

**ENDANGERED SPECIES ACT SECTION 6 GRANT PROGRAM**  
**FY 2012 Recovery Land Acquisition Program**  
**Unarmored Threespine Stickleback**  
**Shay Meadows Conservation Area Expansion**

**Amended Project Statement**

**AGENCY CONTACTS:**

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**NEED: Why is the project being undertaken?**

The acquisition of land within Shay Meadows area surrounding Shay Pond in San Bernardino County (Figures 1 and 2), is being proposed for the permanent protection and management of important habitat for the unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*; “stickleback”, or “UTS”), a federal and state listed endangered species. Historically, stickleback were found more widely distributed, occupying lower-gradient streams in the Los Angeles, San Gabriel, and Santa Ana Rivers, and in a few localities in Santa Barbara County, but have been extirpated from these areas as a result of the effects of urbanization such as stream dewatering, habitat alteration, introduction of exotic predators, and pollution (USFWS 2009). Presently, UTS is restricted to three areas: the upper Santa Clara River and its tributaries in Los Angeles County, San Antonio Creek in Santa Barbara County, and the Shay Creek vicinity in San Bernardino County. Sticklebacks currently occupy three isolated ponds in the Shay Creek vicinity: Shay Pond and its satellite pond at Shay Meadows, Sugarloaf Pond, and Juniper Springs (USFWS 2009).

The Shay Creek vicinity stickleback occurs at high elevation (6,700 feet) in wet-meadows habitat, compared to other populations which inhabit streams below 3,000 feet in elevation. The population of stickleback in the Shay Creek vicinity is unique due to the geographic location and hydrologic isolation from the remainder of the subspecies distribution. The UTS was listed as a subspecies with no mention of a distinct population segment; however, recent genetic analysis of various populations of the subspecies now suggest that the San Antonio Creek and Shay Creek vicinity populations could each potentially be classified as an individual DPS (or possibly a new subspecies or species). Historically, stickleback occupied Shay Pond, Sugarloaf Pond, Juniper Springs, Shay Creek, Motorcycle Pond, Wiebe Pond, and Baldwin Lake; however, present conditions no longer support stickleback in the latter three of these locations (USFWS 2009). The loss, fragmentation, and degradation of hydrologic flows supporting the wet-meadow system has decreased habitat suitability and availability and has made the stickleback in the Shay Creek vicinity vulnerable to extirpation, particularly at Shay Meadows. Sugarloaf Pond and Juniper Springs occur entirely within San Bernardino National Forest lands and therefore benefit from some habitat protection. The major portion of Shay Creek is located on private land in-holdings within the boundaries of the forest. Encroachment by emergent vegetation, loss of natural

hydrological regime, decreased water quality (eutrophication), trespass by humans and livestock, and vandalism are current or potential threats to Shay Pond and the surrounding wet-meadows habitat.

In 2008, approximately 8 acres of property at Shay Meadows (including Motorcycle Pond and areas connecting it to Shay Pond) was acquired through a 2002 Section 6 recovery land acquisition grant and are currently held in conservation by the California Department of Fish and Game (CDFG). The Department of Water and Power, City of Big Bear Lake (DWP) and the Big Bear Community Services District (CSD) acquired approximately 2 acres underlying Shay Pond, referred to as “Shay Creek UTS preservation lands.” As a term and condition of a special use permit for Water Collection and Conveyance Facilities in the Baldwin Lake Watershed, San Bernardino National Forest, San Bernardino County, California (FWS-SB-1980.1; USFWS 2002), CSD is contractually obligated to provide waters from their municipal supply to maintain a minimum 20-gallon-per-minute outflow from Shay Pond. Through a restrictive covenant with CSD, the preservation lands are in conservation status. The permittees, CDFG, and the U.S. Fish and Wildlife Service (USFWS) are in the process of developing and implementing a monitoring and management plan for stickleback in Shay Pond. Absent of adequate habitat protection or interim management, Shay Pond filled in with sediment and vegetation over the last decade. In June, 2011, an emergency effort to rehabilitate Shay Pond was undertaken by USFWS and San Bernardino Forest Service (USFS) personnel, and the CSD. By removing encroaching emergent vegetation and re-contouring the pond boundaries, open water and edge habitat was substantially increased and deep pools were created. In August, 2011, adult and young-of-year stickleback were observed in Shay Pond by USFWS personnel and in an adjacent satellite pond (connected by a culvert) currently proposed for acquisition. This project is not any part of the mitigation required by past projects or permits and builds to increase the areas and benefits accomplished by the 2002 Section 6 grant.

