Disasters Happen

We Can and Will Be Prepared

Disasters are increasingly common in California, ranging from droughts to floods to wildfires.

This UCANR Disaster Preparation and Response Guide outlines how to **establish procedures, train personnel and provide structure and resources** *for staff and the public so that you can be ready.*

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- **The Increasing Need** for UC ANR Disaster Preparedness
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- **UC ANR Involvement** in Disaster Readiness, Response and Recovery
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https://ucanr.edu/disaster/

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Disasters Happen. We Can and Will Be Prepared.

Disaster Preparation and Response Guide for the UC ANR Community

Photo by Michael Chacon on Unsplash

Disasters and UC ANR

The scale and pace of disasters impacting communities across California is increasing, in part due to human-caused climate change. A disaster is a serious disruption occurring over a short or long period of time that causes widespread human, material, economic or environmental loss. An event becomes a disaster when the effects exceed the ability of the affected community to cope using its own resources. Wildfire, drought, landslides, and international pandemics are all disasters currently or recently being experienced by communities across California. Californians are increasingly experiencing significant economic, environmental, and public health consequences from these disasters.

Because of the presence of the University of California Division of Agriculture and Natural Resources and Cooperative Extension (UC ANR) in local communities across the state, more and more personnel are finding themselves responding to local disasters in a variety of new ways.

Cooperative Extension services across the country have been very active in disaster response (Black 2020) and may play a key role in rural areas (Eighmy 2012). Major strengths of Extension include

having dedicated personnel embedded in local communities statewide with a unique focus on assessing human and community needs (Cathey et al. 2007). Extension may even be the key organization around which larger university systems

> **UC ANR Vision - "To positively impact the life of each of California's 40+ million residents"**: *We harness new scientific and technological innovations to protect our people, our environments and our food. We work in communities throughout the state to provide practical, science-based solutions that people trust.*

are involved in disaster response (Kerr et al 2018).

UC ANR has been playing a critical role in preparation and recovery of disaster for decades, particularly during droughts and wildfires. In addition, in 2020, UC ANR has played a role in pandemic response in many locations. However, because of the size and geographic spread of UC ANR offices and personnel, disaster approaches and materials have understandably tended to develop in a reactive way, on a case by case basis. Supported by a modest grant from USDA NIFA, the project team has been able to complete an initial look at disaster work

across UC ANR, and have developed this guide for UC ANR personnel in response.

The guide is intended to serve two key purposes. First, it can help Extension personnel who are new to the system or new to disaster to understand how UC ANR has worked on disaster issues and give some ideas about how to respond locally. Second, it provides an initial analysis of how UC ANR personnel are dealing with disasters and what kinds of additional suport they might need, which is useful for Extension leadership and stakeholders. We hope that this is an important step – but only one step -- in helping UC ANR develop a more coherent system for disaster preparation and response, and supporting personnel to plan ahead to serve their communities before, during, and after disasters.

Public Value and Impact

The involvement of UC ANR personnel in disaster management serves the public by:

- Promoting economic prosperity in California

- Safeguarding abundant and healthy food for all Californians

- Protecting California's natural resources

- Building climate-resilient communities and ecosystems

- Promoting healthy people and communities

- Developing an inclusive and equitable society

Figure 1. House destroyed in the Thomas Fire, 2017.

Disasters Happen: Why We Prepare

From earthquakes to floods and droughts and wildfires, disasters are part of life in California. Disasters can cause extensive damage, ranging from loss of property to loss of life. Reducing potential damages is therefore crucial, particularly for already vulnerable communities.

Given the frequency of disasters in California, it is important that UC ANR personnel feel prepared to engage before, during, and after emergencies. That means not only having our own materials and programs organized ahead of time, but also having a clear sense of where we fit in the emergency response landscape and ensuring that personnel are equipped to deal with what can often be tense and traumatic times.

Knowing that we can always expect disasters in California means there are many opportunities to prepare in advance. On an individual level, being prepared for disasters can help to reduce negative impacts to property and belongings. It can also help to reduce the emotional distress related to disasters, which can include fear and anxiety, that, while normal, can be a challenge to effective disaster response.

On a community level, disaster preparedness can help to reduce financial and other losses. In general, for every $1 spent on disaster preparation, $6 are saved (Multi-Hazard Mitigation Council 2019), so it is beneficial to prepare when possible rather than to cope with extensive damages post-disaster.

UC ANR has a history of disaster preparedness and response work, particularly related to droughts and wildfires, and there are many information resources that can be leveraged to ensure that personnel are able to respond effectively to disasters in California communities.

Case study – A County UCCE office responds to Thomas fire

As the Thomas Fire, which began Dec. 4th, 2017 in the hills above Santa Paula, Ventura County, was still raging in the Santa Barbara area, Ventura County CE advisors pulled together to help the community. Working together, advisors from different disciplines coordinated a "one-stop shop" at their offices where growers could make 30 minute appointments with Natural Resources Conservation Service (NRCS) and the Farm Services Agency to prepare applications for assistance, and also receive recovery practice information from UCCE, the Ventura County Resource Conservation District (RCD), and the California Avocado Commission. With hillside avocado orchards particularly hard hit, Ben Faber, tree crops and irrigation advisor held a workshop on fire recovery and frost damage for avocado growers two days before the fire was declared contained on January 12th, 2018. Sabrina Drill, natural resources advisor worked with staff to make sure that erosion control and other fire and assistance information were available in the UCCE county website. Matthew Shapero, range and natural resources advisor coordinated emergency hay deliveries to ranchers.

Figure 2. Livestock and Range Advisor Matthew Shapero conducts post fire research in Ventura county 2018. Photo by Matthew Shapero.

When all was done, over 230,000 acres had burned, making it the largest wildfire in California history up to that point (eclipsed just 6 months later by the Mendocino complex fire). Two people perished in the fire, but the burn was followed by a massive mudslide in Montecito that killed another 23. The Ventura UCCE team received a ANR Opportunity Grant in February 2018 that contributed to several efforts. Sabrina Drill made presentations about near home erosion control and fire recovery delivered in person and through webinars to homeowners and Master Gardeners, who then went on to provide informational tables at events. She collaborated with Surfrider to revise their Ocean Friendly Gardens program for fire prone and affected areas. Ben Faber visited avocado and citrus orchards to evaluate and teach evaluation skills to estimate and foster tree recovery in avocado and citrus orchards. Working with Specialists Max Moritz and Van Butsic, they held an interactive workshop to provide information, and get feedback on a guide to best practices for new subdivisions in fire prone areas which was subsequently published. Sabrina collaborated with a large group of federal, state, and local agencies as well as local restoration firms and NGOs to develop a strategic plan for watershed protection and restoration following fires and debris flows. Matthew continues to provide recovery information and expertise for local ranchers and is completing field studies on fire recovery in rangelands.

