dominantly as As(V) adsorbed to Fe (hydr)oxides or coprecipitated within hydroxysulfates such as jarosite suggests that As release from soils and sediments contaminated with tailings will be controlled by either organic acid-promoted dissolution or reductive dissolution of host phases.

Notes: ONLINE; mine
Research Notes: -1884
-geologic deposits rich in copper, zinc, silver, gold, mercury, lead, uranium and sometimes arsenic
-after mining for above deposits: erosion, leaching, atmospheric dispersal of soils (decrease in water quality)
-1895
-erosion mitigation (re-vegetation) to limit metalloid transport
URL: <Go to ISI>://000249906600004
http://www.sciencedirect.com/science?_ob=MImg&_imagekey=B6VDG-4NMWR8Y-5-1B&_cdi=5982&_user=4421&_orig=search&_coverDate=09%2F30%2F2007&_sk=999779990&view=c&wchp=dGLbVtb-zSkzS&md5=83e03f8f4f70845f897d76048bdc91fb&ie=/sdarticle.pdf

Reference Type: Report
Record Number: 482
Author: T. Smythe
Year: 2008
Title: Kelsey Creek Detention Structure Operating Criteria
Institution: Water Resources
Date: June 13,2008
Short Title: Kelsey Creek Detention Structure Operating Criteria
Notes: tributary; dam

-big valley groundwater management commission
-kelsey detention structure days of operation (1988-2008)
-kelsey creek daily flows (cfs)
-kelsey creek detention structure operating criteria
-fill aquifer for adequate groundwater storage and maintain even when pumped (spring)
-allow sediment movement through structure to keep from build up
-must (below and above) maintain 15 cfs at all times and be passable by hitch (gates opened during runs of more than 100 fish)
-stream flow data (Kelsey creek near Kelseyville)
http://waterdata.usgs.gov/ca/nwis/uv?11449500

Reference Type: Generic
Record Number: 569
Author: R. Snyder
Year: 1978
Title: California Department of Fish and Game Stocking of Clear Lake 1968-1978
Secondary Author: P. H. Baker
Publisher: California Department of Fish and Game
Type of Work: Letter to Baker, P. from Snyder, R.
Short Title: California Department of Fish and Game Stocking of Clear Lake 1968-1978

Abstract: 190,792 Channel catfish introduced from 1969-1978 by DFG, 2,777 Smallmouth bass, 531 Largemouth bass.
Research Notes: photocopied from the California Department of Fish and Game. Assisted by Jay Rowan and DFG Volunteer Gary Sypnicki.
North Central Regional Office
1701 Nimbus Road
Rancho Cordova, CA 95670
Access Date: 7/7/2011

Reference Type: Journal Article
Record Number: 504
Author: D. F. Spencer and G. G. Ksander
Year: 2001
Title: Field evaluation of degree-day based equations for predicting sprouting of hydrilla (Hydrilla verticillata) turions and tubers
Journal: Journal of Freshwater Ecology
Volume: 16
Issue: 3
Pages: 479-486
Date: Sep
Type of Article: Article
Short Title: Field evaluation of degree-day based equations for predicting sprouting of hydrilla (Hydrilla verticillata) turions and tubers
Alternate Journal: J. Freshw. Ecol.
ISSN: 0270-5060
Accession Number: ISI:000171102500019
Call Number: call number: Shields Shields QH541.5.F7 J6 Bio/Ag Current Periodicals
Keywords: POTAMOGETON-PECTINATUS
GERMINATION
TEMPERATURE
Abstract: The ability to predict sprouting of aquatic macrophyte vegetative propagules is an important step in understanding their temporal distribution and abundance and in developing long-range management strategies. We examined the ability of degree-day based equations to predict monoecious hydrilla, (Hydrilla verticillata L. f. Royle) tuber and turion sprouting in Clear Lake, California using sediment and water temperatures measured in the lake. Sediment temperature data were used to calculate accumulated degree-days. Sprouting of turions and tubers was estimated using previously developed equations relating sprouting to accumulated degree-days. There was good agreement between sprouting predictions and field data on the presence of hydrilla in weed rake samples. Small differences among water temperatures at the five sites and strong relationships between water and sediment temperatures indicate that sprouting should be similar in hydrilla beds found along the western and southern shores of upper Clear Lake. These results can be used to estimate optimal timing for surveys of hydrilla abundance and the application of hydrilla management techniques.
Notes: botany

ISI Document Delivery No.: 474JC
Times Cited: 5
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Author Address: USDA ARS, Exot & Invas Weeds Res Unit, Weed Sci Program, Davis, CA 95616 USA.
Spencer, DF, USDA ARS, Exot & Invas Weeds Res Unit, Weed Sci Program, Robbins Hall,1 Shields Ave, Davis, CA 95616 USA.
Language: English

Reference Type: Book
Record Number: 439
Author: J. W. Stratton
Year: 1987
Title: Methyl mercury in northern coastal mountain lakes : guidelines for sport fish consumption for Clear Lake (Lake County), Lake Berryessa (Napa County), and Lake Herman (Solano County)
Series Title: HES Tox-Epi review.;
Place Published: Berkeley, CA
Publisher: State of California, Dept. of Health Services, Hazard Evaluation Section, Office of Environmental Health Hazard Assessment
Number of Pages: 15 p.
Short Title: Methyl mercury in northern coastal mountain lakes : guidelines for sport fish consumption for Clear Lake (Lake County), Lake Berryessa (Napa County), and Lake Herman (Solano County)
Accession Number: OCLC: 20989795 Provider: OCLC
Call Number: call # - H929 .T6 M47 State lib CSL govt pubs
LC: QP913.H6
Keywords: Fish as food -- Contamination.
Mercury -- California, Northern.
Mercury -- Toxicology.
Abstract: need abstract
Notes: fish; chemistry
California.; Office of Environmental Health Hazard Assessment.; Hazard Evaluation Section.
28 cm.
Cover title./ "April 1987."
by James W. Stratton ... [et al.].
Government publication (gpb); State or province government publication (sgp)
Book

Reference Type: Journal Article
Record Number: 480

Author: T. H. Suchanek, Collin A. Eagles-Smith, Darell G. Slotton, E. James Harner, Arthur E. Colwell, Norman L. Anderson, Lauri H. Mullen, John R. Flanders, David P. Adam, Kenneth J. McElroy
Title: Spatio-temporal trends of mercury in fish from a mine-dominated ecosystem at Clear Lake, California: Individual, species and population level trends
Journal: not in press
Short Title: Spatio-temporal trends of mercury in fish from a mine-dominated ecosystem at Clear Lake, California: Individual, species and population level trends
Keywords: mercury, fish, Clear Lake, mining, bioaccumulation, consumption guidelines, wildlife risk assessment, remediation
Abstract: Clear Lake, California receives acid mine drainage and mercury (Hg) from the Sulphur Bank Mercury Mine, a USEPA Superfund site active intermittently from 1873-1957, and partially remediated in 1992. Hg concentrations were analyzed primarily in four species of Clear Lake
5 fishes: inland silversides (Menidia beryllina, planktivore), common carp (Cyprinus carpio, benthic scavenger/omnivore), channel catfish (Ictalurus punctatus – benthic omnivorous predator), and largemouth bass (Micropterus salmoides – piscivorous top predator). These data represent one of the largest fish Hg datasets for a single site, especially in California.

Spatially, total Hg (TotHg) in silversides and bass declined with distance from the mine, indicating that the mine site represents a point source for Hg loading to Clear Lake. Temporally, fish Hg has not declined significantly over 12 yrs since mine site remediation. Hg concentrations were variable throughout the study period with no monotonic trends of increase or decrease, except those correlated with boom and bust cycles of an introduced fish, threadfin shad (Dorosoma petenense). However, stochastic events such as storms also influence juvenile largemouth bass Hg as evidenced during an acid mine drainage overflow event in 1995.

Compared to other sites regionally and nationally, most fish in Clear Lake exhibit Hg concentrations similar to other Hg-contaminated sites, up to ca. 2.0 mg/kg wet weight (ww) TotHg in largemouth bass. However, even these elevated concentrations are less than would be anticipated from such high inorganic Hg loading to the lake. Hg in some Clear Lake largemouth bass exceeded all human health fish consumption guidelines established over the past 25 years by the USFDA (1.0 mg/kg ww), the NAS (0.5 mg/kg ww) and the USEPA (0.3 mg/kg ww). Hg in higher trophic level fishes exceed ecotoxicological risk assessment estimates for concentrations that would be safe for wildlife, specifically the non-listed common merganser and the recently delisted bald eagle.

Fish populations of 11 out of 18 species surveyed exhibited a significant 1 decrease in abundance with increasing proximity to the mine; this decrease is correlated with increasing water and sediment Hg. These trends may be related to Hg or other lake-wide gradients such as distribution of submerged aquatic vegetation.
Notes: fish

Reference Type: Book
Record Number: 440

Author: T. H. Suchanek
Year: 1997
Title: Sulphur Bank Mercury Mine Superfund Site (Clear Lake, California)
Place Published: [Washington, DC]
Publisher: U.S. EPA
Number of Volumes: 1
Number of Pages: (various pagings)
Short Title: Sulphur Bank Mercury Mine Superfund Site (Clear Lake, California)
Accession Number: OCLC: 39824976 Provider: OCLC
Call Number: call # - UCS

LC: TD1040; Dewey: 628.1683609794
Keywords: Mercury -- Environmental aspects.
Hazardous waste sites -- California.
Clearlake (Calif.) -- Environmental conditions.
Abstract: need abstract
Notes: mine; clear lake; pollution; chemistry
United States.; Environmental Protection Agency.; Region IX.
ill. ; 28 cm.
Includes bibliographical references.
Interim final report./ March 1997.
Role of the Sulphur Bank Mercury Mine Site (and associated hydrogeological processes) in the dynamics of mercury transport and bioaccumulation within the Clear Lake aquatic ecosystem a report prepared for the U.S. Environmental Protection Agency, Region IX, Superfund Program ; prepared by Thomas H. Suchanek ... [et al.].
Government publication (gpb); National government publication (ngp)
Book

Reference Type: Edited Book
Record Number: 466
Editor: T. H. Suchanek, P.J. Richerson, D.C. Nelson, C.A. Eagles-Smith, D.W. Anderson, J.J. Cech, Jr., G. Schladow, R. Zierenberg, J.F. Mount, ÊS.C. McHatton, D.G. Slotton, L.B. Webber, A.L. Bern and B.J. Swisher
Year: 2002
Title: Evaluating and managing a multiply-stressed ecosystem at Clear Lake, California: a holistic ecosystem approach
Volume: 3
Short Title: Evaluating and managing a multiply-stressed ecosystem at Clear Lake, California: a holistic ecosystem approach
Notes: fish; pollution; food web