Historically, stickleback has been observed from the top of Shay Creek at Motorcycle Pond down to the edge of Baldwin Lake, an ephemeral lake connected to Shay Pond via Shay Creek. Observations of above-average precipitation years suggest that the stickleback re-occupy aquatic habitats that are connected to Shay Creek during periods when water is present (USFWS 2009). Therefore, if a strategic, connected portion of the Shay Meadow system can be acquired, protected, and managed, it will be possible to expand occupied habitat and increase the stickleback subpopulation in the Shay Creek vicinity.

Through conservation by acquisition or a conservation easement of all, or a portion of, the proposed parcels, we propose to: 1) secure areas surrounding existing occupied habitat (Shay Pond), including adjacent satellite ponds that are currently occupied, historically occupied, or may be occupied by the stickleback as environmental conditions permit; 2) secure the Shay Creek wet-meadows habitat by maintaining local hydrologic function on, and between, the proposed parcels; and, 3) develop and implement a long-term conservation and management plan for the Shay Meadow area that will guide future activities and support recovery of the species. The proposed acquisition parcels will complement lands already acquired with funds through Section 6 acquisitions by expanding the boundaries of conserved meadow habitat and offering increased connectivity between Motorcycle Pond, Shay Pond, and adjacent wet-meadows habitat. Acquisition of these privately owned parcels within Shay Meadows will protect habitat from development and degradation and will allow for management actions that will protect the

species and improve the function of the system as a whole. All of these actions support the recovery of the endangered stickleback.

Parcels proposed for acquisition are wet-meadows habitat and one parcel also contains pebble plain habitat. The proposed habitat acquisition would also provide protection for the following threatened, endangered, and sensitive species that may occur on parcels proposed for acquisition. Focused surveys have not been conducted for state- or federally-listed plant or other sensitive species because the property is privately owned. The following species occur on adjacent public property and may occur in the area as suitable habitat is present (Table 1):

**Table 1. Potential species present in the Shaw Meadows Conservation Area Expansion**

| Species  | Status     | Recovery Plan | Recovery Priority Number |
|--|------------|---------------|--------------------------|
| Unarmored threespine stickleback ( <i>Gasterosteus aculeatus williamsoni</i> )       | FE, SE, FP | Final         | 3                        |
| Bird footed checkerbloom ( <i>Sidalcea pedata</i> )                                  | FE, SE     | Listed        | 5C                       |
| Slender petaled thelypodium ( <i>Thelypodium stenopetalum</i> )                      | FE, SE     | Listed        | 5C                       |
| San Bernardino blue grass ( <i>Poa atropurpurea</i> )                                | FE         | Listed        | 2                        |
| California dandelion ( <i>Taraxacum californicum</i> )                               | FE         | Listed        | 5                        |
| Southern mountain buckwheat ( <i>Eriogonum kennedyi</i> var. <i>austromontanum</i> ) | FE         | Listed        | 9                        |
| Two-stripe garter snake ( <i>Thamnophis hammondi</i> )                               | CSC        | NA            | NA                       |

TE = Federally listed as Endangered  
 FP = State Fully Protected

SE = State-listed as Endangered  
 CSC = California Species of Concern

**OBJECTIVE: What is to be accomplished during the period of the project pursuant to the stated need?**

The objectives of the proposed acquisition are to:

- 1) Protect Shay Pond and surrounding wet-meadows habitat for the Shay Creek stickleback population and six other listed or protected species that may be present;
- 2) Provide the ability to monitor (fish and water quality), manage, protect and access these properties and to create a connection to adjacent conserved lands;
- 3) Restore portions of Shay Pond and its occupied satellite pond, Motorcycle Pond and connecting wet-meadows habitat, thereby increasing the likelihood of conserving the fish, plants, and wildlife in perpetuity; and,
- 4) Provide a buffer for the Shay Pond, its occupied satellite pond, and Motorcycle Pond, protecting the fish, plants, and wildlife from human and natural perturbations.

