PACIFIC CHORUS FROG (Pacific Tree Frog)

PSEUDACRIS REGILLA (BAIRD AND GIRARD, 1852)

NATURAL HISTORY SUMMARY BY JESSICA CARRASCO

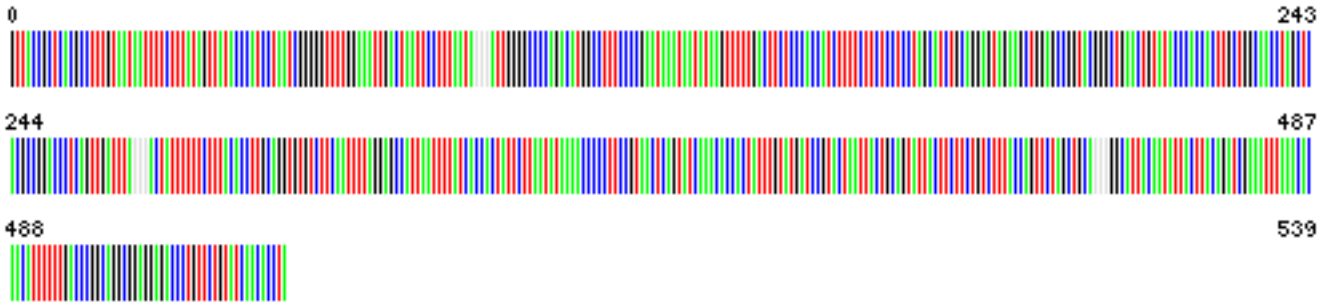

Figure 1. Pseudacris regilla DNA Barcode - Barcode of Life Database - BOLD Systems (Ratnasingham and Hebert 2007)

Classification

Kingdom: Animalia
Phylum: Chordata
Class: Amphibia
Order: Anura
Family: Hylidae
Genus: *Pseudacris*
Species: *P. regilla*

The Pacific Chorus Frog, *Pseudacris regilla was originally* classified as *Hyla regilla* (Baird and Girard 1852). In 1986, 30 taxa in the genus *Hyla* had their phylogenetic relationships examined and molecular data supported the genus change to *Pseudacris* (Hedges 1986). Mitochondrial DNA findings in 2004 supported a regional divergence of *Pseudacris regilla* (Ripplinger and Wagner 2004). In 2006, based on molecular evidence of the species' long independent evolutionary history in the different regions, it was decided that it should be considered three distinct species: *Pseudacris regilla* (extreme southern Alaska (introduced), British Columbia (Canada), Washington, western Oregon, and northern California), *Pseudacris pacifica* (central California, Nevada, eastern Oregon, Idaho, western Montana, and presumably extreme northwestern Utah*),* and *Pseudacris hypochondriaca* (Southern California, southern Nevada, southwestern Utah, and western Arizona south to southern Baja California)

(Recuero et al. 2006*).* This summary will focus on a generalized *Pseudacris regilla*, found locally in the Pacific Northwest.

Description

The Pacific Chorus Frog, *Pseudacris regilla,* (also known as the Pacific Tree Frog) is a small frog with a slender and slightly flattened body, narrow waist, long legs, large toe pads, moderately smooth skin, and a pointed snout (Hallock and McAllister 2005). Adults weigh approximately 0.35 g and are 3.0 to 4.5 cm in length from snout-vent. The Pacific Chorus Frog displays sexual dimorphism and females grow to larger sizes than males. The dorsal body color typically varies from bright green to light brown and sometimes has hues of red and copper (Benard 2017). There is a noticeable dark stripe or mask that extends from the tip of the nose through the eye, and to the shoulder on both sides of the body (Ferguson and Mullins 2011). Dark blotches or markings may be present on the sides of the body and limbs. Mature males can be identified because they have darkly pigmented throats with a translucent creased yellowish skin (Hallock and McAllister 2005). The Pacific Chorus Frog can change its body color depending on environmental conditions and the need for camouflage (Stegen, Gienger and Sun 2004). The Pacific Chorus Frog can be distinguished from other closely related species by two characteristics. First, the presence of toepads found on the ends of the fingers and toes which have limited webbing between digits (Cossel 1997) and second, a dark stripe or “mask” present on both sides of its body (Benard 2017). Newly metamorphosed Pacific Chorus Frogs look similar to adults and range in size from approximately 1.2 to 1.8 cm in length from snout to vent. Tadpoles have eyes on the margins of the head and a tail fin with a high arch that occurs mid-way along the back and is rounded at the end. Coloration is brownish olive with black speckling markings. The underside is a white iridescent color (Hallock and McAllister 2005).

