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NOTES ON THE DISTRIBUTION OF WHISTLING SWAN AND CANADA GOOSE IN CALIFORNIA

WITH ONE ILLUSTRATION

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In this fourth and in succeeding installments of distributional notes on waterfowl in California, are included besides personal observations some of those of U. S. Game Management Agent H. M. Worcester, made in Siskiyou County, from 1931 to 1933, when he was Manager of the Federal Tule Lake Wildlife Refuge. Permission to include Mr. Worcester's important observations, which so materially add to mine for the region, was kindly granted by Dr. I. N. Gabrielson, Chief, Bureau of Biological Survey, and thanks are hereby expressed for this courtesy and to Mr. Worcester for his coöperation. In the following accounts, such observations are credited to "Worcester MS." Also included, as "Murphy MS," are valuable observations of my friend Mr. R. D. Murphy in Honey Lake Valley, Lassen County, during the latter part of his twelve-year residence there. These observations were detailed in his numerous letters to me from 1931 to 1933.

Cygnus columbianus. Whistling Swan. Fall migrants first appear in northeastern California; earliest recorded at Tule Lake, 110 birds, on October 22; 200 on October 28, 1932. In 1931, first seen November 5, 2000 individuals, next November 9, after which common for a month but never more than 1500 present; last noted December 11 (freeze-up November 19). Less plentiful in November, 1932, when not over a thousand were present at period of greatest concentration; last seen December 5, 91 individuals. In 1933, seven birds, the first spring migrants, appeared at Tule Lake on February 20; next day, 57 present. These dates marked the arrival of the first spring transients, including three kinds of geese and mallard and pintail ducks. The lake was still solidly frozen over, the break-up commencing on March 1, with the temperature up to 43 degrees Fahrenheit, after rain the preceding day (Worcester MS). March 7, 1933, Dr. John C. Phillips and I saw nearly a thousand swans on Tule Lake.

In Honey Lake Valley, the earliest swans appeared on January 28, 1933. This was the first of 12 years in which some swans had not remained through the winter, an exceptionally cold one with temperatures down to 30 degrees below zero. The swans left after a blizzard on December 9, 1932. Cold weather continued until February 12, and ice did not leave the sloughs until February 23 (Murphy MS). On March 10, 1933, Dr. Phillips and I saw between 600 and 700 swans on a reservoir near the then dry Honey Lake and 25 birds elsewhere. The day before, we saw 300 swans on marshes five miles south of Alturas, Modoc County.

My earliest fall record for central California is of five swans on the Spalding Ranch, near Willows, Sacramento Valley, November 3, 1929; but the species does not reach this vicinity in numbers until late November or early December. Thus, it appears that these are probably the same birds that spend most of November in northeastern California.

About 75 swans wintered on the Pringle Pond, a mile west of Suisun, Solano County, prior to February 17, 1929. They left between that date and the 22nd. None was seen here March 2, or in extensive travels about the Colusa, Butte Creek and Willows districts of the Sacramento Valley, the next day. Presumably, all had migrated northward. Ten swans found on a lake near West Butte, Sutter County, March 23, 1931, afford a seasonally late occurrence for the region.

Swans have been found to be generally distributed over watered areas of the Sacramento and San Joaquin valleys and on the Suisun Marshes from early December to mid-February in recent years. Lesser numbers have been observed near the sea-coast. Occasionally, large concentrations of swans have been noted in the Sacramento Valley, as one of fully 2000 birds four miles north of West Butte, in December, 1928. Another concentration, seasonally late for the region and probably pre-migratory in character, of nearly a thousand swans, was noted near Willows, February 26, 1933 (fig. 28).