Specifically, the proposed acquisition project is to use \$400,000 in awarded grant funds (Federal grant of \$300,000 plus matching funds of \$100,000) to purchase habitat and/or a conservation

easement which will be conserved in perpetuity for the protection of stickleback and other species within Shay Meadows. The State matching funds could come from the Wildlife Conservation Board (State bonds) and other non-Federal partners and may include in-kind services from the San Bernardino Mountains Land Trust and others, in-kind labor from partners, CDFG, and other agency personnel, land matches, or bargain sales from landowners. The proposal is to acquire a subset of the 8 parcels identified in this proposal (Figure 3). The estimated value of the properties is about \$60,000 per acre. All of the parcels identified range from approximately 1 to 4 acres in size. Land acquisition funds can be used to purchase multiple parcels from a few to several land owners. Therefore, depending on parcel location, it is estimated that about 6 acres of land could be purchased with the initial funds; more acreage could potentially be acquired, given the numerous partners and conservation initiatives involved. The San Bernardino Mountains Land Trust has been coordinating with the USFWS and CDFG to identify stickleback habitat and willing sellers listed below (Table 3). Partial funding would contribute toward achieving the overall conservation goals because acquisition of individual parcels listed in this grant provides significant conservation value.

**EXPECTED RESULTS OR BENEFITS: How will the project impact fish and wildlife resources or benefit the public?**

Public benefits include the conservation of a natural meadow system and its associated species, educational opportunities, scientific opportunities for studies and research, and the preservation of the biodiversity of the San Bernardino Mountains. Through a section 7 consultation between the USFS and the USFWS, CSD has acquired approximately 2 acres of Shay Meadows that contains Shay Pond (USFWS 2002). However, the protection of surrounding lands is needed to provide a buffer around the pond and maintain hydrology for the pond. In addition, management to restore and expand the current extent of Shay Pond is ongoing. The conservation of surrounding habitat will facilitate this effort. Research, education, and public outreach are a part of the management already proposed for the property conserved by the CSD and the purchase of additional habitat surrounding the pond will enhance these opportunities by providing more available lands and possibly, protecting a larger suite of listed and sensitive species of plants and animals.

Without adequate protection or long-term management in place, Shay Pond has been filling in with sediment and vegetation over the past decade (records on file in the Carlsbad Fish and Wildlife Office 2008). Adjacent land uses include rural ranchettes with horse stables. Runoff from paddocks to Shay Meadows occurs; likely carrying with it a high concentration of nitrogen which promotes excessive growth of plants and algae. Off-highway vehicle use is common in the area especially when water levels are low during the summer months. This results in ground disturbance and likely the introduction of petroleum-based pollutants which degrade habitat and water quality and could result in the extirpation of this population of stickleback.

The surrounding meadow and wet-meadows habitat also contain habitat for other state- and federally-listed species, USFS sensitive species, as well as California Species of Special Concern. Habitat acquisition or conservation easements would permanently conserve and protect habitat for the stickleback and possibly a number of other State- and/or federally-listed and sensitive species, and allow the CDFG, the USFS, and the USFWS access to these properties to manage and monitor the status of the stickleback and other sensitive species onsite. Protection

of multiple species would also assist in their recovery and may help preclude the need to list them in the future.

### *Climate Change*

There is scientific consensus that alteration of the atmosphere is causing changes in climate, including increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising sea levels. In California, it is anticipated that there will be warmer temperatures (Cayan *et al.* 2006), greater extremes in weather, and larger variation between wet and dry years (Franco 2005), but precipitation patterns are more difficult to project (Lenihan *et al.* 2006). In periods of prolonged drought or with increased air temperature, as are predicted for California under recent IPCC (International Panel on Climate Change) model assessments, stickleback may experience added environmental stress. A temporary or permanent reduction of habitat related to evaporation and decreased water availability, decreases in water quality (e.g., more frequent algae blooms, increased runoff and eutrophication, changes to water chemistry), or increases in physiologic stress are possible responses to these environmental stress. These stressors enhance pressures from competitors, nonnative species, habitat change, low water supply, and disease, which may directly affect mortality, reproduction effort and/or success, risk of predation or abundance of adequate food resources. Furthermore, in extremes such as prolonged drought, a disastrous effect on small, isolated populations (such as the Shay Meadows stickleback) may contribute to, and exacerbate, the risk of localized extinction. The proposed acquisitions will provide additional habitat to lessen the potential impacts of climate change, lower the risk of localized extinction, and may provide refugia for the stickleback during long periods of drought, increased temperatures or intense, but infrequent, precipitation events.