-introduction
    -3,000 people in roughly 30 villages in early 19th century
        -used fish to supplement diet

-european and American trappers visited clear lake seasonally in 1833. permanent agriculture in 1850's

-volcanic activity, created rich mineral deposits in land which people immediately mined for (borax 1864, sulfur 1865, mercury 1872 by Sulphur bank mercury mine)

-mid 1870s many people settled because of abundant mineral springs

-1860, 3,000 people to 1999, 55,000 people in lake county

-result is change in land uses (altering watersheds, limnological and ecological dynamics of clear lake)

-7 dams on tributaries of clear lake

-much of land around lake is urban/built up land use

-yolo county flood and water conservation district controls water flows

-clear lake home to western grebe (A. occidentalis), clark's grebe (A. clarkii), double crested cormorant (P. auritus), great blue heron (A. herodias), osprey (P. haliaetus), bald eagle (H. leucocephalus)

-periodic flooding and fires

-lost 85% of original wetland

-dams increase water impoundment by 65,000 acres

-1925-1938, increase nutrient loading, decrease in water clarity due to equipment

-1938, lake too turbid for rooted aquatic vegetation; noxious cyanobacterial scum takes over (perennial)

-increase in mercury, other contaminants

-organochlorine pesticides on birds

-80% of fish are introduced

-natural setting

-natural stressors

-increase in el nino events is likely linked with fluctuation in regional and global climatological events at clear lake

-drought and flood

-1975-1977, 1987-1992, 1928-1934

-lake level decrease

-increased lake pH and secchi disk readings, increase water column phosphorus

-good water clarity in non drought conditions

-severe Cyanobacteria blooms (in recorded history) toward end of drought periods

-fire is catastrophic when it does occur

-destroys watershed

-deforestation

-soil exposure, sediment transport increases into clear lake

-additional nutrients deposited into clear lake system

-dams

-alter natural flow and slow it

-upstream is holding more water

-retains sediments and nutrients

-modifications

-dams

-lowering of cache creek, deepened in 1938

-kelsey creek downcut

-1965, dredged for marina (destabilization of bed, erosional products into clear lake)

-contaminants

- DDD (1949, 1954, 1957) in large quantities in clear lake and 20 other small lakes and reservoirs

-also killed other benthic invertebrates, plankton

-1958 fish collected, extremely high concentrations of DDD found (largest in brown bullhead (A. nebulosus), largemouth bass (M. salmoides) 500 fold higher than water, black crappie (P. nigromaculatus)

-grebe populations destroyed (800 folds higher than water)

-resistant gnats lived on, host of other insecticides used

-Hydrilla verticillata introduced aquatic plant, used herbicides to attempt irradiation

-copper, mercury

-private pesticide use (aquatic and terrestrial)

-terrestrial pesticides (agricultural use)

-petroleum, mineral oils, organophosphate pesticeds, pheromone mating disrupters, sulfur, lime sulfur

-methyl tertiary butyl ether (MTBE), in gas

-mining

-sulphur bank mercury mine, superfund site 1990

-mercury, arsenic, methyl mercury

-gravel extraction from lake bed (scotts, middle, Kelsey, adobe, forbes, cole, burns valley)

-change in water level 15 feet, destabilization, increased erosion goes into clear lake

-roads block spawning sites

-still mine for rock, stone, sand, cinder, gravel

-1840-1977, wetland decreased 85%, conversion to agriculture

-1927, middle creek to agriculture

-alters nutrient flow, likely reason for cyanobaceria in clear lake

-dredging and filling causes nutrient loading in clear lake

-creek bed, water table, and shoreline modifications

-spawning streams dry up earlier for hitch

-loss of marshy wetland takes habitat of larval hitch

-1839, cattle brought to clear lake

-overgrazing, erosion

-species introductions

-table 4

-notice how splittail (extict) and hitch (abundant) occupy same trophic position. Hitch may have outcompeted them at one point

-introductions began in late 1800’s

-hitch compete for food with inland silversides (M. beryllina), crappie, threadfin shad (D. petenense)

-food web for clear lake

Reference Type: Journal Article
Record Number: 484
Author: T. H. Suchanek, Janis Cooke, Kaylene Keller, Salvador Jorgensen, Peter J. Richerson, Collin A. Eagles-Smith, E.James Harner and David P. Adam
Year: 2008
Title: A mass balance mercury budget for a mine-dominated lake: Clear Lake, California
Journal: Water Air and Soil Pollution
Short Title: A mass balance mercury budget for a mine-dominated lake: Clear Lake, California
Keywords: acid mine drainage, budget, Clear Lake, mercury, mass balance, mercury loading, mining, sediments
Abstract: The Sulphur Bank Mercury Mine (SBMM), active intermittently from 1873-1957 and now a USEPA Superfund site, was previously estimated to have contributed as least 100 metric tons (10^5 kg) of mercury (Hg) into the Clear Lake aquatic ecosystem. To better quantify the contribution of the mine in relation to other sources of Hg loading into Clear Lake and provide data that might help reduce that loading, we analyzed Inputs and Outputs of Hg to Clear Lake and Storage of Hg in lakebed sediments using mass balance approach. We evaluated Inputs from (1) wet and dry atmospheric deposition from both global/regional and local sources, (2) watershed tributaries, (3) groundwater inflows, (4) lakebed springs and (5) the mine. Outputs were quantified from (1) efflux (volatilization) of Hg from the lake surface to the atmosphere, (2) municipal and agricultural water diversions, (3) losses from out-flowing drainage of Cache Creek that feeds into the California Central Valley and (4) biotic Hg removal by humans and wildlife. Storage estimates include (1) sediment burial from historic and prehistoric periods (over the past 150-3,000 years) from sediment cores ca.2.5m depth dated using dichloro diphenyl dichloroethane (DDD), ^210^Pb and ^14^C and (2) recent Hg deposition in surficial sediments. Surficial sediments collected in October 2003 (11 years after mine site remediation) indicate no reduction (but a possible increase) in sediment Hg concentrations over that time and suggest that remediation has not significantly reduced overall Hg loading to the lake. Currently, the mine is believed to contribute ca.322-331 kg of Hg annually to Clear Lake, which represents ca. 86-99% of the total Hg loading to the lake. We estimate that natural sedimentation would cover the existing contaminated sediments within ca. 150-300 years.
Notes: ONLINE
URL: http://www.springerlink.com/content/3576n2lx37t2836m/fulltext.pdf

Reference Type: Journal Article
Record Number: 512
Author: T. H. Suchanek
Year: 2008
Title: Mercury Cycling and Bioaccumulation in a Mine-dominated Aquatic Ecosystem: Clear Lake, California1
Journal: Ecological Applications
Volume: 18
Issue: sp8
Pages: A1-A2
Short Title: Mercury Cycling and Bioaccumulation in a Mine-dominated Aquatic Ecosystem: Clear Lake, California1

DOI: doi:10.1890/06-1475.1
URL: http://www.esajournals.org/doi/abs/10.1890/06-1475.1

Reference Type: Journal Article
Record Number: 530
Author: T. H. Suchanek, C. A. Eagles-Smith and E. J. Harner
Year: 2008
Title: IS CLEAR LAKE METHYLMERCURY DISTRIBUTION DECOUPLED FROM BULK MERCURY LOADING
Journal: Ecological Applications
Volume: 18
Issue: sp8
Pages: A107-A127
Short Title: IS CLEAR LAKE METHYLMERCURY DISTRIBUTION DECOUPLED FROM BULK MERCURY LOADING
DOI: doi:10.1890/06-1649.1
URL: http://www.esajournals.org/doi/abs/10.1890/06-1649.1

Reference Type: Journal Article
Record Number: 532
Author: T. H. Suchanek, C. A. Eagles-Smith, D. G. Slotton, E. J. Harner and D. P. Adam
Year: 2008
Title: MERCURY IN ABIOTIC MATRICES OF CLEAR LAKE, CALIFORNIA: HUMAN HEALTH AND ECOTOXICOLOGICAL IMPLICATIONS
Journal: Ecological Applications
Volume: 18
Issue: sp8
Pages: A128-A157
Short Title: MERCURY IN ABIOTIC MATRICES OF CLEAR LAKE, CALIFORNIA: HUMAN HEALTH AND ECOTOXICOLOGICAL IMPLICATIONS
DOI: doi:10.1890/06-1477.1
URL: http://www.esajournals.org/doi/abs/10.1890/06-1477.1

Reference Type: Journal Article
Record Number: 534
Author: T. H. Suchanek, C. A. Eagles-Smith, D. G. Slotton, E. J. Harner, D. P. Adam, A. E. Colwell, N. L. Anderson and D. L. Woodward
Year: 2008
Title: MINE-DERIVED MERCURY: EFFECTS ON LOWER TROPHIC SPECIES IN CLEAR LAKE, CALIFORNIA
Journal: Ecological Applications
Volume: 18
Issue: sp8

Pages: A158-A176
Short Title: MINE-DERIVED MERCURY: EFFECTS ON LOWER TROPHIC SPECIES IN CLEAR LAKE, CALIFORNIA
DOI: doi:10.1890/06-1485.1
URL: http://www.esajournals.org/doi/abs/10.1890/06-1485.1

Reference Type: Journal Article
Record Number: 536
Author: T. H. Suchanek, C. A. Eagles-Smith, D. G. Slotton, E. J. Harner, A. E. Colwell, N. L. Anderson, L. H. Mullen, J. R. Flanders, D. P. Adam and K. J. McElroy
Year: 2008
Title: SPATIOTEMPORAL TRENDS IN FISH MERCURY FROM A MINE-DOMINATED ECOSYSTEM: CLEAR LAKE, CALIFORNIA
Journal: Ecological Applications
Volume: 18
Issue: sp8
Pages: A177-A195
Short Title: SPATIOTEMPORAL TRENDS IN FISH MERCURY FROM A MINE-DOMINATED ECOSYSTEM: CLEAR LAKE, CALIFORNIA
DOI: doi:10.1890/06-1900.1
URL: http://www.esajournals.org/doi/abs/10.1890/06-1900.1

