THE WHISTLING SWAN IN THE WEST WITH PARTICULAR REFERENCE TO GREAT SALT LAKE VALLEY, UTAH

By GLEN A. SHERWOOD

The Whistling Swan (*Olor columbianus*) has been increasing noticeably in the Pacific flyway through the 11-year period up to 1958. They continued to increase in 1958 and reached a recent high of 49,946 individuals for the Pacific flyway states (minutes of meeting of Pacific Flyway Council, 1958).

Paralleling the rise in numbers of Whistling Swans has been a mounting interest in the bird by many groups and individuals. This interest has taken various forms, from purely aesthetic to a deep concern over what effect the increasing swan population will have on other waterfowl; and, further, the United States Fish and Wildlife Service has been urged to allow an open hunting season on this species (minutes of meeting of Pacific Flyway Council, 1957). Because of these factors, it was believed that a study of the species might afford a worthy contribution to the literature on this swan.

THE STUDY AREAS

The main study area was located at the Bear River Migratory Bird Refuge, 15 miles west of Brigham City in northern Utah. Bear River Refuge consists of about 64,000 acres and is situated on the delta of the Bear River where it flows into Great Salt Lake (Fish and Wildlife Service, 1952). Lesser portions of the study were carried on at Ogden Bay and Farmington Bay refuges on the eastern shores of Great Salt Lake, Utah.

POPULATION OF THE WHISTLING SWAN

The continental population of Whistling Swans has been fluctuating since 1952, but it has been constantly dropping since 1955, when the total population was about 123,000 (Stewart and Manning, 1958; Crissey, 1957, 1958). At the same time the population of western swans has been generally increasing to the high in 1958 of 49,946 (fig. 1). However, John E. Chattin (personal communication) reports that the count in January, 1959, showed a drop to 39,599 in the Pacific flyway. Conversely, in 1958, the Atlantic population fell to a new low of about 27,900 (fig. 1). One can only speculate as to whether these fluctuations in the two populations are due to changing migrational patterns, to some breeding ground phenomena, or to mortality factors operating in one area and not in another.

The concentration areas of Whistling Swans for 17 western states, during fall migration and on the wintering grounds, are shown in figure 2. Northward migration in the spring shows a somewhat similar pattern of distribution. An interesting question brought to light is that of the direction of migration of swans upon leaving North Dakota in the fall, as the great majority do not go due south; their migration must be either to east or west. An extensive banding program might afford the answer.

The Bear River Migratory Bird Refuge in northern Utah annually harbors one of the largest, if not the largest, single concentrations of Whistling Swans in North America. The birds usually arrive at the Bear River Refuge in the second week of October and reach peak numbers in the latter part of November. If weather conditions do not become severe, substantial numbers of swans winter there. It is not uncommon to see large numbers of them loafing on the ice or moving about in small pockets of frigid water. The Whistling Swans depart from Bear River Refuge to the north in April and early May. Since 1946 the swan population at Bear River has fluctuated from