### **APPROACH: How will the objective be attained?**

Recovery criteria and tasks are listed in the *Unarmored Threespine Stickleback Recovery Plan (revised)* (USFWS 1985) and in the most recent 5-Year Status Review of the Unarmored Threespine Stickleback (USFWS 2009). The recovery tasks in both documents identify this population and watershed and the associated conservation actions as a priority for recovery. No final critical habitat (CH) was approved as it was determined that CH would not be required with the details of the habitat and conservation needs addressed in the recovery plan.

**Task 1** in the Recovery Plan for the stickleback is the acquisition of property. Key cooperators in the proposed acquisition include the USFWS, CDFG, USFS, and the San Bernardino Mountains Land Trust. In 2002, CDFG was awarded \$505,000 associated with a section 6 recovery land acquisition grant to acquire lands for the recovery of the stickleback. About 8 acres of habitat was acquired in September 2008. This proposed recovery land acquisition grant would complement the land acquired through the 2002 land acquisition grant award. The acquisition parcels and/or conservation easements would be purchased using section 6 grant funds and the 25 percent non-Federal match. The matching funds could come from the Wildlife Conservation Board (State bonds) and other non-Federal partners and may include in-kind services from the San Bernardino Mountains Land Trust and others, land matches, or bargain sales from landowners.

- A recommended action in the 2009 “Unarmored Threespine stickleback 5-Year Review” (USFWS 2009, p.29) is to acquire, or otherwise secure for the conservation of the stickleback property within areas that have suitable habitat for the stickleback (e.g., Soledad Canyon, Santa Clara River, Shay Creek vicinity). Task 1 satisfies this objective in a critical portion of its range, with the San Bernardino/ Shay Creek vicinity.

**Task 2** in the Recovery Plan is the fencing of the acquired properties so that destructive uses and trespassing can be controlled. Potential match sources may be provided by in-kind labor from personnel from the CDFG or conservation groups. While the USFWS and USFS may also provide assistance to the CDFG, the USFWS and USFS personnel time would not be included as part of the non-Federal match. Acquisition of lands will help to secure necessary fencing around occupied or potentially occupied habitat to prevent further trespass and habitat degradation and will afford protection to listed species.

- The 2009 “Unarmored Threespine stickleback 5-Year Review” (USFWS 2009, p.29) recommends establishment of a program for routine monitoring of the stickleback populations. Part and parcel to that routine monitoring would include regular visits to Shay Meadows Conservation expansion area to establish current status, detect declines, identify threats, and determine appropriate remediation. Fencing of acquired parcels assists in this objective by substantially reducing known threats within Shay Meadows

**Task 3** in the Recovery Plan is the completion of a long-term conservation and management plan for the entire property, including the proposed acquisition parcels, which will identify short-term and long-term actions that will benefit the habitat and support long term conservation and recovery of the species. This will be completed by USFWS, CDFG, and USFS personnel coordinating with local academics, regulators, and conservation organizations.

- The 2009 “Unarmored Threespine Stickleback 5-Year Review” (USFWS 2009, p.29) also recommends the development and implementation of management plans for extant stickleback populations. Completion of a long-term conservation and management plan for the entire Shay Creek vicinity including the Shay Meadows property, including the proposed acquisition parcels, fencing, habitat monitoring, signage and public outreach, will assist short-term and long-term actions that will benefit the habitat and support long term conservation and recovery of the species in an important part of its range. Work is ongoing by USFWS, CDFG, USGS, and USFS personnel with coordination among local academics, regulators, and conservation organizations. To achieve this objective in kind contributions may include donated assistance from academics, Wildlands Conservancy, and Inland Waterkeepers to support research, public outreach, and habitat protection.

**LOCATION: Where will the work be done? Describe habitat type(s) to be affected, and relevant ecosystem/watershed characterization.**

The parcels proposed for acquisition are located near Big Bear City, San Bernardino County, California (Figures 1 and 2). The adjacent and associated hillside and meadow parcels of land surrounding Shay Pond and its occupied satellite pond, if acquired, would ensure a greater protection buffer zone encompassing the existing pond area and sensitive surrounding habitat. The proposed acquisitions will augment the protection of Shay Pond and the surrounding wet-

meadow ecosystem, which is necessary to protect the life cycle of the stickleback and support recovery of the species in San Bernardino County. The acquisitions will also expand conservation of potentially suitable habitat which may be currently occupied or occupied in the future by stickleback. Without these acquisitions, the potential degradation of the wet-meadow ecosystem through development and trespass may occur. The acquisitions will require minimal management other than routine fencing, monitoring, and small maintenance activities.

