

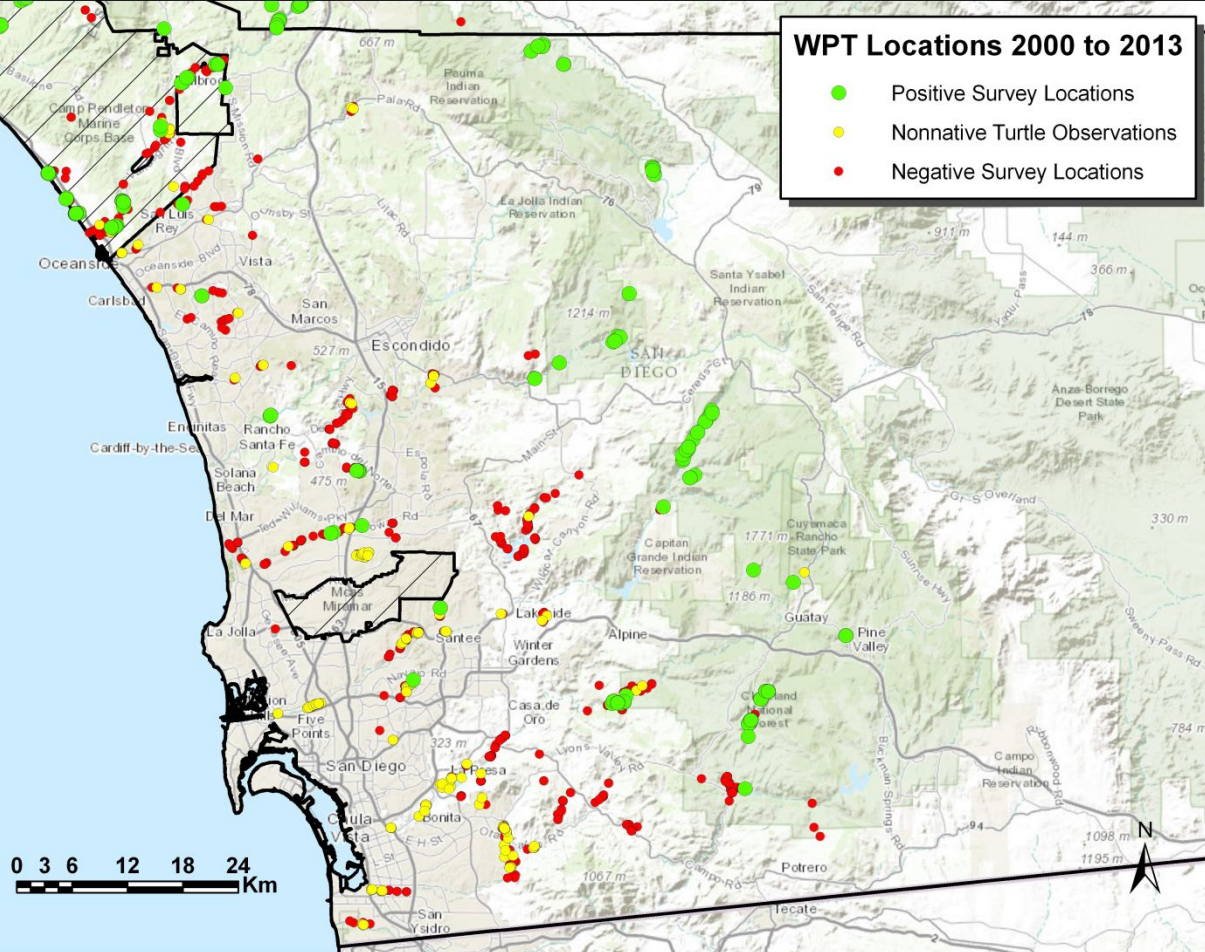
Status and Management in San Diego County



Pond turtles in San Diego

- I. Status
- II. Road effects
- III. Sycuan Peak ER restoration
- IV. Rancho Jamul ER translocation