As with Canada Geese, swans winter in California principally on fresh water and both species are rare on salt water, where many sojourn along the Atlantic Coast. Differences in available food supply on the two coasts probably account largely for the discrepancy in habits. I have recorded (Condor, vol. 39, 1937, p. 150) presence of

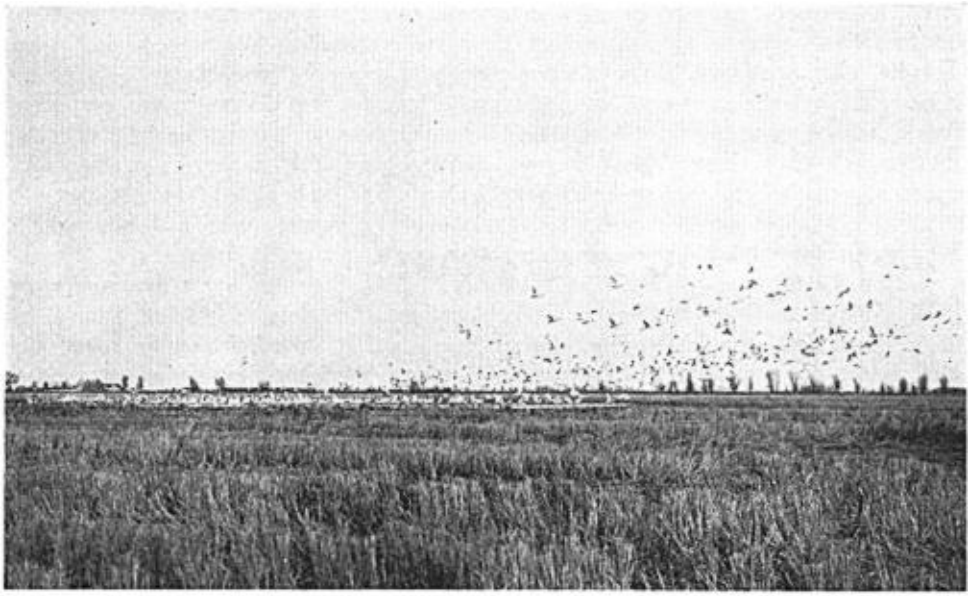

Fig. 28. Part of a pre-migratory concentration of nearly a thousand Whistling Swans rising from feeding ground in rice stubble near Willows, California; February 26, 1933.

Whistling Swans on fresh water bordering the Pacific Ocean west of Ferndale, Humboldt County, where also noted February 12, 1932. At Lake Earl, Del Norte County, a freshwater lake within a mile of the ocean, two old and three young swans were seen on March 4, 1937.

There is no doubt that the species has increased considerably in California over the 25 year period of my observations, but most markedly in its first half. Notwithstanding complete protection, numerous swans are shot annually in California, especially in foggy weather, mistakenly for snow geese. I should not be surprised if the annual toll

from this cause reaches 300 birds, judging by dead and crippled swans observed. Lead poisoning is another factor that unquestionably accounts for many swans' deaths each winter. It appears to have been the cause of the helplessness of a number of apparently uninjured swans seen and caught.

The contents of the stomach of a juvenile Whistling Swan (no. 1354) confiscated December 13, 1931, by the Division of Fish and Game from a hunter eight miles north of Colusa, provide insight into the species' local food habits. As determined by the Bureau of Biological Survey, same consisted wholly of vegetable matter, principally *Potamogeton pectinatus,* plus 40 per cent gravel. Ground up vegetation, probably stems of this plant, comprised 26 per cent; ground up seeds, 8 per cent; and 541 whole seeds, 65 per cent of the food bulk. Visual evidence has indicated that rice and, to a lesser extent, barley from stubble are frequent items in swans' diets. Crop depredations appear to be rare.