Reference Type: Journal Article
Record Number: 441
Author: T. H. Suchanek, L. H. Mullen, B. A. Lamphere, P. J. Richerson, C. E. Woodmansee, D. G. Slotton, E. J. Harner and L. A. Woodward
Year: 1998
Title: Redistribution of mercury from contaminated lake sediments of Clear Lake, California
Journal: Water Air and Soil Pollution
Volume: 104
Issue: 1-2
Pages: 77-102
Date: May
Type of Article: Article
Short Title: Redistribution of mercury from contaminated lake sediments of Clear Lake, California
ISSN: 0049-6979
Accession Number: ISI:000073482600006
Keywords: aquatic; Clear Lake; mercury; mining; pollution; sediments; water
AQUATIC ECOSYSTEM; WABIGOON RIVER; METHYLMERCURY; METHYLATION; RECOVERY; WATERS; SYSTEM
Abstract: Mining operations conducted at the Sulphur Bank Mercury Mine at Clear Lake, California, from 1872-1957, together with acid mine drainage since abandonment, deposited ca. 100 metric tons of mercury (Hg) in the sediments of Clear Lake. In 1992 Hg in surficial

sediments (up to 183 mg kg(-1) total Hg and 15.9 mu g kg(-1) methyl Hg) exhibited a classic point source distribution with maximum concentrations adjacent to the mine. However, the ratio of methyl:total Hg in sediments increased with distance from the mine, suggesting either differential transport of methyl Hg or a non-linear relationship between sediment inorganic Hg concentrations and methylation. Water exhibited an even more gradual decline in total Hg concentrations with distance from the mine, in both unfiltered bottom water (max, ca. 70 ng L-1) and filtered surface water (max. ca. 7 ng L-1). In comparison with other studies, Clear Lake exhibits high total Hg in sediment and water, yet relatively low methyl Hg concentrations. Our findings indicate a non-linearity between total and methyl Hg concentrations in sediments. The ratio of methyl:inorganic Hg is approximately 2 orders of magnitude higher in the water column than in the sediments, making the methyl fraction much more available for downgradient transport away from the mine. Particulate Hg comprises ca. 33-94% of the total Hg and ca. 25-78% of the methyl Hg in the water column. Geothermal springs do not appear to represent a significant source of Hg to Clear Lake. The present pattern of Hg distribution in Clear Lake shows that water column transport plays some role in the lake-wide contamination of methyl Hg, but high methylation at relatively low inorganic Hg concentrations cannot be ruled out. No quantitative estimate of the area of sediments requiring remediation is possible from these descriptive data alone.
Notes: ONLINE; mine

- Pages 94-95
- Sediment total Hg declines rapidly when moving from the mine
- Page 95
- MeHg+ shows a more gradual decline: mine may not be only source
- Page 96
- Total MeHg+ in water depends on Hg concentration in sediments and limnological characteristics affecting Hg transfer, therefore mine is an indirect point source
URL: <Go to ISI>://000073482600006
http://springerlink.metapress.com/content/v602660r56841150/fulltext.pdf

Reference Type: Journal Article
Record Number: 442
Author: T. H. Suchanek, P. J. Richerson, J. R. Flanders, D. C. Nelson, L. H. Mullen, L. L. Brister and J. C. Becker
Year: 2000
Title: Monitoring inter-annual variability reveals sources of mercury contamination in Clear Lake, California
Journal: Environmental Monitoring and Assessment
Volume: 64
Issue: 1
Pages: 299-310
Date: Sep
Type of Article: Article

Short Title: Monitoring inter-annual variability reveals sources of mercury contamination in Clear Lake, California
ISSN: 0167-6369
Accession Number: ISI:000089244600025
Keywords: mercury; mining; monitoring; aquatic; acid mine drainage; floc; Clear Lake; remediation
EXTRACTION; SEDIMENTS; SAMPLES; SULFIDE
Abstract: Mercury (Hg) in the aquatic ecosystem of Clear Lake has been documented since the 1970s when fishes were found to have elevated levels of toxic methyl mercury (meHg). Mining practices at the Sulphur Bank Mercury Mine (active intermittently from 1872-1957) along the shoreline of Clear Lake included the bulldozing of waste rock and overburden ore into the shallow nearshore regions of the lake and the creation of steeply sloped piles of waste rock at the water's edge. This process, plus erosion of the waste rock piles, resulted in the accumulation of an estimated 100 metric tons of Mg in Clear Lake. A monitoring program to assess Mg in Clear Lake was established in 1992, and conducted continuously from 1994. Drought conditions in California had persisted for fa. 6 yrs prior to 1992, when the U.S. Environmental Protection Agency (USEPA) remediated the steeply sloped eroding waste rock piles, which appeared to reduce sediment Hg concentrations significantly. In April 1995, a white flocculent material was observed in Clear Lake adjacent to the mine and has been observed every year since, leading to the discovery of ongoing acid mine drainage (AMD), low pH fluids high in Mg and extremely high in sulfate. AMD is now believed to be the most likely cause of elevated meHg in Clear Lake. The discovery of this source of meHg production in Clear Lake, which will significantly influence remedial options, was only made possible by implementation of a diligent monitoring program.
Notes: ONLINE; mine

- Page 299
- Ongoing acid mine drainage (amd) (low pH, high sulfate) cause of elevated MeHg
- 1970’s-discovery of elevated Hg concentrations in fish
- Page 300
- Before 1920’s-open cut and shaft mining (little contact with Clear Lake)
  - After this, overburden and waste rock removal (creation of Herman Pit)
  - This is when you see increase in Hg in cores
- Page 301
- 1927-44, 1955-57-bulldozing overburden and waste rock into lake (Chamberlin 1990) contributed to increase in Hg
- Page 303
- Amd flows from herman pit (4 m above Clear Lake) through waste rock (changes chemical composition-increase Hg and sulfate), to Clear Lake, resulting in floc
  - Low precipitation years (floc small-elevated MeHg, Al, Fe, silica) vice versa
URL: <Go to ISI>://000089244600025
http://springerlink.metapress.com/content/v612x67m51148317/fulltext.pdf

Reference Type: Journal Article
Record Number: 443

Author: T. H. Suchanek, P. J. Richerson, L. J. Holts, B. A. Lamphere, C. E. Woodmansee, D. G. Slotton, E. J. Harner and L. A. Woodward
Year: 1995
Title: Impacts of Mercury on Benthic Invertebrate Populations and Communities within the Aquatic Ecosystem of Clear Lake, California
Journal: Water Air and Soil Pollution
Volume: 80
Issue: 1-4
Pages: 951-960
Date: Feb
Type of Article: Article
Short Title: Impacts of Mercury on Benthic Invertebrate Populations and Communities within the Aquatic Ecosystem of Clear Lake, California
ISSN: 0049-6979
Accession Number: ISI:A1995RM44200104
Keywords: LARVAE DIPTERA; CHIRONOMIDAE
Abstract: Benthic invertebrates from Clear Lake, site of an inactive mercury (Hg) mine, were analyzed for population and community level parameters in response to a significant point source of sediment-associated Hg. Using multiple regression, at least one taxon (Placobdella leeches) showed a significant decline and another taxon (Procladius midges) showed a significant increase in response to increasing sediment Hg. Responses of invertebrates to sediment Hg levels are complex, likely due to partial confounding between sediment Hg (especially methyl Hg), grain size and depth. Stepwise multiple regression analyses indicate that individual taxa often responded significantly to several environmental factors. Chironomus populations declined with increasing grain size, depth and total Hg; Procladius declined with increasing depth, but increased with increasing sediment grain size and Hg levels; Chaoborus declined with increasing depth; oligochaetes increased with increasing TOC; and Placobdella leeches declined with both increasing depth and sediment Hg levels. Additional multi-variate routines were used to demonstrate more complex relationships than are typically elucidated by standard multiple regression statistics. The complex results presented here may indicate that there are significant population effects above some threshold of sediment Hg concentrations. Community level parameters (diversity and evenness) declined with increasing sediment Hg levels, but with considerable variation at low Hg levels. Simple regression yielded a negative relationship between diversity and evenness versus sediment total Hg that was nearly significant, and one with sediment methyl Hg that was not close to significance. Multiple regression indicated that depth was more important than sediment Hg in describing the variation in diversity.
Notes: ONLINE; mine; insects

- Page 951
- “environmental impacts associated with Hg can be traced to sediment bound pool, benthic invertebrates…food sources”
- 1872-1957, 100 metric tons of Hg into Clear Lake (Suchanek 1998)
- Page 1952
- Affects of Hg contamination decreases with an increase in distance from SBMM
URL: <Go to ISI>://A1995RM44200104
http://springerlink.metapress.com/content/t3n2144525783127/fulltext.pdf

Reference Type: Journal Article
Record Number: 518
Author: T. H. Suchanek, P. J. Richerson, R. A. Zierenberg, C. A. Eagles-Smith, D. G. Slotton, E. J. Harner, D. A. Osleger, D. W. Anderson, J. J. Cech, S. G. Schladow, A. E. Colwell, J. F. Mount, P. S. King, D. P. Adam and K. J. McElroy
Year: 2008
Title: THE LEGACY OF MERCURY CYCLING FROM MINING SOURCES IN AN AQUATIC ECOSYSTEM: FROM ORE TO ORGANISM
Journal: Ecological Applications
Volume: 18
Issue: sp8
Pages: A12-A28
Short Title: THE LEGACY OF MERCURY CYCLING FROM MINING SOURCES IN AN AQUATIC ECOSYSTEM: FROM ORE TO ORGANISM
DOI: doi:10.1890/08-0363.1
URL: http://www.esajournals.org/doi/abs/10.1890/08-0363.1

Reference Type: Journal Article
Record Number: 548
Author: T. H. Suchanek, P. J. Richerson, R. A. Zierenberg, D. G. Slotton and L. H. Mullen
Year: 2008
Title: VERTICAL STABILITY OF MERCURY IN HISTORIC AND PREHISTORIC SEDIMENTS FROM CLEAR LAKE, CALIFORNIA
Journal: Ecological Applications
Volume: 18
Issue: sp8
Pages: A284-A297
Short Title: VERTICAL STABILITY OF MERCURY IN HISTORIC AND PREHISTORIC SEDIMENTS FROM CLEAR LAKE, CALIFORNIA
DOI: doi:10.1890/06-1544.1
URL: http://www.esajournals.org/doi/abs/10.1890/06-1544.1

Reference Type: Journal Article
Record Number: 444
Author: C. Swift
Year: 1965
Title: Early development of the hitch, Lavinia exilicauda, of Clear Lake, California
Journal: California Fish and Game
Volume: 51
Issue: (2)
Pages: 74-80
Date: 1965

