



Frog Docent Training 2021
Part 1

Protecting the Foothill Yellow-legged Frogs of Little Carson Falls

**Suzanne Whelan
Joe Drennan
Annabelle Howe**



Frog Docent Trainings

Orientation Pt.1

Educational Training

March 13

9:00-10:30 AM

Required for new docents

- Introductions
- Program Overview
- Biology of FYLF

Orientation Pt.2

Technical Training

March 20

9:00-10:30 AM

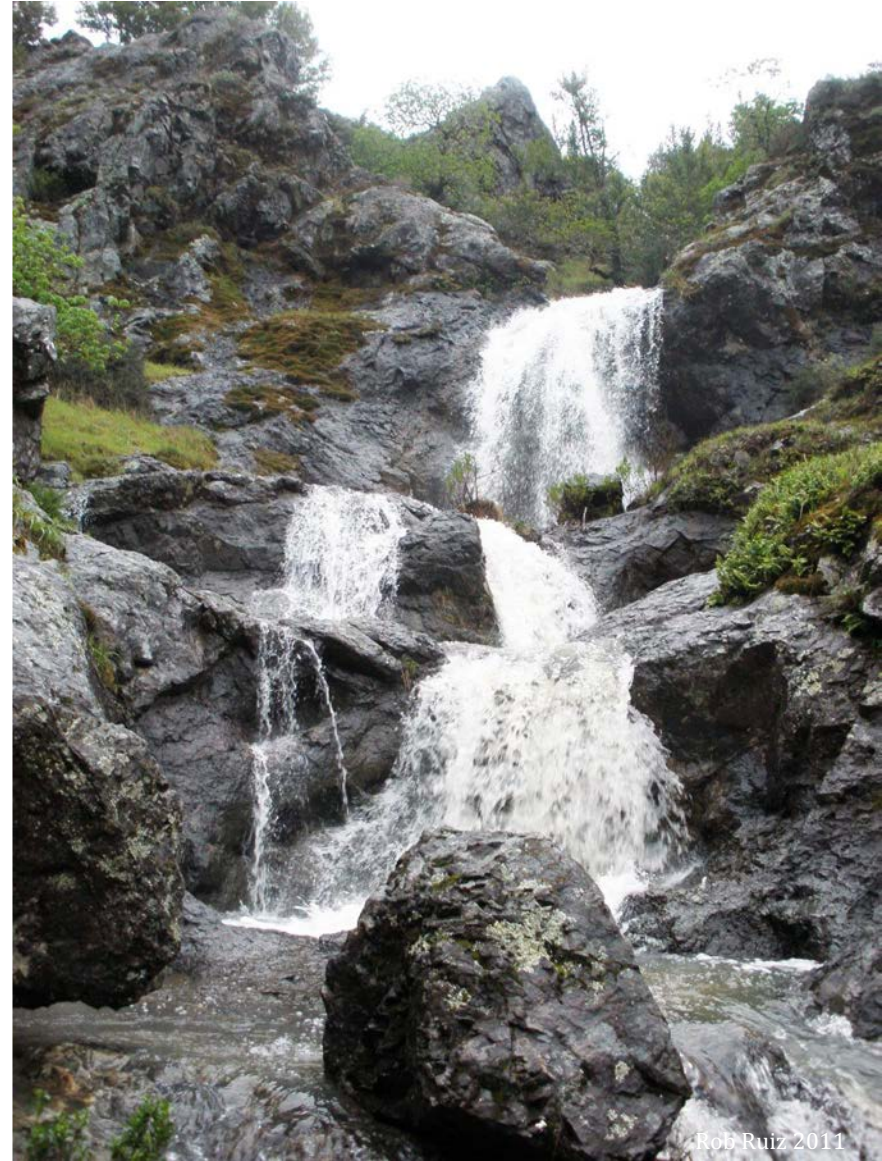
**Required for new and returning
docents**

- Docent Safety
- Visitor Interactions

Why do we need Frog Docents?

Little Carson Falls is...

- A popular hiking destination
- Important breeding habitat for the foothill yellow-legged frog



What is a Frog Docent?