Figure 3. Soil and stream bank erosion after the Thomas Fire, 2018. Photo by Sabrina Drill

UC ANR Involvement in Disaster Readiness, Response, and Recovery

A 2018 survey found UC ANR personnel want more training to handle disasters. The online survey was administered to 1,389 UC ANR personnel including county advisors, Extension specialists, Agriculture Experiment Station faculty, researchers and specialists on UC campuses, administrators, and staff. (For a full report see Koundinya et al. 2020). Two hundred twenty-four people completed the surveys, yielding a response rate of 16%. Given the many varied personnel roles in UC ANR, the authors felt the response rate was adequate and well represented the proportion that likely have experienced disasters. No doubt the response rate would have been higher had the survey been administerd in 2020 after several state-wide disasters that involved many more UC ANR personnel in disaster response.

The goal of the survey was to (1) understand the ways UC ANR has been involved in disasters, (2) identify the types of disaster support needed, and (3) identify related professional development needed.

1. Involvement in disaster management

Thirty-seven percent of UC ANR respondents had been involved in managing disasters in their communities in some way. Of those, about two-thirds were involved during and after, and a little over half were involved before the disaster.
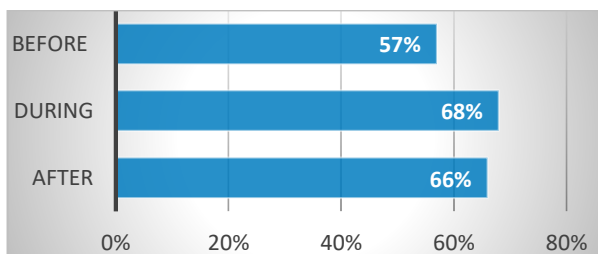

Figure 4. Involvement in UC ANR personnel by disaster phase

Before disasters happened in their communities, a majority of respondents had been working on educating about disaster risk. Only a quarter were involved in researching risk or mitigating it.
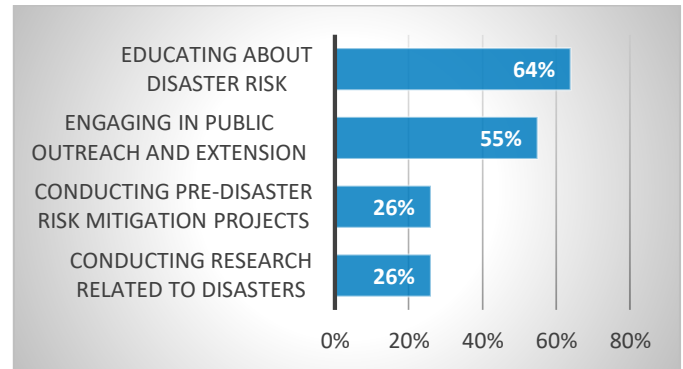

Figure 5. Type of involvement by UC ANR personnel before disasters

During disasters, a minority of survey takers were involved in responding in their communities. Almost half of those worked on evacuating livestock.
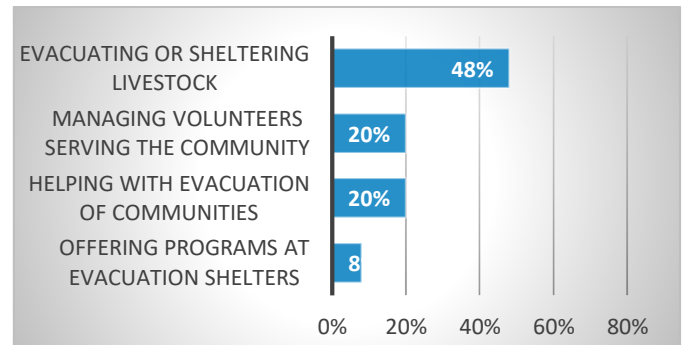

Figure 6. How UC ANR personnel were involved during disasters

After disaster, a minority of respondents were involved through educating and convening.
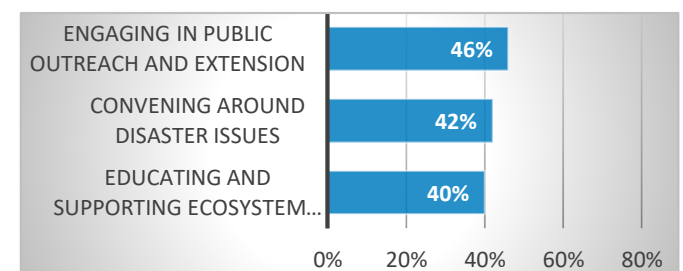

Figure 7. How UC ANR personnel were involved after disasters

2. Types of disaster support needed

Before disasters: At the *individual level,* a majority of respondents said that to be better prepared for disaster they needed a better understanding of risk mitigation, disaster response and evacuation, as well as preparedness materials, and coordinated planning.
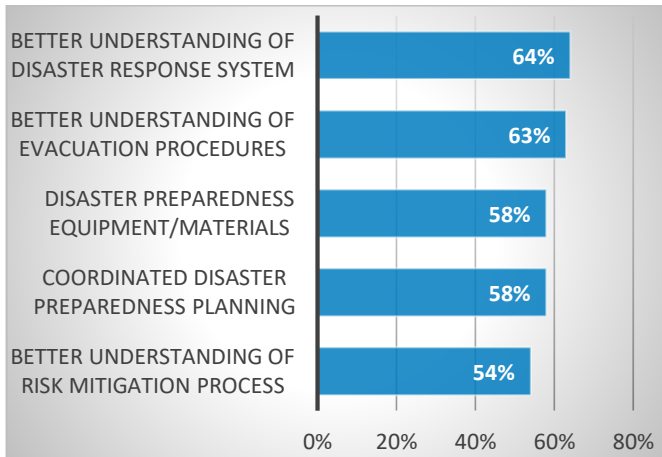
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Figure 8. Respondents' personal disaster readiness needs

To help their communities be better prepared for disasters, a majority of respondents said they needed a better understanding of risks, how to mitigate them, and resources to educate their communities.
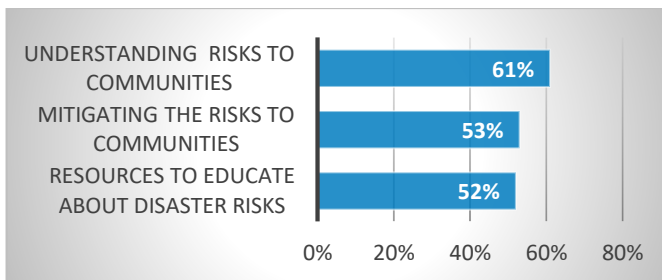
Figure 9. Respondents' needs to better help their communities

