Los Padres National Forest
Zaca and Piru Fires Restoration Conservation Strategy

The Los Padres National Forest and National Fish and Wildlife Foundation Partnership
In 2015, the National Fish and Wildlife Foundation (NFWF) undertook a cooperative partnership with the U.S. Forest Service – Region 5 and the Los Padres National Forest (LPNF) to address the impacts of the Zaca and Piru Fires in a holistic way that will lead to compounded benefits for the impacted landscapes and watersheds. For this partnership, the Forest Service dedicated $8.25 million for planning and restoration projects in the Zaca Fire scar and surrounding areas and $2.75 million for planning and restoration in the Piru Fire scar and surrounding areas.

The Conservation Strategy serves as the guiding document to aid the LPNF and its partners in focusing, and ultimately implementing, projects that advance post-fire restoration in an ecologically meaningful and measurable way. The Conservation Strategy outlines the goals and objectives of the LPNF for the Zaca and Piru Fires restoration work, and highlights potential actions toward reaching those goals. Focus areas described within this document will be targeted in the initial phases of restoration, however projects outside of these areas may be considered depending on their alignment with the strategic goals of the program. Refinements to the Conservation Strategy may be completed based on additional information gathered in year 1 of the program.

Significance of the Los Padres National Forest
The Los Padres National Forest spans nearly two million acres in the Coast and Transverse Mountain Ranges of central and southern California (Figure 1). Stretching across almost 220 miles north to south, the LPNF encompasses land from the spectacular Big Sur coast in Monterey County to the western edge of Los Angeles County, and ranges in elevation from sea level along the Pacific Coast to almost 9,000 feet at the peak of Mt. Pinos (USFS Map 2014).

Fig 1. Los Padres National Forest

One of the most biologically diverse National Forests in California, the LPNF is uniquely situated among one of the world's biodiversity hotspots and contains a wide variety of distinctive habitats and ecosystems. The LPNF supports approximately 500 animal species and nearly 1200 plant species. While dominated by chaparral (68% of the land area), the ecosystems of the forest also contain oak woodlands and savannahs, mature conifer forests, pinyon-juniper communities, semi-desert environments, and riparian corridors (USDA 2014). It is the stronghold of species like the California condor and one of the last refuges of the south coast pacific steelhead, as well as being home to 24 other federally listed threatened and endangered species (See Attachment A).

The LPNF also provides a wide array of important services and functions including flood protection and quality drinking water, protection of Wildland/Urban Interface areas from wildland fire, and as an outdoor classroom and living laboratory for learning about our natural and cultural heritage and the importance of conservation. In addition, the LPNF serves as an important gateway for nature lovers and recreationists. The Forest contains over 1200 miles of trails, 65 camping locations, and 10 federally designated Wilderness Areas that constitute nearly half (48%) of its acreage. Furthermore, its proximity to the greater Los Angeles urban area and communities such as Santa Barbara, Santa Maria, Ojai, Ventura, San Luis Obispo, and Monterey intimately connects the forest to much of the population of the central and south coast region.

Wildfire and the National Forests

Wildfire may be the biggest challenge forest managers and the public face over the next couple of decades (USDA 2005). The National Forests of Southern California occur within a Mediterranean climate; one of the driest, most fire prone areas in the United States. Wildfire is a natural and important part of the ecological processes of the region, however threats from wildfire have been compounded by decades of fire suppression activities, recent droughts and insect infestations, and the challenges from increased human ignitions associated with population growth and growing use of the forest. Although the ecosystems of Southern California have evolved to be well adapted to fire, the stressors associated with recent increases in frequency and intensity of fires have resulted in long-term losses in habitat, ecosystem transitions, changes in hydrology and associated effects to sediment and nutrient fate and transport, and opportunities for invasive species to take hold and spread. In addition, urban communities adjacent to National Forest boundaries share the risks of wildfire, and forest managers are challenged to provide safe forest environments for those within and adjacent to the forest. In California, 7 of the state's largest 10 wildfires have occurred within the last 15 years, with 3 of the top 5 caused by human related activities. The State's 4th largest fire was the Zaca Fire, occurring largely within the LPNF (CalFire 2015).

The Zaca Fire in 2007 and the Piru Fire in 2003 were significant wildfire events impacting the Los Padres National Forest (Figure 2). The Zaca Fire raged for over 3 ½ months and burned 240,207 acres, 95% of which were on the National Forest. The smaller Piru Fire lasted for 14 days and burned 63,991 acres, 32,534 of which were on Forest Service lands.

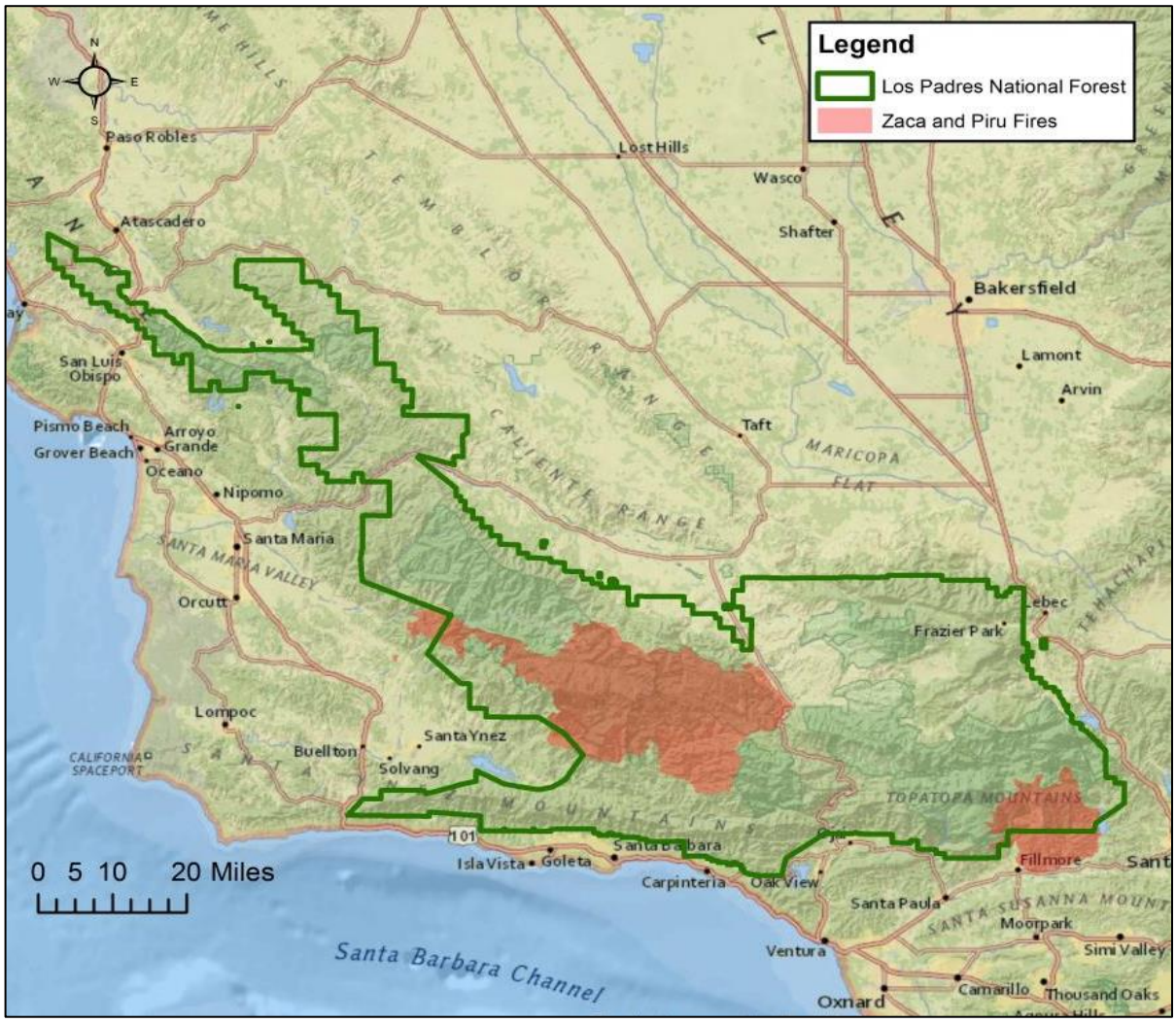

Fig 2. Los Padres National Forest and the Zaca and Piru Fire Scars

On the Zaca Fire, loss of vegetation resulted in significant negative impacts to creeks and rivers and the species they support, as erosion and sediment loading in the watersheds reduced available habitat and impaired stream connectivity in some locations. Trails and roads also experienced significant erosion from both fire and fire suppression activities, and in some areas of the forest invasive species successfully established themselves and flourished post-fire as well.