Type of Article: Article
Short Title: Early development of the hitch, Lavinia exilicauda, of Clear Lake, California
Accession Number: BIOSIS:PREV19654600060355
Call Number: call # - SK351 .C3 Shields UCD
Abstract: In 1962 and 1963, eggs were collected from hitch during their spawning in tributaries of Clear Lake. The eggs were hatched using improved hatchery apparatus. Observations of the stages of development of both eggs and larvae are described and shown to drawings up to the juvenile stage. || ABSTRACT AUTHORS: Author
Notes: hitch

-pg 74
    -siegler canyon creek, april 7, 1962, hitch present
    -april 12, 1963, ditch near lakeport, hitch present
-pg 75
    -eggs hatched 7 days at 60-64 F
-pg 79
    -by 14 days, free swimming
    -by 65 days, fully ossified fin rays
URL: <Go to ISI>://BIOSIS:PREV19654600060355
Author Address: Univ. Calif., Berkeley, Calif., USA

Reference Type: Thesis
Record Number: 445
Author: T. L. Taylor
Year: 1978
Title: Fish distribution and ecology in the streams of the Clear Lake Basin
Place Published: Davis
University: Calif.
Number of Pages: 139 leaves. ill. Dissertation: Thesis (M.S.)--U. of Calif., Davis.
Short Title: Fish distribution and ecology in the streams of the Clear Lake Basin
Accession Number: OCLC: 84555217 Provider: OCLC
Call Number: call # - LD781.D5j 1978 T3984 Shields UCD micro copy collections and special collections
Keywords: Dissertations, Academic -- California -- Ecology.
Abstract: need abstract
Notes: fish; clear lake; tributary
SPEC. COLL. HAS ARCHIVAL COPY; MICRO. ROOM HAS CIRCULATING MICROFICHE COPY (3 SHEETS)./ Typescript./ Degree granted in Ecology.
Thesis/dissertation (deg)
Book

Reference Type: Newspaper Article
Record Number: 446
Reporter: D. Thompson

Year: 2004
Title: Mercury, a Gold Rush legacy, haunting coastal creeks
Newspaper: The Associated Press
Issue Date: May 11, 2004
Short Title: Mercury, a Gold Rush legacy, haunting coastal creeks
Abstract: THIS IS THE ARTICLE
SACRAMENTO (AP) - Mercury from California's Gold Rush days is lingering in three waterways flowing from the coastal mountains northeast of San Francisco, prompting warnings Tuesday from state health officials.

The California Environmental Protection Agency's Office of Environmental Health Hazard Assessment issued a draft advisory warning against consuming too much fish from Clear Lake, Cache Creek and Bear Creek in Lake, Yolo and Colusa counties, respectively.

The draft advisory recommends that no one eat any fish or shellfish from Bear Creek, a 39-mile-long tributary of Cache Creek.

For Clear Lake and Cache Creek, the draft advisory recommends women of childbearing age and children age 17 and younger eat bass, catfish and certain other fish no more than once a month, and men and women beyond childbearing age no more than once a week.

If none of those fish are eaten, women of childbearing age and children 17 years and younger can have one meal a week of bluegill, hitch, carp, trout or crayfish, while women beyond childbearing age and adult men can have up to three meals a week of those fish.

An advisory has been in place since 1987 for Clear Lake, but the new proposal includes the entire 81-mile length of Cache Creek from Clear Lake to the Yolo Bypass of the Sacramento River, as well as the North Fork of Cache Creek and all of Bear Creek.

Mercury can affect the nervous system. Naturally occurring mercury can accumulate in fish and shellfish at many times the concentrations of the surrounding environment. Mercury was mined in the Clear Lake area starting in the mid-1800s.

State scientists plan to discuss the draft advisory Friday at the Lake County Coordinating Resource Management Committee meeting in Clearlake. The public has until June 16 to comment.
Notes: fish; mine

-draft advisory warning not to eat too much Clear Lake fish
  owomen of childbearing age & kids <17: 1/month (bass, catfish, etc), 1/week (hitch, bluegill, carp, trout, crayfish)
  omen and women > childbearing age: 1/week (bass, etc), 3/week (hitch, etc)
-advisory since 1987
-mid 1800's-start of Hg mining
-Hg can affect nervous system

-can bioaccumulate in fish and shellfish

Reference Type: Journal Article
Record Number: 447
Author: J. C. Varekamp and A. F. Waibel
Year: 1987
Title: Natural Cause for Mercury Pollution at Clear Lake, California, and Paleotectonic Inferences
Volume: 15....Issue 11
Pages: 1018-1021
Type of Article: Journal-Geology
Short Title: Natural Cause for Mercury Pollution at Clear Lake, California, and Paleotectonic Inferences
Accession Number: 8804174
Keywords: Water pollution sources; Mercury; Clear Lake; California;
Geochemistry; Lake sediments; Paleohydrology; Geothermal studies
SW 3020 Sources and fate of pollution
Abstract: Mercury measurements in lake sediments from cores from Clear Lake, California, reveal that high Hg levels (up to 65 ppm) have been characteristic for the sediments for >10,000 yr. A strong Hg anomaly occurs in sediments deposited between 10.5 and 8.5 (thousand yr), which the authors relate to a period of relatively rapid tectonic subsidence of part of Clear Lake. It is hypothesized that mercury-rich geothermal fluids rose along the activated fractures and faults and were discharged into the lake, causing the anomalously high Hg content of the sediments and leading to deposition of the Sulphur Bank Hg deposit. The total amount of Hg discharged into Clear Lake over the past 15 ka is estimated to be at least 2400 metric tons. Chemostratigraphy of lake sediments in geothermally active areas may hold promise for the detection and dating of major paleoseismic periods. (Author 's abstract)
Notes: pollution; chemistry; soil; ONLINE
Geology GLGYB Vol. 15, No. 11, p 1018-1021, November 1987. 2 fig, 30 ref.
URL: <Go to ISI>://A1987K774300007
http://www.gsajournals.org/archive/0091-7613/15/11/pdf/i0091-7613-15-11-1018.pdf
Author Address: Wesleyan Univ. Middletown, CT. Dept. of Earth and Environmental Sciences

Reference Type: Generic
Record Number: 570
Author: E. Vestal
Year: 1974
Title: Management Activites at Clear Lake, Lake County
Secondary Author: C. V. Geldern
Place Published: Region III
Publisher: California Department of Fish and Game
Short Title: Management Activites at Clear Lake, Lake County
Abstract: Stocking of Florida Strain LMB. 456 introduced from 1969-1971. Work with Lake County Mosquito Abatement District in order to monitor silversides.

Research Notes: photocopied from the California Department of Fish and Game. Assisted by Jay Rowan and DFG Volunteer Gary Sypnicki.
North Central Regional Office
1701 Nimbus Road
Rancho Cordova, CA 95670
Access Date: 7/7/2011

Reference Type: Book
Record Number: 448
Author: L. A. Walford
Year: 1931
Title: Handbook of common commercial and game fishes of California
Publisher: Sacramento : California State Print. Off.
Short Title: Handbook of common commercial and game fishes of California
Abstract: List of common and scientific names -- Introduction -- Illustrations of anatomical terms -- Glossary of anatomical terms -- A key to the identification of some California fishes -- Descriptions and illustrations of fishes
Notes: fish; html online
URL:
http://content.cdlib.org/xtf/view?docId=kt1s2001fk&brand=calisphere&doc.view=entire_text

Reference Type: Report
Record Number: 464
Author: J. C. S. Wang
Year: 1986
Title: Fishes of the Sacramento-San Joaquin estuary and adjacent waters, California: a guide to the early life histories
Institution: California Department of Water Resources and California Department of Fish and Game
Document Number: 9
Date: January 1986
Short Title: Fishes of the Sacramento-San Joaquin estuary and adjacent waters, California: a guide to the early life histories
Call Number:call # - QL 618.5 T4 No.9 Shields UCD
Notes: fish

Reference Type: Report
Record Number: 449
Author: J. C. S. R. Wang, R. C.
Year: 2007
Title: Early Life Stages and Life Histories of Cyprinid Fish in the Sacramento-San Joaquin Delta, California: with Emphasis on Spawning by Splittail, 'Pogonichthys macrolepidotus'
Series Editor: T. F. F. Studies

Document Number: Volume 32
Type: Final rept
Short Title: Early Life Stages and Life Histories of Cyprinid Fish in the Sacramento-San Joaquin Delta, California: with Emphasis on Spawning by Splittail, 'Pogonichthys macrolepidotus'
Accession Number: PB2007111259
Call Number:call # - QL618.5 .T4 no.9 Shields UCD
Keywords: Life history; California; Spawning; Fathead minnow
Early life stages; Sacramento-San Joaquin Delta; Cyprinid fish;
Species identification key; Species key; Prolarvae-postlarvae; Late
postlarvae-prejuvenile; Early juvenile; Goldfish; Carassius auratus;
Red shiner; Cyprinella lutrensis; Common carp; Cyprinus carpio;
California roach; Hesperoleucus symmetricus; Hitch; Lavinia
exilicauda; Hardhead; Mylopharodon conocephalus; Golden shiner;
Notemigonus crysoleucas; Sacramento blackfish; Orthodon
microlepidotus; Pimephales promelas; Splittail; Pogonichthys
macrolepidotus; Sacramento pikeminnow; Ptychochelius grandis
47D Ocean Sciences & Technology: Biological Oceanography
Abstract: Dichotomous keys were developed from examination of preserved and live specimens to identify the early life stages for 11 species of cyprinid fish (minnows) residing in Suisun Bay (the Bay) and the extended area associated with the Sacramento-San Joaquin River Delta (Delta). Three keys were developed for each of the 11 species based on 3 defined life stages: prolarvae-postlarvae, late postlarvae-prejuvenile, and early juvenile. Keys are presented for goldfish, Carassius auratus; red shiner, Cyprinella lutrensis; common carp, Cyprinus carpio; California roach, Hesperoleucus symmetricus; hitch, Lavinia exilicauda; hardhead, Mylopharodon conocephalus; golden shiner, Notemigonus crysoleucas; Sacramento blackfish, Orthodon microlepidotus; fathead minnow, Pimephales promelas; splittail, Pogonichthys macrolepidotus; and Sacramento pikeminnow, Ptychocheilus grandis. A description of spawning habits, developmental biology, and life histories for each species are also included. This report places special emphasis on the early life stages and spawning of splittail. Catch and salvage of adult splittail in spawning condition, observed behavior of newly hatched larvae, and the widespread collection of prolarvae suggest that the Bay and Delta are both used for spawning. Based on data presented in this report, we conclude that splittail are not all potamodromous: some reside and spawn each year in the suitable habitat of the Bay and Delta.
Notes: fish; hitch
Performer: Bureau of Reclamation, Sacramento, CA. Mid-Pacific Region. Apr 2007. 150p.