During Disasters: To help their communities while disasters are happening, two thirds of respondents said they needed better integration into disaster response systems and organizations. Almost half said they needed training on the Incident Command System.
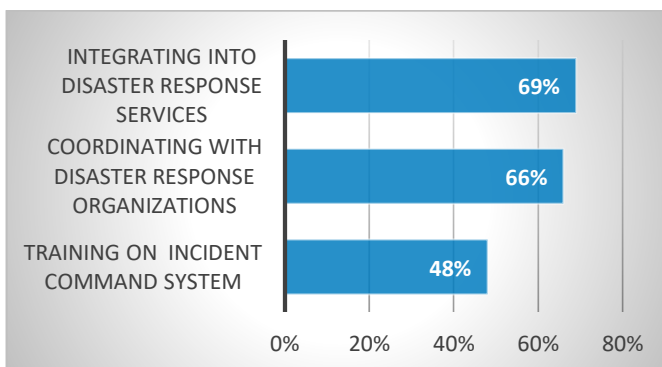
Figure 10. Personnel needs to better help communities during disaster

After Disasters: At the individual level, respondents ranked the need for help with financial recovery highest, followed by post disaster risks and recovery.
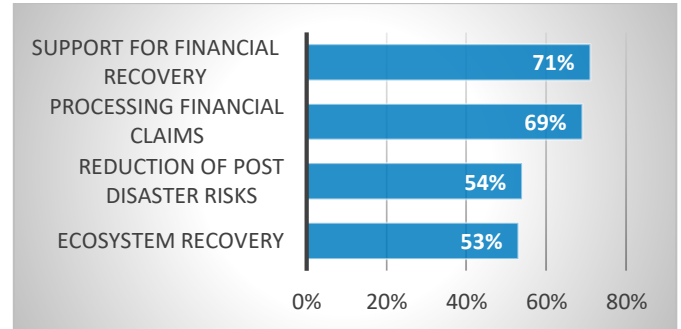
Figure 11. Personnel's needs after disaster

To help their communities, a majority said they needed information on disaster recovery resources and a pre-established network within UC ANR to help with disaster response.
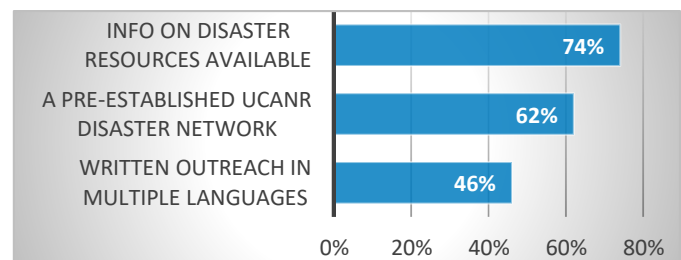
Figure 12. Personnel needs to better help communities after disaster

3. Professional development needed

Three quarters of survey respondents said they needed training on how UC ANR fits in current disaster response systems in California.
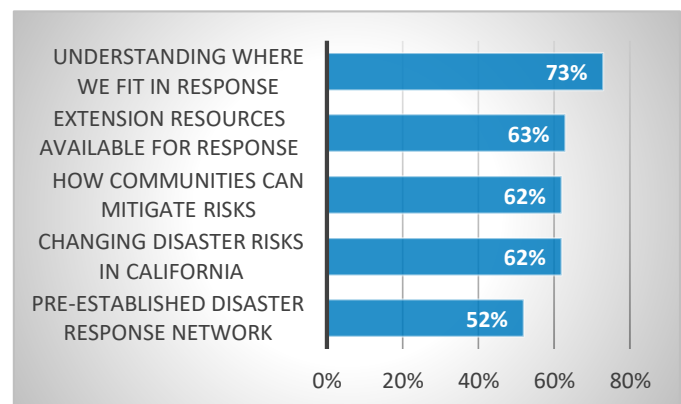
Figure 13. Professional development desired by UC ANR personnel

A majority also wanted better information on extension resources available, risks communities face and how they can mitigate them, and development of pre-established disaster response networks within UC ANR.

Our study revealed that UC ANR personnel have a variety of disaster management needs related to the systems, procedures, materials and equipment, and educational materials that need to be in place for effective disaster management. Given the increasing frequency and scale of disasters in California, it is critical that personnel feel prepared and supported to engage with their communities before, during, and after emergencies.

The Disaster Preparation, Response, and Recovery Landscape

Who's involved in disaster response?

A variety of different agencies and organizations are involved in disaster management in California. The role of UC ANR as an organization is not strictly defined in this landscape, but a first step to take to clarify our role is to identify relationships with the organizations involved in disaster response. The list below is not meant to be exhaustive but rather to describe the key federal and state organizations most likely to be encountered across location and disaster type. There are many local agencies also involved but listing them all here is beyond the statewide scope of this document.

California Office of Emergency Services - The Governor's Office of Emergency Services (Cal OES) is the lead agency in disasters, responsible for the coordination and leadership of all state agencies during declared emergencies.

Local OES - All counties and some larger cities have a local OES to identify hazards and to prepare for, respond to, and help recover from both large and small local incidents. The county OES is a coordinating agency that brings together local agencies to focus on unified responses to disasters.

During a declared local emergency, an Emergency Operations Center (EOC) is activated to provide resources from the non-impacted areas to the impacted areas. Both at the scene of an incident and within the EOC, organizations use the Incident Command System (ICS). The ICS allows for one person to be responsible for all functions of management, operations, planning, logistics and finance. If an incident becomes larger, each role can be delegated to aid in managing the situation. Use of a consistent command structure has been shown to improve coordination among personnel from multiple agencies, with each knowing their role and reporting structure during the incident. For more detail on ICS see page 11.

Federal Emergency Management Agency (FEMA). The mission of FEMA is to help people before, during, and after disasters and coordinate government-wide relief efforts. It is designed to bring an orderly and systemic means of federal natural disaster assistance for state and local governments in carrying out their responsibilities to aid citizens. FEMA provides financial assistance to those who experience financial loss in a federally declared disaster. FEMA is not involved in the operations of mutual aid response during a disaster or emergency.

California is in FEMA Region IX and works in partnership with the emergency management agencies to prepare for, respond to and recover from disasters.

California Department of Food and Agriculture (CDFA) serves as the lead agency addressing animal issues at the state level. CDFA veterinarians assist in coordinating livestock issues at state and regional levels. A CDFA disaster response team in each of five districts will assist with resource coordination and allocation in multi-county/multi-jurisdictional incidents, work with counties to develop animal emergency plans and resource lists, enhance the awareness of disaster preparedness resources such as carcass disposal, animal identification, and prevention of animal and human diseases

California Department of Forestry and Fire Protection (CAL FIRE) both prevents and responds to wildfires in the State Responsibility Area (SRA). They also provide varied emergency services in 36 of the State's 58 counties via contracts with local governments. The Department's Fire Prevention Program consists of wildland pre-fire engineering, vegetation management, fire planning, education and law enforcement. Typical fire prevention projects include brush clearance, prescribed fire, defensible space inspections, emergency evacuation planning, fire prevention education, fire hazard severity mapping, and fire-related law enforcement activities.

