

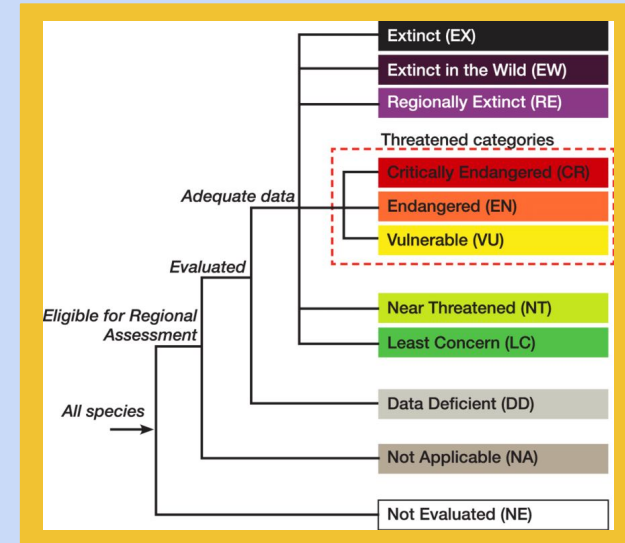
# California Newt

*Taricha torosa*



# Introduction

- Family: Salamandriidae
- Genus and species: *Taricha torosa*
- Common name: California newt
- Identified to be a species of special concern by the California Department of Fish and Wildlife
- The California newt constitutes a Priority Two Species of Special Concern, becoming an increasingly more threatened species within recent years



# Species Description

- Physical Description

- Medium-sized, stocky, terrestrial amphibian
- Large eyes that extend beyond the margin of their head
- Small head size and short neck
- They have bumpy, rough, and grainy textured skin
- Bright orange ventral coloration that contrasts their dark brown dorsal coloration
- Average lifespan of 10-15 years
- Sexual maturity around 4-5 years in age
- Typically lay 3 to 6 egg masses per breeding season, with each mass containing approximately 7 to 47 eggs.

- Taxonomy

- Previously, only two allopatric species were recognized. However, molecular work supports that there is distinction between coastal (*Taricha torosa*) and sierra lineages, identifying them as evolutionarily independent.
- Taxonomic confusion at the genus level



Domain	Eukarya
Kingdom	Animalia
Phylum	Chordata
Class	Amphibia
Order	Caudata
Family	Salamandridae
Genus	Taricha
Species	Tortosa