The area affected by the Piru Fire also experienced similar impacts in nine different watersheds, including Sespe Creek, a designated Wild and Scenic River, and within California condor critical habitat and the Sespe California condor sanctuary. Numerous species were affected, and two California condors died in the fire.

Los Padres National Forest Zaca & Piru Fire Restoration Goals and Priorities

The motto of the Forest Service is "Caring for the land and serving people." Given that mission, the Strategic Plan for the Nation's Forests identifies two main goals: (1) restore, sustain, and enhance the nation's forests and grasslands by fostering resilient, adaptive ecosystems to mitigate climate change; through strategic land management, mitigating wildfire risk, and conserving open space, and (2) deliver

and sustain the benefits of the National Forests to the American public by providing abundant clean water, strengthening communities, and connecting people to the outdoors (USDA 2015). Those goals are further described and expanded upon for the LPNF within the Forest Service's Land Management Plan – Part 1 Southern California National Forests Vision, Part 2 – Los Padres National Forest Strategy, and Part 3 – Design Criteria for the Southern California National Forests (USDA 2005).

With those ideals as guiding principles, the LPNF/NFWF collaboratively developed a Conservation Strategy for the Zaca/Piru post-fire restoration, centered upon two overarching goals:

1) **Ecological Restoration** - Restore and improve the watersheds impacted by the Zaca and Piru Fires to promote thriving populations of fish and wildlife, provide abundant clean water to the communities dependent on the headwaters within the Los Padres National Forest, and increase ecosystem integrity and resilience to the effects of intensifying and increasing droughts, flooding and erosion events, altered fire regimes, and other effects of climate change.

2) **Public Services and Non-natural Features Improvement** – Rehabilitate damaged Forest Service infrastructure to reduce and prevent future environmental degradation, improve capability of Forest Service staff and partners to achieve their objectives, and encourage recreational use and enjoyment by the public through education and improved access.

Over the next five years, LPNF and NFWF will award grants to address LPNF needs that capitalize on investment effectiveness for desired outcomes, as guided by the goals and priorities identified in this document and subsequent revisions to this plan. The priorities by which future proposals will be reviewed to meet the goals of these strategies, examples of actions that may be undertaken to achieve those goals, and metrics on how goals will be measured are described in below.

Ecological Restoration

The primary focus of this Conservation Strategy is to advance projects that improve ecological outcomes for the watersheds and ecosystems most directly affected by the Zaca and Piru Fires to conditions comparable to or better than pre-fire conditions. Projects to achieve ecological restoration are guided by the following priorities:

Ecological Restoration Priorities

- Ecological restoration within, or displaying a discernable cause-and-effect nexus to, the lands affected by the Zaca and Piru Fires
- Directed effort to key subwatersheds or geographic areas when and where identified by the Los Padres National Forest, e.g. Manzana Creek watershed
- Targeted restoration or protection toward high value resources and key threatened and endangered species; in particular, steelhead, California condor, and bigcone Douglas-fir
- Strategies that both restore past conditions, and maintain and strengthen ecosystem and wildlife populations' resilience to future fires and climate change
- Focused management of invasive species where effort is likely to have an immediate and lasting beneficial response for the resources of concern, e.g. tamarisk, *Tamarix ramosissima*
- Develop tools and information for the LPNF and its partners that provide immediate benefits for resource planning, outcomes measurement, and future restoration

Projects that will be considered to achieve the goals and priorities listed above may include watershed restoration via aquatic organism passage improvements, in-stream or riparian habitat improvement, and water quality or water quantity improvements, landscape restoration via reforestation and revegetation activities, fuel management and forest health improvements (tree thinning or prescribed burns), and invasive vegetation species management, activities focused on species restoration of key species such as the California condor, steelhead, big cone Douglas-fir or other threatened and endangered species, or assessments or field surveys to help strategically develop projects related to the goals of this plan.

Over the course of this program, all projects that are completed as part of this Conservation Strategy and subsequent grant awards will be required to quantify outcomes that align with the identified priorities. Goals have been established to target and evaluate restoration toward those outcomes. The evaluation goals developed for ecological restoration are presented below. These measures may be expanded or improved upon as additional information becomes available.

Evaluation Goals

- 20 stream miles made accessible to steelhead and other aquatic species via aquatic organism passage improvement
- 500 acres of riparian habitat restored
- 1000 acres of invasive species management completed
- 3000 acres of reforestation/revegetation/forest health improvement projects completed
- 300 pounds of native seed harvested

This document is intended to efficiently and effectively direct actions that result in measureable and beneficial improvement of the resource. As this program continues to evolve, these evaluation goals will be coupled with additional measures when available and appropriate to gage outcomes specific to species and ecosystems of concern.

Public Services & Non-natural Features Improvement

In addition to ecological restoration, the improvement of public services and non-natural features impacted by the Zaca and Piru Fires, in particular those that illustrate a clear nexus with the goals of ecological restoration, will be considered where appropriate. Projects to achieve restoration of public services and non-natural features are guided by the following priorities:

Public Services & Non-natural Features Improvement Priorities

- Maintenance, decommissioning, or improvement of non-natural features and infrastructure (e.g. trails, roads, and fuel breaks) impacted by the Zaca and Piru Fires
- Preference for restoration of non-natural features and infrastructure will be toward those locations that have resulted in the post-fire diminishment of forest or watershed health, forest management capabilities, or forest use
- Directed effort within key subwatersheds when and where identified by the Los Padres National Forest, e.g. Manzana Creek watershed
- Targeted restoration of infrastructure with direct impacts on high value natural resources and key threatened and endangered species; in particular, steelhead, California condor, and bigcone Douglas-fir
- Develop tools and information for the Los Padres National Forest and its partners that provide immediate benefits for resource planning, outcomes measurement, and future restoration

Qualifying projects under this category include, but are not necessarily limited to, the restoration of trails made unusable as a direct result of post-fire impacts, the recovery of fuel breaks to pre-fire conditions including invasive species removal and revegetation projects, the maintenance of critical fuel breaks deemed necessary for future forest health and fire management so long as they include mitigation to meet other ecological goals, the maintenance of critical locations where chronic sediment loading from erosion impacts watersheds, habitat, or other natural features of the forest, or assessments or field studies to help strategically develop projects related to the goals of this plan.

As with the priorities described for ecological restoration, all projects that are completed as part of these conservation strategies and subsequent grant awards will be required to quantify outcomes that align with the identified priorities. Goals have been established to target and evaluate restoration toward those outcomes. The evaluation metrics developed for public services and non-natural features improvements are presented below. These measures may be expanded or improved upon as additional information becomes available.

