

WATERFOWL POPULATIONS OF A SWAMP IN WESTERN OREGON

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The purpose of this paper is to present a discussion of the occurrence and seasonal variation in abundance of waterfowl and associated groups of birds in a fresh-water swamp. This swamp is located along the western edge of the Willamette Valley at the eastern base of the Coast Range foothills in southeastern Benton County, Oregon, about one mile west of U. S. highway 99W, 12 miles south of Corvallis, and about 25 miles north-northwest of Eugene, Lane County.

In climate the area is part of the maritime province of the west coast. The winters are mild, with an average temperature of 39.6°F. in January. The summers are mild (July average, 65.3°), but dry. The annual rainfall is about 46 inches, most of it falling during the winter and spring months. This rainfall usually causes at least one annual winter or spring flooding of portions of the valley along the Willamette River and its tributaries.

The swamp is leased to a private hunting club for each duck season. During the summer, fall, and early winter the area is grazed by a few horses and perhaps 40 cattle. Most of the waterfowl nesting is completed before these animals are turned into the area. We have not been able to detect any harmful effects to waterfowl, or to waterfowl habitats, as a result of these practices. Water levels are maintained by flows into the upper end of the swamp from Muddy Creek, and water is usually impounded throughout the summer because beavers (*Castor canadensis*) have a series of dams at the lower end of the swamp area. A county gravel road bisects the swamp.

The study area is not a true swamp, as not all of it supports shrub and tree vegetation, but it combines characteristics representative of both marsh and swamp areas. Swamp area has increased during the past eight years at the expense of the marsh area; however, even though the marsh vegetation still predominates, the name "swamp" is applied to the entire area of about 225 acres. During the high-water periods of winter and early spring the area has large expanses of open water, interspersed with clumps of leafless shrubs and small trees. An entirely different aspect exists during the late spring and summer periods. At this time, about 10 per cent of the area is open water; 35 per cent consists of clumps and stands of shrubs and dwarfed trees; and the remaining 55 per cent consists of typical marsh vegetation. The predominant shrub is hardhack (*Spiraea Douglasii*), with a few red willows (*Salix lasiandra*) scattered through the area. The Oregon ash (*Fraxinus oregona*) occurs in thickets and as pure stands more or less dwarfed in form, seldom attaining the stature of this species in other locations. The aspect of the marsh vegetation changes during the growing season with slough sedge (*Carex obnupta*) and spike-rush (*Eleocharis palustris*) characteristic of the spring season, and smart weed (*Polygonum hydrophiloides*), water parsley (*Oenanthe sarmantosa*), arrowhead (*Sagittaria latifolia*), water plantain (*Alisma plantagoaquatilis*), bur-reed (*Sparganium simplex*), and water purslane (*Ludwigia palustris*) coming into prominence during the early summer months. Some other marsh species are cattails (*Typha latifolia*), California bulrush (*Scirpus californicus*), pondweed (*Potamogeton* sp.), and Oregon sedge (*Carex oregonensis*). Very small aquatic plants are lesser duckweed (*Lemna minor*), greater duckweed (*Spirodela polyrhiza*), and duck weed fern (*Azolla filiculoides*). Grain fields, pastures, and inactive fields occupy most of the lands in the vicinity of the swamp, with a few orchards on nearby foothill ridges. The lower foothills are covered by oak woodland and chaparral growths, replaced by Douglas fir

forests at the higher elevations, or on the more moist north slopes. The Willamette River is situated about four miles to the east of the swamp.

In all 116 field trips were made to this swamp between May 10, 1941, and April 2, 1949. No trips were made during the war years 1943-1945. The area was visited on each trip by at least one, if not all the authors.

Each species will be discussed separately, giving the period of occurrence, the seasonal, and, occasionally, monthly variations in abundance, together with nesting data and any unusual habitat conditions. The population numbers and variations through each species' period of occurrence presented herein represent an estimate of the normal or usual population for any one year based on counts made as often as possible during each month throughout the years of study. As with most censuses it is admitted that there may be a considerable margin of error in actual numbers recorded here, but the redeeming feature of this study is that the error should be consistent throughout, for the same individuals did the field work each time. Indicated trends should be reasonably accurate. In flood periods in the Willamette Valley, waterfowl spread out from the swamp onto the flooded fields and pastures so that few birds were observed at the swamp. As the flood waters receded, the waterfowl populations again built up on the swamp area. Thoroughness of observations in any one day depended a great deal on the existing weather conditions, for strong winds and heavy rains forced the ducks into protected areas.