Beyond its wildland fire fighting role, CAL FIRE is an "all-risk" department and responds to other emergencies including medical aids, hazardous material spills, swiftwater rescues, search and rescue missions, civil disturbances, train wrecks, floods, earthquakes and more.

Law enforcement agencies including the **California Highway Patrol,** the National Guard and local sheriff's officers and police are commonly responsible for evacuation and for maintaining roadblocks during disasters. Others drawn on can include law enforcement offers from State Parks, the Department of Fish and Wildlife, CalTrans and local roads departments.

California Department of Social Service, Disaster Services Bureau (CDSS) is responsible for supporting counties' mass care and shelter programs, state and federal grant recovery programs for individuals and households, and emergency repatriation. CDSS also administered emergency food programs for children during the 2020 pandemic. These program responsibilities are delegated to the Department through an Administrative Order from the California Governor's Office of Emergency Services.

The California Employment Development Department Disaster-Related Services (EDD) provides a variety of services to individuals and businesses affected by disasters in California. EDD staff assist at Local Assistance Centers or Disaster

Disaster Service Workers

There are two types of Disaster Service Workers who may provide aid during a declared disaster. *Disaster Service Workers* are public employees (with state or local government agencies), who, by the nature of their government employment, are paid *Disaster Service Workers* when activated by their employer. University of California employees may be tasked as Disaster Service Workers due to their status as public employees, though this has not frequently happened in the past.

Disaster Service Worker Volunteers are unpaid volunteers. Both are provided workers' compensation benefits if injured while participating in authorized disaster-related activities, as well as limited immunity from liability.

UC ANR personnel that wish to enter an evacuation or disaster area must be designated as Disaster Service Workers or Disaster Service Worker Volunteers. Certified disaster service workers and volunteers must present their identification card with a photo and serial number to the officer to authorize passage through a road block. Alternatively, law enforcement officers may check a master list of certified disaster service workers at the Emergency Operations Center.

Your local Office of Emergency Services Coordinator may be able to provide information on whether your UC ANR unit is expected to provide Disaster Service Workers when called upon. They can also let you know how to become a registered Disaster Service Worker Volunteer, and how to properly identify OES-approved personnel for entry into disaster areas through roadblocks.

Recovery Centers established by Cal OES or federal authorities. The EDD has staff available in recent wildfire areas to provide assistance with filing claims for Unemployment Insurance (UI) benefits, job search, general support, referrals, and resources.

Additional agencies involved in disaster management may include:

- *State agencies*: Regional Water Quality Control Boards, CAL EPA, CA Department of Public Health, Cal Recycle and others
- *Federal agencies*: US Forest Service, Farm Service Agency, the Natural Resource Conservation Service, the Bureau of Land Management and others.
- *Local government:* County Board of Supervisors, Health Departments, Animal control, Sheriff's Department, Agricultural Departments, and others

Volunteer groups

There are many volunteer groups that organize to help those experiencing disasters. Here we mention some of the most common organizations. This is not an exhaustive list.

Community Emergency Response Teams (CERTs) are organized and trained by local OES offices. They educate people about disaster preparedness for hazards that may impact their area and train them in basic disaster response skills, such as fire safety, search and rescue, and disaster medical operations through classroom work and exercises. CERT members can assist others in their neighborhood or workplace following an event when professional responders are not immediately available to help. CERT members also are encouraged to take an active role in emergency preparedness projects in their community.

Volunteer Organizations Active in Disaster (VOADs) are associations that improve outcomes for people affected by disasters by facilitating cooperation, communication, coordination, and collaboration among nonprofit organizations, community-based groups, government agencies, and for-profit companies. They enable increased coordination in disaster response and recovery operations between VOAD member organizations and their government partners, including local

emergency managers, Cal EMA, California Volunteers, and FEMA.

Due to its size and geography, California is home to two regional VOADs, the NorCal VOAD in the 48 northernmost counties in the state, and the SoCal VOAD in the ten southern-most counties. VOADs have an agency disaster status reporting system that enables local VOADs to quickly gather information on critical needs from their member agencies after a disaster and share it with designated decision-makers in the operational area. They report on services being provided, resource shortfalls, and unmet community needs.

The Red Cross - responds to an emergency somewhere in the country every 8 minutes, from small house fires to multi-state natural disasters. The American Red Cross sets up shelters, hot meals and showers. According to their website, 95% of their disaster relief workers are volunteers and 90% of disasters they respond to are home fires. There are five regional groups in California.

The **Humane Society** works with the public to educate on the need to plan ahead for the evacuation of pets during disasters and fields animal rescue teams during disasters when requested by the lead agency. They also provide disaster recovery grants post-disaster and plan and train prior to disasters.

Volunteers are also forming themselves into Community Animal Response Teams. These are networks of animal and animal-agricultural resources that are available for planning, prevention, protection, mobilization, response, and recovery related to emergency incidents within their community.

Extension disaster resources

The **Environmental Health and Safety** office (EH&S) has a mission to prevent injuries and protect the environment for all ANR employees, volunteers, and the public. The department serves all ANR locations throughout the state with policies, safety trainings, and safety notes. In cooperation with safety coordinators, they ensure that each

Cooperative Extension and Research and Extension Center location has a written Injury and Illness Prevention Program (IIPP) as required by law. **Safety notes**, though written for UC ANR employees and volunteers, have a variety of information that can be shared with communities.

UC Davis Veterinary Emergency Response Team (VERT) is the veterinary response team at the UC Davis School of Veterinary Medicine. It is a volunteer group lead by a core of faculty and staff with extensive experience in animal rescue and disaster medicine. Their medical reserve corps can respond to small and large scale disasters when requested by government agencies. Members are trained in incident response, animal sheltering, biosecurity, disaster medicine, rescue techniques, evacuation strategies, disaster management, etc.

The UCD VERT provides seminars and workshops on disaster preparedness, disaster response, and rescue methods to individuals and agencies involved with animals. The research component involves science based studies to develop protocols for integrated emergency and disaster response, development of equipment used in rescue, and to create local and national guidelines for care of animals in emergencies and disasters. They have a **written guide** for those working in animal evacuation.

California Sea Grant extension specialists work with state and federal agencies, nonprofit organizations, local businesses, and the California coastal community to identify emerging marine resource problems and opportunities, conduct applied scientific research, and share findings with stakeholder groups. They create partnerships to address critical needs in aquaculture, coastal community development and fisheries management, as well as extreme weather, storm surges and tsunamis.

Extension Disaster Education Network (EDEN) – UC ANR is a member of EDEN, a collaborative multi-state effort by Cooperative Extension Services across the country to reduce the impact of disasters through research-based

education. EDEN goals are to enhance the abilities of communities to prepare for, prevent, mitigate, and recover from disasters, strengthen Extension's capacity and commitment to address disaster issues and serve as a national source for research-based disaster education.