Reference Type: Book
Record Number: 450
Author: L. B. S. T. H. Webber
Year: 1998
Title: Second annual Clear Lake Science and Management Symposium, October 24, 1998 : proceedings volume
Place Published: Lakeport, Calif.
Publisher: U.C. Davis, Clear Lake Environmental Research Center
Number of Pages: iii, 138 p.

Short Title: Second annual Clear Lake Science and Management Symposium, October 24, 1998 : proceedings volume
Accession Number: OCLC: 44175512 Provider: OCLC
Keywords: Water quality -- California -- Clear Lake (Lake County)
Water chemistry -- California -- Clear Lake (Lake County)
Hydrology -- California -- Clear Lake (Lake County)
Notes: clear lake symposium; contains many articles
University of California, Davis.; Clear Lake Environmental Research Center. ; University of California, Davis.; Dept. of Wildlife, Fish and Conservation Biology. Conf Author(s): Clear Lake Science and Management Symposium (2nd : 1998 : Lakeport, Calif.)
ill., maps ; 28 cm.
Cover title./ "Hosted by: The University of California, Davis Clear Lake Environmental Research Center, Lakeport, CA ; affiliated with: The Department of Wildlife, Fish and Conservation Biology, University of California, Davis."/ Includes bibliographical references.
editors, Lori B. Webber, Thomas H. Suchanek.
Conference publication (cnp)
Book

Reference Type: Generic
Record Number: 571
Author: L. Week
Year: 1980
Title: Field Notes
Place Published: Region III
Publisher: California Department of Fish and Game
Date: December 3, 1980
Short Title: Field Notes
Notes: 1980 Memorandum to file stating that there are 629 boat ramps, 580 rip rap rock fills, 925 bulkheads surrounding the Clear Lake littoral zone. Approx. 33% of original linear shoeline has been altered.
Research Notes: photocopied from the California Department of Fish and Game. Assisted by Jay Rowan and DFG Volunteer Gary Sypnicki.
North Central Regional Office
1701 Nimbus Road
Rancho Cordova, CA 95670

Reference Type: Book
Record Number: 451
Author: L. E. Week
Year: 1982
Title: Habitat selectivity of littoral zone fishes at Clear Lake, California
Series Title: Inland Fisheries administrative report ;; no. 82-7;
Place Published: [Sacramento?]
Publisher: State of California, the Resources Agency, Dept. of Fish and Game

Number of Pages: 31 p.
Short Title: Habitat selectivity of littoral zone fishes at Clear Lake, California
Accession Number: OCLC: 58663581 Provider: OCLC
Call Number: call # - F660 .A3 no.82-7 State lib CSL govt pubs
Keywords: Fish habitat improvement -- California -- Clear Lake.
Fishes -- California -- Clear Lake.
Clear Lake (Calif.)
Abstract: need abstract
Notes: fish; clear lake
California.; Dept. of Fish and Game.
map ; 28 cm.
"September 1982"--Cover./ Bibliography: p. 23-27.
by Larry E. Week.
Government publication (gpb); State or province government publication (sgp)
Book

Reference Type: Report
Record Number: 483
Author: L. E. Week
Year: 1983
Title: Modern Fishes of Clear Lake, California
Short Title: Modern Fishes of Clear Lake, California
Abstract: The composition of fish species in Clear Lake has changed dramatically over the last century in response to habitat alteration and the introduction of non-native species. Urban and agricultural encroachment has destroyed nearly 84% of the original vast marsh complex. A total of 15 non-native species have become established in addition to 12 native species. The synergistic effect of habitat manipulation and fish introduction has resulted in the extirpation of two native species (one indigenous to Clear Lake), and the near extirpation of the only centrarchid native to Clear Lake.

Existing fish populations are generally found near remnant marshes reflecting the direct life support function of these areas. Distribution patterns of prehistoric fish fauna were probably similar.
Notes: fish

-abstract
    -agriculture encroachment destroyed 84% of marshes
    -1983, 15 non native, 12 native
-pg 1
    -1840, first European settlers
-pg 3
    -summer temperature 20-25 C (Goldman & Wetzel 1963)
    -polymictic, some weak stratification in summer
    -natural shoreline
        -sand, gravel or rocky beaches emergent vegetation (tule)

-pg 6
	-april-october 1976, electrofishing
		-inland silverside>bluegill>carp>tule perch>green sunfish>prickly sculpin>black crappie>goldfish>largemouth bass>white catfish>blackfish>hitch>brown bullhead>white crappie>channel catfish>sacramento perch
	-august 1982
		-same as above except largemouth bass moved to #5
	-1967, inland silverside introduced for clear lake gnat control
	-commercial
		-sacramento blackfish and carp
-pg 8
	-thicktail chub and clear lake splittail extirpated (hopkirk 1973)
	-table 2, fish of clear lake
-pg 10
	-species associated with aquatic vegetation, hitch, blackfish, tule perch, prickly sculpin

Reference Type: Conference Paper
Record Number: 185
Author: J. Welsh
Year: 1970
Title: Clear Lake water quality
Conference Name: Minutes of the regular meeting. Sacramento, Calif. : The Resources Agency of California, Department of Water Resources, California Water Commission, 1970. October 2, 1970.
Pages: 9 leaves ; 28 cm.
Accession Number: OCLC: 26480744 Provider: OCLC
Keywords: Water quality -- California -- Clear Lake.
Clear Lake (Lake County, Calif.)
Abstract: need abstract
Notes: clear lake
California Water Commission. ; California.; Dept. of Water Resources.
James Welsh.
Conference publication (cnp)
Article

Reference Type: Journal Article
Record Number: 497
Author: D. E. C. E. R. White
Year: 1962
Title: Sulphur Bank, California: a major hot-spring quicksilver deposit
Journal: Geological Society of America
Volume: In: Engel A.E.J., H.L. James, B.F. Leonard (Eds) Petrologic studies: a volume to honor A.F. Buddington.
Pages: 397–428

Start Page: 397
Short Title: Sulphur Bank, California: a major hot-spring quicksilver deposit
Abstract: need abstract
Notes: mine; clear lake

Reference Type: Generic
Record Number: 502
Author: G. White
Year: 1984
Title: The Archaeology of LAK-Si0, Near Lower Lake, Lake County, California
Place Published: The Cultural Resource Facility, Sonoma State University, Rohnert Park, CA.

Short Title: The Archaeology of LAK-Si0, Near Lower Lake, Lake County, California
Abstract: need abstract
Notes: geothermal

Reference Type: Audiovisual Material
Record Number: 452
Author: G. White, D.A. Fredrickson, D.F.Thomas, VM. Levinson, B. Thomas, T. Huffman, Mary
Year: 1994
Title: Sharing the neighborhood for 5000 years the people of the lake and the uplands
Publisher: [Sacramento] : California Dept. of Transportation
Extent of Work: 1 videocassette (29 min.)
Type: Government publication (gpb); State or province government publication (sgp); Videorecording (vid); Videocassette (vca); VHS tape (vhs)
Short Title: Sharing the neighborhood for 5000 years the people of the lake and the uplands
Alternate Title: Sharing the neighborhood for five thousand years; Ethnic studies video collection.
Accession Number: OCLC: 32520422 Provider: OCLC
Call Number: call # - VIDEO/C 3787 Mediactr UCB
Keywords: Excavations (Archaeology) -- California -- Lake County.
Pomo Indians -- Antiquities.
Indians of North America -- California -- Lake County -- Antiquities.
Archaeology -- Methodology.
Archaeology -- California -- Lake County.
Lake County (Calif.) -- Antiquities.
Clear Lake (Lake County, Calif.) -- Antiquities.
Anderson Marsh State Historic Park (Calif.) -- Antiquities.
Abstract: Film examines the procedures and discoveries of an archaeological excavation of pomo indian village sites surrounding Clear Lake in Lake County, California.
Notes: native american; settlement; archaeological
Alpha Spectrum Productions, Inc. ; California.; Dept. of Transportation.
sd., col. ; 1/2 in.

VHS.
"Music and dancers are Southwest pomo"--Closing frame./ Participants: Delbert Thomas, Greg White, Dave Fredrickson, Elyn Walker, Larry Weigel, Sunshine Psota, Wendy Nelson, Jim Brown, Jr., Lisa Swillinger, Dave Beiling./ Narrator: Mary Huffman.
Alpah Spectrum Productions, Inc. Project directors, Greg White, Dave Fredrickson ; executive producer, Dave Fredrickson ; producer, Vera-Mae Fredrickson ; directors, Trevor Thomas, Bill Levinson ; videographer, Don Bright ; writer/editor, Bill Levinson ; music, Leland Fullwider, Bill Graves. More Records: Show record information
Visual Material

Reference Type: Book
Record Number: 453
Author: S. B. W. H. Whitson, C. San Francisco. Nordhoff, C. Sacramento Valley. Nordhoff, T. Mendocino and Clear Lake. Magee and S. Mount
Year: 1976
Title: Northern California 100 years ago : assembeled from Harper's 1883, Harper's 1873, and Scribner's 1873
Series Title: The "Old/100 years ago" series; Variation: Old/100 years ago series.
Place Published: Albuquerque
Publisher: Sun Pub. Co.
Number of Pages: 48 p.
Short Title: Northern California 100 years ago : assembeled from Harper's 1883, Harper's 1873, and Scribner's 1873
ISBN: ISBN: 0914172043 : pbk.
Accession Number: OCLC: 21733141 Provider: OCLC
Call Number: cal # - F866 .N62 State lib CSL ca and ca non circ
Keywords: Lumber trade -- Mendocino County, Calif.
Lumber trade -- California -- Mendocino County.
San Francisco (Calif.) -- Description and travel.
Sacramento Valley (Calif.) -- Description and travel.
Clear Lake (Calif.)
Shasta, Mount (Calif.)
Abstract: need abstract
Notes: settlement; clear lake
ill. ; 28 cm.
Bishop, W.H. San Francisco. -- Nordhoff, C. The Sacramento Valley. -- Nordhoff, C. Mendocino and Clear Lake. -- Magee, T. Mount Shasta.
compiled by Skip Whitson. More Records: Show record information
Book