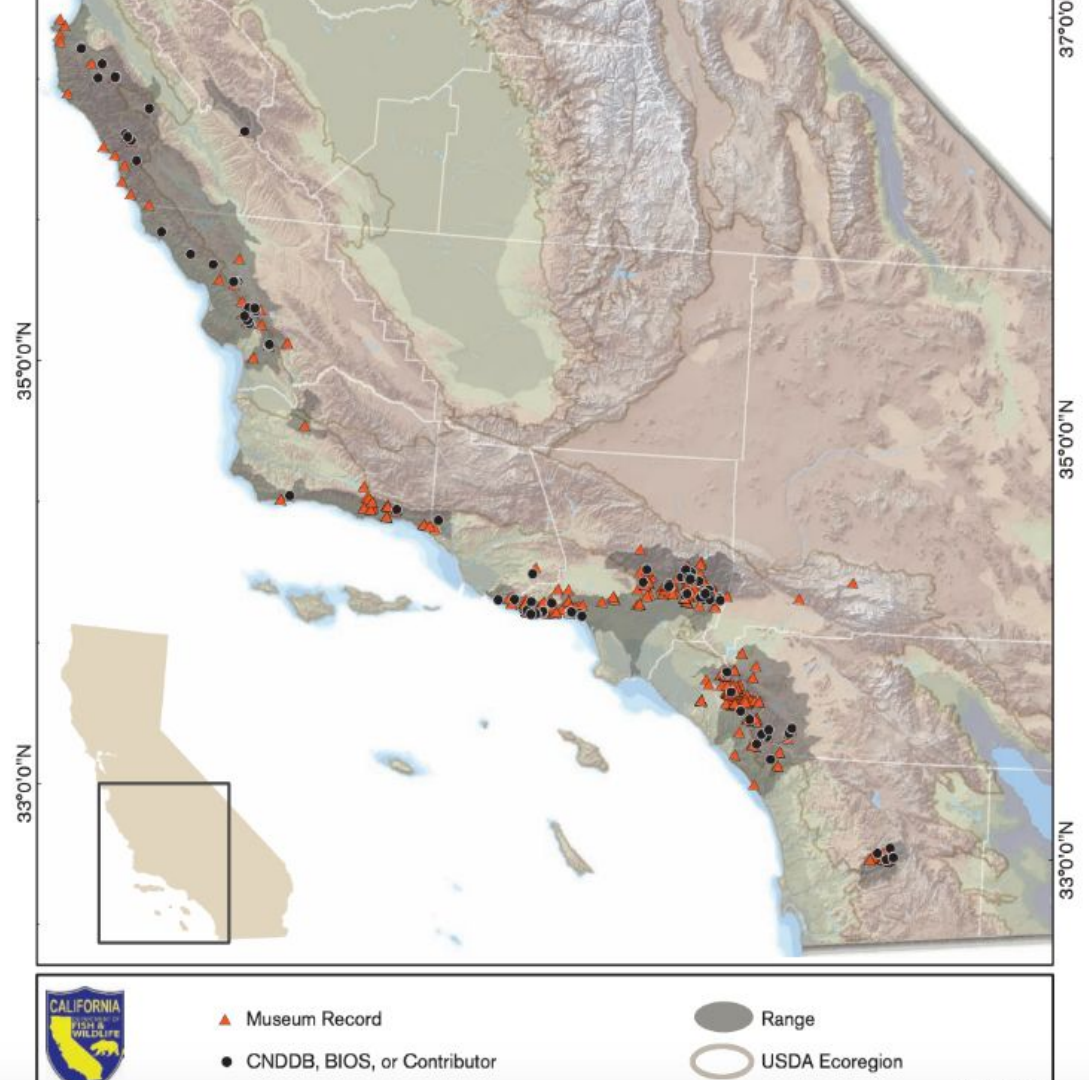
# Distribution and Habitat

- Found in the western United States, specifically in California and a small part of Oregon
  - California: from central Mendocino County through the coastal ranges in San Diego County.
  - Oregon: southern part of the state, especially along the border with California
- Currently, the California newt is absent from more than half of historically occupied counties
  - a third of localities in southern California have been extirpated
- The California newts typically inhabit wooded areas, riparian zones, and foothills near permanent bodies of water like ponds, slow-moving streams, and marshes
  - Breeding season = aquatic environments
    - ponds, marshes, swamps, and slow-moving streams
  - Non-breeding season = terrestrial environments
    - forest floors in leaf litter, in the crevices of rocks, and under logs
- Newts are an ectothermic species, therefore their habitat must maintain consistent moisture and moderate temperatures. They require habitats that retain moisture to prevent desiccation.



# Distribution and Habitat

- Heavily populated along coastal ranges



# Life History and Ecology

- Unique reproductive strategy that involves both aquatic and terrestrial phases:
  - Aquatic habitats: occurs during the mating season. Male newts perform elaborate courtship displays to attract females. After mating, the female lays her eggs in aquatic environments. The eggs hatch into larvae, which remain fully aquatic while undergoing metamorphosis. Once the juvenile newts develop limbs and reduced tails, they can move to terrestrial habitats, where they grow and mature until they reach sexual maturity.
  - Terrestrial habitats: non-breeding season
- Newts do not provide parental care
- The California newt species is a primarily carnivorous species. This species exhibits different dietary needs throughout its different life stages.
  - As larvae, they feed on small aquatic invertebrates
  - Once they mature into adults, they primarily consume terrestrial invertebrates
- California newts display territorial behaviors. These behaviors are displayed at breeding sites, where the California newt will compete for better breeding locations with other males.



# Population Status and Trends



- **Population Size and Trends**

- Historically, the California newt was a common species to inhabit the Pacific slope, being classified as one of the more abundant amphibians in California.
- Populations in the upper Carmel Valley adjacent to the Hastings Reservation in Monterey County used to have the California newt population numbered in the thousands in the early 1990s
- However, the California newt population has not been systematically resampled more recently.
- Populations in the south that used to be in the hundreds are now in the tens
  - habitat loss, pollution, and predation



- **Genetic Concerns**

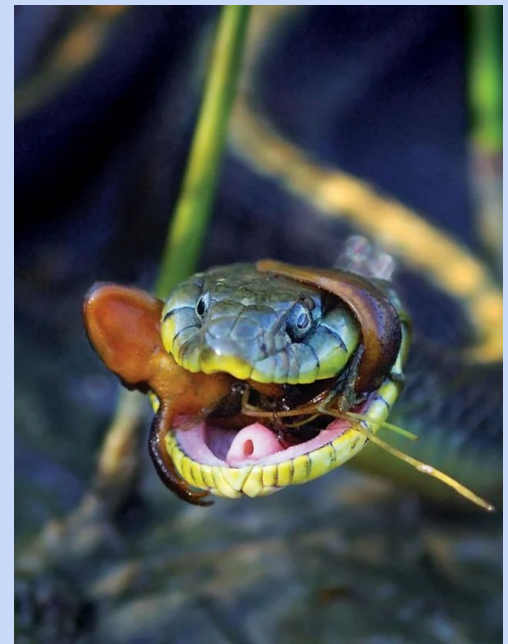
- Include habitat fragmentation, population isolation, and reduced gene flow
- A study conducted by An-Ming Tan and David Wake analyzed mitochondrial DNA sequences from 36 individuals across 22 populations of *T. torosa*. The researchers found significant genetic divergence between populations that were studied, indicating limited gene flow and historical isolation.