Environmental
Educator

Ambassador
for the
Watershed

Community
Scientist

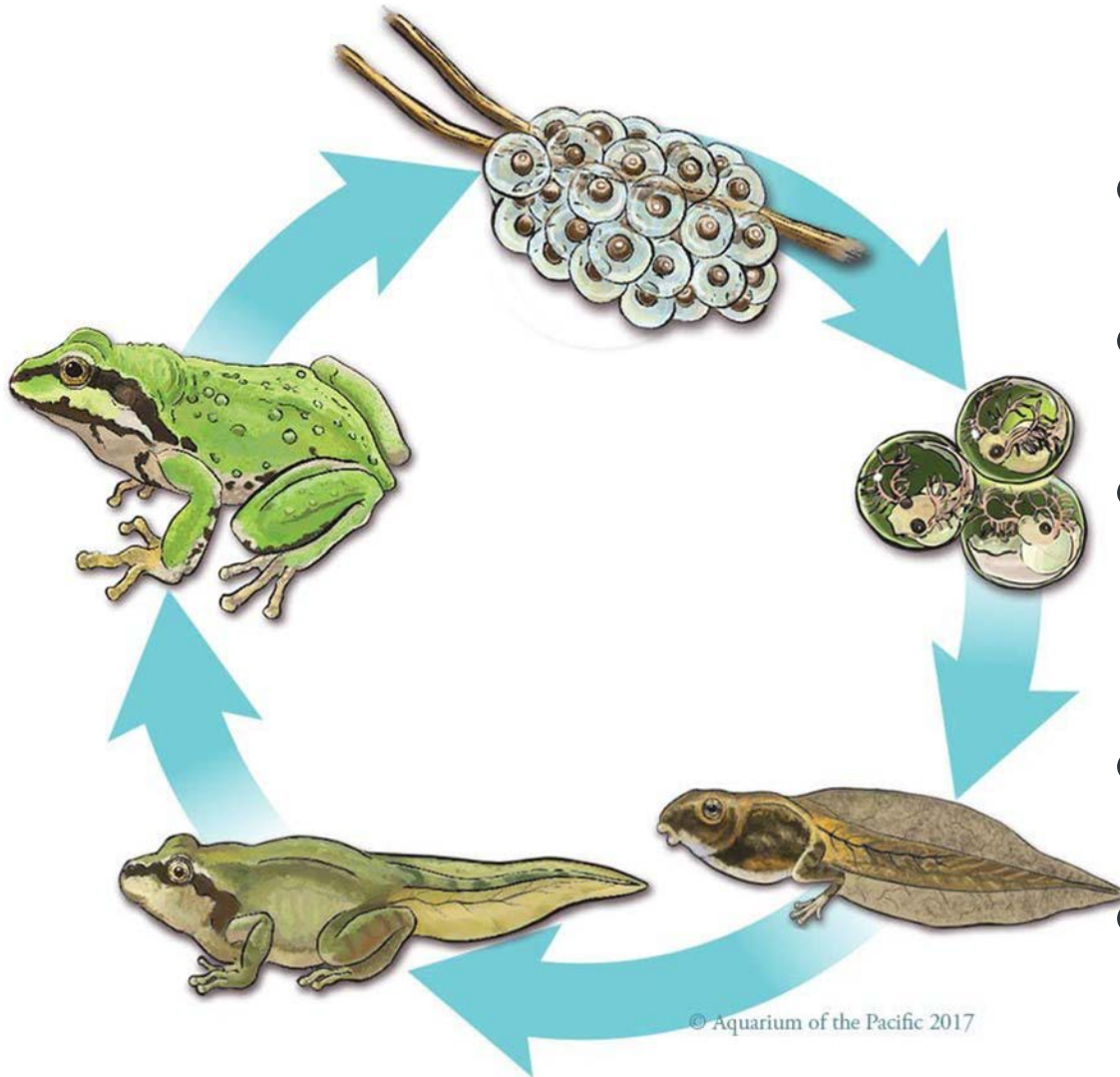
Voice for
the Frogs

Data
Collector



Docents have direct impacts on the success and recovery of this vulnerable species!

What are Frogs?



- Tailless amphibians
- Cold-blooded
- Have smooth mucus covered skin
- Long legged
- Ecosystem health indicators