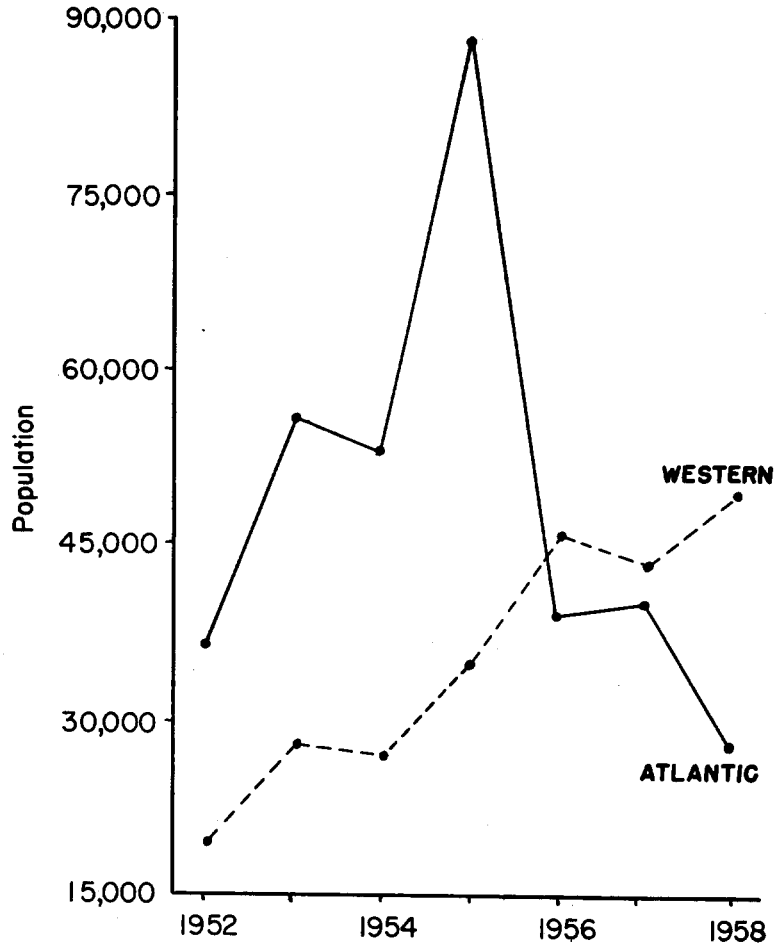

Fig. 1. Fluctuations of populations of the Whistling Swan of the Atlantic coast and western United States from 1952 to 1958. From Stewart and Manning (1958) and Crissey (1957, 1958).

a low of 6975 in 1948 to a high of 22,500 in 1955. In 1957 the fall peak was 18,150, and in 1958 it was 11,625 (Bear River Refuge census figures). The population at the refuge is not necessarily indicative of that of the Pacific flyway (table 1).

FOOD HABITS

The food requirements of the Whistling Swan in Great Salt Lake Valley are comparatively simple. The crops and gizzards of 50 swans were examined for food content. Many specimens could not be used for a food habits study because the gizzards and proventriculi contained no food or because the bird had died of some cause which might have altered its natural habits before death. Twelve (24 per cent) of the 50 swans examined were considered suitable for the study, and all 12 had been feeding exclusively on tubers and seeds of sago pondweed (*Potamogeton pectinatus*). At Bear River Refuge and Ogden Bay Refuge the swans feed almost exclusively in the open water areas, and in these areas the most abundant vegetation was sago pondweed. Ditch-grass (*Ruppia*

maritima) and horned pondweed (*Zannichellia palustris*) were available in some of the open water areas, but these were apparently not used by the swans.

Although swans can walk with apparent ease I have never observed them grazing in fields upon agricultural crops.

COMPETITION

The Whistling Swan's feeding habit of tearing up tubers and roots and creating pockets in the mud has been condemned by some people and has been considered by

Table 1

Whistling Swan Population at Bear River Refuge and in the Pacific Flyway States, 1952–1958*

Year	Pacific flyway states winter inventory (Jan.)	Bear River Refuge, peak fall population (Nov.)
1952	19,400	14,100
1953	28,200	14,500
1954	27,100	16,900
1955	35,000	22,500
1956	46,000	10,000
1957	43,000	18,150
1958	49,900	11,625
1959	39,600	———

*Winter inventory figures from Stewart and Manning (1958) and Crissey (1957, 1958). Bear River Refuge population from the refuge's census figures.

others as an aid to waterfowl. Bent (1925:286) reported that Whistling Swans "do considerable damage by treading great holes in the mud and by rooting and pulling up the celery and grass; they thus waste large quantities of these valuable duck foods, much more than they consume, and consequently spoil some of the best feeding grounds for ducks, much to the disgust of the sportsmen." Further, Bruette (1930) stated that the swans "are primarily vegetable feeders, and so voracious that they lay waste much of the feeding ground suited to ducks. They pull up the celery, root and branch, taking more than they require and leaving it floating useless on the surface of the water."

Personnel at Bear River Refuge feel that competition with other waterfowl, if any, is not serious. Further, they are convinced that swans are not a detriment to ducks but rather a help because they pull up more food than they need and this excess is used by the ducks. The food probably would not otherwise have been available to the dabbling ducks because of water depth. There is a possibility that the swans' feeding activity may create the establishment of new sago beds by dissemination of seeds and tubers and by "cultivation" of the marsh bottom.