**Table 2. Shay Meadows Conservation Area Expansion (Stickleback) Acquisition Parcels**

| APN          | Acreage      | Estimated Acquisition Cost | Federal Funding Requested |
|--------------|--------------|----------------------------|---------------------------|
| 31442272     | 4.35         | \$261,000                  | \$195,750                 |
| 31442252     | 2.52         | \$151,200                  | \$113,400                 |
| 31442280     | 2.61         | \$156,600                  | \$117,450                 |
| 31442224     | 1.31         | \$78,600                   | \$58,950                  |
| 31442225     | 1.12         | \$67,200                   | \$50,400                  |
| 31442226     | 1.12         | \$67,200                   | \$50,400                  |
| 31442227     | 1.23         | \$73,800                   | \$55,350                  |
| 31442228     | 2.22         | \$133,200                  | \$99,900                  |
| <b>Total</b> | <b>16.48</b> | <b>\$988,800</b>           | <b>\$741,600</b>          |

In the future, after land acquisitions are completed and the complex is fully protected, larger scale restoration efforts may be pursued within the Shay Meadows system to restore the wetted connection between Shay Pond and Motorcycle Pond (Figure 3). Additionally, if acquired, the currently occupied satellite pond adjacent to Shay Pond may be rehabilitated through removal of encroaching vegetation and expanded to provide additional suitable habitat for the species. The proposed acquisitions will link the already conserved pond to other protected lands to the east, as well as USFS lands to the north east.

**ESTMATED COST: Provide a detailed breakdown of what it will cost to attain the objective.**

| <b>Shay Meadows Conservation Area Expansion<br/>(Stickleback) 2012</b> |                  |
|--|------------------|
| <b>Section 6 Program : Recovery Land Acquisition</b>                   |                  |
| <b>Budget Category</b>   | <b>Amount</b>    |
| Total project costs  | <b>\$300,000</b> |
| Total non-federal match (25%)  | <b>\$100,000</b> |
| <b>TOTAL FEDERAL AWARD =</b>   | <b>\$400,000</b> |