Reference Type: Book
Record Number: 492
Author: R. G. E. L. Whittaker
Year: 1975

Title: Primary Productivity of the Biosphere
Series Editor: R. H. W. H. Leith
Series Title: Ecological Studies
Place Published: New York
Publisher: Springer-Verlag, New York.
Volume: 14
Number of Pages: 339
Short Title: Primary Productivity of the Biosphere
Abstract: need abstract
Notes: native american; clear lake

Reference Type: Journal Article
Record Number: 516
Author: J. G. Wiener and T. H. Suchanek
Year: 2008
Title: THE BASIS FOR ECOTOXICOLOGICAL CONCERN IN AQUATIC ECOSYSTEMS CONTAMINATED BY HISTORICAL MERCURY MINING
Journal: Ecological Applications
Volume: 18
Issue: sp8
Pages: A3-A11
Short Title: THE BASIS FOR ECOTOXICOLOGICAL CONCERN IN AQUATIC ECOSYSTEMS CONTAMINATED BY HISTORICAL MERCURY MINING
DOI: doi:10.1890/06-1939.1
URL: http://www.esajournals.org/doi/abs/10.1890/06-1939.1

Reference Type: Report
Record Number: 454
Author: P. F. Windrem
Year: 2008
Title: Chi Council for the Clear Lake Hitch Interim Report on Activities
Date: January 1, 2008
Short Title: Chi Council for the Clear Lake Hitch Interim Report on Activities
Abstract: THIS IS THE ARTICLE
Introduction
In early spring, hitch migrate up streams tributary to Clear Lake to spawn. Longtime residents vividly recall the vast numbers of spawning hitch in every tributary to Clear Lake. Over the past 50 years, the numbers of spawning hitch have plummeted dramatically. In recent years, no hitch have been sighted in some major tributaries during the spawning season.

Early in 2004, the Lake County Group of the Sierra Club organized volunteers to survey the hitch migration. In August of 2004, the Chi Council for the Clear Lake Hitch was formed with the assistance of the Eastlake & Westlake Conservation Districts as a Coordinated Resource

Management and Planning (CRMP) organization. The organizers were Sierra Club members, local landowners, tribes, state and local governmental agencies and interested citizens.

As stated in its Memorandum of Understanding, the goals of the Chi Council are to:

Study, protect, restore, and maintain the watershed ecosystem leading to a restored population of Clear lake Hitch
Study and recognize the "lake effect" on the hitch population by the introduction of nonnative fish, the condition of the shoreline habitat, the effects of pollutants in the water column, and aquatic conditions generally
Study the fish population during migratory runs
Streams have been monitored in each of the successive spawning seasons. The data has been compiled by Chi Council and posted on its website at www.lakelive.org/chicouncil.

Summary of Findings

Spring hitch surveys made over the past four years have resulted in the following observations:

The numbers of hitch that spawn in the creeks each year appear to be declining.
In the major tributaries of Middle Creek and Clover Creek, hitch were observed in 2004 & 2005; none were observed in 2006 or 2007.
No hitch have been observed over the past four years in Seigler or Schindler Creeks.
Conversely, significant numbers of hitch have been observed in Adobe Creek each year.
For over 30 years, physical barriers in Kelsey, Scotts, Middle and Clover Creeks have deprived hitch of access to miles of historic spawning beds.
The causes for the decline in the hitch population are not clearly identified or understood
The effect of non-native species of fish in Clear Lake on hitch populations is not yet understood.
The Need for Scientific Research

Two of the objectives of the Chi Council are to:

Establish scientific protocols for the monitoring of the hitch population, and
Encourage scientific research on hitch and their habitat through colleges, universities and other agencies.
While volunteer surveys of hitch spawning have provided significant information regarding current hitch populations and the location of physical barriers to streambed access, scientifically designed and supervised studies are needed to answer fundamental questions regarding the condition and fate of this important native fish. The Chi Council has solicited assistance from the University of California to help organize and conduct such studies.

Removal of Physical Barriers

Modification or removal of physical barriers in the creeks to allow free passage of spawning hitch is a vital first step to restore a viable population of hitch. The Chi Council urges ongoing, focused efforts by governmental agencies and private parties to achieve that end.

Volunteer Support Is Vital

Monitoring of the spring hitch migration is essential to learn more about hitch behavior and establish population trends. The continued participation of volunteers to monitor the hitch spawn is vital to the success of this project. For detailed results of past surveys, log onto the Chi Council's website at www.lakelive.org/chicouncil.

Thank you for your continued support of the Chi Council to save the Clear Lake hitch from extinction.

Respectfully submitted,

Peter F. Windrem, Chair
Chi Council for the Clear Lake Hitch
Notes: fish; html online

Reference Type: Report
Record Number: 572
Author: P. F. Windrem
Year: 2011
Title: Chi Council for the Clear Lake Hitch Interim Report
Institution: Chi Council for the Clear Lake Hitch
Date: June 17, 2011
Short Title: Chi Council for the Clear Lake Hitch Interim Report
Abstract: Summary of findings, how streams are monitored for hitch spawns, the need for further research, and importance of volunteer observations. Hard data from 2005-2011 show hitch observations and numbers.
URL: http://lakelive.info/chicouncil/2008report.htm

Reference Type: Journal Article
Record Number: 455
Author: M. Wolfe and D. Norman
Year: 1998
Title: Effects of waterborne mercury on terrestrial wildlife at Clear Lake: Evaluation and testing of a predictive model
Journal: Environmental Toxicology and Chemistry
Volume: 17
Issue: 2
Pages: 214-227
Date: Feb
Short Title: Effects of waterborne mercury on terrestrial wildlife at Clear Lake: Evaluation and testing of a predictive model
Alternate Journal: Environ. Toxicol. Chem.
ISSN: 0730-7268

Accession Number: 4397330
Keywords: Article Subject Terms: Aquatic birds; Bioaccumulation; Freshwater pollution; Mercury; Methyl mercury; Methylmercury; Organochlorine compounds; Pollution effects; USA, California, Clear L.; Water Pollution; Water pollution; Wildlife; Article Geographic Terms: USA, California, Clear L. USA, California, Clear Lake; dimethylmercury; mercury; organochlorine compounds; terrestrial ecosystems; water pollution; wildlife
Freshwater
X 24166 Environmental impact; P 6000 TOXICOLOGY AND HEALTH; SW 3030 Effects of pollution; Q5 01504 Effects on organisms
Abstract: Birds and mammals exposed to waterborne mercury (Hg) and methylmercury (MeHg) were collected and/or sampled at Clear Lake, California, USA, to field test the predictive wildlife criteria model developed for the Great Lakes Water Quality Initiative (GLWQI). Tissue samples collected from sampled animals were analyzed for Hg and organochlorine residues, and for selected physiologic parameters known to be affected by Hg. All mammalian organ tissues analyzed contained less than 12 ppm total Hg, wet weight. All avian tissue samples analyzed contained less than 3 ppm total Hg, wet weight. No evidence of Hg-associated health effects was found. Tissue Hg residues were compared with water, sediment, and animal food samples to characterize bioaccumulation of mercury in the Clear Lake food web. Total Hg bioaccumulation factors for the Clear Lake site closest to the Hg source were: TL-2: 11,100; TL-3: 31,200; TL-4, 190,000. Our results support the final wildlife criterion (1,300 pg/L) and suggest that the GLWQI model, with site-specific modifications, is predictive for other Hg-bearing aquatic systems.
Notes: birds; fish; chemistry; pollution; bioaccumulation; soil; ONLINE
Journal Article
URL: http://www.setacjournals.org/archive/1552-8618/17/2/pdf/i1552-8618-17-2-214.pdf
Author Address: Toxicology Task Force, 1233 West Hills Road, Philomath, Oregon 97370, USA

Reference Type: Thesis
Record Number: 456
Author: L. A. Woodward
Year: 1999
Title: Assessment of sublethal mercury stress in a contaminated lake: Clear Lake, Lake County, California
Place Published: United States -- California
University: University of California, Davis
Thesis Type: Ph.D.
Short Title: Assessment of sublethal mercury stress in a contaminated lake: Clear Lake, Lake County, California
Accession Number: 9958657
Keywords: Ecology
Environmental science
Genetics
Mercury -- Environmental aspects -- California -- Clear Lake (Lake County)
Water -- Pollution -- California -- Clear Lake (Lake County)
Clear Lake (Lake County, Calif.)

Abstract: Simple and reliable diagnostics are needed for the assessment of sublethal effects of toxicants. An ideal diagnostic would respond to a variety of toxicants and stressors and could be applied across different types of systems. The measure would be best assessed on organisms found (or placed) in the stressed environment so as to include not only the toxicant stress but also response under natural conditions. Two measures were assessed in the mercury contaminated Clear Lake, Lake County, California. Both utilized chronomid larvae (Chironomus plumosus) a genus commonly found worldwide. The second measure was further tested for potential correlation with allozyme heterozygosity and the repeatabilty of the measure. The first examined allozyme frequencies along a gradient of sediment mercury concentrations. We examined whether allozyme frequencies could be used to distinguish populations along the gradient or between contaminated and reference sites. No significant correlations were found between allozyme frequencies and contamination, but an overall deficit of heterozygotes was found at all sites sampled. While toxicant stress could be the cause, a more parsimonious explanation would be sampling over a patch population structure leading to a heterozygote deficiency (Wahlund effect). Examination of allozyme frequencies along a transect indicated that the observed deficiency of heterozygous genotypes was due to sampling across some fine-scale substructuring of the populations. The second measure examined the use of developmental stability as an indicator. Developmental stability is the ability of an organism to produce a consistent phenotype in a given environment. Measures of developmental stability, such as fluctuating asymmetry and phenodeviation, provide a simple method for detecting stress in populations. Fluctuating asymmetry is the deviation from perfect bilateral symmetry in traits. Phenodeviants are aberrations from the normal phenotypic expression of a character. Developmental stability was examined for chironomid larvae collected along a gradient of sediment mercury concentrations. Four of 12 measures of fluctuating asymmetry differed significantly among sites. Differences were correlated with mercury contamination. The frequency of phenodeviants also showed differences among individuals from the three areas examined. Finally, the midge larvae were assessed relative to a potential relationship of these potential bioindicators to allozyme-heterozygosity. Replicability of tested indices was examined. Asymmetries of the different characters were uncorrelated. Fluctuating asymmetry and total heterozygosity were significantly higher in the more contaminated site. However, no significant relationship was found between the level of individual fluctuating asymmetry and individual allelic heterozygosity.
Notes: chemistry; pollution; clear lake; insects; ONLINE
ill. Dissertation: Thesis (Ph. D.)--University of California, Davis, 1999.
Includes bibliographical references (leaves 50-56)./ Reproduction: Photocopy./ Ann Arbor, Mich. :/ UMI Dissertation Services,/ 2001./ 23 cm.
by Lee Ann Woodward.
Thesis/dissertation (deg); Manuscript (mss)
URL:
http://proquest.umi.com/pqdweb?did=731810361&Fmt=7&clientId=1567&RQT=309&VName=PQD
http://proquest.umi.com/pqdweb?vinst=PROD&fmt=6&startpage=-1&clientid=1567&vname=PQD&RQT=309&did=731810361&scaling=FULL&vtype=PQD&rqt=309&TS=1216141031&clientId=1567

