



Western Painted Turtle (*Chrysemys picta bellii*)¹

Conservation Status—The western painted turtle is listed as an ISSSSP Sensitive Species in Oregon and is an Oregon Conservation Strategy Species (ODFW 2006) and as a Sensitive-Critical species (ODFW 2008). It has no special status in the state of Washington. The species is listed as a U.S. Fish and Wildlife Service Species of Concern. The Natural Heritage Global Rank is G5 (demonstrably widespread), and the Oregon State Rank is S2 (imperiled). Factors cited as limiting western painted turtle populations in Oregon include loss of wetland and adjacent upland habitat for nesting, threats from roads and recreation especially in urban centers, and lack of juvenile recruitment due to high nest and hatchling predation (Gervais et al. 2009).

Systematics & Distribution —Western painted turtles have traditionally been divided into four subspecies, *C. picta dorsalis*, *C. picta martinata*, *C. picta picta*, and *C. picta bellii*. These subspecies have been differentiated based on geographic range and morphological characteristics; the subspecies overlap extensively in parts of their range and interbreed where they co-occur. A recent proposal has been made to recognize *C. picta dorsalis* as *C. dorsalis* (Starkey and others 2003) which would result in no longer recognizing sub-specific status of populations in Oregon. Painted turtle taxonomy remains controversial (Ernst and Lovich 2009).

Western painted turtles are the most widespread turtle species in North America, occurring across a broad swath of the North American continent. The western painted turtle, *C. picta bellii*, ranges west across southern Canada from Ontario to British Columbia and south from Missouri to Idaho (Ernst and Lovich 2009). A small band of its range juts into northern Oregon, restricted to the northern Willamette Valley south to Salem and east into central- and northeastern Oregon, primarily within the Columbia Basin (St. John 2002). Other reported locations within Oregon may be released pet turtles or their progeny (Gervais et al. 2009).

Ecology—Western painted turtles occupy slow-moving or still, shallow water including sloughs, ponds, small lakes, canals, and streams. Aquatic vegetation either at the surface or emerging from the water, and a soft, muddy substrate are also characteristics of good turtle habitat, and basking sites in the form of rocks, logs, or emergent banks are also required. Sparsely vegetated land near water is needed for nesting. Soil type is highly variable, but nests are frequently found on land with southern exposure. Hatchlings typically spend their first winter in the nest, emerging in spring to move into their aquatic habitat. Hatchlings seem to require shallow aquatic habitat, but little specific information is available.

¹ Contributed from Jennifer Gervais, Oregon Wildlife Institute

In western Oregon, overwintering in a state of semi-dormancy does not always occur, but when it does, they overwinter in either aquatic (buried in mud) or terrestrial (buried under debris and/or soil) environments, with predominant use of shallow aquatic habitats (Hayes et al. 2002, Gervais et al. 2009).

The primary use of terrestrial habitats by western painted turtles is for nesting. Western painted turtles nest near aquatic habitat, usually within 100 m and often much closer and sometimes nearly adjacent to their aquatic habitat (Hayes et al. 2002, Ernst and Lovich 2009, Gervais et al. 2009). Flood plains, shrubby fields, roadsides, pastures, and open beaches have all been used as nesting habitat (Ernst and Lovich 2009). A broad range of substrates are used for nesting in Oregon, including compact soils and recent fill composed primarily of gravel and sand (Ernst and Lovich 2009, Gervais et al. 2009). Nests are often as shallow as 7 cm (Ernst and Lovich 2009).

