

CYGNUS CYGNUS BUCCINATOR IN SKAGIT VALLEY, WASHINGTON, USA

M JORDAN and R CANNIFF

Introduction

Cygnus cygnus buccinator appeals to professional and nonprofessional ornithologists alike. Increased public awareness of these swans in Washington State has resulted from an increase in the swans. In recent years the Skagit Valley has become the most important wintering area in the State, boasting the largest wintering concentration of Alaskan *C. c. buccinator* south of the Canadian border.

Their winter ecology in the Skagit Valley is becoming better understood through the efforts of private citizens. Previously, annual population counts and a listing of general habitat usage were the only information available through the State Department of Game.

Study area

The Skagit Valley is a fertile agricultural area in northwestern Washington State. The study area was located to the east and north of the city of Mount Vernon, encompassing the Nookachamps watershed and the area north of the Skagit River to Cook Road between Burlington and Sedro Wooley (Fig 1).

History

C. c. buccinator was once abundant and widespread in Washington State. However, by 1940 (Jewett *et al* 1953), its status had changed drastically to: 'formerly migrant and winter resident both east and west of the mountains; no record in recent years'. Most of this decline was caused by habitat loss through land development and commercial hunting for skins (Banko 1960).

In 1957 six *C. c. buccinator* were recorded at Barney Lake near Mount Vernon (Washington Department of Game 1979). There were no further records until 1963, when 20 were identified, again at Barney Lake. In 1972 a yearly census was started. Fig 2 presents the population of the Skagit Valley from 1957 to 1980.

Results

Seasonal fluctuations

Nine *C. c. buccinator* were observed on 28 October 1978. From then on counts were made weekly for November, and every three or four weeks for the rest of