Evaluation Goals

- 100 miles of authorized Forest Service trail restored
- 5000 acres of restoration of FS land affected by fuel breaks and fire management activities
- 2000 acres of strategic fuel break development for protection of critical ecosystems

Species of Special Concern

Three key species have been identified for conservation action within the forest: the California condor, southern pacific steelhead, and big cone Douglas-fir. These three species represent native populations of species that occur within the Los Padres National Forest landscape and are of particular concern to resource managers of the region. These species, while certainly not the only species of concern on the forest, effectively represent the challenges the LPNF ecological community faces in its watersheds and forest communities. It is expected that measures implemented to address the needs of these species will, by extension, benefit the forest and its other species. A list of all threatened and endangered species occurring within the LPNF is included in Attachment A.

- **Southern Pacific steelhead**
  Steelhead of the south coast region of California are designated as a distinct population segment and federally listed as endangered under the Endangered Species Act. Steelhead (*Oncorhyncus mykiss*) are one of six Pacific salmon species that are native to the west coast of North America, and are currently the only species of this group that naturally reproduces within the coastal watersheds of southern California. Because steelhead employ several different life-history stages that exploit all portions of a river system, they serve as an excellent indicator of the health of southern California watersheds (NMFS 2012).

  Steelhead play an important role in the cultural and historic heritage of the region. They have been a fundamental part in the lives and culture of Native American tribes like the Chumash, who've occupied the central and south coast of California. As recent as the mid-20th century, recreational steelhead angling was prevalent throughout the region, including within the LPNF. However, following the dramatic rise in southern California's human population after WWII and the associated land and water development in coastal watersheds, steelhead populations rapidly declined from an estimated 32,000-46,000 fish per year to less than 500 returning adults (NMFS 2012).

The LPNF contains some of the best opportunities to maintain and restore the south coast steelhead populations. The National Marine Fisheries Service - Southern California Steelhead Recovery Plan (NMFS 2012) highlights a number of high priority Distinct Population Segment-wide recovery actions that include:

- Physically modify passage barriers such as dams and diversion facilities to allow natural rates of migration to upstream spawning and rearing habitats
- Enhance protection of natural in-channel and riparian habitats, including appropriate management of flood-control activities, off-road vehicle use, and in-river sand and gravel practices
- Reduce water pollutants such as fine sediments, pesticides, herbicides, and other non-point source waste discharges
- Conduct research on the relationship between resident and anadromous forms of *O. mykiss*, and the population dynamics regarding distribution, abundance, residualization, dispersal, and recolonization rates
- Survey and monitor the distribution and abundance of non-native plant and animal species that degrade natural habitats or compete with native species; reduce and/or control such non-native invasive species

- **California Condor**

  Thousands of years ago the California condor (*Gymnogyps californicus*), one of the largest flying birds in North America, was common in many parts of the continent. However, as people settled the west, they increasingly disrupted the bird's habitat, reduced their food supply, and intentionally and unintentionally killed birds as a result of their actions. By the late 1900's the population was diminished to only a few individuals, and their habitat limited to the mountainous parts of southern California, including the rugged and remote terrain found within the Los Padres National Forest (Battistone 2015).

  Since the 1980s, aggressive conservation measures have been conducted and through these efforts California condor populations have started to recover from a population of only 27 individuals, to currently over 120 wild birds flying in California (Battistone 2015). However recovery is limited by available habitat, food supply, and the fact that nesting condors raise only one chick at a time, taking over one year before a young bird is ready to leave the nest and live on their own. (Battistone 2015).

  From the beginning of the condor conservation efforts, the Los Padres National Forest has played an important role in California condor recovery. The first two of only four condor sanctuaries in the United States were established within the Los Padres: the Sisquoc Condor Sanctuary (1200 acres) and the larger Sespe Condor Sanctuary (53,000 acres). The Sespe Condor Sanctuary, located in the midst of the Piru Fire scar, continues to be an integral part of condor restoration activities and serves as a primary condor reintroduction site to release captive birds back into the wild. Opportunities for improving condor recovery within the Los Padres National Forest may include:

  - Reducing impacts from micro-trash and lead poisoning (from spent lead ammunition inadvertently ingested by condors feeding on carrion, their only food source)
  - Educating the public about anthropogenic threats to condors
  - Contributing to the success of captive breeding programs and subsequent release of birds into the wild

- **Big cone Douglas-fir**
  Big cone Douglas-fir (*Pseudotsuga macrocarpa*) is one of only two species of Pseudotsuga in North America, and the only one native to southern California. Stands of big cone can be found throughout the mountains of the LPNF, and may be intermixed with oaks and chaparral to create a complex and biologically diverse ecosystem. They provide habitat for many rare wildlife species, including the California spotted owl, which depends on conifer ecosystem communities that include big cone Douglas-firs for survival. As one of the few areas in southern California where big cone Douglas-fir still exist, restoring and maintaining these populations is a high priority for the Forest.

  Some of the activities related to the conservation of big cone Douglas-fir that may be engaged in through the Zaca/Piru restoration program include:
  - Improved survey of existing big cone Douglas-fir stands and their health
  - Evaluation of big cone Douglas-fir regeneration since the Zaca/Piru Fires
  - Enhancement of big cone Douglas-fir abundance and forest health through directed land management actions including forest thinning, revegetation and plantings, protective fuel breaks, and invasive management control
  - Collection and propagation of seed from native big cone Douglas-fir stands

Targeted Watershed Restoration and Currently Identified Priority Projects

The prioritization of forest-wide goals is intended to help program managers develop appropriate Requests for Proposals (RFPs), evaluate the relative benefits of one proposal versus another, and guide project planning to more effectively meet the objectives of the Forest. Projects generated through RFPs during the granting process may be directed to focus on specific project activities or geographic areas to aid in achieving the goals and priorities of this plan.

The Los Padres National Forest (LPNF) and National Fish and Wildlife Foundation (NFWF) have and will continue to identify strategic opportunities within sub-watersheds or critical areas impacted by the Zaca and Piru Fires to serve as focus areas for targeted restoration. Two such areas where the initial round of RFPs will be directed include the Manzana Creek watershed within the Zaca Fire scar, and focus areas within the Piru Fire scar. Included below are descriptions and associated supporting information for these areas that help define the rationale and guide upcoming implementation projects. Information for future focus areas may be included within subsequent revisions to the Conservation Strategy and will be provided as part of RFPs.

Focus Watershed #1: Lower Manzana Creek

Manzana Creek has been identified by the LPNF and NFWF as a high priority watershed within the Zaca Fire scar (Figure 3). Much of the Sisquoc River watershed, including Manzana Creek, has been rated by NOAA-NMFS with estimated "High Intrinsic Potential" to provide over-summering habitat for steelhead (NMFS 2013). In 1999 through 2000, the LPNF conducted snorkel surveys on selected streams. Within the Southern California ESU, the highest densities of steelhead (>50 fish/100-m) were observed in Manzana Creek.