Reference Type: Newspaper Article

Record Number: 457
Reporter: D. Wooten
Year: 2008
Title: $658,622 will go to 6 Native American Conservation Projects in California, Nevada
Newspaper: US Fed News
Issue Date: March 21, 2008
Short Title: $658,622 will go to 6 Native American Conservation Projects in California, Nevada
Abstract: THIS IS THE ARTICLE
WASHINGTON, March 21 -- The U.S. Department of the Interior's U.S. Fish & Wildlife Service issued the following press release:

The Department of the Interior today announced that 6 Native American conservation projects in California and Nevada will receive $658,622 in grant funding through the National Tribal Wildlife Grant Program administered by the U.S. Fish and Wildlife Service. The grants provide technical and financial assistance for the development and implementation of efforts that benefit fish and wildlife resources and their habitat, including species that are not hunted or fished.

Nationwide, $6.2 million in grants will go to 38 Native American projects in 18 states to fund a wide range of conservation projects.

"The Tribal Wildlife Grants program has helped the Service to collaborate more effectively with Native American tribes in conserving and restoring the vast diversity of fish and wildlife habitat that they manage," said U.S. Fish and Wildlife Service Director H. Dale Hall.

More than $34 million has gone to Native American tribes through the Tribal Wildlife Grants program in the past six years, providing funding for 175 conservation projects administered by 133 participating Federally-recognized tribes. The grants have enabled tribes to develop increased management capacity, improve and enhance relationships with partners including State agencies, address cultural and environmental priorities, and heighten interest of tribal students in fisheries, wildlife and related fields of study. Some grants have been awarded to enhance recovery efforts for threatened and endangered species.

The grants are provided exclusively to Federally-recognized Indian tribal governments and are made possible under the Related Agencies Appropriations Act of 2002, and through a component of the State Wildlife Grant program.

During the current grant cycle, tribes submitted a total of 110 proposals that were scored by panels in each Service Region using uniform ranking criteria. A national scoring panel recommended 38 proposals for funding.

The conservation projects covered by the California and Nevada Tribal grants include, in California: Three grants totaling $293,225 for projects addressing the Clear Lake hitch, a culturally significant native fish in Clear Lake. This multi-tribal effort will seek to accelerate the recovery of this fish and to provide stock to other streams in the watershed. The three tribes and their individual grant awards are: The Big Valley Rancheria Band of Pomo Indians in California, $49,791 for the Big Valley Rancheria Clear Lake Hitch Study; Habematolel Pomo of Upper

Lake, $48,498 for the Clear Lake Hitch Study and Recovery Project; and the Robinson Rancheria , $194,936 for the Clear Lake hitch study.

A grant to the Yurok Tribe of the Klamath River Reserve in northern California for $200,000 to study the feasibility of reintroducing California condors to the Yurok Ancestral Territory. The condor is listed as an endangered species by Federal and State agencies.

A grant to the Karuk Tribe for $100,000 for the Bluff Creek Habitat Protection-Road Decommissioning Implementation Project will improve salmon habitat by decommissioning a road that is a primary source of sedimentation negatively impacting salmon spawning habitat.

In Nevada the Moapa Band of Paiutes will receive $97,397 for the Muddy River Habitat Enhancement Project (Stream Bank Restoration). This project will restore and enhance the fishery and wildlife habitat of the Moapa River and other important wetland habitats on the Moapa Indian Reservation. The Tribe will restore stream channel and stream bank characteristics so that a riparian component made up of native plants can be established.

The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people. We are both a leader and trusted partner in fish and wildlife conservation, known for our scientific excellence, stewardship of lands and natural resources, dedicated professionals and commitment to public service. For more information on our work and the people who make it happen, visit www.fws.gov [http://www.fws.gov].
Notes: native american; grant

Reference Type: Report
Record Number: 458
Author: J. F. Wright and J. Macclanahan
Year: 1971
Title: Flood Control Project Maintenance and Repair--1970 Inspection Report
Short Title: Flood Control Project Maintenance and Repair--1970 Inspection Report
Accession Number: 7402617
Call Number:call # - ERA
Keywords: *flood control; *levees; *river basins; *california; engineering structures; maintenance; channel improvement; check structures; flood protection; maps; sites; erosion control; vegetation; projects; network design; *sacramento and san joaquin valleys(calif.)
SW 0835 Streamflow and runoff; SW 2010 Control of water on the surface
Abstract: In 1970, flood control levees extending 1,537 miles were operated under cooperative state and federal agreements in the sacramento and san joaquin valleys and in lake and placer counties, calif. flood control projects include the sacramento, american, san joaquin, calaveras, and truckee rivers; littlejohns and middle creeks; merced county stream group; sacramento river bank protection project, and the lower san joaquin flood control project; and the fresno county stream group. twice during 1970, department of water resources specialists rated the quality of

levee maintenance performed by local maintaining agencies. this bulletin reports both the 1970 ratings and the method of rating, discusses proper maintenance procedures, and reports levee construction by the u. s. army corps of engineers, channel maintenance, applications for levee encroachments, and the condition of the flood control project structures. maps locate project levees and local maintenance agencies. (woodard-usgs)
Notes: dam; flood control; tributary
Available from state of calif, documents section, p.o. box 20191, sacramento, calif. 95820 price $2.00. bulletin no 149-70, may 1971. 30 p, 2 fig, 8 tab.

- Pg 8
- Summary of maintenance ratings by project (table 1). Middle creek, 14.3 miles of levee. Maintenance rating (% of miles) 49% good, 51% fair
- Pg 19
- 20 year levee maintenance record (1951-'70) (table). All good except '64 fair
- Pg 29
- Middle creek pumping plant-good condition
  - "gravity control gate seat is cracked. Additional settlement has been observed to the concrete surge box"
- Pg 30
- Middle creek and tributaries control by DWR
  - 112 acres in clearnace

Author Address: CALIFORNIA STATE DEPT. OF WATER RESOURCES, SACRAMENTO

Reference Type: Thesis
Record Number: 459
Author: W. A. Wurtsbaugh
Year: 1983
Title: Internal and external controls on plankton abundance in a large eutrophic lake: Clear Lake, California
Thesis Type: Dissertation
Short Title: Internal and external controls on plankton abundance in a large eutrophic lake: Clear Lake, California
Accession Number: 629184
Call Number: call # - LD781.D5j 1983 W857 Shields UCD micro copy collections and special collections
Keywords: Article Subject Terms: Cyanophyta; bioassays; eutrophication; fish; growth; nutrients; nutrients (mineral); pesticides; plankton; Article
Taxonomic Terms: Cyanophyta; Article Geographic Terms: USA, California, Clear L. California, Clear Lake; dissertation; fish; nutrients; nutrients (mineral)
Freshwater
P 2000 FRESHWATER POLLUTION; Q1 01504 Effects on organisms
Freshwater plankton -- California -- Clear Lake (Lake County)
Clear Lake (Lake County, Calif.)
Lake County (Calif.)

Abstract: This dissertation addresses the impacts of nutrients, pesticides, algaecides and introduced fish on the lake's plankton community. Nutrient addition bioassays indicate that the growth of blue-green algae in Clear Lake is usually directly limited by combined nitrogen. Nitrate stimulates growth and inhibits nitrogen fixation, while phosphate additions usually have no effect on these parameters. Low iron levels (2-30 mu g/L dissolved Fe) aggravate the effects of low nitrogen by limiting nitrogen fixation (acetylene reduction). Nitrogen fixation rates are stimulated as much as 500% above control levels by iron in laboratory and in situ large-volume bioassays. Small additions of copper could effect algal control in Clear Lake. At concentrations of 10-75 mu g/L, copper significantly reduces blue-green algal carbon fixation, nitrogen fixation, and biomass. At 2 mu g Cu/L there is a small but significant stimulatory effect, especially on nitrogen fixation.
Notes: algae; fish; clear lake
Order No. FAD DA8321005.
maps. Dissertation: Thesis (Ph. D.)--University of California, Davis, 1983.
Includes bibliographical references (leaves 269-292)./ Reproduction: Photocopy./ Ann Arbor, Mich. :/ UMI Dissertation Services./ 24 cm.
Wayne Alden Wurtsbaugh.
Thesis/dissertation (deg); Manuscript (mss)
Author Address: Univ. California, Davis, CA 95616, USA

Reference Type: Journal Article
Record Number: 460
Author: W. A. Wurtsbaugh and A. J. Horne
Year: 1982
Title: Effects of copper on nitrogen fixation and growth of blue-green algae in natural plankton associations
Journal: Canadian Journal of Fisheries and Aquatic Sciences
Volume: 39
Issue: 12
Pages: 1636-1641
Short Title: Effects of copper on nitrogen fixation and growth of blue-green algae in natural plankton associations
Alternate Journal: Can. J. Fish. Aquat. Sci.
ISSN: 0706-652X
Accession Number: 373693
Keywords: Article Subject Terms: algal blooms; growth; nitrogen fixation;
Article Taxonomic Terms: Aphanizomenon flos-aquae; Article Geographic
Terms: USA, California, Clear L.
copper; effects on
D 04627 Algae/lichens; K 03009 Algae
Abstract: Copper toxicity bioassays were conducted on six stages of the spring Aphanizomenon flos-aquae bloom in eutrophic Clear Lake, California. Major variables tested were nitrogen fixation, carbon fixation, pigments, and cell numbers. Inhibition of nitrogen fixation, carbon fixation, and pigment accumulation increased linearly between 10 and 30 mu g Cu/L. Higher concentrations produced little additional toxicity. In contrast, there was a stimulatory effect of

copper, especially on nitrogen fixation, at the very low level of 2 mu g/L. There was no inhibitory effect of copper on nitrogen fixation without a comparable or greater effect on carbon fixation or chlorophyll a. Other algae growing with the Aphanizomenon bloom were not affected by additions of copper up to 20-30 mu g Cu/L, but were affected at the 50-100 mu g/L level.
Notes: algae; pollution; chemistry; nitrogen fixation; ONLINE
1982.
Journal Article
URL: http://article.pubs.nrc-cnrc.gc.ca/RPAS/RPViewDoc?_handler_=HandleInitialGet&calyLang=eng&journal=cjfas&volume=39&articleFile=f82-220.pdf
Author Address: Div. Environ. Studies, Univ. California Davis, Davis, CA 95616, USA