Turtle Surveys

•MSCP

•Camp Pendleton

•Genetics

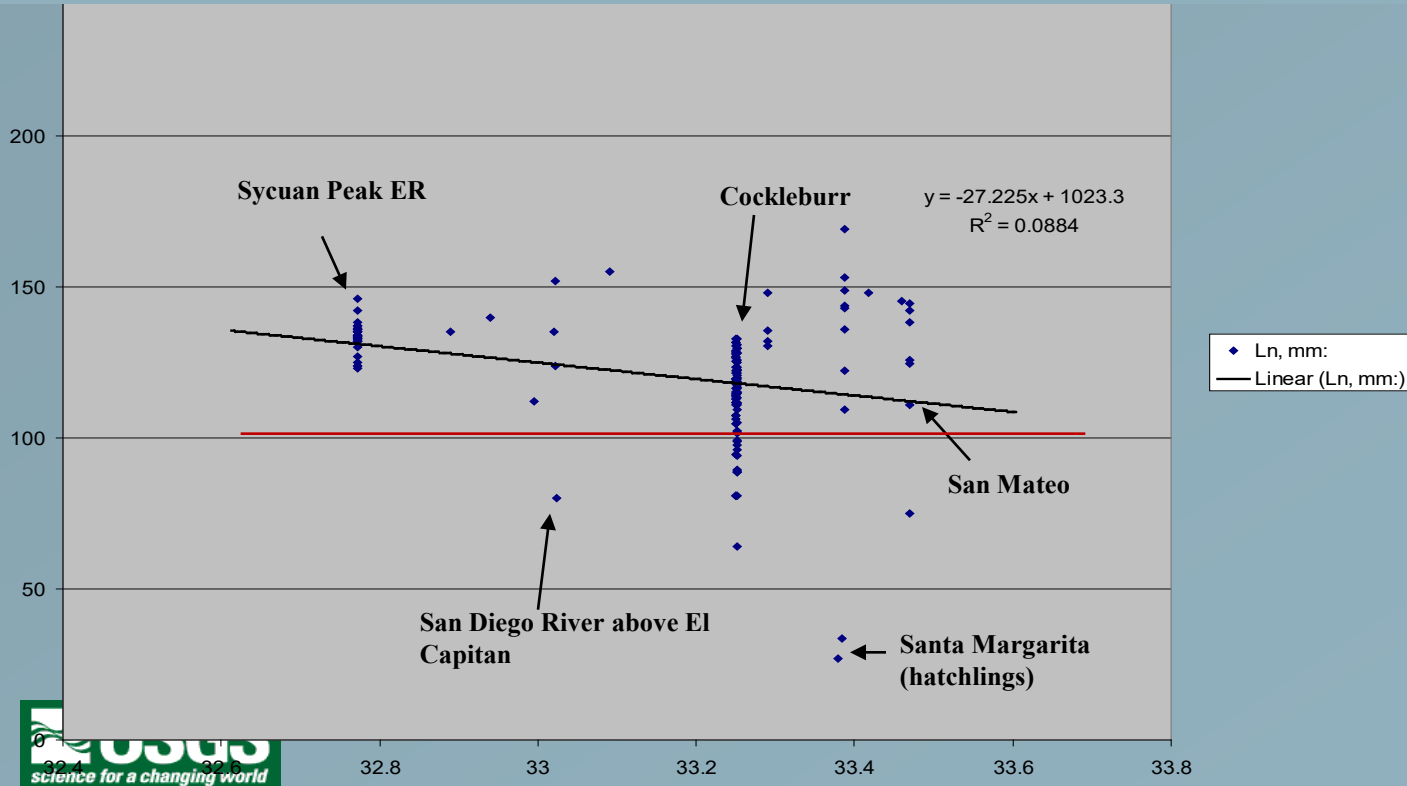
•North County Assessment

•County of San Diego

•USFS

Coastal turtles—Length vs Latitude

Missing juveniles



Road concerns:

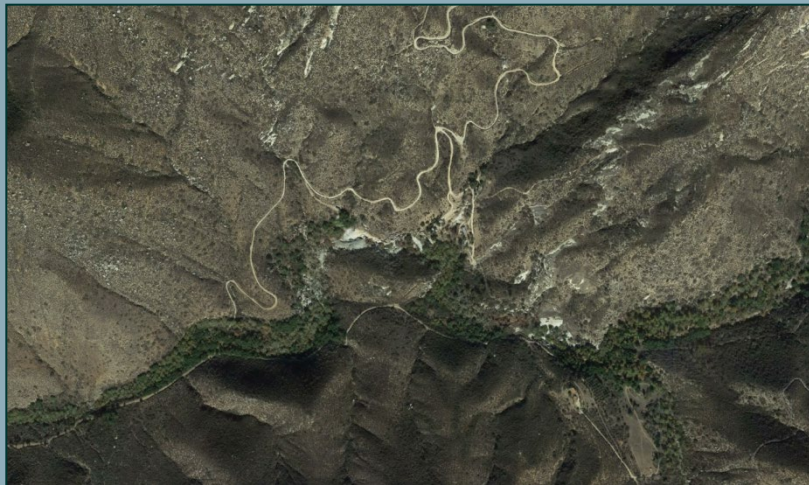
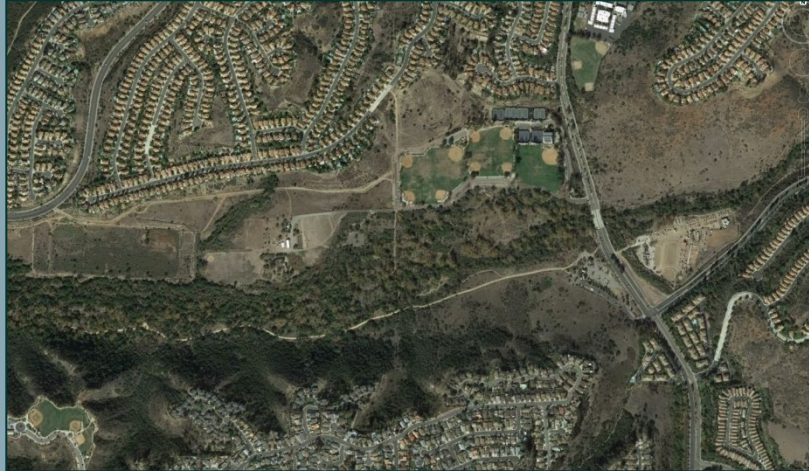
- Direct mortality/injury
- Runoff/Pollution
- Changes in temperature
- Increased accessibility

Road types:

- Public vs Controlled Access
- Primary vs Secondary vs Dirt

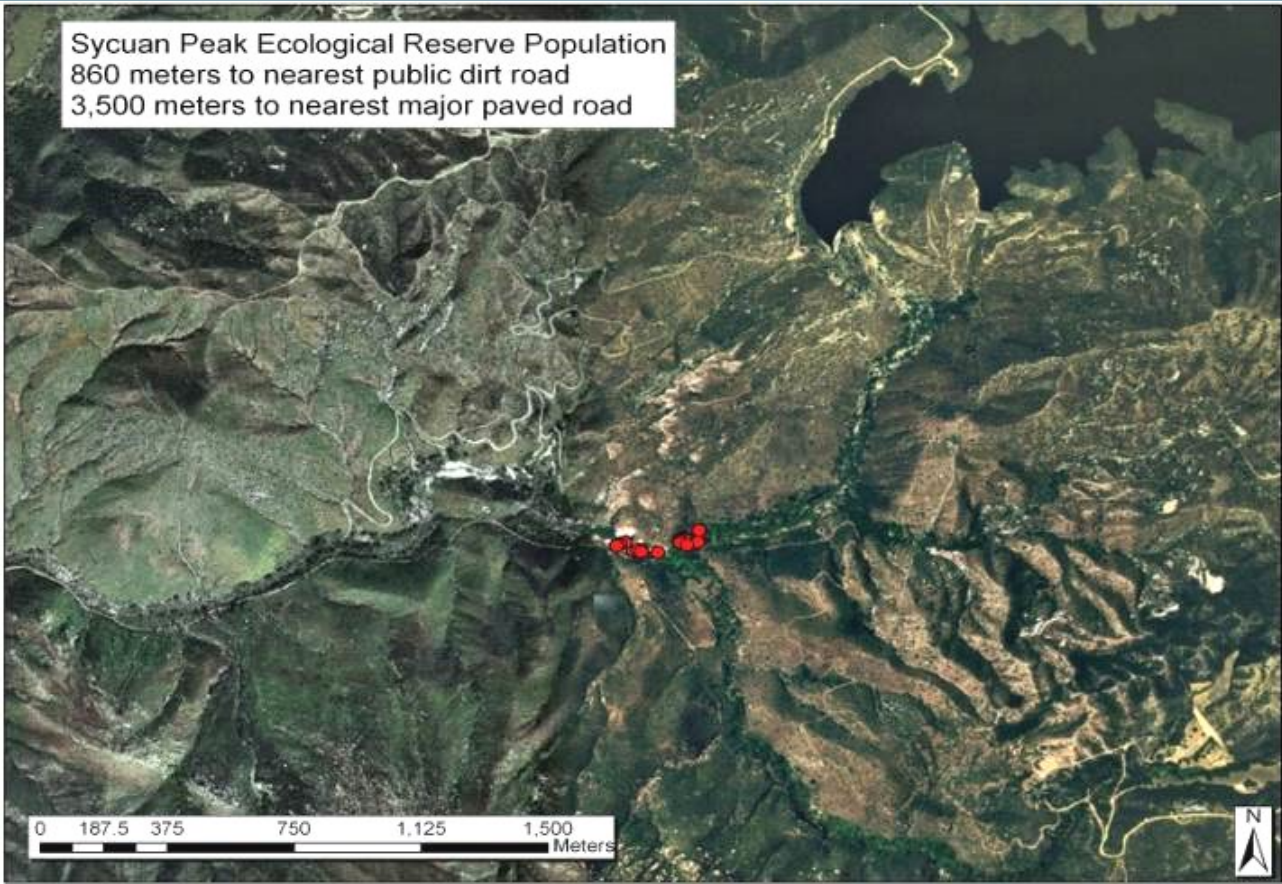
Population effects:

- Male biased populations
- Adult biased populations
- Reduced or no recruitment



Sycuan Peak (3,500m to nearest paved road): 47% females

Sycuan Peak Ecological Reserve Population
860 meters to nearest public dirt road
3,500 meters to nearest major paved road

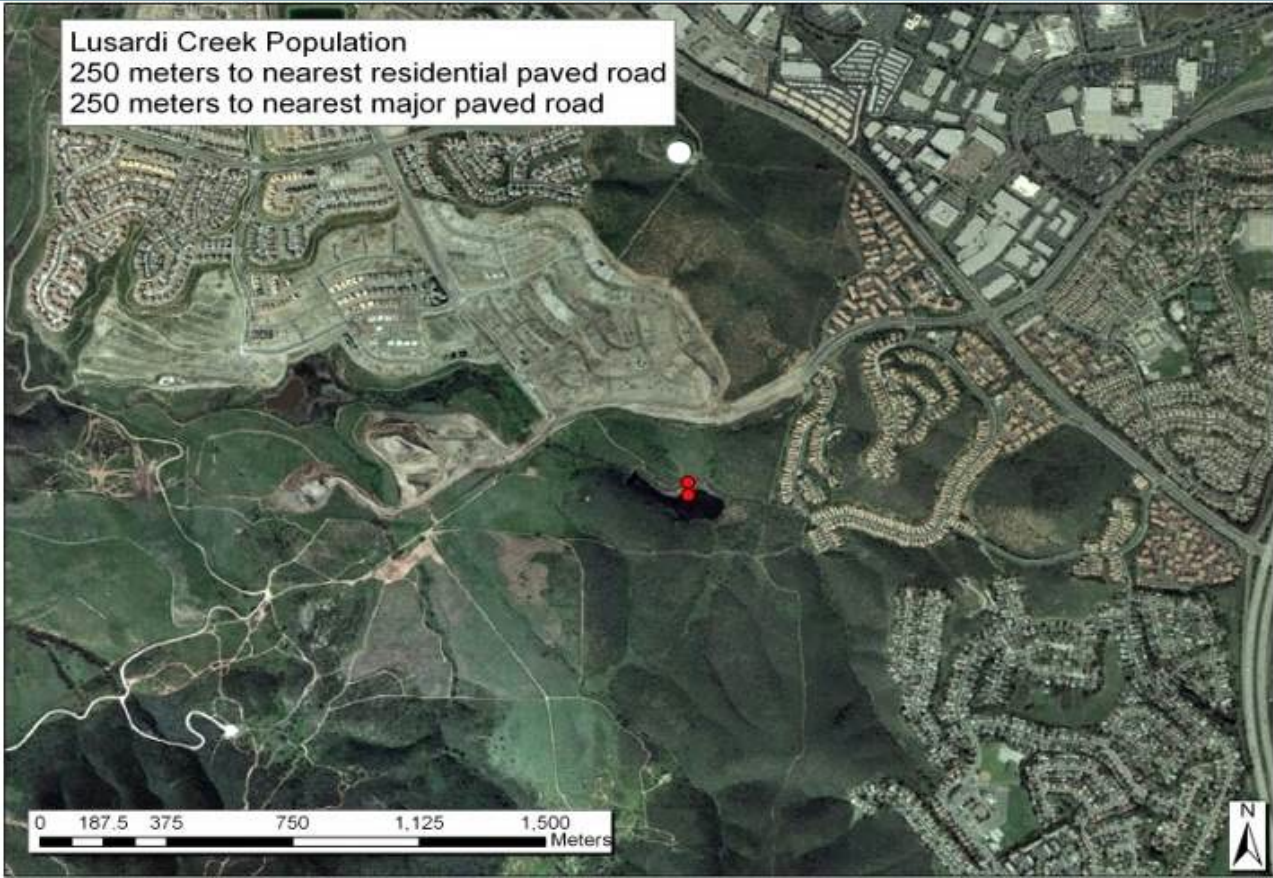


Lusardi Creek (250m to nearest paved road): 8% female

Lusardi Creek Population

250 meters to nearest residential paved road

250 meters to nearest major paved road



Los Penasquitos (150m): 0 females

Los Penasquitos Population
70 meters to nearest public road