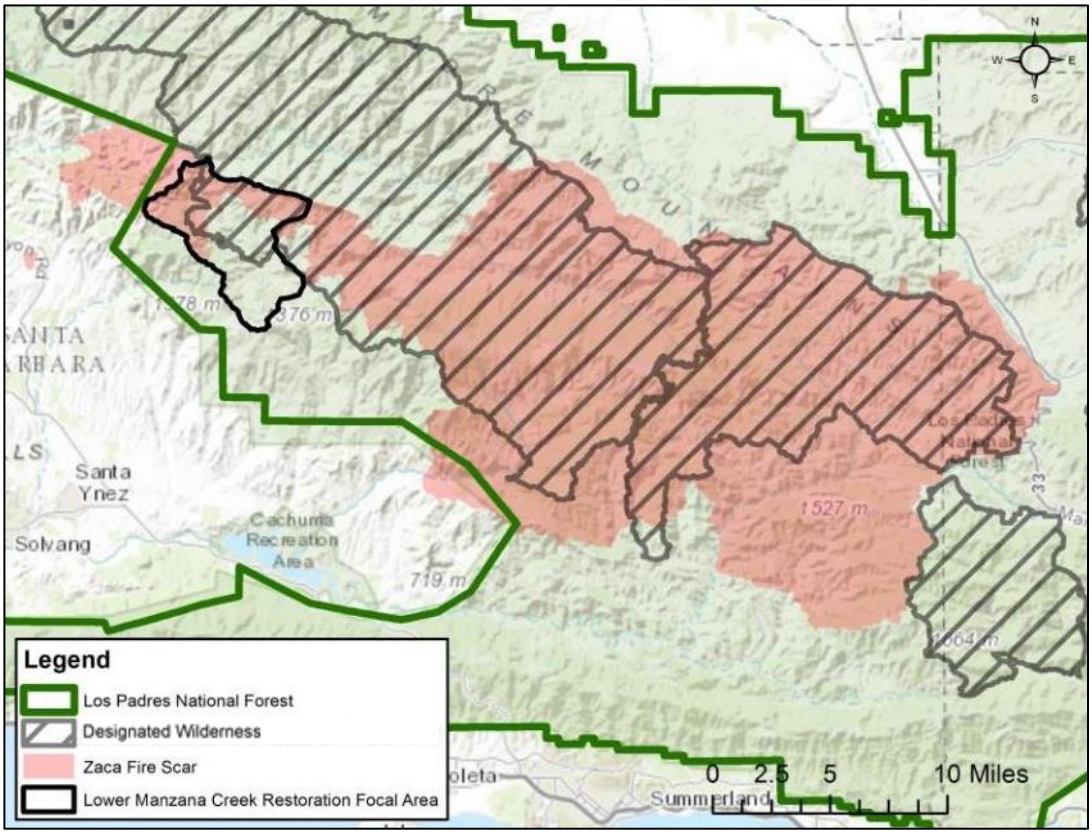

Fig 3. Lower Manzana Creek Watershed, Zaca Fire Scar, and Wilderness Areas within the Los Padres National Forest.

Manzana Creek is one of the lower-most tributaries to the Sisquoc River within the LPNF boundary, before the Sisquoc joins with the Cuyama River to form the Santa Maria River. Much of the 36,000 acre Manzana Creek watershed escaped impacts from the burn as the fire was raging, however as one of the furthest downstream areas below the Zaca Fire it has been affected from the subsequent sediment loading and resulting changes in habitat. At the same time, the Manzana watershed has served as a critical oasis for aquatic species, including steelhead, that live within the Sisquoc and upper Santa Maria environments. In addition to its importance to steelhead, this area of the Forest sees heavy use from campers and hikers, and the Nira Campground near Davy Brown Creek is known to be one of the most popular campsites on the Santa Lucia Ranger District.

A variety of restoration projects can be accomplished within the Manzana Creek watershed to address the goals of the forest. The following are known needs within the watershed that have been identified by the LPNF and NFWF as valuable projects that may be conducted through the RFP process or direct contracting.

Manzana Creek Watershed Restoration

Information on the full extent of needed watershed restoration projects within the Manzana Creek watershed is incomplete, however LPNF experts have identified three high priority road crossings in need of improvement for aquatic organism passage (Figure 4). The completion of these projects would add roughly 5 miles of stream connectivity to the system, opening the upper reaches of Davy Brown Creek to access by steelhead and thereby expand the habitat available to steelhead and other aquatic species.

Those projects are:

- Campground Road at Munch Creek
- Upper Sunset Valley Road at Davy Brown
- Lower Sunset Valley Road at Davy Brown

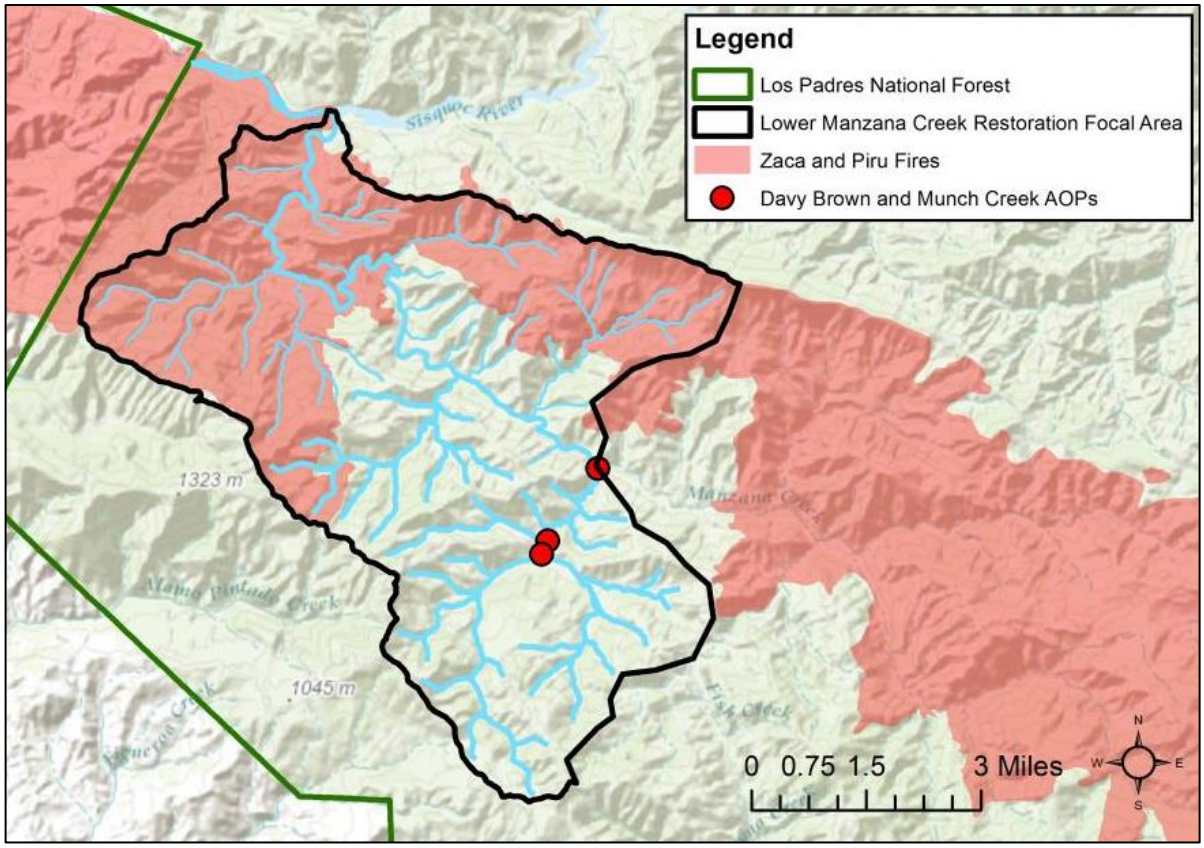

Fig 4. Priority Aquatic Organism Passage sites

Projects that address other watershed restoration needs within the watershed, or additional significant barriers to aquatic organism passage may also be considered as they are identified.

