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AQUATIC BIRDS OF THE WHITE RIVER, UINTAH COUNTY, UTAH

Benjamin B. Steele¹ and Stephen B. Vander Wall¹

ABSTRACT.— Abundance, seasonal use, and species composition of waterfowl and other aquatic birds are described along a 32.8 km stretch of the White River, Uintah County, Utah, at the site of the proposed White River Dam. Fourteen species of waterfowl and eight other species of aquatic birds were recorded. Waterfowl populations along the river were highest in April, but densities were much lower than on lakes and reservoirs at nearby Ouray National Wildlife Refuge.

Most studies of waterfowl and other aquatic birds are associated with lakes, ponds, marshes, or reservoirs. In arid areas, where standing water is scarce, rivers provide the major habitat for aquatic birds during migration and for nesting. In the Uinta Basin of northeastern Utah, the Green River and its tributaries historically represented the only aquatic habitat. Since the construction of reservoirs for irrigation and hydroelectric power, species composition and use patterns of aquatic birds have changed dramatically (Hayward 1967). Waterfowl and shorebirds, however, still use the Green River and its associated oxbows, sloughs, and backwaters. Smaller numbers of birds use tributaries such as the White River, where standing water and wetlands are not present.

The Utah Division of Water Resources has proposed construction of a dam on the White River (Bureau of Land Management 1980). This earthen dam, 65 km southeast of Vernal, Uintah County, Utah, would create a reservoir 21.8 km long to supply water for oil shale and other energy development. The reservoir would be 774 ha (1860 ac) in area and average 1.1 km wide. Here we report the abundance, seasonal use, and species composition of aquatic birds in a section of the White River extending from 24.1 km above to 8.7 km below the proposed dam site. Potential changes in the aquatic avifauna due to construction of the dam are discussed.

METHODS

Aquatic and other birds of riparian habitat were censused along line transects during five months (February, April, June, August, and October) from 1975 through 1981. Transects were located just upstream of the proposed dam site. Each sample consisted of morning censuses on five consecutive days. Transects were approximately parallel to the White River, and thus abundances are reported in individuals/river km. In 1975 and 1976, three ½ km transects were walked. From 1977 to 1980, two 1 km transects were walked and, in 1981, one 1 km transect was walked. All waterfowl, shorebirds, and herons were recorded.

To gain further information on aquatic birds during spring migration, a 32.8 km (20.4 mile) section of the White River (24.1 km above to 8.7 km below the proposed dam site) was floated by canoe for three consecutive days starting 7 April 1982 and again for three days starting 14 April 1983. The number and location of all waterfowl were recorded in river kilometers, beginning at Cowboy Canyon (km 0) and ending at Asphalt Wash (km 32.8).

STUDY AREA

The White River flows westward from its headwaters in the White River Plateau in

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Colorado through semiarid shrub land and pinyon-juniper woodland (mean annual precipitation 20.3 cm) and enters the Green River at Ouray National Wildlife Refuge (Ouray NWR), 45 km south of Vernal, Utah. Flow in the White River varies widely from 130 cubic feet per second (cfs), usually during late summer, to 2800 cfs in May or June (5-year means 1975-1979). The White River is very turbid during spring runoff (800-7000 mg of suspended solids per l) and during local summer thunderstorms (e.g., 61,000 mg/l during a 1979 flash flood) (White River Shale Project 1981).

Within our study area the river meanders through a flood plain approximately 200 m wide. On the flood plain, there is riparian habitat dominated by cottonwood (*Populus fremontii*), salt cedar (*Tamarix pentandra*), and various shrubs.

RESULTS

Waterfowl

Waterfowl along the White River were most abundant during spring migration in April (2.09 ind/river km, Table 1). During winter (February), late summer (August), and fall (October), mean waterfowl abundance was low and relatively constant at 0.31 to 0.36 birds/river km. There was no marked increase in waterfowl along this section of the White River during fall migration. Summer residents (potential breeders) were only slightly more common than winter residents. Coefficients of Variation in abundance over

the seven-year period were lowest in April (50.1%), indicating that April had both the highest and most predictable waterfowl populations.