EDEN does this by connecting extension professionals around disaster management through annual conferences, disciplinary committees, and sharing disaster educational resources on a resource dashboard. Extension professionals can participate in EDEN by using and sharing disaster resources and becoming official EDEN delegates.

EDEN has formal relationships with the U.S. Department of Agriculture (USDA), through the National Institutes of Food and Agriculture (NIFA, formerly CSREES), and with the National Oceanographic and Atmospheric Administration's National Sea Grant Program (NOAA SeaGrant).

UC ANR Disaster Resources

The variety of disasters occurring in California makes it difficult to be thoroughly prepared for all possibilities. With a changing climate, the pace of disasters is increasing and more of our personnel are being affected.

The characteristics of disasters have affected who within UC ANR has been involved in disaster education in the past, as well as the nature of the response.

Disaster characteristics

The differing characteristics of disasters that affect UC ANR's response include:

Scale – Some disasters, such as the 2020 pandemic, occur at the worldwide scale. All UC ANR locations have been affected and many have been key in helping their communities. More common is a local scale disaster such as a wildfire affecting a city or county. The smaller the scale of the disaster, the fewer people are typically affected. This may allow resources to flow in from outside the area. On the other hand, it could reduce the attention paid to the event. Disasters at the state or national scale have

led to statewide UC ANR responses (see case studies in this guide).

Many local UC ANR units have developed responses to help their communities weather smaller scale disasters. In these cases, sharing locally developed resources across the UC ANR network can greatly help unaffected locations prepare for the next disaster and support those locations in crisis.

Duration – The length of the event affects the response. Disasters that are over quickly, such as an earthquake, typically move into the recovery phase quickly. Prolonged disasters such as wildfires last from days to weeks. The 2012-16 drought lasted for many years. The duration of the disaster affects when the recovery phase begins and when potential UC ANR assistance is delivered. It also affects the amount of time available to mount a response. For the multi-year drought, resources and programs developed in the first few years became more and more useful as the disaster went on.

Type – The type of disaster affects who within the UC ANR network has the expertise and staffing to prepare or respond, and what resources may already be available to respond. Disaster resources and programs developed by UC ANR have been developed collaboratively between campuses and counties over many years. A sampling of these programs and resources are listed below.

Existing UC ANR disaster webpages

Below are some currently existing resources for different types of disasters developed by UC ANR units. This list is not exhaustive.

Home disaster preparation resources - Nutrition, family, and consumer science teams have developed a California tool kit including disaster planning and safety, accessing food and water, planning for children and older adults, dealing with financial recovery and insurance, clean up, and emergency kits.

Fire - Natural resources advisors and specialists have worked over the past fifteen years to collect, organize, and provide information about fire through a *single portal*. This can serve as a starting point for

scaling up to include other kinds of climate related disasters.

Drought - During California's most recent long drought, adivsors, specialists and statewide programs developed *drought resources*, including tip sheets for farmers, ranchers, and others, an online seminar series with drought experts from UC and beyond, a list of experts, and more.

COVID-19 - In response to the novel coronavirus, UC ANR developed an online set of **resources** from many programmatic areas. In addition, several programs developed sector specific resources, including *water* and *nutrition*.

Animal health - UC ANR and UC Davis' School of Veterinary Medicine have developed volunteers, trainings, and a guidebook on animal care during and after disasters, incorporating ANR livestock and natural resources personnel and 4H. The guidebook, released in 1999, has excellent planning protocols for animal owners though some of the details of emergency response and methods of communication, require updating.

Compiling UC ANR disaster resources

With individual UC ANR units developing their own disaster resources, it can sometimes be difficult to determine what has been already created so as not to have to reinvent the wheel. We recommend disaster resources be stored in a central location for easier discovery by others in the UC ANR network who may need them. We also suggest that web-pages created in UC ANR units to respond to disasters be decommissioned when the disaster recovery period is over, or when materials and information become out of date.

We suggest compilation of UC ANR developed resources on this website https://ucanr.edu/disaster/.

Figure 14. QR code for UC ANR disaster website

Case Study: A statewide program responds to COVID-19

The UC ANR Nutrition Policy Institute (NPI) is a statewide program of UC ANR that conducts applied research across multiple sectors and communities to develop and evaluate policies and programs to address health disparities. Basic needs—employment, housing, food, childcare, education—are anchors to health and were all severely affected by the COVID-19 pandemic. NPI researchers rapidly adjusted existing projects and joined forces with partners to respond.

School Meals: When community partners expressed concern that school closures due to the pandemic would cause gaps in school meal service, NPI produced and distributed [fact sheets](#) on how to continue school meal service, helped advocacy groups obtain grant funding on school meal practices education, and produced reports and a [white paper](#) on USDA school meal policies around emergency delivery of school meals.

Figure 15. Food distribution program during school closures due to the COVID 19 pandemic. USDA Photo by Lance Cheung.

Homelessness: NPI provided recommendations on food security for homeless California community members from the February 2020 [report](#), *"Addressing Food Insecurity for Families and Individuals in California Experiencing Housing Insecurity"*.

Food Assistance: NPI engaged partners to

1) publish an Op-Ed on the importance of leveraging the Supplemental Nutrition Assistance Program to buffer the effects of employment lost due to the pandemic on individuals' and families' food security;

2) identify research questions related to the pandemic's impact on food access and security for low-income children and their families;

3) compile community resources in flyers produced in English and Spanish on COVID-19 infection control, food safety, housing security, and unemployment for communities, the safety and importance of eating fruits and vegetables during the COVID-19 pandemic, how and where to buy directly from local farms and ranches and safe access to the outdoors;

4) develop a website with links to information on COVID-19 and resources in other languages.

Figure 16. Families pick up lunches outside a closed middle school. USDA Photo by Lance Cheung.

Future Work: New efforts are underway to continue to inform community, state and local COVID-19 food security relief efforts. NPI and collaborators secured two grants to document challenges faced by California families participating in the Supplemental Nutrition Assistance Program for Women, Infants and Children and evaluate the impact of COVID-19 and mitigation strategies on economically disadvantaged California community members.

UC ANR Disaster Preparedness Requirements and Resources

UC ANR preparedness requirements

In addition to the [Injury and Illness Prevention Program](#) required for each UC ANR unit at a minimum, each UC ANR location should have an [emergency action/fire prevention plan](#).

This plan identifies the responsibilities and protocols for safe evacuation of facilities, including evacuation routes and assembly area(s). The plan also includes identification of fire hazards within the workplace. ANR locations are also encouraged to develop location-specific plans for the hazards applicable to their location. For more information, contact your unit's [Safety Coordinator](#).

UC ANR preparedness safety notes

The following Safety Notes provide summaries of disaster or emergency preparedness information, along with links to other resources.