# San Bernardino County Location Map

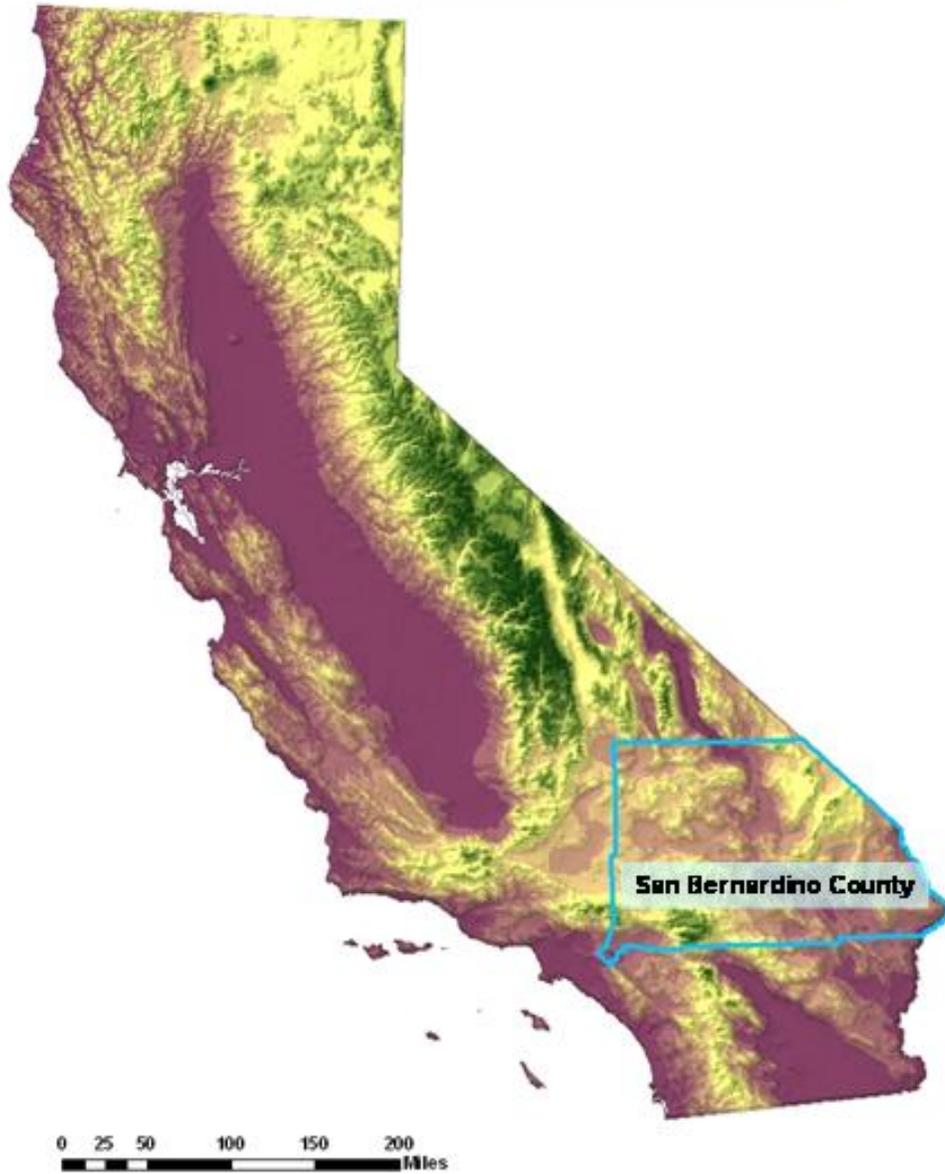
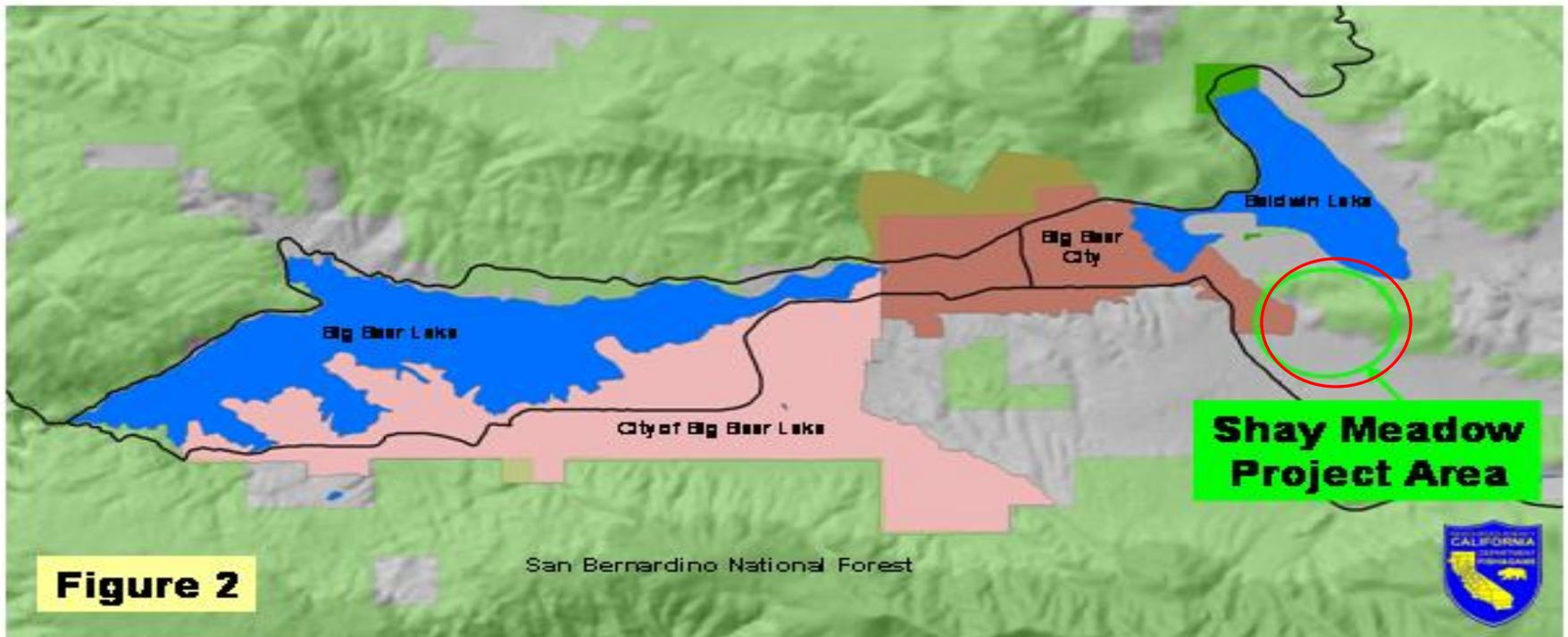