150 meters to nearest major paved road

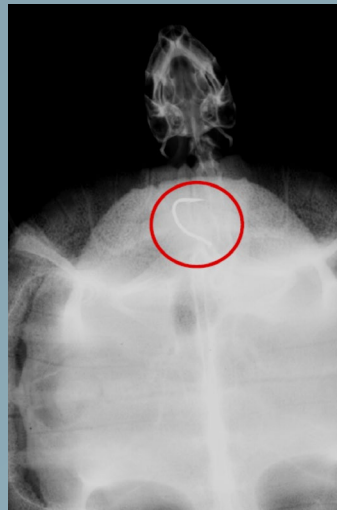


0 187.5 375 750 1,125 1,500
Meters



Public access, recreation

- Turtles picked up as pets or “rescues”
- Turtles picked up by dogs
- Ingesting fish hooks
- Shot by airgun



This OTHER - ID#A1419001

I am a brown and green Turtle.

My age is unknown.

I have been at the shelter since Jun 25, 2011.

This information is 5 hours old.

Nonnative aquatic species

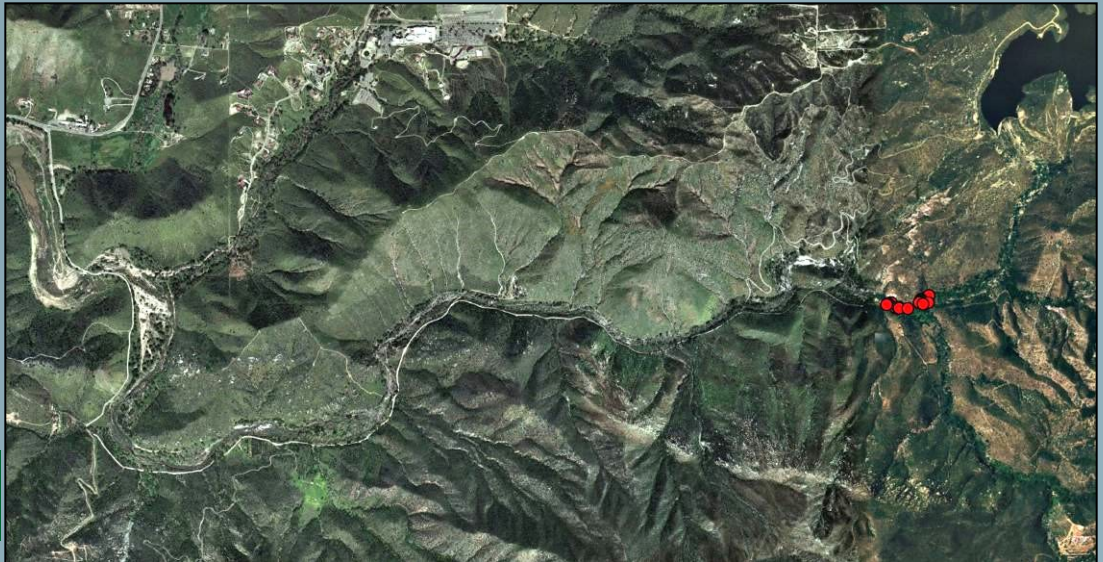
- Turtles (sliders)
- Bullfrogs
- African clawed frogs
- Predatory fish
- Competitive fish
- Crayfish