Branta canadensis canadensis. Canada Goose. This species breeds commonly in northeastern California (Moffitt, Calif. Fish and Game, vol. 17, 1931, pp. 20–26). Subsequent field observations indicate that the bird's normal breeding range closely parallels the summer range of Rocky Mountain Mule Deer in California (see map, Calif. Fish and Game, vol. 20, 1934, p. 54). Thus, Canada Geese have been found nesting west to Meiss Lake, west of Macdoel, Siskiyou County (20 pairs observed April 27, 1931); near Big Spring, Shasta Valley, Siskiyou County (Game Warden F. R. Starr, *in litt.*); north of McArthur (50 pairs estimated nesting, May 3, 1931); and near Burney (10 pairs estimated present, July 2, 1931), in Shasta County. Also, west to Mill Creek Homesite, Tehama County (a pair, June 20, 1931), and in Sierra Valley, Plumas County; south regularly to the southern end of Lake Tahoe (over 40 adults present April 18, 1931). Mr. James B. Dixon writes that it occasionally breeds at Mono Lake, Mono County.

Only about 25 pairs were estimated to be nesting about Tule Lake, Siskiyou County, April 25, 1931, when, according to State Game Warden F. R. Starr, twice this number nested on Sheepy Lake, the remnant of Lower Klamath Lake. Modoc and Lassen counties comprise the species' breeding metropolis in California. Practically every small lake with swampy borders, or marshy area, is used. Extensive field investigations in these counties in 1931, 1932, and 1933 resulted in the following estimates of number of breeding pairs of geese for each of the more important localities: *Modoc County:* Clear Lake 25, Goose Lake 25, Surprise Valley 100, Warm Spring Valley 40, Jess Valley 20, South Fork Pit River Valley 200, Egg Lake 10, Big Sage, Doris and other Modoc County reservoirs 75. *Lassen County:* Big Valley (near Bieber) 40, Ash Creek Valley 20, Dixie Valley 20, Grasshopper Valley 5, Poison Lake and vicinity 10, Eagle Lake 20, and Honey Lake Valley 200. It is evident that the last mentioned locality and Surprise and Pit River valleys of Modoc County are important breeding grounds. A good many Canada Geese also nest on Lake Almanor and on other lakes and reservoirs in northeastern Plumas County.

As a result of the above investigations it was concluded that based upon conservative estimates no less than 1200 pairs of Canada Geese breed in California annually. It is thought that the progeny of these birds, about 4800 young ones, represent considerably more individuals of the subspecies than are bagged annually by the State's gunners.

Occasionally, Canada Geese may nest well outside of their normal breeding range. The instance (Bird-Lore, vol. 35, 1933, p. 112) of Canada Geese nesting on Crystal Springs Reservoir, San Mateo County, in the spring of 1932, was partially verified by me in August, 1932, when twelve individuals were observed on the lake.

Canada Geese are partially resident the year around on their California nesting grounds. That is, of the breeding population, some remain throughout even the severest winters, more in mild ones; while others migrate southwestward to the Sacramento and San Joaquin valleys in mid-winter. Here, their numbers are augmented by migrants from farther north, so that the species is a fairly common winter resident over much of the temperate northern three-fourths of the state, exclusive of the northwest coast region where replaced by the White-cheeked Goose, *Branta canadensis occidentalis* (see Moffitt, Condor, vol. 39, 1937, p. 159).

In some favorable areas Canada Geese are locally common winter residents. These include the rolling hills intersected with creeks bordering both sides of the Sacramento Valley where the birds are to be found in numbers regularly in winter, as east of Marysville and Lincoln and west of Willows and Williams. They may then be rare in comparison with the greater numbers of smaller kinds of geese so abundant on the floor of the Valley. In unusually cold weather, Canada Geese become common in the valleys, when they are presumably frozen out of their more favored, elevated wintering grounds. From Tomales Bay, where positively identified December 31, 1932, and December 28, 1938, southward, Canada Geese are sometimes found in mid-winter on salt and brackish water, more frequently on fresh water close to the sea. Of late years, at times up to 500 geese have been wintering at the south end of Crystal Springs Lake, San Mateo County, where seen on Christmas days of 1936 and 1938, and on numerous other occasions. That the species still ranges as far south as San Diego County, is attested by a photograph (Pacific Sportsman, 1934, p. 14) of a hunter holding three unmistakable Canada Geese stated to have been killed in that county in November.

