

**THE SOUTH DELTA BARRIERS
PROJECT
1993**

**ASSESSMENT OF
EXISTING FISH, WILDLIFE AND
PLANT COMMUNITY RESOURCES
AND
POTENTIAL PROJECT IMPACTS**

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Bay-Delta and Special Water Projects Division

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A few sand beaches were located along Old and Middle Rivers during low tide, and a small, privately-owned island near the southeast tip of Woodward Island may contain suitable habitat for the beetle as well. These areas were not made up of the type of loose sand habitat normally supporting the species at other locations in the Delta. (ECOS, 1990)

Curved-Footed Hygrotus Diving Beetle

The curved-footed hygrotus diving beetle is classified by the USFWS as a Category 2 candidate. Very little is known about the curved-footed hygrotus diving beetle. Other members of their family (Dytiscidae) provide a general understanding. Beetles of this family inhabit brackish pools with little circulation and an abundance of plant and small animal life. Aquatic vegetation is important, providing anchorage as they float submerged, cover and substrate for their reproduction cycle (Baldus 1935).

The habitat in the South Delta area did not appear suitable for the beetle, due to deep and fast-moving waterways. (ECOS, 1990)

Western Pond Turtle

The southwestern pond turtle *Clemmys marmorata pallida*, is designated as a Category 2 candidate species by the USFWS and a species of special concern by the DFG. A subspecies of the western pond turtle *Clemmys marmorata*, is distributed from Washington south to Baja California (Stebbins 1985). Many populations have been reduced or extirpated, especially where aquatic habitats have been modified or eliminated (Brattstrom 1988; Holland, unpubl. data). The U.S. Fish and Wildlife Service is considering listing the western pond turtle as threatened or endangered (Federal Register, 1989) principally because of the loss of habitat. The reproductive biology of the western pond turtle is not well known. Storer (1930) reports several anecdotal accounts of pond turtle nesting, and concludes that sand banks along the courses of large rivers, or hillsides in foothill regions, are used for oviposition. He also concludes that nesting occurs up to 400 meters from, and 60 to 90 meters above, stream beds. Holland (1985) indicates that along the central California coast, mating occurs in April and May, and eggs are laid from June through August. Holland (1985) additionally suggests that hatchlings overwinter in nests and emerge in March or April. Incubation in captivity takes 73 to 80 days (Feldman 1982). Feldman (1982) also makes a case for hatchlings overwintering in nests, based on his observations of captives.

As the human population continues to grow in California, riparian corridors and the water itself in many of the arroyos will come under increasing demand for urban and agricultural uses. Without some protection of the arroyos and associated upland areas, the long-term survival of pond turtle populations in central and southern California cannot be assured.

Western pond turtles were observed in surveys performed by ECOS INC 1990. a few adult turtles in Old River west of the Tracy Boulevard bridge, along Salmon Slough, and in Middle River 0.3 miles north of Highway 4. Suitable habitat was found to exist along all watercourses in the project area, including canals in the Clifton Court Forebay area.

Giant Garter Snake

The giant garter snake is designated a Category 2 candidate species by the USFWS and a threatened species by the DFG. The giant garter snake is a subspecies of the western aquatic garter snake. The giant garter snake formerly occurred on the floor of the Central Valley from Sacramento and Antioch south to Buena Vista Lake, Kern County. Agricultural development, especially the draining of wetlands and channelization of streams has extirpated the giant garter snake from the south San Joaquin valley and lowered its numbers in the north.

The giant garter snake is generally highly aquatic and is associated with permanent or semi-permanent bodies of water in a variety of habitats. Individuals forage primarily for fishes and amphibians during the day from March through October in areas of fresh water, particularly sloughs and marshes (Hansen and Brode 1980), and can be found in areas temporarily flooded such as irrigation canals. The giant garter snake spends the cool winter months in dormancy (Hansen 1982).

The preferred nocturnal retreats are thought to be holes, especially mammal burrows, crevices, and surface objects. During the day this garter snake often basks on streamside rocks or on densely vegetated stream banks. When disturbed it usually retreats rapidly to water.

Courtship and mating normally occur during the spring. Four to 30 young are born alive in July and August, usually in secluded sites such as under the loose bark of rotting logs or in dense vegetation near pond or stream margins.

Surveys were conducted during 1987 and 1988 by Ecos, Inc. for the South Delta Program and no giant garter snakes were observed.

Virtually all channels and islands within the project area contain some suitable giant garter snake habitat. However, there are extensive areas where habitat is absent where sections are devoid of emergent vegetation for a considerable distance. The giant garter snake should be considered a likely inhabitant of the waterways within the project area and may be present in irrigation canals in the central Delta islands which contain dense emergent marsh vegetation. The project operated as described, however, should not impact the giant garter snake since the garter snake is not dependent upon tidal changes or a specific water level during its daily activities; it would be vulnerable to impacts if water levels are increased substantially and winter burrows are inundated during the time when the snake is

dormant. However, significant water level increases are not expected to occur in areas where suitable habitat occurs. Impacts to agriculture associated with the project are not expected to alter suitable habitat associated with internal irrigation ditches.

California Tiger Salamander

The California tiger salamander Ambystoma tigrinum californiense is designated a Category 2 candidate species by the USFWS and a species of special concern by the DFG.

This species is found in grasslands and open woodlands. They breed in reservoirs, ponds, large rain pools, lakes and slow-flowing streams during the winter months (Stebbins 1972, 1985). The nearest record of this species to the project area is in the Kellog Creek vicinity 10 miles from the project area (CNDDDB 1987).

No California tiger salamander or suitable habitat was observed during ECOS INC 1990 surveys.

Red-Legged Frog

The California red-legged frog is designated as a Category 2 candidate species by the USFWS and as a "species of special concern" by the DFG. Red-legged frogs occur west of the Sierra-Cascade crest and along the coast ranges the entire length of the state usually below 3,900 feet. Their habitat consists of quiet, permanent pools of streams, marshes, and occasionally ponds and they prefer shorelines with extensive vegetation.

This is a highly aquatic species with little movement away from streamside habitats. The frogs have periods of inactivity from late summer to early winter.

Breeding takes place from January to July with a peak in February in the south and March to July in the north. Females lay 750 to 4,000 eggs in cluster up to 10 inches across attached to vegetation 2 to 6 inches below the surface of permanent pools (Stebbins 1954). Tadpoles require 11 to 20 weeks to reach metamorphosis (Calef 1968).

The red-legged frog is not expected to occur within the project area, primarily because of the lack of preferred habitat. Therefore, the project will have no impact on the red-legged frog.

Plant Resources

The levee banks and islands of Old River support fragments of riparian forest. The riverbank has been cleared of vegetation in places, but in the less disturbed reaches of the river are some very large valley oaks, mixed with cottonwoods, and tree and shrub willows.