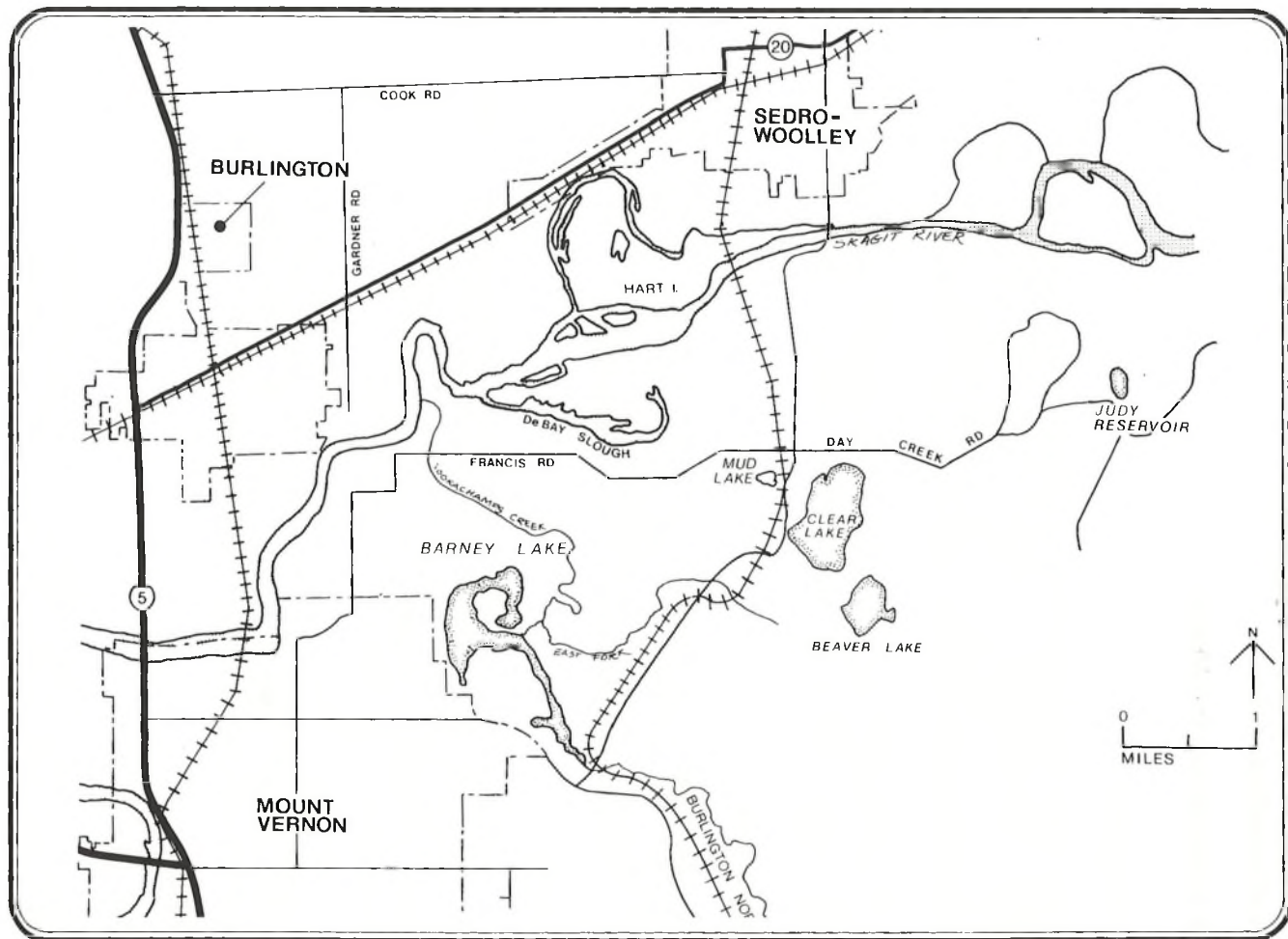
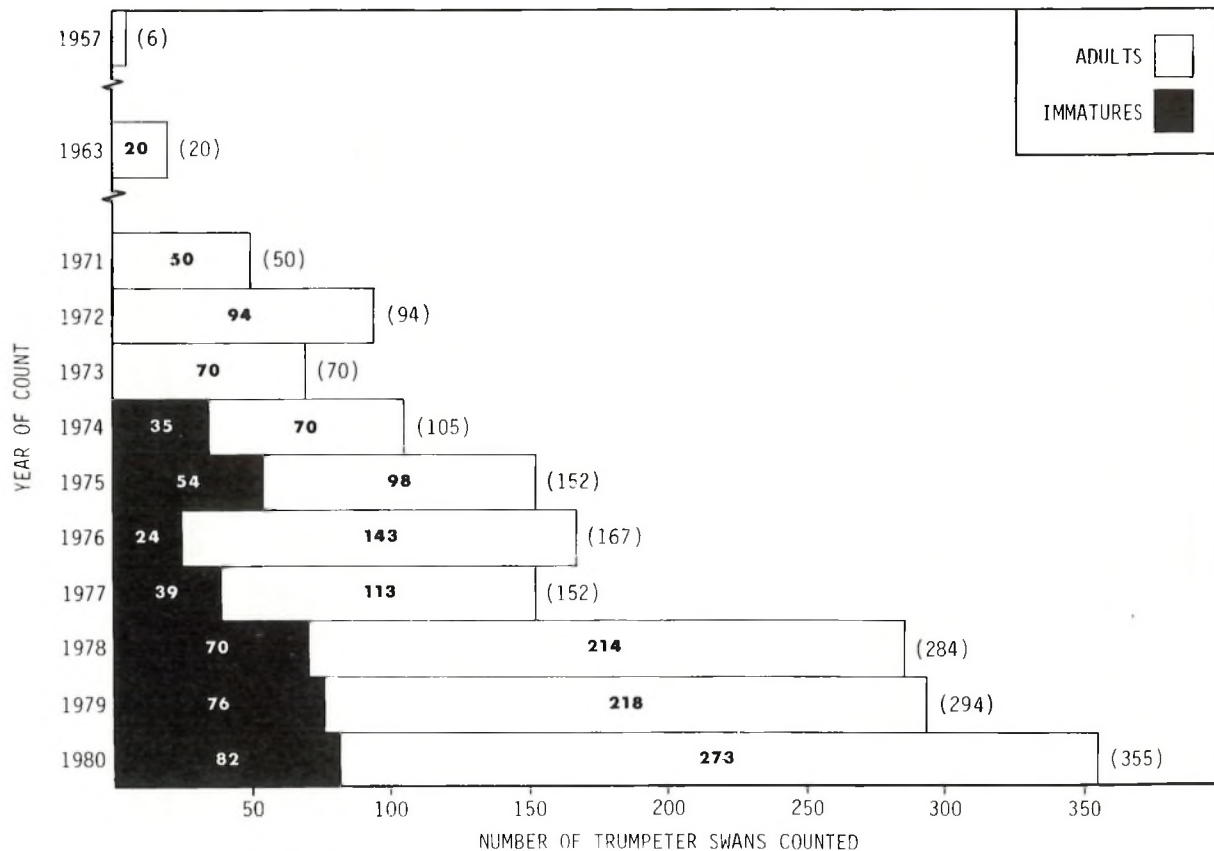