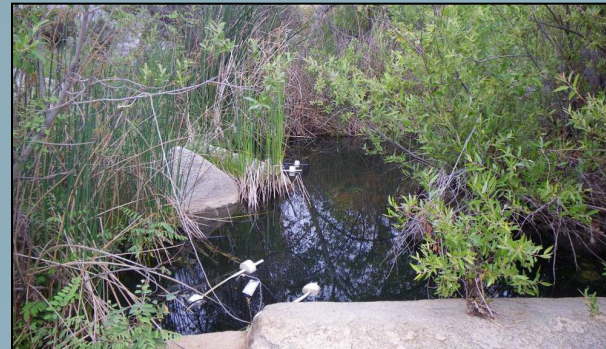
--Sycuan Peak Ecological Reserve--

- Headstarting and nonnatives removal
- CDFW Reserve—Restricted access and multi-agency collaboration
- Discrete ponds—Easier for trapping and exotics control
- Ideal for testing nonnatives species management as a strategy



Restoration process at SPER

- Initial surveys to determine population (10 females, 14 males)
- Harvest eggs for headstart program (3 females producing eggs)
- Utilize traps, nets, airguns, visual encounter surveys to remove nonnative aquatic species
- Continue monitoring to determine population response and harvest eggs
- Continue nonnative species removal as needed
- Release headstarted individuals, monitor for site fidelity

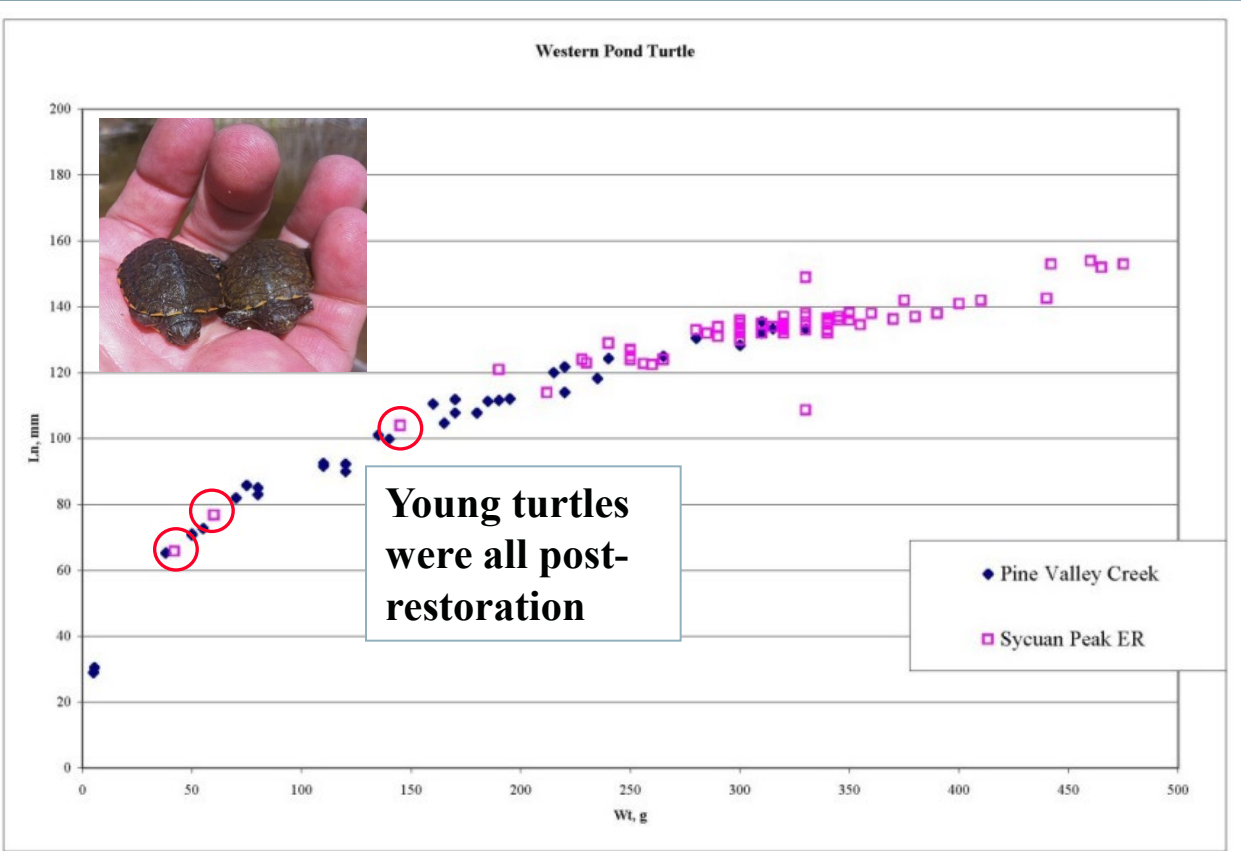


Nonnative species removal

- Species removed include:
 - American bullfrog, African clawed frog, green sunfish, largemouth bass, red swamp crayfish
- More gravid females with higher fertility
- Recruitment detected in 4 of 5 years since restoration began
 - Youngest pond turtles detected in MSCP region in 10 years