Manzana Creek Landscape Restoration

There are a number of landscape restoration actions that can and should be taken to improve ecosystem health, improve habitats vital to fish and wildlife, and support native plant establishment:

- **Invasive species identification and control measures.** A number of invasive species have established strongholds in the Forest prior to, after, and because of the Zaca Fire and are threatening the native plants and the species they support. LPNF/NFWF will support projects that identify areas where invasives are a significant problem and implement control measures to remove invasive species where possible. Of particular concern is tamarisk. The LPNF is currently developing an Environmental Impact Statement detailing acceptable tamarisk management strategies for the entire forest. Any future tamarisk management projects will need to comply with that document.

- **Forest health management - mitigate impacts from loss of vegetative community species due to fire, and/or exacerbated by drought, disease and insect infestation.** One approach for restoration activity is to focus effort within areas of tree mortality (Figure 5). Within the lower Manzana Creek watershed, roughly 1400 acres have been identified with tree mortality. (A map of tree mortality within the Manzana Creek watershed is presented below, however applicants can work with local District Rangers to identify other appropriate areas. Projects outside of these mapped areas will also be considered.) Projects related to tree mortality restoration may include reforestation, or they may address fuels and timber management where tree mortality and forest stand density pose risks in the event of future fire and other natural outbreaks that may ultimately harm the long term health of the forest. All proposed projects must display an understanding of appropriate management techniques specific to the vegetative communities affected by fire scarred areas and the expected ecological benefits that would result. The forest management activities described herein may also be applied to riparian areas where benefits will include those for steelhead and other aquatic species, as well as terrestrial species and birds, such as the least Bell's vireo and southwestern willow flycatcher that depend on healthy riparian environments (Boughton 2010).

- **Protect big cone Douglas-fir stands and encourage pine forest regeneration.** Big cone Douglas-fir is of high priority to LPNF and projects that benefit this species in particular, and pine forest ecosystem health in general, are highly encouraged. Projects may include seed collection, seedling plantings, or timber stand thinning.

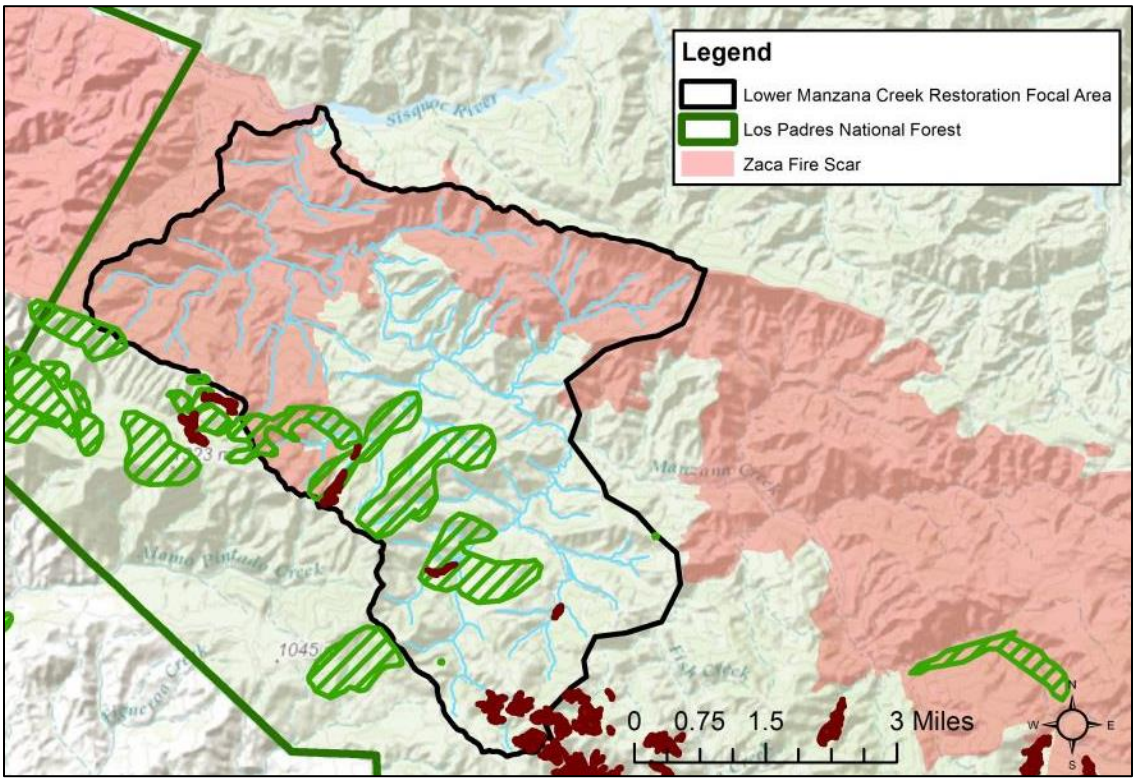

Fig 5. Areas of Tree Mortality in the Lower Manzana Creek watershed. Mortality may be caused by pests, disease or drought – not just fire events. Green hash-marked polygons represent known areas of tree mortaility. Maroon polygons represent Big cone Douglas-Fir stands.

Manzana Creek restoration and protection of vital habitats for key species

Several threatened and endangered species reside within the Lower Manzana watershed, including southern California steelhead. Projects that provide positive impacts to these habitats and species are encouraged. Figure 6 below illustrates areas where some of these species are known to occur.

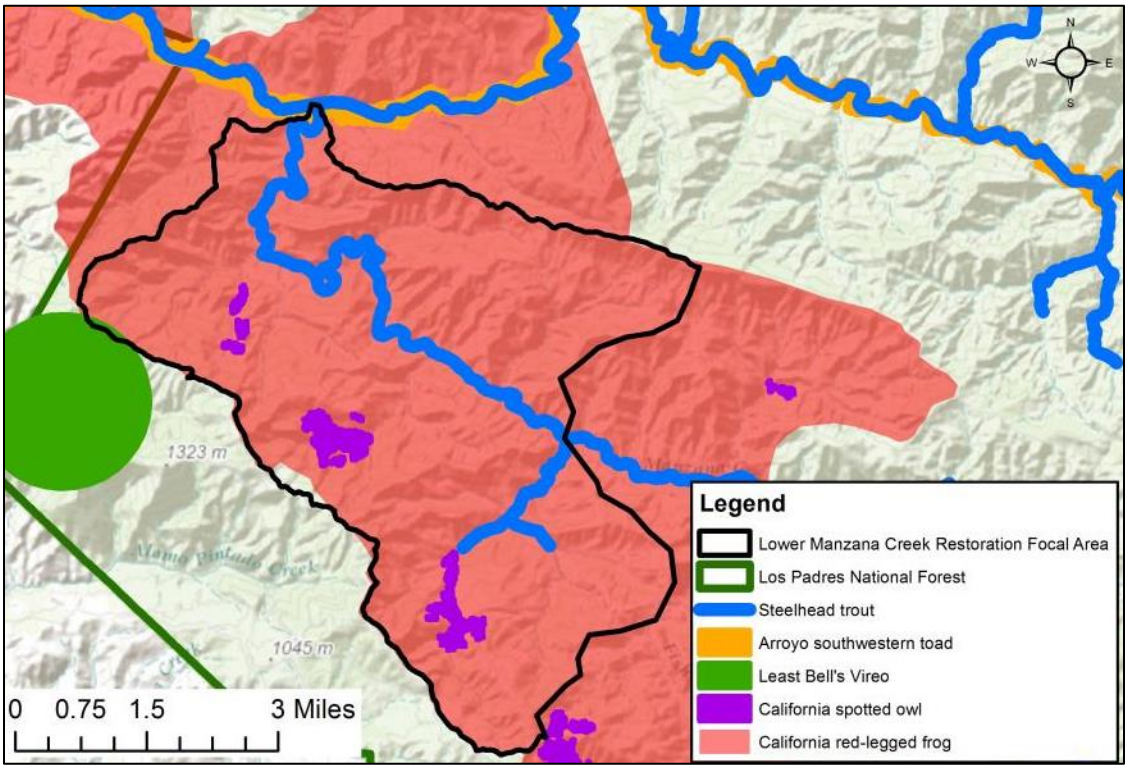

Fig 6. Critical habitat for and evidence of species of concern.