Distribution

The Pacific Chorus Frog is one of the most plentiful amphibians on the western coast of North America, distributed from British Columbia, Canada to Baja California, México and stretching as far inland as Montana and Nevada. The Pacific Chorus Frog is the most common and most widespread frog in Washington State and in Oregon (Nature

Mapping Foundation 2017). *Pseudacris regilla's* range map is available at Hammerson and Santos-Barrera, 2004.

Diet

The Pacific Chorus Frog is primarily a nocturnal feeder, but during the breeding season it will feed during the day. Like most frogs, it has specialized teeth only on in its upper jaw and vomerine teeth on the roof of the mouth. The teeth are used to grip the prey and keep it in place until swallowed, a process facilitated by retracting the eyes into the head (Nishikawa, 2000). Adults extend their tongues, coated with a sticky secretion, to capture prey (Ferguson and Mullins 2011). The Pacific Chorus Frog also has typical elongated hind legs of frogs which allow them to be able to move quickly to catch prey, and it has toepads that allows it to climb (Nishikawa 2000). Its diet consists primarily of arthropods such as flies (Diptera), ants (Hymenoptera), spiders (Aranea), and beetles (Coleoptera). Tadpoles feed mostly on algae, bacteria, and floating vegetative debris (Ferguson and Mullins 2011).

Habitat and Ecology

Pacific Chorus Frogs can be found in a variety of different habitats including deserts, meadows, and forests, from sea level to elevations over 3000 m, typically in low vegetation near water including marshes, ponds or lakes (Cossel 1997). Pacific Chorus Frogs take shelter in rock fissures, under bark, in vegetation along streams, and in abandoned rodent burrows. While they are regularly found in bodies of water, they can also be found as far away as half a mile from water (Stebbins 1951). Pacific Chorus Frogs spend most of time on the ground, but they also climb high onto leaves and branches of trees and shrubs. As insectivorous animals, they help control insect pests, throughout their distribution. Pacific Chorus Frogs are considered a keystone species because many different species depend on them as their primary prey, such as garter snakes (*Thamnophis*) (Watkins 1996).

Reproduction and life cycle

The breeding season is typically from winter to spring but can range from as early as November to as late as June, depending on the geographical location and weather

(Hammock and Hogan 2017). Pacific Chorus Frogs will travel to nearby bodies of water such as lakes, streams, and ponds. The male will call out to attract the females. Males are known to display aggressive during breeding season. The male will give a warning call to an intruding male, and if he fails to leave the area, the two may fight until one departs (Ferguson and Mullins 2011). Females will lay the eggs in shallow, calm water, attached to vegetation. The males fertilize the eggs externally and both parents then leave the area. There is no parental investment given to the offspring (Hammock and Hogan 2017). Eggs are typically laid in small loose clusters of 10-80 eggs. A female may lay 20-30 egg clusters during one breeding season. The eggs will generally hatch in 2-3 weeks, starting the larval (tadpole) stage of development (KingCounty.gov 2017). The larval stage will typically last between 50 and 80 days then, the tadpole will metamorphose into a froglet. Metamorphosis will last around two months. During this time, the froglet will double in size and seek terrestrial habitat, making it extremely vulnerable to predators. It will reach sexual maturity in time to participate in the first breeding season following its hatching (Hammock and Hogan 2017).

Conservation status

In 2004, the International Union for Conservation Nature Red List of Threatened Species listed the Pacific Chorus Frog as a species of “Least Concern” (Hammerson and Santos Barrera 2004). Although it is not ranked as being at risk, it has been determined that pollution and chemical contaminants pose a risk that may cause declines or localized extinctions. Frogs that breed in high levels of nutrients from fertilizers, cattle or other sources, may also be at increased risk for developing malformations (Hallock and McAllister 2005).

Cultural significance

In 2007, the Washington State Legislature designated the Pacific Chorus Frog, *Pseudacris regilla, as* the official state amphibian. The proposal came directly from the Boston Harbor Grade School third-grade class as part of a project that combined science, research, art, and persuasive writing. (Washington Secretary of State 2017) The students chose *Pseudacris regilla* because it lives in every county in the state and

on both sides of the Cascades (Washington State Legislature 2017) and because it is an important keystone species (Hammock and Hogan 2017).

Specimen-specific detail

The Pacific Chorus Frog (*Pseudacris regilla)* specimen from the Burton Ostenson Museum of Natural History at Pacific Lutheran University was collected in Capitol State Forest, Washington in the Fall of 2008, by the Natural History of Vertebrates class. Capitol State Forest, located southwest of Olympia in the Black Hills of Grays Harbor and Thurston counties, is a forested area with nearby creeks and bodies of water that provide an ideal environment for Pacific Chorus Frogs (the Washington State Department of Natural Resources 2017). In 2008, Barack Obama became the first African-American to be nominated by a major political party for President of the United States, many of the world's stock exchanges experienced significant declines and television shows such as" Breaking Bad" and "Sons of Anarchy" were in their first season (OnThisDay.com 2017).

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