The April canoe censuses in 1982 and 1983 yielded an estimate of waterfowl abundance (3.13 and 2.13 ind/river km, respectively, Table 2) slightly higher than the 1975-1981 line transect mean (2.1 birds/river km). Waterfowl were most abundant upstream of the dam site (3.24 and 2.78 birds/river km). The Canada Goose (*Branta canadensis*), Green-winged Teal (*Anas crecca*), and Mallard (*Anas platyrhynchos*) were the most common species of waterfowl (Table 2). The Northern Pintail (*Anas acuta*) and Bufflehead (*Bucephala albeola*) were present but were not recorded during censuses.

Only the Canada Goose breeds in the study area. We recorded four broods between Cowboy Canyon and Asphalt Wash in June 1981. The Utah Division of Wildlife Resources recorded five pairs of geese with a total of 35 goslings on 9 June 1976 (White River Shale Project 1977).

Other Aquatic Birds

In addition to waterfowl, we recorded seven other species of aquatic birds. They were most commonly recorded in June (0.91 birds/river km) and August (0.60 birds/river km) but were absent in winter (Table 1). Great Blue Herons (*Ardea herodias*) were fairly common transients in spring and summer but are not known to breed in the area.

TABLE 1. Seasonal trends in abundance of waterfowl and other aquatic birds (birds/river km) along the White River from 1975 through 1981. Coefficient of Variation (CV) is standard deviation divided by the mean.

Month	Year							Mean	CV
	1975	1976	1977	1978	1979	1980	1981		
WATERFOWL									
February	0.0	1.6	0.1	0.0	0.0	0.0	0.6	0.33	183.0
April	2.9	2.3	3.0	2.4	2.7	1.1	0.2	2.09	50.1
June	0.3	0.4	1.3	1.6	0.1	0.0	0.2	0.56	113.0
August	0.0	0.0	2.0	0.1	0.0	0.4	0.0	0.31	207.0
October	0.0	0.0	0.0	0.5	0.5	1.5	0.0	0.36	155.8
OTHER AQUATIC BIRDS									
February	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	—
April	0.5	0.5	0.3	0.8	0.0	0.0	0.0	0.30	105.4
June	1.1	1.9	1.3	0.3	0.4	0.4	1.0	0.91	64.2
August	1.7	0.9	0.2	0.3	0.1	0.5	0.5	0.60	91.8
October	0.0	0.0	0.0	0.3	0.0	0.1	0.2	0.09	141.8

Snowy Egrets (*Egretta thula*) were uncommon spring migrants. The Spotted Sandpiper (*Actitis macularia*) was the most common shorebird and the only one known to breed. They were present along the river in all June and August censuses. Killdeers (*Charadrius vociferus*) were fairly common spring migrants and summer residents, but there is no evidence that they breed. Greater Yellowlegs (*Tringa melanoleucus*) and American Avocet (*Recurvirostra americana*) were uncommon spring migrants. Greater Yellowlegs were seen in late April 1976, 1977, and 1979, and seven avocets were recorded 20 April 1978. The Common Snipe (*Gallinago gallinago*) was observed once, on 26 August 1980, near the proposed dam site.

Belted Kingfishers (*Ceryle alcyon*) were occasional spring and fall migrants, but, probably owing to the turbidity of the water, none remained to breed.

DISCUSSION

Aquatic habitat along the White River is apparently important to waterfowl primarily during spring migration, although the Canada Goose nests in moderate numbers. Other aquatic birds use the river during migration, but only the Spotted Sandpiper is known to breed. The river is not heavily used during fall migration.