ENDANGERED
Steelhead trout

ENDANGERED
Arroyo southwestern toad

ENDANGERED
Least Bell's vireo

THREATENED
California red-legged frog

SENSITIVE
California spotted owl

Manzana Creek Infrastructure Improvements

Wildfire can also have a significant impact on infrastructure such as trails, roads, and fuel breaks. After a fire, accessibility and use of those features may be reduced, and impacts to them may create secondary effects which continue to harm the natural environment well after the fire is extinguished. Projects that restore these features, particularly where restoration efforts additionally benefit disturbed or degraded environments, will be considered. Figure 7 identifies the network of roads, trails, and fuel breaks in and around the Manzana Creek watershed, however no specific priority restoration projects have been identified at this time.

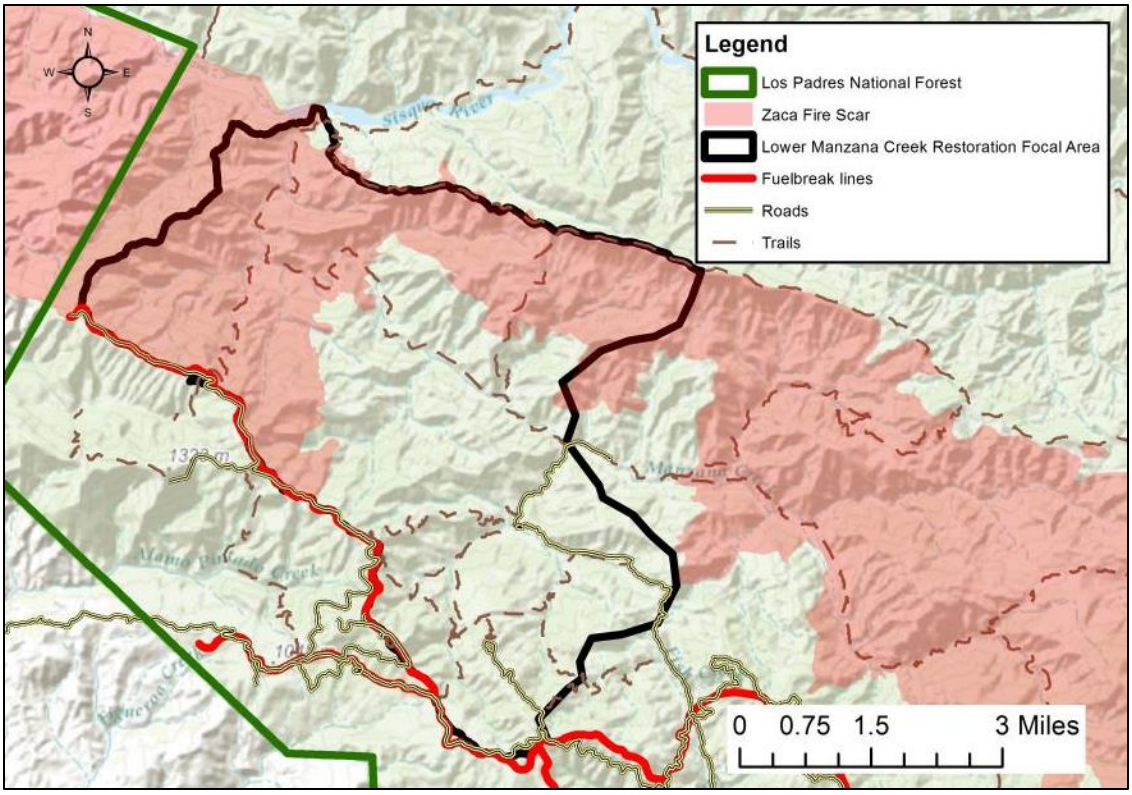

Fig 7. Fuelbreak lines, roads and trails in the Lower Manzana Creek watershed.

Focus Area #2: Piru Fire

The Piru Fire occurred in 2003 and affected roughly 32,000 acres of the Los Padres National Forest within the Ojai Ranger District. The impacts to wildlife and habitat were significant, including the death of two California condors, degradation of stream systems from sediment loading and riparian vegetation loss throughout the fire scar, as well as damage and destruction to miles of trail system and Forest Service roads. Given that much of this fire occurred in extremely remote and rugged wilderness and portions of the Sespe Condor Sanctuary (closed to public entry), the opportunities for guided restoration within the Piru burn scar may be more limited.

Figure 8 below identifies areas within the LPNF and the Piru Fire scar that occur outside of designated wilderness areas that may be more amenable to conducting restoration work.

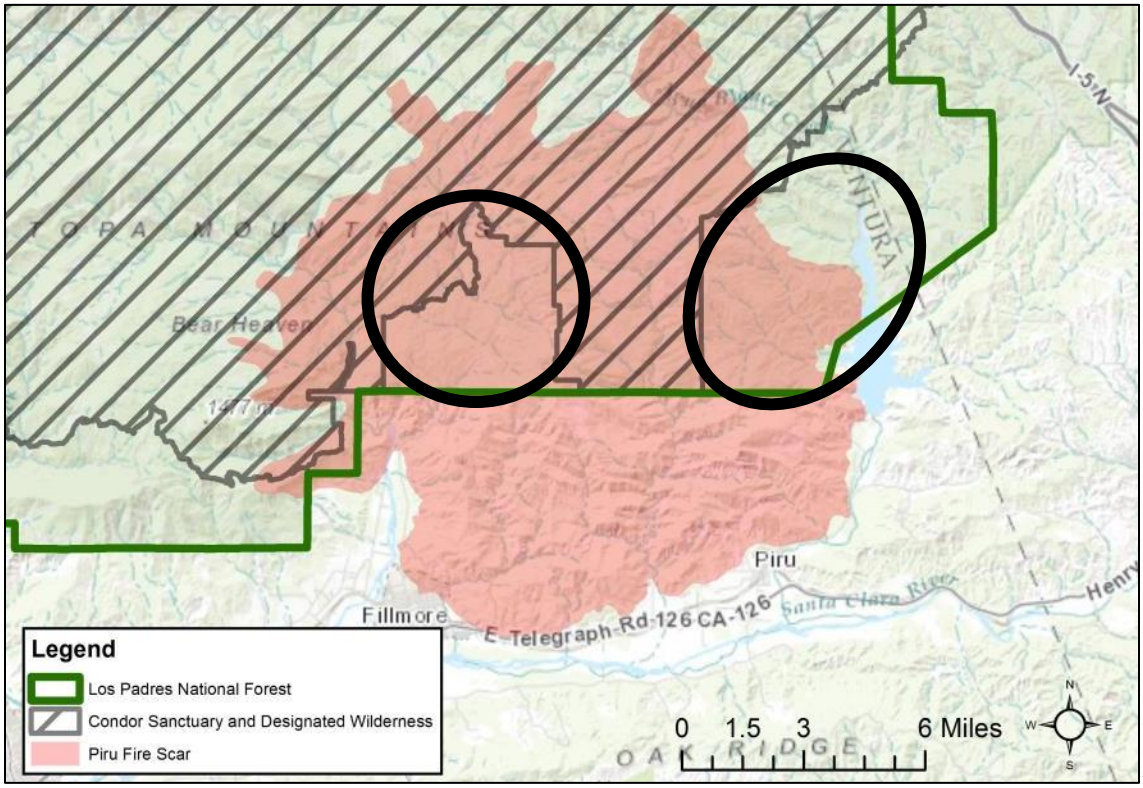

Fig 8. Piru Fire Scar. Circles indicate areas on Forest Service land inside the Piru Fire scar but outside of Wilderness and Sanctuary areas where projects might be more easily implemented.