Wherever I have seen Whistling Swans feeding I have also observed ducks and geese with them and following them, and often members of these species number in the hundreds. Many times I have seen flocks of Great Basin Canada Geese (*Branta canadensis*), Snow Geese (*Chen hyperborea*), Mallards (*Anas platyrhynchos*), Pintails (*Anas acuta*), Gadwalls (*Anas strepera*), Canvasbacks (*Aythya valisineria*), Redheads (*Aythya americana*), and Buffleheads (*Bucephala albeola*) feeding among the swans. The swans display no visible intolerance to these other waterfowl. If any depletion of forage is brought about by the Whistling Swan it is probably not great, because for years waterfowl of all species have been returning, in numbers of up to 1,000,000 to the Bear River Refuge without apparent damage to the vegetation.

MORTALITY FACTORS

The Whistling Swan is a legally protected bird, yet one-half (50 per cent) of 58 swans examined were killed with shotguns (table 2). Illegal shooting of the Whistling Swan is not new. Moffitt (1939) pointed out that as many as 300 are illegally shot in California each year, and Floyd Thompson, Federal Game Agent (personal communication) reports that nearly as many are shot in Utah every fall. The Whistling Swan is particularly vulnerable because of its habit of flying low across the marshes, and every hunter is undoubtedly tempted when such a target is presented, but this does not excuse their indiscriminate shooting.

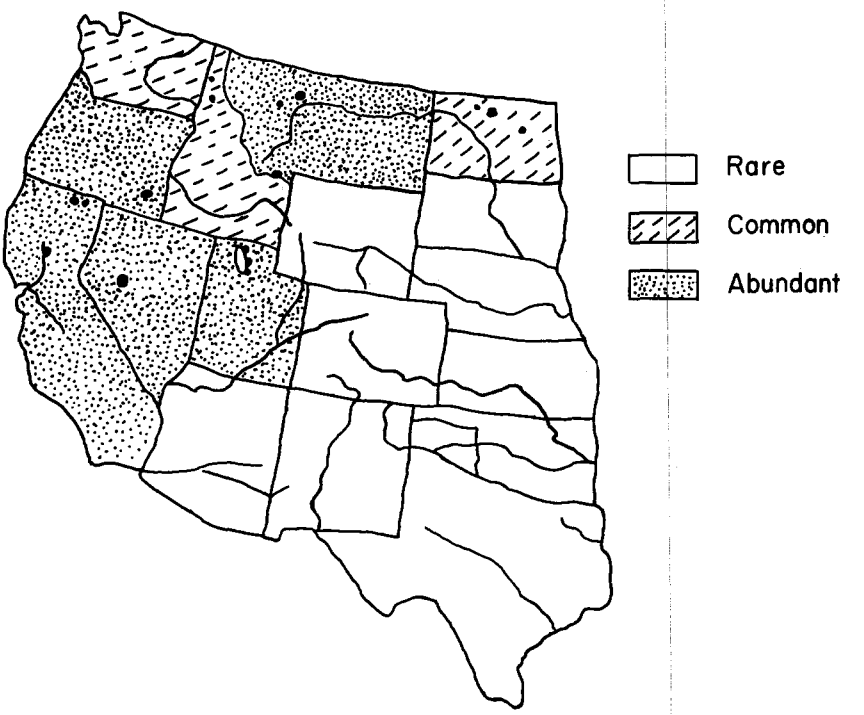

Fig. 2. Concentration areas of the Whistling Swan during fall migration and on wintering grounds for 17 western states. Data acquired from questionnaire sent to state Game and Fish departments and to refuge managers and federal game agents in regions 1 and 2 of the United States Fish and Wildlife Service. Rare, 0–400; common, 400–5000; abundant, 5000–35,000.

Eighteen swans which showed no evidence of gunshot wounds were fluoroscoped (fig. 3). Seven (38.9 per cent) of the 18 had a total of 18 lead pellets in their bodies. Two swans had five shots each, one had four, and four birds had one shot each. The shots were located in various portions of the body including abdomen, head, back, breast, wings, and neck. Shot size ranged from numbers 2 to 5.