- [006 General Earthquake Safety](#)
- [106 Workplace Violence Awareness](#)
- [107 Workplace Violence Prevention](#)
- [108 Workplace Violence Response](#)
- [109 Tsunami Awareness](#)
- [145 Preparing an Effective Evacuation Route Map](#)
- [166 Office Preparedness for Emergencies](#)
- [167 Be Informed about Emergencies](#)
- [168 Make a Plan for Emergencies](#)
- [169 Build a Kit of Emergency Supplies](#)
- [185 Situational Awareness](#)
- [187 Travel Safety](#)
- [188 Get Home Bag](#)
- [189 Emergency Preparedness for Supervisors](#)
- [190 Emergency Preparedness When Offsite](#)
- [199 Public Safety Power Shutoff](#)

Recommendations for UC ANR Disaster Readiness, Response and Recovery

Preparedness recommendations

Although the wide variety of types of disasters that may occur make complete preparedness impossible, there are some general principles that apply across emergencies.

Identify the risks in your location

There are many resources to identify the risks in your community.

[**MyHazards**](#) - The CalOES MyHazards website is a helpful tool to identify hazards in your area and recommend actions to mitigate those hazards.

Local OES - Local offices of emergency services implement preparedness programs, develop emergency response plans, coordinate emergency notification and conduct training drills. Participate in these events and collaborations to become more informed about the hazards in your area.

[**Local hazard mitigation plans**](#) **-** Counties, local jurisdictions and special districts in California are required to develop hazard mitigation plans. These plans assess the natural and manmade hazards in each location, identify values at risk, and develop mitigation plans. Find these plans and work with your UC ANR unit to identify how the local risks affect your community.

Network with disaster agencies and organizations

Local OES - Meet with the local OES office and talk about your local unit including facilities, expertise and whether you have any registered disaster service workers (see definition on page 7). Try to identify whether there are any existing MOUs between the local OES and your unit. Some may have been established decades ago leaving little institutional memory of their existence. Ensure that your unit is linked in to local OES as appropriate.

Volunteer groups - Participate in meetings of VOADs or other volunteer groups to identify what plans are already in place in your area and how your unit's expertise and capacity fits in.

Network with UC ANR colleagues

A number of UC ANR work groups and program teams have already developed programs and resources on disaster preparation and recovery. For example, the water program team has tackled drought issues and the fire workshop has addressed wildfire issues. Find out ahead of time who in your network can be called upon to help with their expertise and ideas in times of disaster.

Develop an emergency action/fire prevention plan

These are required by UC ANR. This plan identifies the responsibilities and protocols for safe evacuation of facilities, including evacuation routes and assembly area(s). The plan also includes identification of fire hazards within the workplace. ANR locations are also encouraged to develop location-specific plans for the hazards applicable to their location.

Develop a disaster preparation and response plan

Work with the personnel in your unit to identify the procedures you will use to ensure everyone is safe when a disaster strikes and who among you may be assisting the community during the disaster. Some units may be in counties where UC ANR personnel are expected to be disaster service workers. Clarify expectations with all staff so that everyone knows what will be expected of them. Identify how you will communicate with each other, especially if electricity or phone service is out.

Get emergency training

Having trained personnel before a disaster will greatly increase effectiveness and reduce the stress experienced when a disaster does happen in your location.

The **Incident Command System** (ICS) is a standardized hierarchical structure that allows multiple agencies both within and outside of government to cooperate in disaster response. UC ANR's Environmental Health and Safety office recommends trainings on the *Incident Command System (ICS)* on their website*.* Below is a brief summary:

For all employees:

ICS-100 - Introduction to Incident Command System to gain a fundamental understanding of the organizational structure of the Incident Command System.

For supervisors, safety coordinators, and those in mission critical functions:

IS-700 - NIMS An Introduction on the National Incident Management System a nationwide template to enable government, private-sector, and nongovernmental organizations to work together during incidents.

With increasing levels of responsibility:

IS-363: Introduction to Emergency Management for Higher Education

Additional trainings that may be useful include:

First aid training classes give participants the information and skills needed to help adults and children during many emergency situations and how to coordinate with the emergency medical system.

Mental health first aid is a skills-based training course that teaches participants to assist someone experiencing a mental health or substance use-related crisis by learning risk factors, warnings, strategies to help someone in both crisis and non-crisis situations, and where to get help.

Trauma informed disaster practices - disasters can be scary and stressful, and they often bring up many emotions for the people affected by them. It is crucial that while communicating about disasters, thought be given to when, how, and whom to communicate with.

Many online resources exist to help personnel think about trauma-informed disaster practices, including Psychological First Aid and the Vicarious Trauma Toolkit. In addition, read an interview with a UC Santa Barbara clinical psychologist Maryam Kia-

Keating about her research on California-specific trauma-informed disaster readiness and response from the California Institute for Water Resources.

Particular care should be paid to ensuring where possible that resources are multi-lingual and that people are not placed in harmful situations related to any facet of their identity (e.g., race, gender, sexuality, residency status) during disasters.

Inventory your unit's community disaster resources

Identify whether you have supplies that could be useful during disasters (generators during a public safety power shutoff for example) or staff with special skills (nutrition educators who can lead youth activities at an evacuation shelter for example).

Stock up on written/printed educational resources. Ensure that you have a variety of handouts on hand in the appropriate languages since you cannot be sure that your electricity or printing capacity will stay intact.

Keep a list of who in your unit has been trained in ICS, NIMS, first aid and other important disaster response areas. Identify any trained disaster service workers and keep track of who has official disaster worker IDs. Make sure these are updated regularly.

Become familiar with EDEN resources

Make use of and share resources with the [Extension Disaster Education Network (EDEN)](#). Consider becoming a delegate to interact with Cooperative Extension colleagues around the country. Coordinate with ANR EH&S office to use the EDEN Response Notes, report use of EDEN resources or share relevant UC ANR resources when preparing or responding to disasters.

During a Disaster

The characteristics of the disaster will greatly affect how UC ANR personnel respond to it personally and whether they are able to provide community assistance while the disaster unfolds. Some disasters may be outside the expertise or resources of your unit. Others may be too dangerous to be involved and should be left to professional

emergency responders. Just like on an airplane where you are asked to attend to your own oxygen mask before helping others, do make sure staff are all safe before getting involved in assisting the community.

Contact all personnel make sure they are safe

Engage the process developed before the disaster to communicate with all staff and provide support for them to personally cope with the disaster. [Report to ANR administrative leaders](#) to let them know your status and any resource needs.

Identify community support needs

You may be positioned in your community as someone who hears about needs through clientele networks or calls to your office, or you may need to engage with your local VOADs and community-based organizations to identify needs. Make sure to inform partner organizations about the needs you are learning about so they can be incorporated into the emergency management system response.

Identify available resources

Partners and the UC ANR network be have resources to assist.

Reach out to partner organizations to identify who has resources to meet the needs of your community. Participate in the VOAD network to identify community needs and resources you can collaborate on.