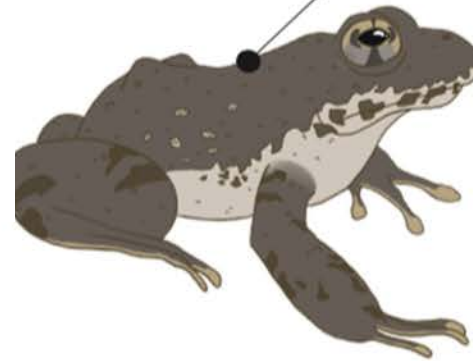
Foothill yellow-legged frog

Native

Length: 1.5-3.2 inches

Candidate for California

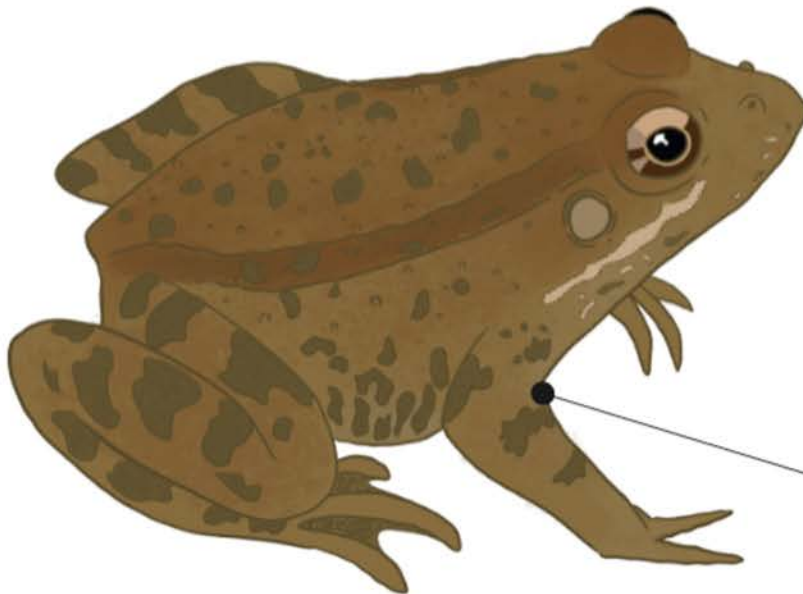
Environmental species Act



Pacific chorus frog

Native

Length: 0.75-2 inches



California red-legged frog

Native

Length: 1.75-5.25 inches

Federally threatened





Foothill yellow-legged frog

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Length: 1.5-3.2 inches

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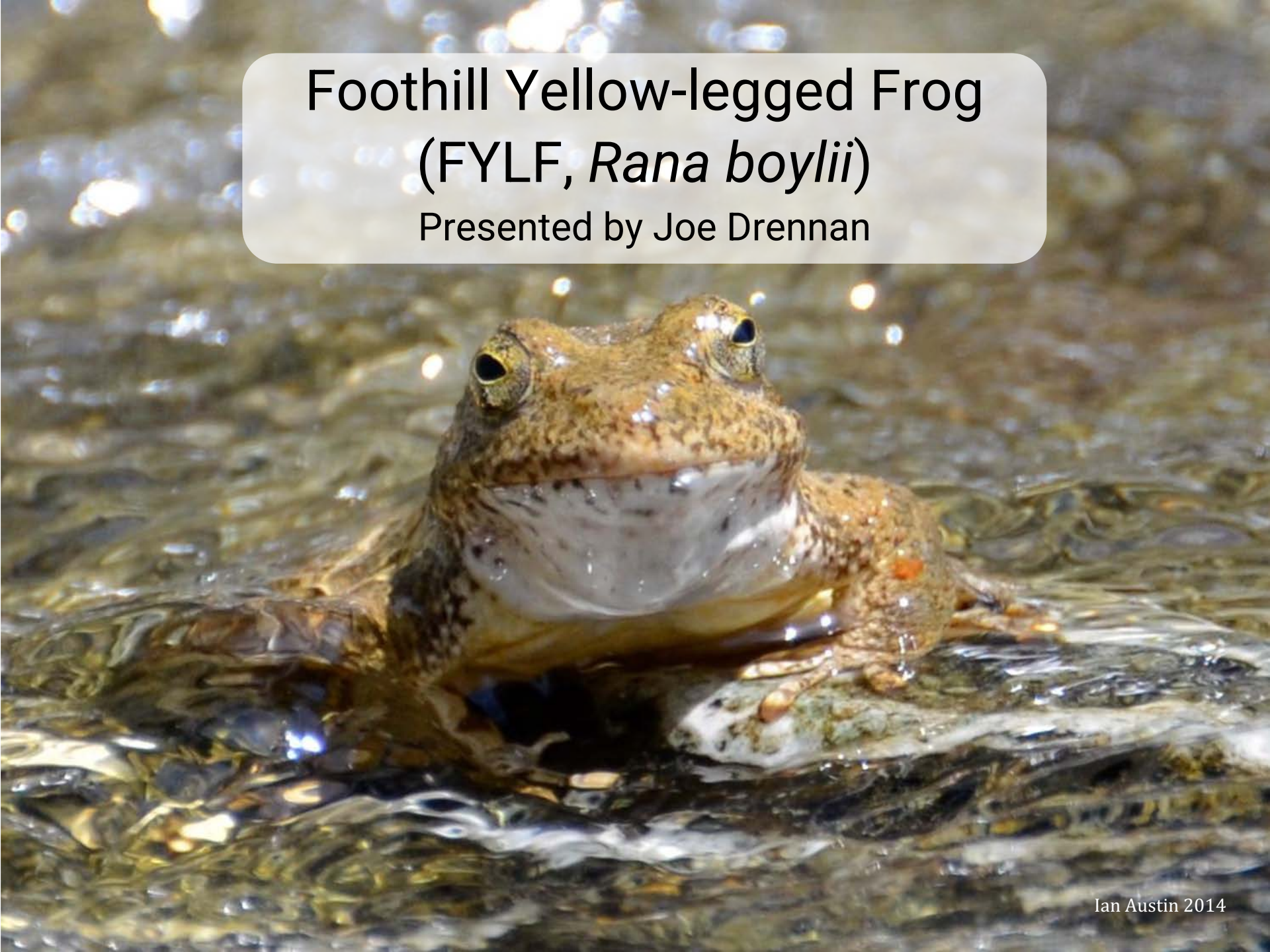