Piru Fire Watershed Restoration

All of the themes and objectives for watershed restoration described in this Conservation Strategy are as applicable to the Piru burn scar as they are the Zaca. At this time, no specific subwatersheds have been identified for focused work or priority projects, however Sespe Creek and Piru Creek are two watersheds of particular interest related to the recovery of steelhead where watershed restoration efforts could be explored in further detail.

Sespe Creek, a tributary of the Santa Clara River, is a perennial, un-dammed, and mostly pristine system, with over 30 miles of designated as Wild and Scenic River, much of which has significant potential habitat for steelhead. Piru Creek is the largest tributary to the Santa Clara River, and provides about one half of the Santa Clara's flow. Piru Creek is also regarded for its potential habitat for steelhead, although two large reservoirs occur within the Piru Creek that limit steelhead migration and access within the watershed. Opportunities for restoring these systems, and other critical steelhead habitat affected by the Piru Fire will be considered where appropriate.

Piru Fire Landscape Restoration

There are a number of restoration actions that can and should be taken to improve ecosystem health, habitats vital to fish & wildlife, and support native plant establishment:

- **Invasive species identification and control measures.** A number of invasive species have established strongholds in the Forest prior to, after, and because of the Piru Fire and are threatening the native plants and the species they support. LPNF/NFWF will support projects that identify areas where invasives are a significant problem and implement control measures to remove invasive species where possible. Of particular concern is tamarisk. The LPNF is currently developing an Environmental Impact Statement detailing acceptable tamarisk management strategies for the entire forest. Any future tamarisk management projects will need to comply with that document.

- **Reforest and revegetate with native plant species where needed, appropriate and likely for success.** Applicants can work with local District Rangers to identify other reforestation needs. All projects must display an understanding of revegetation and reforestation techniques appropriate to fire scarred areas and the harsh drought conditions the area has been experiencing for several years. Riparian planting and restoration may also be included under this category that would improve conditions for steelhead and other native freshwater and riparian species such as the Arroyo toad and Southwestern willow fly catcher (Boughton 2010).

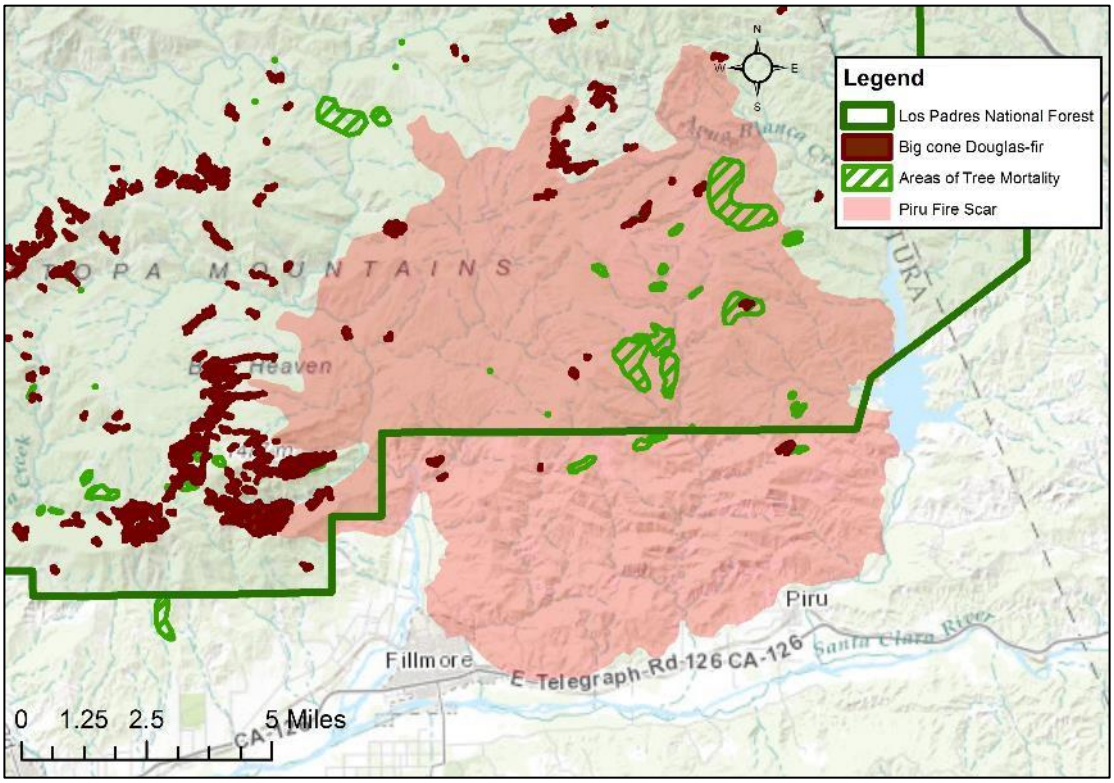

Fig 9. Areas of Tree Mortality and stands of Big cone Douglas-fir in and around the Piru Fire scar. Mortality may be caused by pests, disease or drought – not just fire events.

Piru Fire restoration and protection of vital habitats for wildlife species.
Several threatened and endangered species reside within the area affected by the Piru Fire, including the California condor and southern California steelhead. Projects that provide positive impacts to these habitats and species are encouraged. Figure 9 below illustrates areas where some of these species are known to occur.

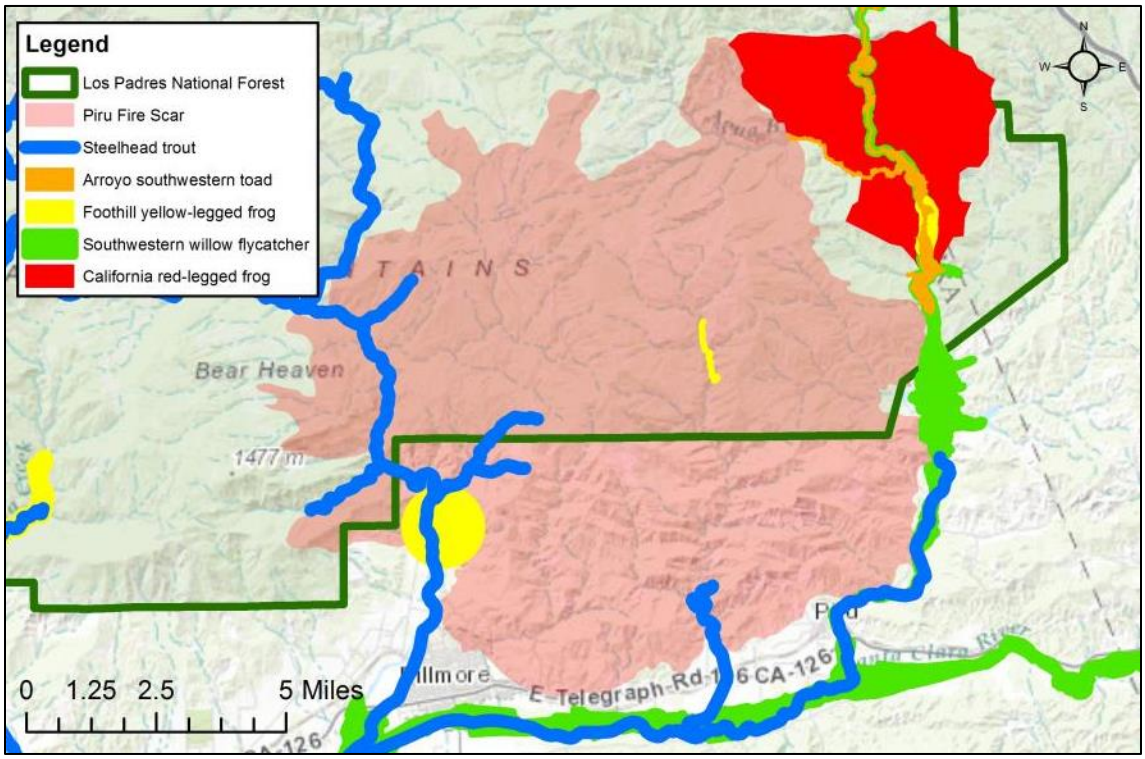

Fig 10. Critical habitat for and evidence of species of concern.