Lead poisoning, which annually takes a toll from other waterfowl (Jordan and Bellrose, 1951), has also killed Whistling Swans. The swan's ability to dig deeply into the marsh bottoms might possibly allow them to pick up and ingest lead shot more readily than do other waterfowl. Ten of the 58 swans examined in this study definitely had died of lead poisoning (table 2). Some of them had ingested fantastically large numbers of

shot. One swan examined had ingested 236 pellets. Strangely, all 10 birds involved were juveniles. Several of the 10 had a food impaction from the gizzard to the throat opening. Paralysis of the gizzard is an effect of lead poisoning.

Disease, botulism, and unknown causes ranked second as a group of mortality factors, claiming the lives of 16 of 58 Whistling Swans examined (table 2). Eight of the 16 died of unknown causes. Of the remaining eight swans, three probably died of

Table 2

Mortality Factors of Whistling Swans from Great Salt Lake Valley, Utah, 1957–1958

Cause of death	Number	Per cent
Gunshot	29	50.0
Lead poisoning	10	17.2
Disease, etc.	16	27.6
Accidents	3	5.2
Total	58	100.0

botulism; three succumbed to aspergillosis; one died from tuberculosis; and one died of coccidiosis. Since completion of this study, I have been informed that about 40 Whistling Swans died at Bear River Refuge in late February and early March of 1959. Botulism was suspected, but conclusive evidence was unavailable.

Accidents killed three of the 58 birds examined. One large male (19 lbs. 10 oz.) apparently crashed into a dike at Bear River Refuge during a hail storm on March 25, 1958. A juvenal female swan was found near Ogden Bay Refuge on February 26, 1958, with the lower mandible torn away. Probable cause of this was a muskrat trap. The third swan that succumbed to an accident died of complications from a compound wing fracture.

Except for the one swan that died of coccidiosis, parasites probably did not directly cause death in any of the other 27 birds examined for parasites. The parasites may have been secondary causes of death in some cases. All 28 swans, however, were infected with parasites to some degree, and four were severely infected.

POTENTIAL STATUS OF THE WHISTLING SWAN AS A LEGAL GAME BIRD

Some individuals and groups have been requesting that the United States Fish and Wildlife Service allow a limited open season on the Whistling Swan (Pacific Flyway Council Meeting, 1957). Supporters of this program give the increasing swan population as one reason for allowing the harvest. Others feel that the swan is competing with other waterfowl for food and space, and thus their numbers should be reduced. Still others consider the swan a resource which could supply hunting pleasure.

There are, however, many biologists and bird lovers who are convinced that such an open season would not be wise management. Their arguments include: not enough birds, confusion with the Trumpeter Swan (*Olor buccinator*) and Whooping Crane (*Grus americana*), low table value, and high aesthetic value.

In the winter of 1957–1958 a questionnaire was sent to the 18 western game and fish departments and to the refuge managers and game agents in regions 1 and 2 of the United States Fish and Wildlife Service asking if they would favor a liimted harvest of the Whistling Swan. Of the 17 western states responding, five (29.4 per cent) favored an open season on the Whistling Swan, eight (47.1 per cent) were opposed, and four (23.5 per cent) expressed no opinion. Further, among personnel of 17 national

wildlife refuges answering, three (17.6 per cent) favored an open season, and 14 (82.4 per cent) did not. Similarly, of 11 federal game agents reporting, one (9.1 per cent) favored the harvest, nine (81.9 per cent) did not, and one (9.1 per cent) expressed no opinion.