Sexual maturity has been estimated at 4-5 years in males and 7-9 years in females (Wilbur 1975, Congdon et al. 1992, Hayes et al. 2002). Painted turtles court and mate from March into June, and courting behavior is also seen in the fall (Gibbons 1968b). The nesting season in Oregon is similar to western pond turtles with most nests constructed during June and July (Hayes et al. 2002). Western painted turtles lay large clutches with a mean of 11 eggs and ranging from 4-23 eggs (Ernst and Lovich 2009). Several clutches may be laid in each breeding season. Some females in northern populations may not breed each year (MacCulloch and Secoy 1983), and this is likely true in Oregon. Laying of several clutches per year is typical where it has been studied (Ernst and Lovich 2009), and probably occurs in Oregon. Incubation takes approximately 60-80 days, depending on environmental conditions (Ernst and Lovich 2009). Young turtles hatch in the fall, but spend the winter in the nest in most parts of the species' range (Breitenbach et al. 1984). In the mild climate of western Oregon, emergence from overwintering occurs most typically in March and April (Gervais et al. 2009), similar to western pond turtles (Rosenberg et al. 2009). From the time of laying to spring emergence, western painted turtles may have spent almost a year on land before entering aquatic habitats, highlighting the importance of consideration to both aquatic and terrestrial habitats for conservation of western painted turtles.

Western painted turtles are omnivorous and eat fish, crayfish, tadpoles, amphipods, insects, carrion, and plant matter are also consumed (MacCulloch and Secoy 1983, Ernst and Lovich 2009). Adult turtles in Michigan in one site appeared to be feeding almost entirely on aquatic vegetation based on stomach contents, whereas stomachs from another site frequently contained earthworms, fish, and snails (Gibbons 1967). Their flexible diet probably allows them to occupy diverse aquatic habitats.

Habitat Management/Restoration—Major threats to western painted turtles in Oregon are loss of wetland and adjacent upland habitat, including the degradation of nest areas from invasive plants that increase cover, particularly Himalayan blackberry (*Rubus armeniacus* or *R. discolor*). Populations in urban centers are particularly vulnerable to road mortality and disturbance from recreation near aquatic areas. Road mortality may be a significant problem, particularly for female turtles seeking nest sites. Provision of nesting habitat that is free of human disturbance and close to water is important. Turtles are notoriously wary while basking, and providing basking sites that are away from human disturbance may also be very beneficial, especially to urban populations. Habitat management to give basking and nesting turtles some distance and

visual screening from disturbance by human recreationalists and their companion animals may improve both survival and reproduction.

Non-Habitat Limiting Factors—Little is currently known regarding mortality factors for hatchlings, although researchers and conservationists have suggested that introduced bass (both smallmouth and largemouth), and bullfrogs (*Rana catesbeiana*) may have a substantial impact on hatchling survival in Oregon. These introduced species coexist naturally through much of the western painted turtle's range, although the interactions among these species in Oregon are unknown. Likewise, the impact of nest predation by raccoons, coyotes, skunks, and other animals that have adapted to more urban environments is not well understood but have been noted to be at times particularly high and may threaten some populations (Gervais et al. 2009). Determining if nesting and hatchling mortality are causing significant population-level impacts will inform whether taking steps to reduce these sources through nest enclosures or head starting are worthwhile investments of time and funding dollars.

Introduced turtles pose a threat to native populations through the potential for disease transfer and reduction of the genetic integrity through interbreeding when painted turtles are released particularly from unknown genetic stock. Prevention of captive releases by well-meaning members of the public through educational outreach is likely the best response to these threats. Similarly, collection of wild turtles, particularly from isolated urban populations, could affect population viability. Again, the best prevention may be public education.

Survey Methods—Survey methods are similar for both of Oregon's native turtle species. There are two primary methods of surveys-- trapping and visual surveys. The primary limitations of trapping surveys are the commitment of great effort per area and the potential harm to turtles, the latter being the reason that permits are required from Oregon Department of Fish and Wildlife. Trapping should only be conducted by trained personnel and when the objectives of the study require capture. It is important to ensure that methods are sufficiently rigorous to meet the stated objectives of the survey. Survey protocols have been developed for western pond turtles (Bury and others 2001) and applied to western painted turtles (Gervais et al. 2009). In an evaluation of survey protocols for western pond turtles, 40 to 53% of the number of turtles estimated from population estimates were observed during any of 6 replications of visual surveys (Horn 2001). Standardized protocols using count data from either trapping or visual surveys will be limited in their rigor to allow for factors that affect the ability to detect turtles in a broad array of habitats and conditions, and this needs to be considered before designing and conducting population surveys. It is important to recognize that occupancy can be confirmed, but that the lack of detections may not indicate the absence of turtles.

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