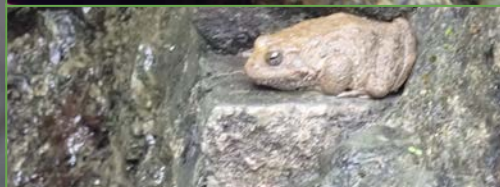
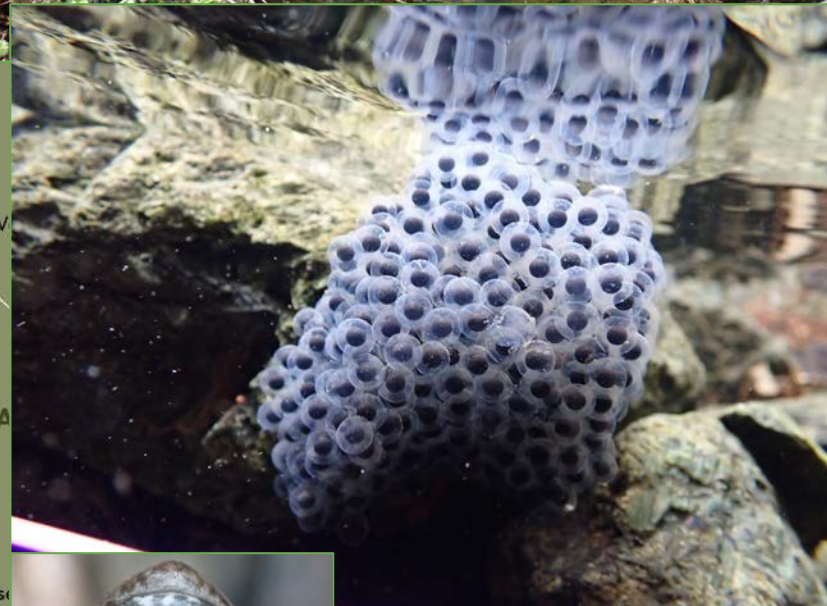
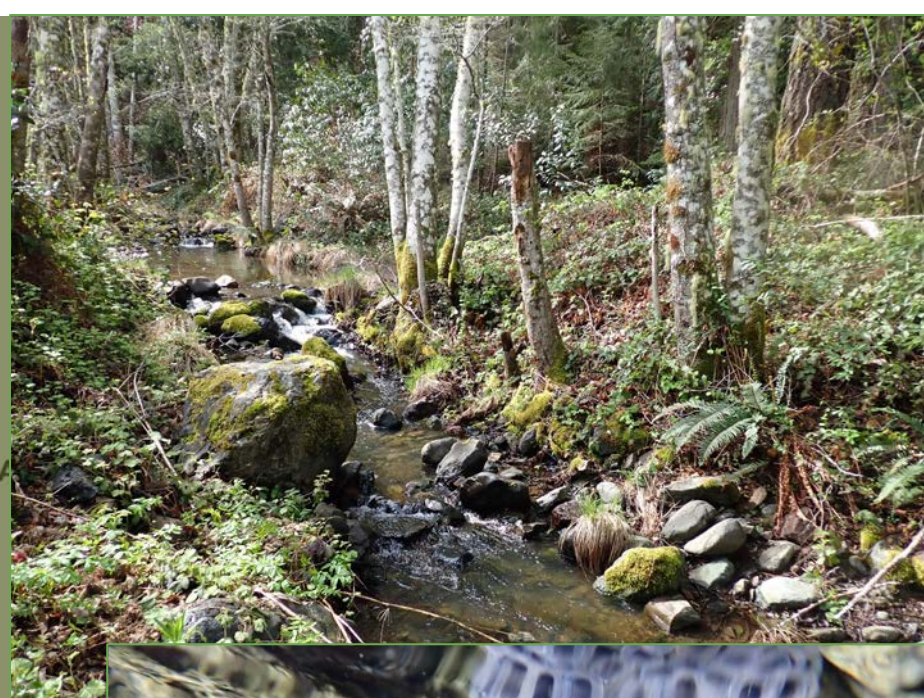
Will Elder, NPS