Sizes detected at Sycuan Peak ER vs Pine Valley Creek





Pacific Pond Turtle headstarting

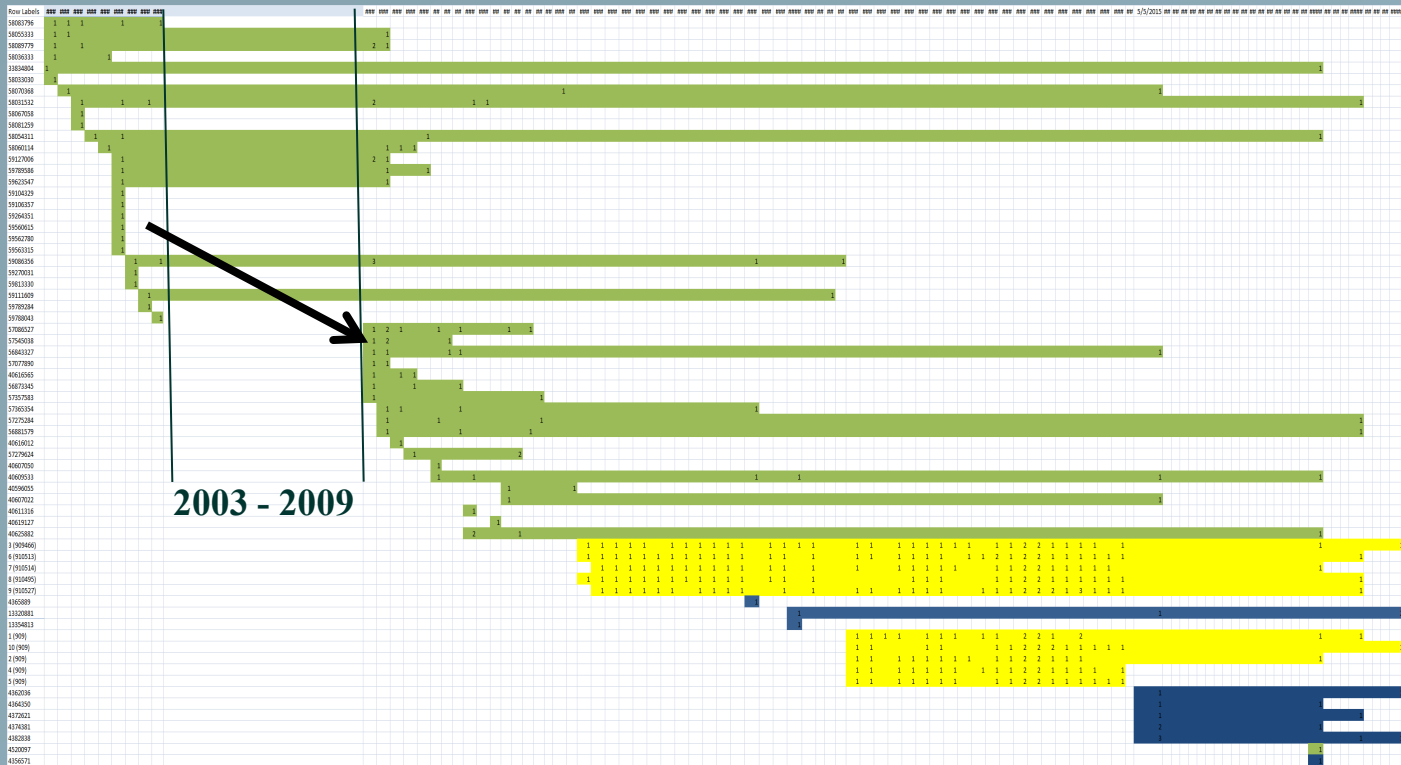
- 5 juveniles released in 2013
- 5 more released in 2014



Sycuan Peak ER, July 17, 2013

The combined efforts by USGS, San Diego Zoo, Cal DFW, USFWS, and SANDAG have increased the population size by nearly 50% with the first juveniles on site since before 2002.