Colymbus auritus. Horned Grebe. A male, in full plumage, observed only once (April 1, 1947) on the areas of deep open water.

Podilymbus podiceps. Pied-billed Grebe. Except for records on January 18 and on February 1, 19, and 24, occurred consistently from April through November in small numbers, reaching its greatest abundance (8 to 10) in May and June, the nesting season. On May 18, 1948, we found one floating nest that contained seven eggs covered by rotting vegetation. Few are seen in late summer, but there is a slight increase, mostly of immatures, during October and November.

Ardea herodias. Great Blue Heron. A permanent resident seen most often from January through August. No more than eight have been seen at the swamp in any one day, the usual number being two or three. One individual with over one-half of the flight feathers missing was seen on August 22, 1947. The location of the breeding colony is not known.

Casmerodius albus. Common Egret. Rare in the Willamette Valley. First records (to our knowledge) of it were made here on May 6, 1947, and at Fern Ridge Reservoir in Lane County on May 3, 1947 (G. W. Gullion, MS). One appeared at the swamp on May 6, and then no more were seen until August, when five or six were seen on August 9, two on August 13, and one on August 29. They were not seen in 1948 or 1949 at the swamp. In all instances they were observed in the marsh vegetation feeding on bullfrog (*Rana catesbiana*) tadpoles.

Butorides virescens. Green Heron. Although this heron seems to be a permanent resident, at least in small numbers in the Willamette Valley (Graf, Murrelet, 27, 1946:51), it has been seen at the swamp only from May through September. Establishment of this heron as a breeding bird in western Oregon occurred on July 18, 1946 (Evenden, Auk, 64, 1947:322), but so far no nests have been found at the swamp. Green Herons occurred most often from May through July, the largest number seen in any one day being four.

Botaurus lentiginosus. American Bittern. Summer resident at the swamp from February 14 to August 9 (one record for November 13). Bitterns are most often seen in May and June, usually only one or two at a time, although on April 25, 1942, there was a migratory influx of seven. Nesting seems to take place in late April and early May in dense clumps of California bulrush or cattail.

Cygnus columbianus. Whistling Swan. Not observed at the swamp until 1949. Seven were observed engaged in courtship antics on open waters of the swamp on January 20 and 25. On February 1, eight adults and two immatures were observed in a rye field adjacent to the swamp. Their presence here is in accordance with the greater numbers observed in California during the same period.

Branta canadensis. Canada Goose. First appears in late September in numbers less than 100. Popu-

lations build up to a peak of 4000 to 7000 birds in mid-February, then taper to 1000 or 1500 in late March, and increase again in April to about 2500, presumably because of arrivals from the south. The geese depart from the area by mid-May, our latest record being for a single goose seen on May 13. The majority of these geese appear to be the Lesser Canada Goose (*B. c. leucopareia*). Large geese, which we presume to be the Common Canada Goose (*B. c. moffitti*) are seen in small numbers. Small Canada Geese, presumably the Cackling Goose (*B. c. minima*), first appear in September (earliest—September 28) and are seen until late April (latest—April 20). Their numbers vary from 10 to 500, and the period of greatest abundance is late January.

Anser albifrons. White-fronted Goose. Recorded from the area as follows: one on February 27, three on April 10, fifteen on April 15, and eight on October 7.

Chen hyperborea. Snow Goose. Four records: December 16, 1947, January 17, 1943, and February 15 and 27, 1949. On three occasions a single bird was seen associated with flocks of Lesser Canada Geese, but the February 15 observation was of six Snow Geese by themselves.

Anas platyrhynchos. Mallard. A permanent resident, most abundant from October through March. Populations vary from 25 to 50 in September to a maximum of about 1500 in mid-January, tapering to 300 or 400 through February and March. On March 6, 1949, over 1000 were seen. Pairing becomes apparent in late February and March, with perhaps all but eight or ten pairs, and some other individuals, moving on to other places by late March. The remaining pairs nest from April (one full set of eggs found on April 13) through early June, either in clumps of sedge or sedges associated with clumps of spiraea or hardhack. Young birds are seen from May through July. Adults can be seen in eclipse plumage from mid-June through September. Although we have little evidence, we suspect that summer resident birds move south in the fall, being replaced by migrants from the north.