GANDA 2018

Foothill Yellow-legged Frog
(FYLF, *Rana boylii*)
Presented by Joe Drennan

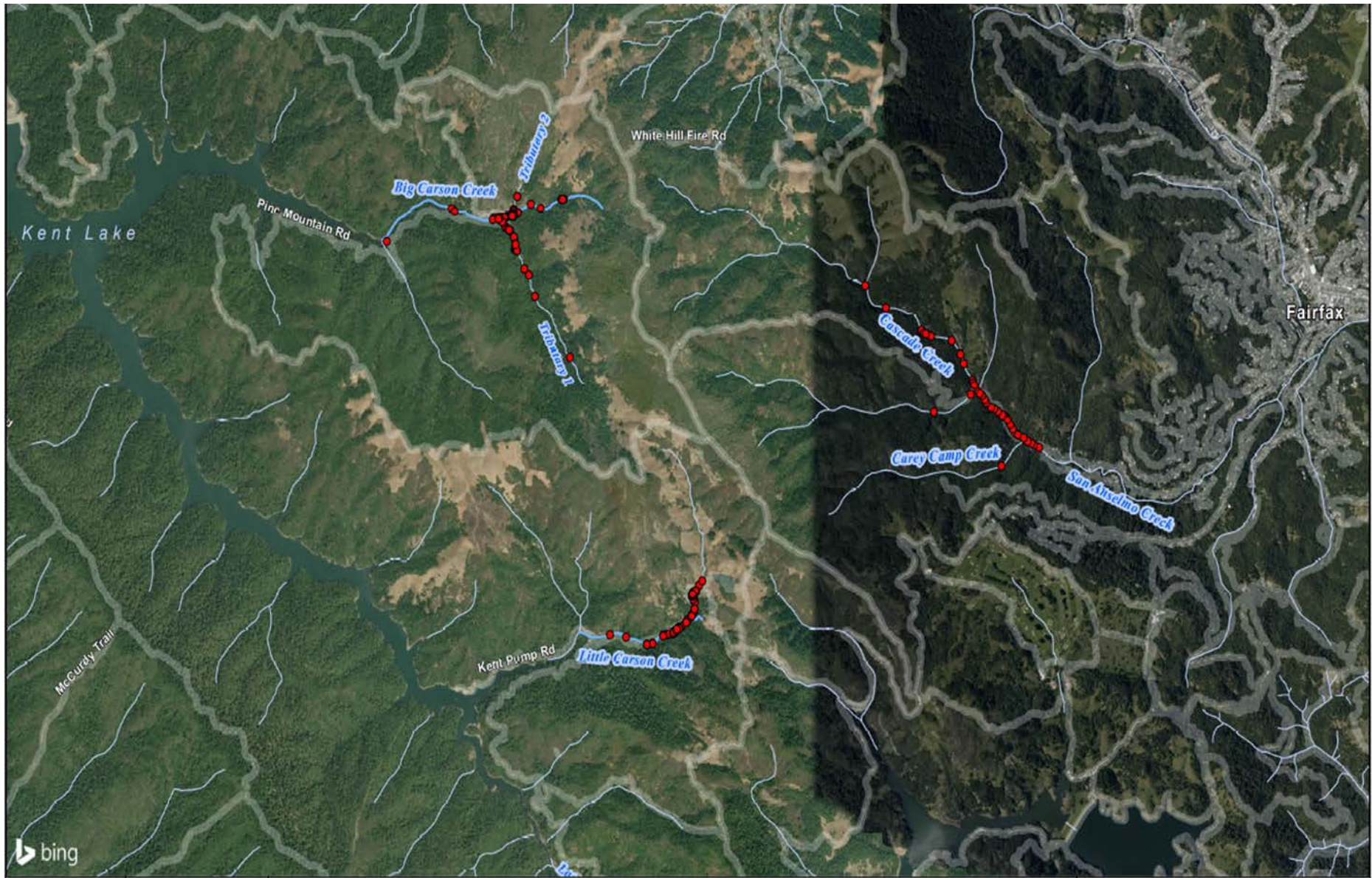




Current Distribution of Foothill Yellow-legged Frog in the Mt. Tamalpais Watershed

- The FYLF distribution map in the next slide includes recently (2017-2020) documented observations that expanded the known distribution in the Mt. Tamalpais Watershed. FYLF have now been recorded in Cascade Creek, San Anselmo Creek, and Carey Camp Creek.
- In December 2017, Finch Klein (son of Janet Klein, former MMWD's Natural Resources Program Manager) observed an adult FYLF while hiking above the falls in Cascade Creek (GANDA 2018).
- This event led Marin Open Space District to conduct focused surveys in Cascade Creek and San Anselmo Creek in 2018, 2019, and 2020. During surveys in San Anselmo Creek, GANDA observed one egg mass in 2018, 18 egg masses in 2019, and six egg masses in 2020, along with numerous adult males, gravid and spent females, and juvenile FYLF in all three creeks.
- Given numbers and the healthy array of age cohorts, this population is likely not new, but surprisingly has not been documented.





Current FYLF Distribution - Marin Municipal Water District, 2004 to 2020

Foothill Yellow-Legged Frog

- Gray, brown, reddish or olive in color
- Females larger than males at breeding age (1.5 to 3.5 inches)
- Males have swollen thumb base or 'nuptial pads'
- Throat and chest usually dark spotted with unique patterns
- Highly aquatic, within just a few hops from the stream
- Typically found in habitat with rocks and sunny banks for basking
- Good indicators of ecosystem health





Lorri Gong 2013



Ian Austin 2014



GANDA 2014



Can you spot all 5 foothill yellow-legged frogs?