Recapture data and demography- No young turtles until 2013



--Rancho Jamul ER--

- CDFW Reserve
- Actively managed for conservation/restoration
- Ponds are > 1.75 km from nearest paved roads
- Nonnative aquatic species removal
- Hard release of translocated adults



Western Pond Turtle Translocation Project

By California Department of Fish and Wildlife · Updated on Wednesday · Taken at Rancho Jamul Ecological Reserve ·

Once plentiful throughout California, the western pond turtle (*Emys marmorata* or *Actinemys marmorata*) has been declining steadily in number throughout the state over the last few decades. The only turtle species native to California, the western pond turtle has been designated as a Species of Special Concern by the California Department of Fish and Wildlife (CDFW).

Pressures on pond turtles include degradation of habitat through introduction of non-native invasive species, water quality and quantity loss, and reduction of suitable habitat due to development. Although adult turtles are hardy and have few natural enemies, the turtle eggs and new hatchlings are subject to predation by everything from bullfrogs and fish to wild pigs. This has been particularly true in southern California, where current drought conditions are intensifying existing pressures. In some southern California watersheds, western pond turtles have been extirpated altogether.

Recently, researchers from the U.S. Geological Survey (USGS), in partnership with CDFW, the U.S. Fish and Wildlife Service, and other regional government and private entities, began an effort to help restore western pond turtles to the Otay watershed in San Diego County. Rancho Jamul Ecological Reserve, a 5700+ acre property owned and managed by CDFW, was chosen as the target area for translocation and establishment of new productive turtle populations. The Reserve is about 30 miles from downtown San Diego.

A team of USGS biologists began by conducting genetic studies to identify which existing population of turtles was the best candidate for translocation. East of the Reserve, the Pine Creek watershed still supports a fairly healthy pond turtle population, but current drought conditions are reducing and degrading available habitat for the turtles. Once the genetic

studies were complete, the Pine Creek turtles were determined to be a good fit for the project.

Meanwhile, two pools along Jamul Creek, within the Reserve, were identified as suitable habitat for the translocated turtles. Efforts began in June to reduce invasive species in the pools in preparation for the translocation project. Turtle trapping in Pine Creek began in late August. By early September, three mature males and three females had been caught. They were outfitted with radio transmitters (attached to their shells with epoxy, which can easily be removed at the end of the study effort). The turtles were then transported to their new home, where they scurried into the dark water and disappeared with surprising speed.

Over the next 10 days, six more turtles were caught, fitted with transmitters, and transported to their new home. A total of 20-30 turtles are expected to be moved to Jamul Creek over the coming months.

Using telemetry and tracking each individual's unique radio signal, the turtles are monitored every few days to ensure their acclimation to their new habitat. If successful, the first clutches should appear around April -- it's even possible that the turtles could lay eggs around the time of the first fall rains of 2014, if conditions are just right. Periodic removal of non-native invasive species, particularly bullfrogs, will continue to ensure the safety of the turtle eggs and hatchlings. Removal of non-native species is expected to lead to the return of other native species, including tree frogs, garter snakes and dragonflies. Only one non-native species will be allowed to remain in the pool, at least for now -- the Red Swamp crayfish that crawl along the muddy bottom will serve as a major source of food for the new resident turtles.



--Rancho Jamul ER--

- Habitat suitability surveys were conducted the entire length of Jamul Creek within the reserve**
- Seine nets, hand capture, traps, and airguns have been used to prepare the site for turtles**
- Over 400 African clawed frogs, 60 American bullfrogs, and 800 crayfish have been removed**
- Turtles were translocated between September and October of 2014 and again in Sept. 2015**



--2017- Continued Turtle Restoration Efforts—

High rain year—

--Rancho Jamul ER--

- Dry ponds filled in January and February**
- Bullfrogs bred in March**
- Larvae metamorphosed in August**
- Over 4,900 bullfrogs were removed.**

--San Dieguito and San Diego Restoration Efforts—

- Bullfrog removal at two sites in each watershed**
- Over 3,400 bullfrogs removed**

Acknowledgements

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SANDAG & SDMMP: Keith Greer, Ron Rempel, Yvonne Moore, Kris Preston

