

River and the San Juan River near Clay Hills Crossing but there is no confirmed nesting or breeding habitat present in the national recreation area. (Glen Canyon NRA, Henderson and Spence pers. com. 2002). In Arizona more than 110 pairs occupy 160 territories including breeding territory along the Colorado River. Smaller populations are known to exist in Utah. Breeding habitat is present along the Colorado River and some lake shorelines at low elevations in areas of dense willow, cottonwood and saltcedar or other woodlands along streams and rivers. Destruction and loss of native riparian habitat combined with natural predation and brown-headed cowbird parasitism have reduced species populations.

*California Condor (Gymnogyps californianus)* was reintroduced into the wild by the U.S. Fish and Wildlife Service in Arizona in 1996. There is some evidence that the condor was present in Utah at one time and its range may extend into Utah. These birds were released on the Vermilion Cliffs in Coconino County near Page, Arizona approximately 20 miles from the Utah border. Roosting habitat includes cliffs, tall evergreens and snags. Their population decline is thought to be related to ingestion of lead or cyanide poisoning of dead carcasses. Possible shootings, removal from wild of eggs, young, and adults for captive breeding, and unknown causes may also be a contributor. This species is known to forage for food more than 100 miles from their home territory. No breeding or nesting habitat is present in the recreation area, but individual birds may infrequently move across the area. A few individuals have been observed at Lake Powell within the last five years (Glen Canyon NRA, Spence pers. com. 2002).

*Bald Eagle (Haliaeetus leucocephalus)* habitat is present along the larger rivers in the southern part of Utah. The bald eagle winters in small numbers throughout the Lake Powell area and is observed in areas of the San Juan River and around Bullfrog (Glen Canyon National Recreation Area, 1986). Of the three nesting sites located in southeastern Utah, two nests are located along the Colorado River corridor. No nest sites have been observed or recorded along Lake Powell's shorelines. Potentially favorable bald eagle roosting sites along the rivers and shorelines of reservoirs such as Lake Powell are monitored for winter and breeding season uses (Spence et al 2002). There are no known consistently used winter roosting locations in the recreation area. Bald eagles have been observed feeding at Antelope Island and

other portions of Lake Powell during the winter months (National Park Service 2002).

*Western Yellow-billed Cuckoo (Coccyzus americanus)* populations have declined throughout its range in the western states due to habitat loss. It is a candidate species currently under study by the U.S. Fish and Wildlife. Habitat for this neo-tropical species consists of cottonwood-willow riparian forests. Its presence and breeding habitat is well documented in Arizona. The bird has been sighted in Utah but its presence is not well documented. Western yellow-billed cuckoo have been observed on the Colorado River near Lees Ferry below the Glen Canyon Dam and at Clay Hills Crossing on the San Juan River. This bird species has not been observed at Lake Powell (Spence 2002).

*American Peregrine Falcon (Falco peregrinus anatum)* was removed from the federal list of endangered and threatened species on August 25, 1999 (64 **Federal Register** 46542). It is still listed as an Arizona special status species. The peregrine falcon nests on cliffs next to riparian and wetland habitats. It is occasionally observed on cliff faces in the recreation area. Foraging activity does occur within close proximity to the lake shoreline. Threats to this species include loss of habitat and environmental contaminants. There are over 80 known peregrine falcon nesting sites in the recreation area. These nest sites are located along cliffs at higher elevations on the canyon walls far above the water surface of the lake (Glen Canyon NRA, Spence pers. com. 2002).

*Navajo Sedge (Carex specuicola)*, grows in small pockets of sandy to silty moist soil in cool and shady seeps or spring alcoves in the San Juan River Canyon at elevations ranging from 4301 to 6004 feet. No designated critical habitat for the Navajo sedge is located in Glen Canyon National Recreation Area (Glen Canyon NRA, Henderson, pers. com., 2002).

*Ute Ladies-tresses (Spiranthes diluvialis)* is a small native orchid that is associated with wet meadows that may occur along streams, at spring or seep discharges and rarely along lakeshores at elevations ranging from about 4300 to 7000 feet. It typically flowers between late July through August, which is the best time to determine its presence. This species is threatened by loss of habitat, agriculture, fluctuating water levels and urban stream channelization. This species is known to occur in Garfield County, and other counties in Utah (FWS letter June 14, 2001) but it has not

been observed or identified on the shoreline or riparian areas along either Lake Powell or any of the river corridors joining the lake (Glen Canyon NRA, Spence, pers. com. 2002).

Under current use conditions, there have been no documented incident reports of known conflicts of federally endangered fish or other species with watercraft or PWC users (Glen Canyon NRA, Spence, pers. com. 2002). Current motorized watercraft use of any type is not considered to affect any endangered fish species in Lake Powell (UDWR, M. Gustaveson, pers. com. 2002).

### Shoreline Vegetation

More than 730 species of plants have been identified in the recreation area. Shoreline vegetation is considered to include several types of vegetation communities, including submerged aquatic beds, wetlands, riparian areas or zones, beach dunes, and upland vegetation that grows near the shoreline. The EIS defines the shoreline zone as areas within 500 horizontal feet from the lake's waterline at full pool. The area physically included in this zone will change as reservoir water levels change. The waterline can fluctuate as much as 50 feet vertically and 1,000 feet horizontally during a calendar year.

Areas of submerged aquatic vegetation are generally scarce and poorly developed at the recreation area. Reasons for this condition include unstable water levels associated with reservoir operations for water supply, power generation, and flood storage; poor plant rooting conditions along the lake's shorelines; very steep shoreline slopes; limited availability of low-gradient shorelines; and lack of suitable bottom conditions. Shoreline vegetation includes upland, beach dune, wetland, hanging-garden, and riparian locations near the land-water interface. Shoreline vegetation occurs along the main reservoir shoreline and along the tributary streams and rivers that flow into the reservoir. The same water fluctuation and difficult rooting conditions combined with the desert climate severely restrict development of shoreline and riparian vegetation. Consequently, most shorelines are bare rock, unvegetated sand, gravel, or cobbles.

PWC use has limited impact upon the recreation area shoreline vegetation. The areas where disturbance could occur should be considered and consistent within the protection of these resources.

### Water Quality

During the summer of 2001, the Glen Canyon National Recreation Area conducted a water quality testing to