Foothill Yellow-Legged Frog

- Adults migrate from their overwintering habitat to breeding habitat in spring
 - Breeding season from March-June
- Obligate stream breeders
- Males and females pair up in amplexus



FYLF Egg Masses

- Deposited in spring following high flows; usually in shallow, edgewater habitats with low flow velocity
- Females lay one clutch of eggs per year
- Mean oviposition period for LCC is from March 13 to May 7
- Hatch in 5-30 days depending on temperature
- Tadpoles metamorphose in late summer



Little Carson Falls Main Breeding Pools



Pool 4



Pool 3

Pool 2



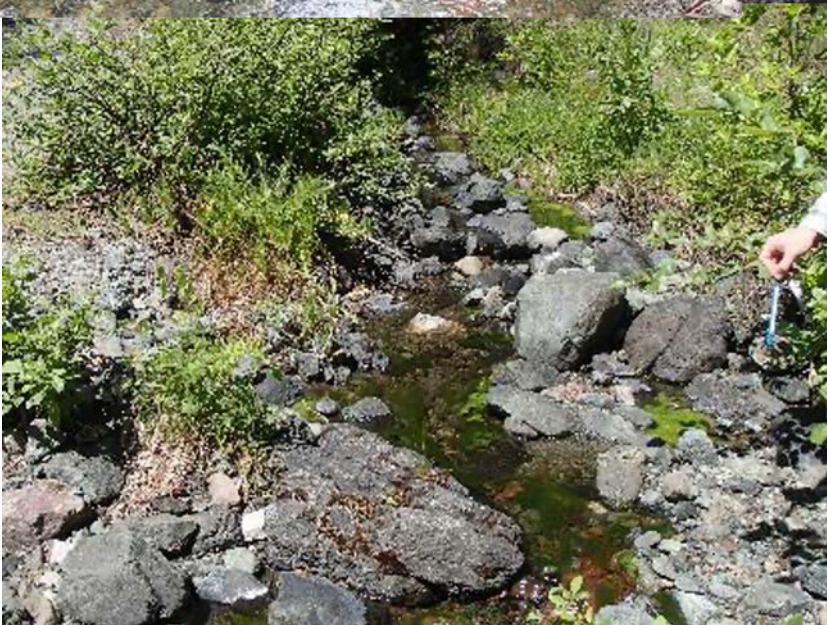
Pool 1



Pool 0



Big Carson Mainstem



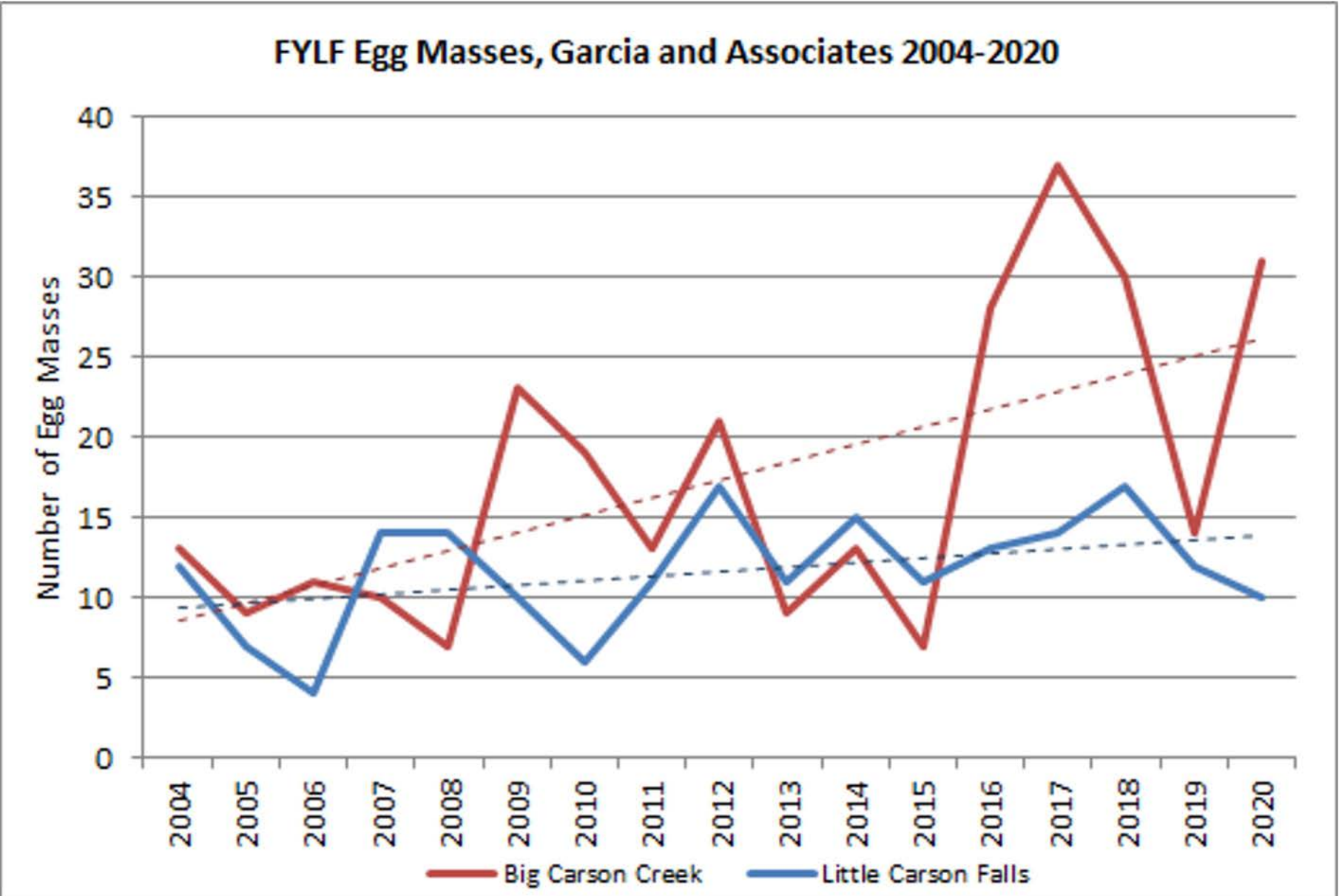
BIG CARSON CREEK AND TRIBUTARIES

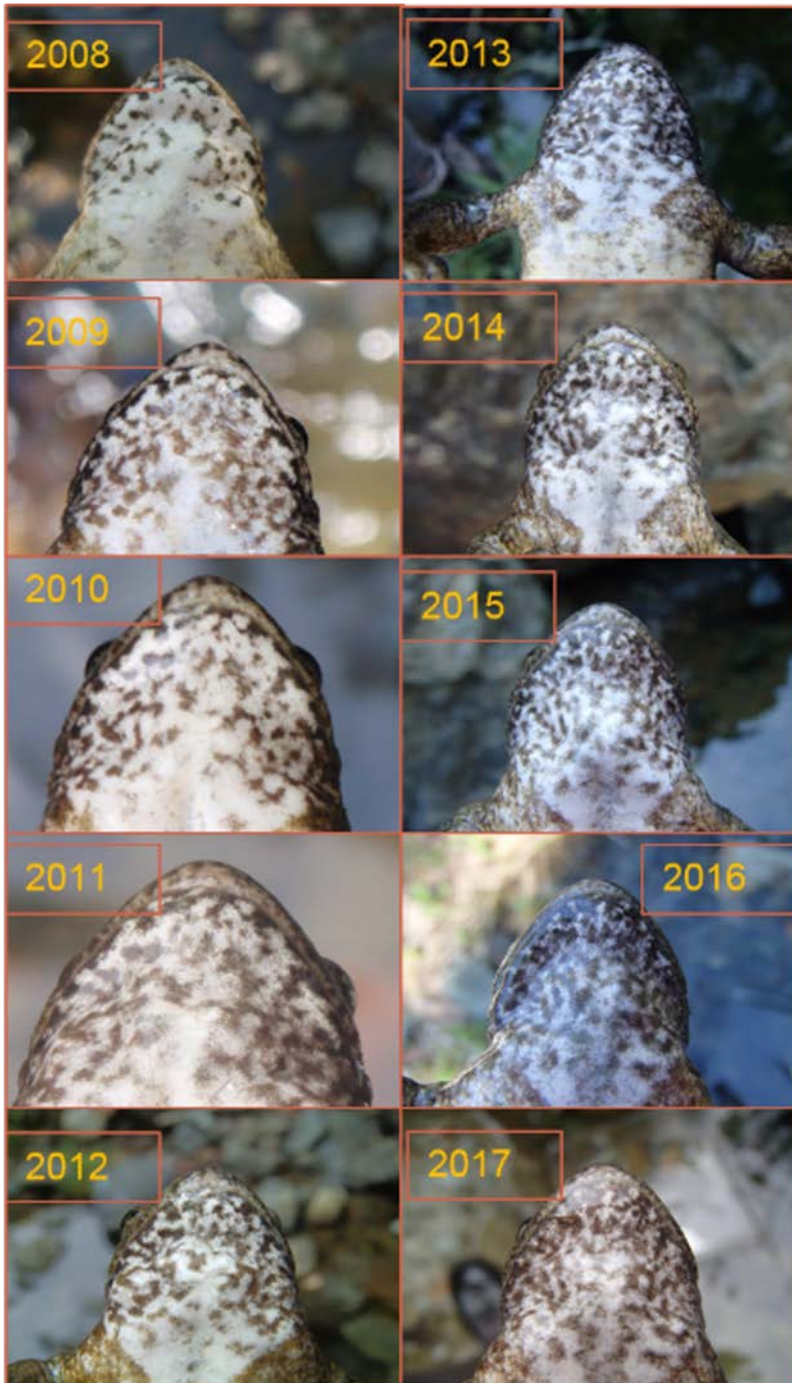
Table 1. Total Number of Egg masses Observed at Little and Big Carson Creeks and Tributaries, 2006 to 2020