Reach out to your UC ANR network to identify who may have expertise and capacity to assist you in your local efforts. Personnel in other units who have recently been affected by a similar disaster may have a lot to share. Colleagues may also be able to initiate response through volunteer networks. UC ANR personnel should feel empowered to contact and offer assistance to others experiencing a disaster without waiting to be asked.

Reach out to EDEN. Cooperative Extension Services across the country have pooled disaster education resources through the Extension Disaster Education Network ([EDEN) website](#). There may

Case Study: An Advisor responds to the Camp Fire

On Thursday, November 8, 2018, the Camp Fire broke out and over 52,000 residents of the town of Paradise and surrounding communities fled the fire, many with pets and livestock in tow. UC Cooperative Extension Livestock and Natural Resources Advisor Tracy Schohr had been on the job just 13 months when a friend at the Butte County Fairgrounds called asking for help. *"It was late morning and I got a call asking to come set up the large animal evacuation center at the fair grounds for horses and to bring panels,"* recalls Schohr. Because the Butte County Fairgrounds had no horse stalls, Tracy worked with her family to start loading panels and called local clientele to bring panels to the fairgrounds for evacuated large animals.

Figure 17. Livestock pen fencing being dropped off at large animal evacuation center during the 2018 Camp Fire. Photo by Tracy Schohr

Ranchers across Butte County dropped everything and brought truckloads of panels, hay, and watering tubs to the fairgrounds. Schohr inventoried panels that were coming in to ensure they would be returned to their owners, but as Friday morning came and more and more horses were showing up it was evident that local supply was not going to meet the need. She reached out to a rancher on the California State Fair Board who made contact with the CEO of State Fair to loan hundreds of panels to the shelter.

Schohr again called on clientele to secure a semi-truck to haul two loads of panels from Sacramento to pen over 500 equine animals at the height of the evacuation. Schohr also worked with local 4-H leaders and FFA advisors to coordinate youth volunteers to set up panels and care for hundreds of evacuated livestock.

When the Camp Fire started, Schohr had no training in disasters and did not know of the local animal disaster group in her community that was overwhelmed with the evacuees of the state's most destructive fire. *"I did not know the protocols or procedures for disasters, when needs for the large animal shelter were recognized I just worked on a solution,"* states Schohr. Following the disaster, Schohr has become a member of the North Valley Animal Disaster group participating in several trainings and is a co-editor of the non-profit's newsletter. In September 2019, she was able to put the training to use during the Swedes Fire in Butte County as the large animal shelter lead when she set up the evacuation center, coordinated volunteers, and ordered supplies through the county – while following protocols of a very well designed ICS system!

Schohr took an active role at the Camp Fire large animal shelter, but also continued serving her core clientele, livestock producers, during the Camp Fire. She collaborated with UCCE advisors and specialists to launch a water quality study investigating livestock drinking water quality below the urban burn and took forage samples to investigate ash contact on cattle pastures. She also worked with the county agricultural department to obtain permits for producers to go behind the road closures to check on animals sheltering in place and rebuild burned fence. Working with feed stores and hay farmers across the Western states she also coordinated semi-truck loads of hay that were used at the shelter and provided temporary relief to ranchers who lost all their winter feed in the fire. In addition, Schohr coordinated with the California Highway Patrol for semi-trucks to use a closed highway saving ranchers thousands of dollars and decreasing livestock time spent on a truck by 80%.

already be a written resource on the website that could help your clientele. Colleagues who participate in EDEN from across the country may also be willing to help.

Keep track of your unit's disaster response

If you have staff attending to livestock evacuation, or volunteers providing services at shelters, track the hours and location of services rendered. Check in with staff to ensure they are following proper safety procedures and are getting needed breaks. Practice principles of mental health first aid to ensure staff are not being overwhelmed by stress through this work. Good records can assist in after action reviews and any legal issues that arise. They can also help show the worth of UC ANR to their communities.

After a Disaster

The amount of time for a local community to recover from a disaster also varies by the type of disaster. Individuals affected by losing homes or loved ones, may take many years to recover. Unlike disaster response, which may feel more like a sprint to a finish line, disaster recovery can be a long slow marathon to try to rebuild individual lives and communities.

Some local units may have little choice but to focus on disaster recovery if all their clientele have been deeply affected. Others may be able to pivot back to regular programming more quickly. After a disaster there are things your UC ANR office can do to help your community recover.

Offer disaster recovery assistance

Many individual UC ANR staff have worked post-disaster recovery into their on-going extension programs. Examples include working with clientele after a disaster to hold workshops that support recovery. This could include tips for rebuilding after a fire, accessing recovery funds, restoring natural resources or identifying spoiled food after a power outage.

Collaborate within your office to engage with your community

Several UCCE offices have collaborated to mount a unit-wide response (see Ventura County after the Thomas fire case study). Having additional resources can help start a disaster recovery program in your location.

Help your community prepare for the next disaster

Unfortunately, disaster can be thought of as a cycle. Though your community is recovering from a disaster, this is also the time to prepare for the next disaster. UC ANR can play a role in helping communities learn from the disaster they experienced and help shape preparation activities and policies to avoid additional harm in the future. The time directly after a disaster can be very productive for risk reduction because public attention is focused on the issue.

One example of this would be developing applied research, outreach materials and hosting workshops on wildfire hazard reduction after an impactful wildfire has burned nearby. Some UC ANR personnel may also be involved convening their communities around the issues and in developing new risk reduction policies in their communities and across the state.
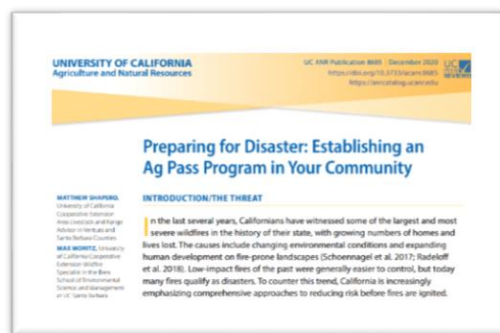

Figure 18. Free downloadable UCANR publication to help communities prepare for disaster by establishing an ag pass program.

Another example of post-disaster adaptation is the development of an Agricultural Pass program for agriculture owners and workers to access their agricultural properties located within a disaster area. Ventura county developed this program in response to repeated disasters and it has enabled those who

Case study – 4H volunteers staff livestock animal shelters

The UC 4-H Youth Development Program engages youth in reaching their fullest potential through hands on learning. Over the last 100 years, UC 4-H has continued to evolve programming to meet youth and community needs. During California's recent fires, 4-H youth have joined forces with local government and non-profit organizations to volunteer at livestock animal

Figure 19. Fire fighters lead livestock out of a burned area. 4 H members have been helping care for animals at shelters.

shelters. These shelters often include a mix of farm animals including horses, cattle, sheep, goats, and chickens. As families heed evacuation warnings they pack up their animals too, and find comfort in large animal shelters that provide full service care for their animals safe from the fire's path.