# Threats

- **Natural**

- The Sierra garter snake has evolved a resistance to TTX.
- The California tiger salamander and the hybrid of the California tiger salamander and the barred tiger salamander will feed on California newt larvae
- Besides predation, the fungal disease *Batrachochytrium dendrobatidis* (Bd) also poses a threat. Bd leads to a skin infection called chytridiomycosis which causes hyperkeratosis, a hardening of the skin which disrupts osmotic regulation and can lead to cardiac arrest.





# Threats (Continued)

- **Human-Induced**

- The effects of the chaparral wildfire on breeding and reproduction located in the Santa Monica Mountains were studied in May 1992/1993 (before fire) and May 1994/1996 (after). In the spring following the fire, the total stream area of pools and runs were reduced to less than 20%. A significant reduction from 40-50% before the fires occurred. Pre-fire, the two largest, deepest pools in the area contained 31% and 17% of the egg masses. After the fires, the pools were shallow and contained no egg masses.
- Invasive species such as crayfish and mosquitofish contribute to population decline in California newts. It was observed in the Santa Monica Mountains in Los Angeles County that less than 50% of eggs and larvae survived in the presence of crayfish and mosquitofish
- Since California newts are predominantly terrestrial until breeding season, they are at higher risk of population decline due to vehicle strikes from crossing road ways when traveling to the nearest body of water



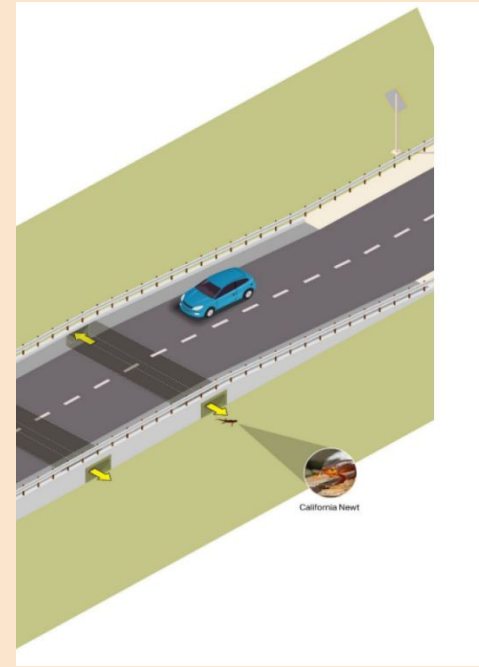
Stuart Palley for the US Forest Service



2019 Drew Gaddy Photography

# Conservation Measures

- The Newt Passage Project in Santa Clara County is creating a wildlife crossing to help California newts with their journey to their breeding grounds in the Lexington Reservoir and in the waterways near the town of Los Gatos. The project has proposed levitating the roadway to allow for passage underneath to better connect the habitat.
- The Chileno County Newt Brigade, an operation consisting of 70-80 volunteers, helps newts and other amphibians cross Chileno Valley Road.
- Recommended actions to combat the effects of climate change and human influence using beavers to help restore riparian and streambed habitats.



# Risk Assessment

<b>Timeline</b>	<b><u>Scenario 1:</u> Unchecked Threats Continue</b>	<b><u>Scenario 2:</u> Conservation Measures Implemented</b>
<b>10 years</b> (~1-2 generations; based on age of sexual maturity)	Average amount of risk in early stages due to invasive predators and environmental factors; ~ <b>75% longevity statewide</b>	High likelihood of survival due to removal of invasive species and restoration efforts in place; ~ <b>90% longevity statewide</b>
<b>30 years</b> (~3-4 generations; accounts for overlap of generations)	Continued environmental hardships and stressors; ~ <b>55% longevity statewide</b>	Continued efforts in wildlife passages and monitoring; ~ <b>80% longevity statewide</b>
<b>50 years</b> (~6-7 generations; projection was mentioned in literature)	Habitat fragmentation continues, increase in vehicle fatalities, and lack of regulation; ~ <b>35% longevity statewide</b>	Habitat protection, restoration, and protections are implemented; ~ <b>75% longevity statewide</b>

# Conclusion

- Based on the findings, the outlook of the California newt's future is promising based on their wide range, varied habitat, and ability to recover from threats.
- If removal of invasive species and implementation of protective roadways come to fruition, recruitment to the overall population can be increased.
- Threats from climate change and other anthropogenic problems will likely need to be addressed through policy changes and protective statuses.