| Site | Number of Egg Masses per Year | | | | | | | | | | | | | | | |
|-------------------------|-------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--|
| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | |
| Little Carson | 4 | 14 | 14 | 10 | 6 | 11 | 17 | 11 | 15 | 11 | 13 | 14 | 17 | 12 | 10 | |
| Big Carson | 11 | 5 | 2 | 11 | 10 | 7 | 13 | 8 | 7 | 1 | 19 | 31 | 24 | 26 | 23 | |
| BCC Trib 1 | * | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 0 | 2 | |
| BCC Trib 2 | * | 5 | 3 | 11 | 9 | 6 | 8 | 1 | 5 | 6 | 5 | 6 | 6 | 0 | 6 | |
| Subtotal BCC | 11 | 10 | 7 | 23 | 19 | 13 | 21 | 9 | 13 | 7 | 28 | 37 | 30 | 26 | 31 | |
| Total Egg masses | 15 | 24 | 21 | 33 | 25 | 24 | 38 | 20 | 28 | 19 | 41 | 51 | 47 | 38 | 41 | |

*Tributary egg masses were not tallied separately for BCC 2004-2006.

Annual Egg Mass Counts for the Little Carson Creek and Big Carson Creek FYLF Populations, 2005-2020.





Chin Photograph Recapture Data 2008 to 2019

Digital photography is used to identify individual frogs by the unique spot patterns on the lower jaw.

Chin photo data allows us to track individual frogs: growth rates, longevity, and movement patterns.

567 individuals have been identified on Little and Big Carson creeks since 2008, including:

- 197 females
- 370 males

Chin photo data was not analyzed in 2020

Male – BCC-M9

First captured on Big Carson Creek on May 15, 2008 and recaptured every year through 2017. Recaptured again 2019!



Estimated to be about 14 years of age based on SUL (41 mm) at first capture.

Native FYLF predators in Little Carson Creek

California Giant Salamander
Dicamptodon ensatus



Rough skinned newt
Taricha granulosa (pictured)
CA newt, *Taricha torosa*



Western Aquatic
Garter Snake,
Thamnophis
atratus

Threats to FYLF Populations



Dams

Climate
change



Non-native
predators

Disturbance
in creeks



Non-Native FLYF Predators



American Bullfrog

Rana catesbeiana

- Invasive species
 - Outcompete and eat everything in their path
- 29 removed from Little Carson Falls between 2011 and 2014
 - Only one seen since 2015





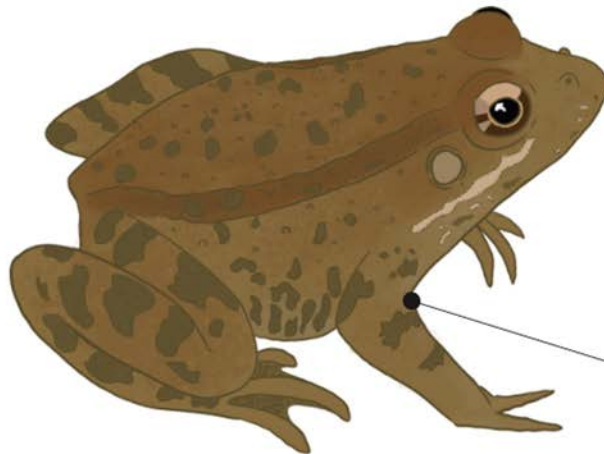
FROGS OF MARIN



American bullfrog
Non-native
Length: 3.5-8 inches



Foothill yellow-legged frog
Native
Length: 1.5-3.2 inches
Candidate for California
Environmental species Act



Pacific chorus frog
Native
Length: 0.75-2 inches



California red-legged frog
Native
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Federally threatened

Non-Native FLYF Predators



Signal Crayfish

Pacifastacus leniusculus

- Invasive species
- Introduced to CA in 1912
- Opportunistic feeder

- Crayfish removed from lower section of creek between 2008 and 2016
- No crayfish observed from 2017 to 2020

Human Disturbance at Carson Falls





Frog Docent Program Overview

2 Types of Frog Docents

Hike out to Little Carson Falls to educate visitors at the breeding site



Greeter table at Pine Mountain Road



Frog Docent Eligibility & Responsibility

- At least 18 years old
- Follow safety guidelines
- Represent Marin Water and One Tam
- Commit to at least 3 shifts
 - focus on weekends
 - shifts Th, Fri, Sat, Sun
- Engage the public
- Collect data
- Go for a hike!



Want to become a frog docent?



Join us for Part 2: Technical Training

March 20, 9:00-10:30 AM

Thank you!



Our volunteers and program partners make this project possible!



MARIN
WATER



AmeriCorps