Marin 4-H member Logan Pomi is one of the many 4-H members who has spent time volunteering at large animal shelters. *"School was canceled in 2017 and I felt it was a good time to help people in my community,"* recalls Pomi who first volunteered during the Tubbs Fire. *"I knew my experience and background from raising animals in 4-H would be helpful."* She has since volunteered at the Kincade Fire (2019), Wallbridge Fire (2020) and Glass Fire (2020) large animal evacuation centers in the Bay Area.

4-H members have taken on a variety of roles at large animal shelters, including intake registration paperwork, sanitizing stalls, feeding and watering, daily cleaning of stalls, organizing donations and working alongside veterinarians during animal health checks.

The valuable lessons gained from youth involvement in 4-H expanded beyond animal care, to leadership and record keeping.

Figure 20. "One of my most memorable experiences volunteering was helping a veterinarian pull [deliver] a calf during the Tubbs fire," says Pomi. "I was trusted to help the veterinarian because I was the one who had experience with cattle."

While volunteering, Pomi trained other volunteers, youth and adults, on shelter protocols, animal care practices and feeding. Pomi's also says, *"My experience volunteering at the shelter has also helped me prepare for my future career goals as a lawyer. At the shelters I have learned a lot about organization with paperwork at intake and releasing of animals to owners."* At the shelter, volunteers, including 4-H members, write down everything that is done to an animal, from feeding and watering to cleaning stall and medical care. With multiple volunteer experiences under her belt, she has also worked with folks to start digitizing the records at the shelter.

The personal development, animal education and community engagement offered through 4-H programming has played a tremendous role in meeting volunteer needs at large animal evacuation centers. When hundreds of animals occupy a shelter for weeks, it takes a significant amount of volunteers to provide routine daily care. 4-H has fulfilled this need across the state, providing experienced youth to assist with caring for shelter animals.

register for a pass to cross barriers erected after evacuation to tend to crops or animals on their properties. A program of this type must be developed before a disaster to be successful.
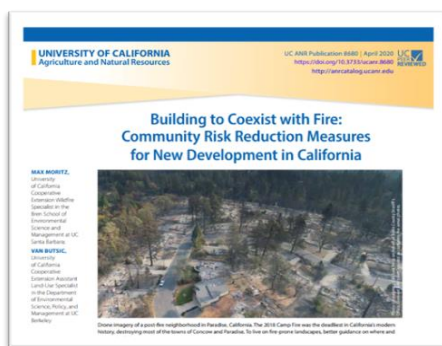

Figure 21. Free downloadable UCANR publication to help communities better design residential development to help avoid structure loss from wildfires and break the disaster cycle.

Recommendations for increasing UC ANR disaster capacity

This guide includes many recommendations for what individual UC ANR units can do to be more prepared for disasters in their local community. All of these activities could be more impactful if action is taken to improve disaster response capacity across UC ANR.

Improving UC ANR's capacity to prepare for disasters, respond in communities and help them recover is increasingly important as the climate warms and the pace of disasters increases.

A majority of UC ANR personnel surveyed in 2018 said they wanted more information on available disaster recovery resources and a pre-established network within UC ANR to help with disaster response.

Here we suggest some system wide strategies that could help local UC ANR personnel better serve their communities in times of disaster.

Develop disaster response teams

These teams would be responsible for coordination in advance of and during disasters. This would include everything from statewide / county coordination, to expertise available for a specific disaster type. In essence, these teams would serve as a virtual version of a floor safety monitor; personnel that would be trained and prepared to

direct others during disasters and ensure that UC ANR is acting in a coordinated manner so units do not reinvent the wheel during each disaster.

Develop disaster work groups / program teams

The work on this guide and the Disaster Happens project that developed it evolved from the Climate Change Program Team. Development of disaster work groups within different disciplines may be one way to accomplish some of the coordination described above. Or a disaster program team could be established to coordinate amongst work groups that address disciplinary topics.

Provide additional resources to disaster coordination

With funding for disaster program staffing, personnel could be hired to connect disaster research and extension in UC ANR and to develop programming based on the results of the 2018 needs assessments and public surveys described above. Deliverables could include coordinated web resources with easy-to-access information available across platforms; training for UC ANR personnel in every unit so they can be integrated into communication and response networks; specific training and communication plans for ANR volunteers including 4-H, Master Gardeners and Master Food Preservers to be ready to deploy as needed.

Create a California Extension Disaster Education Network

With additional funding a statewide program could be developed. Cal EDEN would be modeled on a successful program implemented by Cooperative Extension in *New York State*. It would be composed of disaster researchers and educators across UC and UC ANR who develop evidence-based guidance on preparedness, response, and recovery after natural disasters and emergencies, assist with local emergency operations, and conduct related research.

The California Extension Disaster Education Network (Cal EDEN) would be a collaborative educational network based at ANR and dedicated to educating Californians about preventing, preparing for and recovering from emergencies and disasters. Cal EDEN would be affiliated with the national Extension Disaster Education Network (EDEN).

Before disasters, Cal EDEN would coordinate across UC ANR's myriad programs, including food safety, emergency animal care, crop preservation, fire preparation and response, etc. to collect, organize, and make available existing resources, and to generate new educational resources, such as back-up electrical storage capacity in response to needs assessments and requests from the community.

Cal EDEN would serve clientele at various levels, from local emergency response agencies and VOADs to residents. We would be able to rapidly develop this program by drawing on resources from our colleagues in the national Extension Disaster Education Network (EDEN), a national organization of land-grant universities that links Extension educators from across the United States and throughout various disciplines, enabling them to develop and use resources to reduce the impact of disasters.

We estimate the network could be established with funding for staff, supplies, travel, etc. UC ANR can be ready to initiate the CalEDEN project as soon as funding is available. The foundation has already been laid through a variety of existing and recently completed projects. This effort would leverage all of the on-going disaster work being currently done by advisors, specialists, faculty, and program staff throughout our system, including research, outreach, and service. It would leverage expertise already in existence through UC ANR's Risk and Safety Services which is already engaged with each extension office throughout the state to make sure ANR's internal preparation for disaster is up to date. It would also leverage the large amount of natural hazards research being done on individual UC campuses.

In addition, UC ANR could help support efforts by the state and others to support underserved communities in disaster readiness and recovery. Because personnel are located in communities throughout the state and deliver existing programs to diverse groups, it is well-positioned to directly reach those that are often overlooked.

The Future of Disasters in California

The future landscape of disasters in California is not predictable but all indications are that the pace and scale of disasters will continue to increase as our climate continues to warm. We hope that this guide will help our UC ANR colleagues be better prepared to meet disasters in their personal lives and their communities. We hope that through collaboration we can all help UC ANR be better prepared to assist California residents through an uncertain future.

UC ANR Disaster Related Publications

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