Figure 1





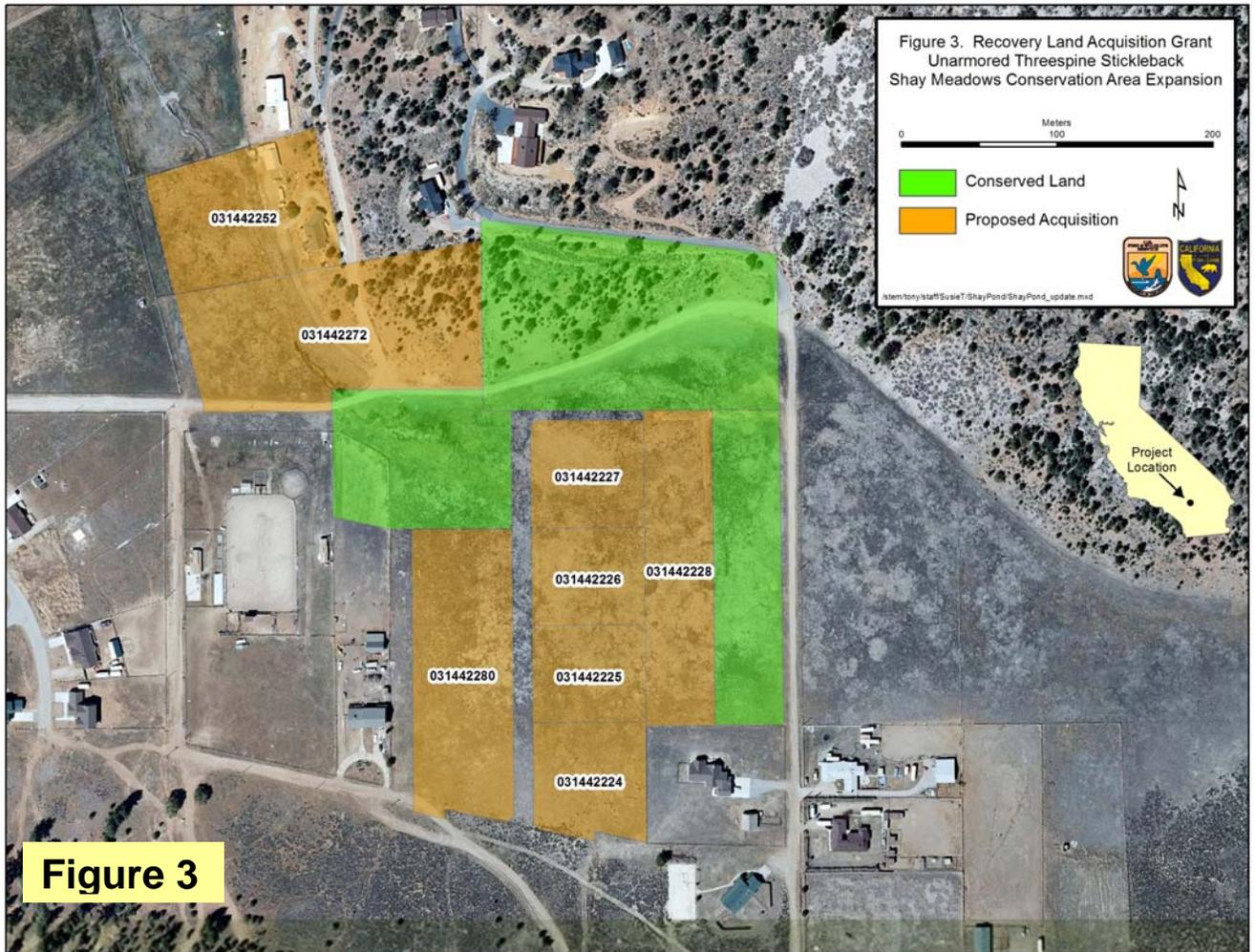


Figure 3. Currently conserved (green) and proposed (orange) land acquisitions for UTS in the Shay Creek vicinity (San Bernardino County). Adjacent land use and ownership of parcels is mixed, and includes residential (developed and undeveloped), rodeo/entertainment facility, road and utility easements, and pasture lands.