Learning Laguna Field Notes: Western Pond Turtles
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Western Pond Turtle (Clemmys marmorata – although there is some debate about the species name)

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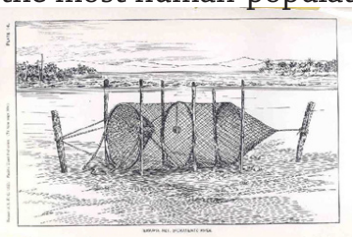
Turtles showed up in the fossil record 230 million years before present. They persisted through two mass extinction events and are currently widely distributed. The Western Pond Turtle goes back 2 million years and is our only native freshwater turtle. Historically they were present from Washington State to Baja on the Pacific slope. They have been found in all streams in the North Bay. They are very creative and resilient animals and will live in most any water source but they do prefer slow moving water. Once they were common, now their populations are declining and, in the most human-populated areas, WPT have been extirpated. In the late 19th century, they were hunted for food to help feed a growing San Francisco. In the year 1896 alone, 23,000 WPT were killed and taken from Sonoma County to San Francisco restaurants.



Dr. Nick Geist, Biology professor at Sonoma State University is beginning to study local WPT populations. While it is known that they have temperature dependent sex determination, there is no baseline data for which temperature produces which sex, or how many WPT there are in Sonoma County or their ages or sexes, or even if they are breeding successfully. At this point, he theorizes that we have mostly old males in the Laguna and they are likely to be gone from here in 20-30 years. Some good news, they seem to be doing well in the Russian River, east of Wohler Bridge and in Northern California in general.

Here is a bit about what is known about this charismatic creature.

In late spring and into the summer (May-July) females venture forth to look for nest sites in well-drained soils adjacent to riparian areas, but in sunny spots as eggs need a high temperature for incubation. They are picky nesters and this is a dangerous endeavor for the female as she is at high risk of being run over by cars and predated upon by dogs. If she is able to successfully select a site, she digs a hole and deposits 5-10 hard-shelled eggs. Then she covers the nest and packs an adobe-like plug over the top and smooths the grass to hide it. The turtle then empties her bladder to soften ground around the nest which keeps it wet for the first couple of hours. It is very difficult to visually spot nest sites but, using olfactory cues, predators like raccoons, foxes and skunks easily find the nests. Eggs take 75-90 days to hatch and hatchlings are about the size of a quarter. There are lots of natural predators for hatchlings but if they can survive and grow they become mostly immune to predators. Bullfrogs are a major predator for hatchlings and young turtles. From Sonoma County north, hatchlings over-winter in the nest and emerge in the spring.

WPT hatchling at SSU lab.

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Comparing a wild turtle to a Head Started turtle of approximately the same age.

http://www.kqed.org/quest/blog/tag/turtles/

In the wild, young turtles will grow and stop growing based on temperature. Thus, they are very slow growers. In a controlled environment, like a lab/nursery, with warm temperatures and regular feeding, they grow to the size of a 3-4 year old turtle in a matter of months. Dr. Geist has created a "headstart" program for WPT in a lab at Sonoma State University. In the summer of 2008, he collected 57 eggs from Lake County. Over the summer, they were incubated and in late August 45 hatched—a very high percentage for this type of study. Part of the science of the project is to determine the pivotal temperature that determines sex. Once hatched, the turtles are transferred to the Oakland Zoo where they will be raised under optimal conditions for the first year. Then, once big enough to avoid predation, they will be returned to the lake where they came from. While we might like to see the juveniles used to re-populate the Laguna, for a variety of reasons, the permit for the program stipulates that the turtles be returned to their native waters.

Pond turtles are ectotherms and they require emergent basking sites to thermoregulate their body temperature which is why we sometimes get to see them along rocks, logs, root wads and mud banks of the Laguna channel. When the weather is either too hot or too cold, or when the ground becomes too dry, adults will sleep and/or go into a torpor state. They generally have hearty immune systems and their organs don't seem to age, enabling them to live up to 70 years in the wild.

WPT are omnivores but eat mostly meat and are "ambush predators." They feed only in the water (not on land) and their diet includes fish, worms, crustaceans, amphibians (egg masses, tadpoles and adults), adult and larval aquatic insects, terrestrial grasshoppers and aerial flies off the water's surface, beetles, and - infrequently - aquatic plants, including algae, willow and alder catkins, tule, and cattail roots. They have also been known to scavenge on the carcasses of mammal, bird, reptile, amphibian, and fish species.

It is tannic acid that gives the shell its mahogany color. The upper shell or is the carapace and the lower shell is called plastron. Males have a somewhat concave plastron and longer, thicker tails. In young turtles, it is sometimes possible to county the rings on the plastron to determine age.

References:

• Notes taken during a presentation by Dr.Nick Geist, Summer 2008
• Article: Western Pond Turtle Natural History http://www.atlantismagazine.com/bettelheim/pond-turtle.html
• Article: No Pond Turtle Left Behind - KQED Quest program http://www.kqed.org/quest/blog/tag/turtles/

Title: "Terrapin Net, Sacramento River" [Plate 14.]
Artist: -None Listed-
Wilcox, William A. 1895. Appendix: Fisheries of the Pacific Coast. pp 139-304. In: United States Commission of Fish and Fisheries. 1895. Report of the Commissioner for the Year Ending June 30, 1893. Part XIX. Washington: Government Printing Office.