Canada Geese are apparently hardier than Whistling Swans and a considerable number of the former, as stated, winter in northeastern California. Worcester (MS) found about a thousand present at Tule Lake on his arrival, September 16, 1931. This number gradually diminished until not more than 50 were in evidence on December 31. The same observer states that about 300 geese wintered in 1932–33 on Tule Lake and on Clear Lake, Modoc County; also, that others wintered on Sheepy Lake, several hundred being observed on Sheepy Creek, February 4, 1932. The next day, Worcester found evidence in the snow of coyotes having killed several Canada Geese along Willow Creek, near Clear Lake, Modoc County. His notes for January 2, 1933, advise that all waterfowl, save 200 Canada Geese, had by that date left Tule Lake. On January 17, he saw no geese, but on the twenty-third, 38 were observed flying high overhead. February 7, 1933, Canada Geese were heard over the Refuge, and on the 13th, small numbers were observed there; but on the morning of February 19, 1500 birds, evidently arrivals during the night, were found present. Approximately 1000 Canada Geese remained on Tule Lake during the ensuing month (Worcester MS). At Tule Lake on March 17, 1933, Dr. Phillips and I saw fully 700 Canada Geese, of which at least 40 mated pairs observed were thought to represent birds about to nest locally. The next day, about 20 mated pairs were similarly noted along the South Fork of Pit River, Modoc County.

In Honey Lake Valley, I found between 300 and 400 Canada Geese wintering near the hot springs at Wendel and Amadee on January 26, 1932. These birds fed in grain stubble that was not solidly blanketed with snow and roosted on the ice near the hot springs, whence they secured water. According to Murphy (MS) migrant geese did not arrive at Honey Lake until February 6, 1932, in heavy flights on that and the two succeeding days. Winter broke overnight on February 9. Canada Geese

were observed beginning to pair off on March 8, 1932, and by the 22nd, nests contained incomplete sets of eggs.

In the fall of 1932, most of the waterfowl, including many Canada Geese, left Honey Lake Valley following a blizzard on December 9. There ensued a month of the coldest weather recorded for California, with temperatures as low as 30 degrees below zero at Wendel; nevertheless about 200 Canada Geese remained throughout the winter. In mid-January, a Canada Goose was caught that had a large piece of ice frozen to its tail. The first migrant Canada Geese returned to Honey Lake Valley on February 5, 1933. The cold weather broke on February 12, and ice left the sloughs on the 23rd (Murphy MS). March 10, 1933, Dr. Phillips and I observed over 500 Canada Geese in Honey Lake Valley, and the next day, about 30 mated pairs. March 16 and 17, 1934, I found mated pairs of geese to be common; several incomplete sets of eggs were observed and one of six eggs was thought to be a full clutch.

Mr. A. L. Brown of Litchfield, who is employed by the State Division of Fish and Game, advised by letter that the cold winter of 1936–37 was the hardest on waterfowl in many years. In mid-January, there were two feet of dry snow on the ground, temperatures as low as 32 degrees below zero, and open water only around the hot springs at Wendel and Amadee. About 350 Canada Geese and 800 ducks were wintering here. By January 15, 1937, many of the birds had become so weakened that they could not fly, so Brown commenced feeding them grain. Feeding was continued until February 12, by which date there were approximately 1500 Canada Geese and 800 ducks present, all in good condition. The failure of the ducks and geese to migrate to more favorable environment with the advent of critical conditions is similar to the case of Mallards in Alberta reported by Rowan (Proc. Boston Soc. Nat. Hist., vol. 38, 1926, pp. 161–163, and elsewhere). His explanation that physiological condition of the birds, governed by photoperiodism or effect of daylight upon the gonads and migratory urge, makes migration under certain conditions a physiological impossibility, even though it may be a physical possibility, appears to be a plausible theory that probably applies to the ducks and geese wintering in Lassen County.

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