Anas strepera. Gadwall. Seen only occasionally, from late January through mid-April and on October 7. Usually in pairs; never more than four pairs seen in any one day.

Anas acuta. Pintail. A common fall, winter, and spring resident, noted as early as August 22, but with not over 100 individuals until late November. During December, January, and February populations vary from 50 to 1000, averaging about 500. From March through May their numbers taper from 350 individuals to one or two pairs. Pintails do not occur at the swamp in June and July. Birds are in eclipse plumage from August into early November, full-plumaged birds being evident from then on. Pairing begins in late February. All birds remaining in May are paired, but no evidence of nesting has been found.

Anas carolinensis. Green-winged Teal. Common fall and winter resident, with two or three birds present even as late as June 23. Populations are small from September through December. Numbers usually increase tremendously in January, and fluctuate between 2000 and 5000 birds through early March, dropping off to less than 500 birds from then until May. In May and June only an occasional pair or individual is seen; nests have not been found.

Anas discors. Blue-winged Teal. Seen on January 14 and 29; on May 7, 13, 15, and 22; on August 9, 13 and 29; and on September 9, 28 and 30. In all but one instance there were at least two birds present. On May 13 two day-old young were observed with a female teal that was joined by a male Blue-winged Teal after being flushed (McAllister, Condor, 51, 1949:99). This teal's occurrence at the swamp appears to be very sporadic.

Anas cyanoptera. Cinnamon Teal. On May 23, 1942, a male was seen (Evenden, Murrelet, 24, 1943:28). Since then this species has been recorded five times in April, once in May, and once on June 23 and thus may be treated as an irregular spring visitor to the swamp. No evidence of nesting has been found, although a pair with young was seen at Fern Ridge Reservoir, Lane County, on July 28, and August 3, 1946 (G. W. Gullion, MS).

Mareca americana. Baldpate. Rather uncommon winter visitant at the swamp. From 25 to 50 can be seen in October and November, but numbers drop to less than 10 in December and January, increasing to not over 100 in February, decreasing thereafter to May 18, after which none has been seen. Pairing is first observed in April.

Spatula clypeata. Shoveller. A fall, winter, and spring resident, present in small numbers of not over 150 from September to February. From 350 to 500 can be observed in February and March, tapering to 125 to 150 in April. Very few were seen in May, the latest date being May 15. Pairing begins in late February.

Aix sponsa. Wood Duck. Principally a summer resident, having been seen at other times only

on October 14, 21, and 28, November 13, and on January 20. A few pairs occur from March through August. Nests have not been found, although nesting probably occurs in the older ash growths along the west side of the swamp, adjacent to Muddy Creek. Young ducks, incapable of flight, first appear in the latter half of May, and as many as three family groups have been seen in one day in June.

Aythya valisineria. Canvasback. Recorded only twice: December 7 and 16, 1947. In both instances two birds were present on areas of deep open water.

Aythya affinis. Lesser Scaup. Prefers the rivers and larger bodies of water in the valley. Five were observed on open water at the swamp on January 14, a pair on March 6, one on March 30, and one each on April 10 and 23.

Bucephala clangula. Common Golden-eye. One male was seen on April 13, 20, and May 1, 1948; it stayed on the open-water areas of the swamp and remained aloof from other ducks.

Bucephala albeola. Buffle-head. Several Buffle-heads have been seen from March 13 through May 18, and two females or second-year males were observed at the swamp as late as June 13 in company with an immature or female Hooded Merganser. This is a new record for a late spring occurrence in western Oregon. There is only one winter record, that of two birds on December 7. Most of the occurrences are in May.

Oxyura jamaicensis. Ruddy Duck. An uncommon winter resident from October through April in open-water areas. Usually less than 10 birds are seen during any of the months except March, when up to 15 or 20 may be seen on any one day. Full-plumaged males are seen as early as mid-March.

Lophodytes cucullatus. Hooded Merganser. Pairs or individuals have been seen from January 20 through March 9, and May 10 through July 24. The absence of any records for April is significant, for in this month they nest, probably in the ash groves along the west side of the swamp. As early as May 10 young are seen with the adults around the margins of the swamp and marsh areas. Young may still be seen with adults as late as June 25.

Mergus merganser. Common Merganser. Seen at the swamp on April 13 and October 21.