ENDANGERED
Steelhead trout

ENDANGERED
Arroyo southwestern toad

ENDANGERED
Southwestern willow flycatcher

THREATENED
California red-legged frog

SENSITIVE
Foothill yellow-legged frog

Piru Fire Infrastructure Improvements

Wildfire can also have a significant impact on infrastructure such as trails, roads, and fuel breaks. After a fire, accessibility and use of those features may be reduced, and impacts to them may create secondary effects which continue to harm the natural environment well after the fire is extinguished. Projects that restore these features, particularly where restoration efforts additionally benefit disturbed or degraded environments, will be considered. Figure 10 identifies the network of roads, trails, and fuel breaks in and around the Piru Fire boundary. One associated priority project has currently been identified.

- ***Pothole Trail***

The Pothole Trail is a designated hiking trail within the National Forest Service trail system, and one of the last remaining trails affected by the Piru Fire that has yet to be restored. The beginning of this trail, just above Piru Lake, has historically been used by fire fighters during forest fires as a strategic location for a fuel break. Portions of the trail were obliterated through fire suppression activity and the construction of fuel breaks. The fuel break scars remain and have inadvertently directed the users of the trail along that pathway. The current route includes sections of extremely steep grade (>40%) and poor condition well outside the standards of Forest Service trail. The proposed project would re-route the start of the Pothole Trail away from the fuel break (which may be used again in the future given another fire event), and would include restoration of the landscape impacted by the past fire suppression activities. In addition, the trailhead for the proposed Condor Trail, which would offer a contiguous pathway across the Los Padres and the central coast region from its southern end all the way to Big Sur, would originate from this site.

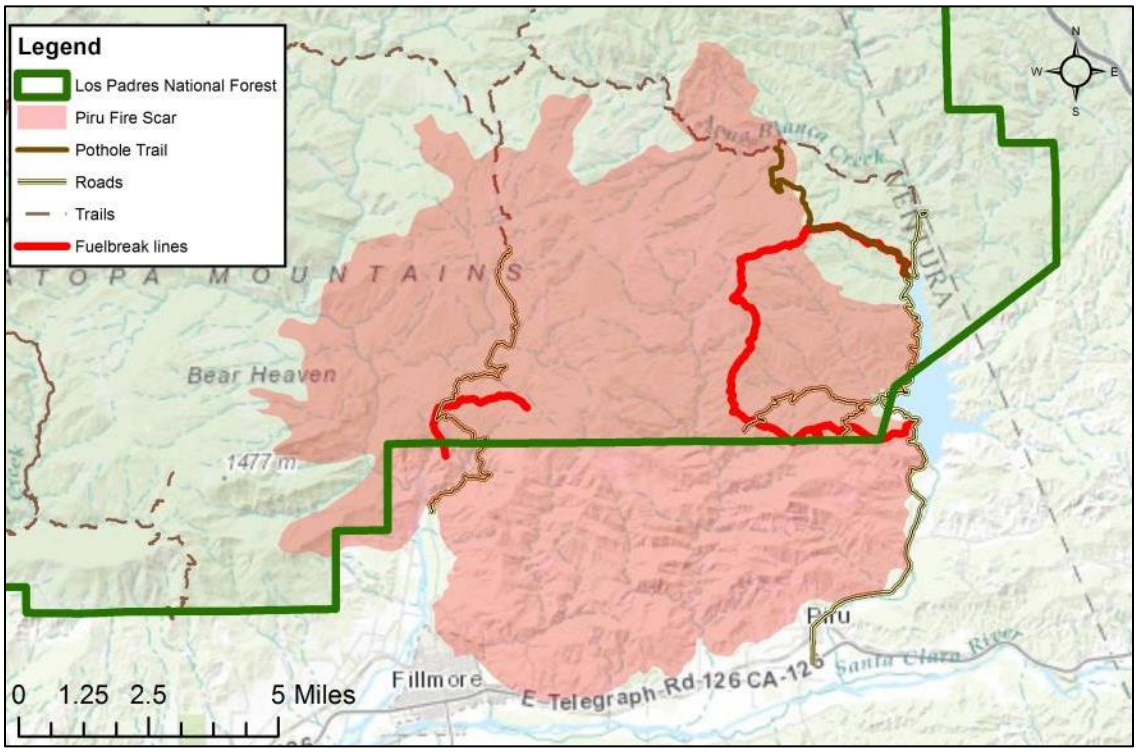

Fig 11. The Pothole Trail, Fuelbreak lines, roads and other trails in and around the Piru fire scar.

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Attachment A – Threatened and Endangered Species on the Los Padres National Forest

SPECIES	SCIENTIFIC NAME	STATUS	
BIRDS		State	Federal
California condor	*Gymnogyps californianus*	Endangered	
California least tern	*Sterna antillarum browni*	Endangered	
Least Bell's vireo	*Vireo bellii pusillus*	Endangered	
Marbeled murrelet	*Brachyamphus marmoratus*	Endangered	Threatened
Western snowy plover	*Charadrius alexandrines nivosus*		Threatened
Southwestern willow flycatcher	*Empidonax traillii extimus*	Endangered	Endangered
Yellow-billed cuckoo	*Cocczyus americanus*		Threatened
MAMMALS			
San Joaquin kit fox	*Vulpes macrotis mutica*	Threatened	Endangered
Southern sea otter	*Enhydra lutris nereis*		Threatened
Giant kangaroo rat	*Dipodomys ingens*	Endangered	Endangered
Stellar sea lion	*Eumetopias jubatus*		Threatened
REPTILES			
Blunt-nosed leopard lizard	*Gambelia silus*	Endangered	Endangered
AMPHIBIANS			
Arroyo toad	*Anaxyrus californicus*		Endangered
California red-legged frog	*Rana aurora draytonii*		Threatened
California tiger salamander	*Ambystoma californiense*		Endangered
FISH			
Tidewater goby	*Eucyclogobius newberryi*		Endangered
Steelhead trout:	*Oncorhynchus mykiss*		
Southern California DPS			Endangered
South/Central California Coast DPS			Threatened
Santa Ana sucker	*Catostomus santaanae*		Threatened
INVERTEBRATES			
Smith's blue butterfly	*Euphilotes enoptes smithi*		Endangered
Conservancy fairy shrimp	*Branchinecta conservatio*		Endangered
Longhorn fairy shrimp	*Branchinecta longiantenna*		Endangered
Vernal pool fairy shrimp	*Branchinecta lynchi*		Threatened
Kern primrose sphinx moth	*Euproserpinus euterpe*		Threatened
PLANTS			
Camatta Cyn. amole	*Chlorogalum purpureum var. reductum*		Threatened
Chorro Creek bog thistle	*Cirsium fontinale var obispoense*	Endangered	Endangered
Kern Mallow	*Eremalche kernensis*		Endangered
Southern mountain buckwheat	*Erigonum kennedyi var. austromontanum*		Threatened