In terms of total numbers of waterfowl, the White River is not as important as reservoirs and other impoundments near the Green River. Sangster (1977) reported 47,347 (1975)

and 27,485 (1976) ducks and geese on Pelican Lake and Ouray NWR near the confluence of the White and Green rivers. If waterfowl densities that we recorded are consistent along the rest of the White River, approximately 360 birds could be expected between Rangely, Colorado, and the Green River (132.0 km). Although the river is not heavily used by waterfowl, it may be one of the few important aquatic habitats within a large area.

Species composition along the White River during April was also different from that at Pelican Lake and Ouray NWR. Canada Goose was the most abundant species on the White River (54% of the total) followed by Green-winged Teal (17%) and Mallard (12%). At Pelican Lake and Ouray NWR, Mallards were most abundant (33%), and the Canada Goose ranked fourth (4.6%). Pelican Lake and the Ouray Refuge were also characterized as having more species (18) than did our study site (14 species), plus a greater percentage of diving ducks (Aythiinae and Mergini): 7 of 18 species compared to 4 of 14 species on the White River. This is probably the result of the shallow water and high turbidity, making diving for food an unproductive foraging technique. The only species seen on the White River and not reported by Sangster (1977) was the Red-breasted Merganser.

If the White River Dam is built, changes in the abundance and composition of the aquatic bird fauna of the White River will depend

TABLE 2. Waterfowl abundance (birds/river km) along the White River from Cowboy Canyon to Asphalt Wash 7-9 April 1982 and 14-16 April 1983.

Species	Cowboy Canyon to dam site (km 0-24.1)		Dam site to Asphalt Wash (km 24.1-32.5)		Total survey	
	1982	1983	1982	1983	1982	1983
Canada Goose	1.58	1.86	1.23	0.34	1.71	1.46
Green-winged Teal	0.52	0.37	0.58	0.35	0.54	0.37
Mallard	0.36	0.25	0.42	0.29	0.38	0.25
Gadwall	0.19	0.19	0.00	0.04	0.14	0.15
American Wigeon	0.10	0.00	0.00	0.00	0.07	0.00
Lesser Scaup	0.08	0.00	0.04	0.00	0.07	0.00
Northern Shoveler	0.00	0.00	0.23	0.00	0.06	0.00
Blue-winged Teal	0.00	0.07	0.19	0.00	0.05	0.05
Red-breasted Merganser	0.07	0.00	0.00	0.00	0.05	0.00
Common Merganser	0.04	0.00	0.00	0.00	0.03	0.00
Ring-necked Duck	0.00	0.04	0.00	0.00	0.00	0.03
Cinnamon Teal	0.00	0.00	0.11	0.00	0.03	0.00
All waterfowl	3.24	2.78	2.80	1.02	3.13	2.31

on three factors: (1) colonization (or introduction) of plants on the margin and bottom of the reservoir, (2) decreased turbidity of the water, and (3) changes in populations of aquatic organisms (e.g., fish, insects, plankton) that are components of the aquatic food web. If marsh vegetation can be established, several species of ducks, herons, and egrets may nest. However, the terrain along the shores of the proposed reservoir will be mostly steep rocky slopes covered with thin soils, allowing establishment of emergent vegetation in only a few locations. The extent of these locations and the success of plantings or natural colonization in them will determine how many birds will breed in the reservoir.

Suspended materials will settle in the reservoir and the water will become less turbid; this should enable the kingfisher to become a breeding species. If cottonwoods are successfully established, they will provide perches for kingfishers and other aquatic birds. Muddy shores in shallow areas may attract more shorebirds.

Decreased turbidity and changes in prey populations, as well as the presence of open water, will be responsible for the major changes in the aquatic avifauna.

Members of Aythinae and Mergini will undoubtedly become more prevalent as will other diving aquatic birds. Coots, gulls, and terns will also probably occur, because they are common at Pelican Lake (Hayward 1967).

If emergent and riparian vegetation are successfully established and water levels remain relatively stable, more aquatic birds will occupy the reservoir than presently use the White River. If, however, revegetation is unsuccessful, the reservoir may be a relatively unproductive avian habitat.

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