Reference Type: Journal Article
Record Number: 461
Author: W. A. Wurtsbaugh and A. J. Horne
Year: 1983
Title: Iron in Eutrophic Clear Lake, California - Its Importance for Algal Nitrogen-Fixation and Growth
Journal: Canadian Journal of Fisheries and Aquatic Sciences
Volume: 40
Issue: 9
Pages: 1419-1429
Type of Article: Article
Short Title: Iron in Eutrophic Clear Lake, California - Its Importance for Algal Nitrogen-Fixation and Growth
ISSN: 0706-652X
Accession Number: ISI:A1983RG53300009
Abstract: Clear Lake, California, is warm, shailow, polymictic, and eutrophic. During 1995, levels of dissolved (<0.45 prn) iron in all three basins of Clear Lake were always low (1 5 - 30 pg a L- ') and decreased to 2 kg. L- ' during the major bloom of Aphanizornenon flos-aquae. Nitrogen fixation (acetylene reduction) rates of the blue-green algal populations were stimulated as much as 500% above control Bevels by iron additions in laboratory and in situ large-volume bioassays. Carbon fixation rates and chlorophyll a Bevels were also significantly stimulated by iron additions, but usually less rapidly and to a lesser extent than N2 fixation. Additions of nitrate stimulated carbon fixation and chlorophyli production but inhibited increases in nitrogen fixation. Phosphate additions either had no effect or produced a mixture sf stimulation or depression sf all three variables. The bioassays indicate that the growth of blue-green algae and other algae in Clear Lake is usually directly limited by combined nitrogen and occasionalEy by iron or phosphorus. Low iron levels aggravate the effects of low nitrogen by limiting nitrogen fixation, thus reducing blue-green algal growth.
Notes: ONLINE; clear lake
URL: <Go to ISI>://A1983RG53300009
http://article.pubs.nrc-cnrc.gc.ca/ppv/RPViewDoc?_handler_=HandleInitialGet&journal=cjfas&volume=40&calyLang=eng&articleFile=f83-164.pdf

Reference Type: Journal Article
Record Number: 467
Author: W. H. L. Wurtsbaugh
Year: 1985
Title: Diel migrations of a zooplanktivorous fish (Menidia beryllina) in relation to the distribution of its prey in a large eutrophic lake
Journal: Limnology and Oceanography
Volume: 30
Issue: 3
Pages: 565-576
Short Title: Diel migrations of a zooplanktivorous fish (Menidia beryllina) in relation to the distribution of its prey in a large eutrophic lake
Abstract: Diel changes in the distribution of the tidewater silverside (Menidia beryllina) and its prey were measured in Clear Lake, California, a large, shallow, eutrophic lake. Zooplankton prey densities were low in the littoral zone, but increased rapidly to near peak abundances 50-200 m from shore. Gill netting, trawling, and visual observations showed that tidewater silversides migrated both horizontally and vertically to feed in areas of high zooplankton abundance. At night the fish concentrated near shore and did not feed. At dawn (8 x 10^8-2 x l0^10 photons cm^-2 nm^-1 s^-l) the fish migrated lakeward at least 50-l,000 m, and littoral abundance decreased from more than 100 m^-2 to only 0.1^-2. The migration preceded the initiation of feeding by 30-60 min. After feeding 2-4 h, the fish returned to the littoral zone and swam rapidly (6-11 body lengths s^-l) parallel to shore in narrow, continuous schools until resting aggregations formed. The fish returned to shore before they were satiated, perhaps to balance predation losses in offshore areas against foraging gains. A second period of offshore activity and feeding occurred in the afternoon and evening.
Notes: fish; algae

Reference Type: Thesis
Record Number: 462
Author: L. C. Young
Year: 1995
Title: Environmental factors and predicted response of mercury levels in fish at Clear Lake, California
Number of Pages: xi, 124 leaves
Date: 1995
Thesis Type: Book; Archival Material Date of Entry: 19970512
Short Title: Environmental factors and predicted response of mercury levels in fish at Clear Lake, California
Accession Number: OCLC: 36892196 Provider: OCLC
Call Number: call # - CSUH

LC: QH545.M4
Keywords: Fishes -- California -- Clear Lake.

Mercury -- Environmental aspects.
Clearlake (Calif.)
Abstract: The bioaccumulation of mercury in fish is a function of several environmental parameters. These parameters include, but are not limited to, water pH, sediment mercury levels, and the nutrient level of the aquatic habitat. The nutrient level, or trophic level, of the aquatic environment can be determined as a function of total nitrogen availability of bottom sediments, total phosphorous availability of the water columns, and algal pro- duction. These parameters were used to determine the trophic level index, or bioproduc- tion index (BPI), for Clear Lake in northern California. The water pH, sediment mercu- ry levels, and bioproduction index for Clear Lake were incorporated into a quantitative model to determine the methylmercury bioaccumulated in largemouth bass (Micropterus salmoides). Fish methylmercury levels based on the Clear Lake BPI are also determined for decreasing sediment mercury levels, which would occur following the implementation of mercury amelioration procedures. Tissue mercury concentrations in largemouth bass taken from Clear Lake are compared to the derived fish mercury values. Predicted fish methylmercury concentrations closely correspond to observed tissue mercury concentra- tions taken from largemouth bass at Clear Lake. Based on these parameters, it is deter- mined that a 95% reduction in sediment mercury levels in the Oaks Arm is required to reduce fish mercury concentrations to the recommended FDA guideline of 1 pg/ g, and a 99% reduction in sediment mercury levels is required to produce fish mercury concentrations at the NAS guideline of 0.5 p.g/l.
Notes: fish; pollution
ill., maps ; 29 cm. Dissertation: Thesis (M.S.)--Humboldt State University, 1995.
Includes bibliographical references (leaves 88-93)./ Typescript (photocopy).
by Laura C. Young.
Thesis/dissertation (deg); Manuscript (mss)

-pg iii
- -bioaccumulation of mercury in fish
- -95% reduction in sediment mercury levels in oaks arm is required to reduce fish mercury concentration to FDA guideline (1 micro gram per gram), 99% for NAS guideline (.5 microgram per liter)

-pg 1
- -oaks arm has highest mercury contamination
- -sulphur bank mine contributes the most to mercury contamination
  - -erosion and slope failure of shoreline

-pg 2
- -control of Sulphur bank mine has reduced sediment mercury levels 20-30% over 5-19 years. Therefore reducing mercury in fish to within 0-6% of FDA guidelines
- -need 30% mercury reduction in soil to get 10% mercury reduction in fish

-pg 38-39
- -tables, mercury concentration in fish from the three arms

-pg 42
- -table, water pH versus methyl mercury in fish

-pg 52
- -table, mercury concentration of bass in several lakes

-pg 54

-table, algal production in clear lake (1970)
-pg 55
-table, secchi readings in clear lake (1991)
-pg 101-106
-table, water quality data, oaks arm, upper basin, lower basin (1979-1986)
-pg 107-117
-tables, mercury concentration in clear lake fish (1970-1984)
-pg 118
-table, algal production at clear lake

Reference Type: Journal Article
Record Number: 463
Author: P. S. a. J. J. C. J. Young
Year: 1996
Title: Environmental tolerances and requirements of splittail
Journal: Transactions of the American Fisheries Society
Volume: 125
Pages: 664-678
Short Title: Environmental tolerances and requirements of splittail
Call Number: call # - SH1.A5
Abstract: The range of splittail Pogonichthys macrolepidotus has decreased to less than a third of its original range due to loss or alteration of habitats. We measured the critical thermal minima (CT min) and maxima (CT max), critical dissolved oxygen minima (CDOmin). critical salinity maxima (CSmax). salinity endurance, and critical swimming velocity (Ucrit) for age-O (0.1-4.0 g), age-l (10-48 g), and immature age-2 (72-201 g) splittails to assist in effective water and habitat management and restoration of this species. Neither thermal acclimation nor fish weight affected the CTmin (6.5-7.3°C), but CTmax (29-33°C) of fish acclimated at 17 and 20°C were higher than CTmax (21-22°C) of fish acclimated at 12°C. Mean CDOmin values were low (0.6-1.3 mg 02/L) for all age groups, although immature age-2 fish acclimated at 12°C had a lower CDOmin than any group acclimated at 17°C. Mean CSmax (20-29%0) did not vary with acclimation temperature, but increased with increasing weight for fish acclimated at 17°C. Mean time to loss of equilibrium in all age-groups generally decreased as salinity increased and was generally lower for age-O fish than for those of other age-groups. Mean absolute Ucrit (19.5-66.3 cm/s) increased with standard length (SL), but relative Ucrit (3.4-6.8 body lengths/s) decreased with SL for fish acclimated at 17°C. Increases in acclimation temperature by 3°C for small age-O fish and 5°C for age-2 fish increased absolute Ucrit by 11 and 25 cm/s, respectively. We conclude that age-O. age-1, and especially age-2 fish are eurythermal. euryhaline, and tolerant of low DO levels and strong water currents. This general hardiness probably permits splittails to exist in harsh estuarine habitats such as dead end sloughs. A lack of sufficient flooded vegetation for spawning and rearing, narrower environmental tolerances of other life stages (i.e., eggs, larvae, and adult spawners), or biotic factors (e.g., predation, competition) may be limiting splittail abundance and distribution.
Notes: fish

-pg 664

-splittail range less than 1/3 of original due to alteration or loss of habitat
-hardiness allows it to exist in harsh estuaries
-last of its genus
-endemic to sacramento-san Joaquin drainage
-now restricted to sacramento-san Joaquin estuary
-stream spawners (blockages)

-pg 669

-highly tolerant of thermal changes, salinity increases, dissolved oxygen decreases and strong water currents