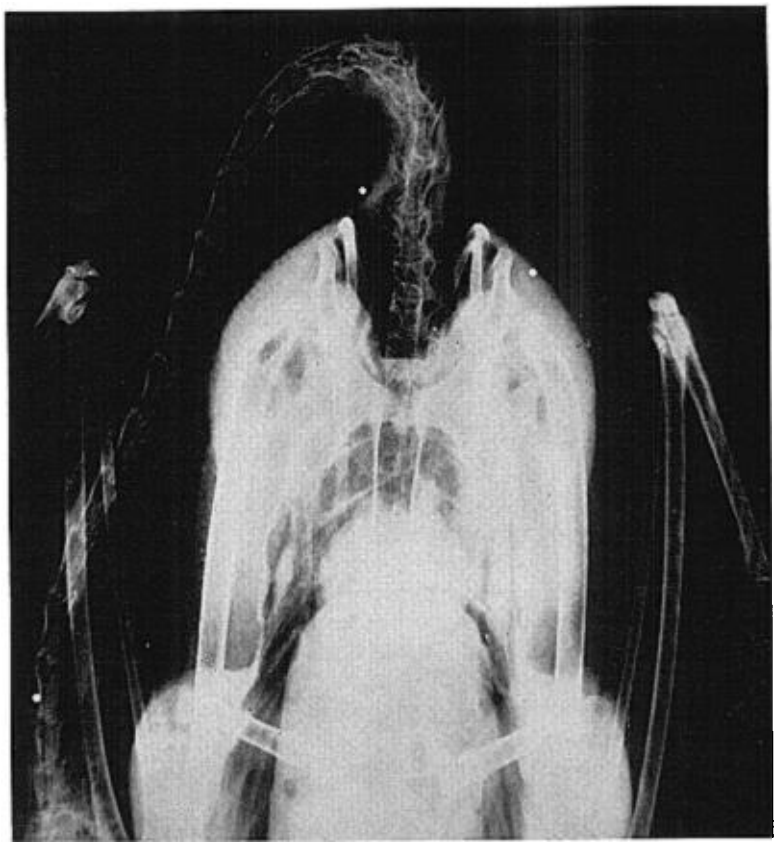

Fig. 3. X-ray of Whistling Swan showing lead shot (white dots) in neck and breast; December, 1958. Photograph courtesy of Budge Clinic, Logan, Utah.

It was my conclusion that a limited harvest of the Whistling Swan is not to be recommended for the following reasons:

1. The swan population is not increasing in North America. It has increased in the west up to 1958, but it fell considerably in 1959, and the Atlantic population was drastically down in 1958.

2. As swans do not mate until their third or fourth year, many juvenal swans would be shot before they reached the breeding age (Kortright, 1942).

3. Because of the bird's large size, the crippling loss from a hunt could account for additional reduction in swan numbers.

4. The fact that a few favored locations in the United States harbor large concentrations of the Whistling Swan is not enough justification to allow a hunt. There are many areas where Whistling Swans are rare. A harvest would further reduce the opportunity of observing the magnificent flights of these birds.

5. The Trumpeter Swan population would undoubtedly be placed in jeopardy if a harvest of the Whistler is permitted. Further, even though the Whooping Crane and Whistling Swan ranges overlap but little, it is not inconceivable that hunting the Whistler could mean occasional accidental shooting of a Whooping Crane.

6. That the Whistling Swan is creating severe competition to other waterfowl for food and habitat has not been proved.

7. Whistling Swans would not be favored for their table value as they are considered very tough. Bruette (1930) stated that "as game birds, they are not especially valuable because their long life toughens them and renders them practically useless as food. The younger ones, though, are fair eating when in good condition."

8. The aesthetic value of the swan is considerable, probably greater than that of any other waterfowl. The Whistling Swans make their contribution in beauty and should not become a game bird.

ACKNOWLEDGMENTS

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SUMMARY

The population of swans of the western or Pacific flyway increased to a high of 49,946 in 1958. However, the count of January, 1959, showed a drop to 39,599. The Bear River Refuge, 15 miles west of Brigham City, Utah, annually harbors one of the largest concentrations of Whistling Swans in North America. Population figures at the refuge ranged from a low of 6975 in 1948 to a high of 22,500 in 1955. In 1958 the fall peak was 11,625.

The food habits of the Whistling Swan in Great Salt Lake Valley are simple in that they feed exclusively on sago pondweed.

Competition between the Whistling Swan and other waterfowl for food and habitat was not considered serious at Bear River Refuge.

Mortality factors affecting the swans in Great Salt Lake Valley, Utah, include gunshot, lead poisoning, disease, and accidents. Twenty-nine birds of 58 examined were found to be carrying lead shot in their body tissues.

The majority of the biologists, game agents, and refuge managers queried about the possibility of hunting the swans were opposed to such a program.

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