Rallus limicola. Virginia Rail. The common spring and summer resident rail at the swamp. Except for one record on January 6, this species was recorded from March 6 through August. Virginia Rails may be present after this time, but have not been seen or heard by us. They are most often observed in April and May when as many as eight or ten family groups may be found in the swamp. Nesting must begin in late March or early April, for we have found downy young as early as April 22. Nesting lasts into June, for very small downy young have been found as late as June 21. Nests are usually situated in thick clumps of sedge.

Porzana carolina. Sora Rail. Summer resident, recorded only a few times in the months of April, May, and June. It is most often heard and seen in May. Nests have been found in late April and early May in the dense clumps of sedge. The Sora has more retiring habits than the Virginia Rail, and we feel that it is probably more abundant than our own records seem to indicate.

Fulica americana. American Coot. Occurs at the swamp from late August through mid-May. Populations increase from less than half a dozen in August to from 300 to 600 in October, November, and December, dropping to 200 or 250 in January and February, with numbers under 100 in March and April. Very few are seen in May, and for unexplained reasons, they have not been recorded in June and July, even though they have been seen elsewhere in western Oregon during these months.

Charadrius vociferus. Killdeer. Recorded at the swamp every month except December, although in greatest abundance from January through June. Nests have been found from late April through May. The larger flocks of 10 to 40 individuals occur in the winter months.

Capella gallinago. Common Snipe. This snipe has been recorded in every month except July. Populations are very small from August through December, increasing to 35 or 40 birds in January and February, with as many as 75 occurring in March. Numbers taper off through April with just a few in May and June. Winnowing begins in mid-April and continues through June. Nests have not been found.

Tringa solitaria. Solitary Sandpiper. This rare spring migrant has been observed singly in marsh areas on April 23 and May 13.

Totanus melanoleucus. Greater Yellow-legs. The yellow-legs is a spring and fall migrant from February 25 through May 6, and from October 3 through October 28 at the swamp. Few are seen until April, their period of greatest abundance, when migrating flocks of up to 125 birds occur. Only two or three are seen at any one time in May. As many as 17 have been seen in October.

Erolia alpina. Red-backed Sandpiper. One was observed on May 13, 1947.

Limnodromus (*griseus* or *scolopaceus*?). Dowitcher. We feel that our records show comparatively little use of the swamp area by dowitchers. Although their habitat can be open-marsh areas, there is evidently little area exactly suitable for them at the swamp. We have never seen more than five or ten individuals any one day. They were observed once on each of the dates April 10, May 6 and 15, and September 28. Elsewhere in the valley they have been seen in January, February, June, July, and October, in large flocks totalling as many as 75 individuals.

Lobipes lobatus. Northern Phalarope. One small group of 8 or 10 was seen on a patch of open, deep water on May 18, 1941.

Chlidonias niger. Black Tern. This tern was first observed on May 3, 1947, by Philip Dumas, and we recorded it on May 15, a year later. It seems to be a rare spring migrant to the swamp although at Fern Ridge Reservoir in Lane County terns have been seen in June, July, and August (G. W. Gullion, MS). Gullion believes they may nest there.

SUMMARY AND CONCLUSIONS

A total of 39 species of water birds has been recorded at a 225-acre swamp in the Willamette Valley, western Oregon, in the period 1941-1949. In the total are represented 2 grebes, 4 "herons," 1 swan, 5 geese, 9 surface ducks, 7 diving ducks, 2 rails and a coot, 7 shorebirds, and 1 tern. Twenty-seven of these 39 species can be considered as normal residents or visitants to the swamp at some time during the year; the other 12 species are of sporadic, unusual, or accidental occurrence. Status and seasonal fluctuations in numbers are discussed for the species concerned.

We noted no great change in the overall waterfowl populations during the period of this study, although the time of normal peak population of any species was often advanced or retarded by the climatic influences during any one year, so that population peaks did not always occur in the same month each year.

A study of this swamp has illustrated how attractive an area, even as small as this, can be to comparatively large numbers of waterfowl. Aquatic areas, such as the one studied, combining features of open water, marsh, swamp, pasture, unused fields, and nearby river gravel bars, are scarce in the Willamette Valley. The lack of expanses of mud flats and open water is evidenced by the absence of several species of pelicans and cormorants, shorebirds, and gulls.

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