Fig 1. Skagit Valley area used by *Cygnus cygnus buccinator*.



SOURCE: WASHINGTON DEPARTMENT OF GAME; RUSS CANNIFF

Fig 2. Maximum counts of adult and immature *Cygnus cygnus buccinator* near Barney Lake, Skagit County, Washington, 1957–1980.

winter 1978/79. A gradual decline in swans began in late January, and by mid-March more than half of the swans were gone (Fig 3).

Four neck-banded swans arrived with the first sizeable group of *C. c. buccinator* on 18 November. A second influx occurred on 23 November. Most notable of the marked birds was 09VY with her unbanded mate and three cygnets. She was banded at the Kenai National Moose Range in Alaska in 1972 and had been seen previously at Barney Lake in 1973 and 1978. The population peaked in late December at 294.

Swan arrival in 1979/80 began with one juvenile at Barney Lake, again on 28 October. Counts were conducted weekly throughout the season. The population increased rapidly to an initial peak of 114 birds on 11 November. A steady, gradual increase followed until another influx on 25 December, including the arrival of the first neck-banded swan, 34VT. A sharp influx in mid-January occurred with the arrival of 46 swans, including 00VT, formerly 09VY, on 12 January. Following a gradual increase, a maximum population of 355 occurred at the end of January (Fig 3). This peak gradually declined until all swans had departed by the end of March.

Collared swans returning to the valley in 1979/80 were noticeably fewer. Only two bands, one return (00VT) and one new (34VT), were observed, compared with 12 the previous season.

A total of 27 family groups was observed, three more than in the previous year, but the adult/juvenile ratio was 22% compared with 26%.

The 1978/79 season had a sharp, steady rise in population during the first two weeks in November, including eight banded arrivals, with 85% of the population present by 23 November. In contrast, the 1979/80 migration had three noticeable pulses, one each around 11 November, 25 December and 12 January. The majority of the population had not arrived until the end of December, five weeks later than the previous year. This difference between southward migrations might be explained by the severity of the weather on the breeding grounds and along the migratory routes; weather conditions for the fall and early winter of 1979/80 were milder than those of 1978/79.

Cygnus columbianus columbianus also occur. They winter primarily in the salt marsh of Skagit and Port Susan Bays southwest of Mount Vernon. A small number, however, associate with the *C. c. buccinator* in the Barney Lake vicinity. It was not until this year that efforts were made to count systematically the *C. c. columbianus* population (Fig 3).

Habitat areas and swan usage

Barney Lake, located 0.5 km east of the city of Mount Vernon, is an old oxbow

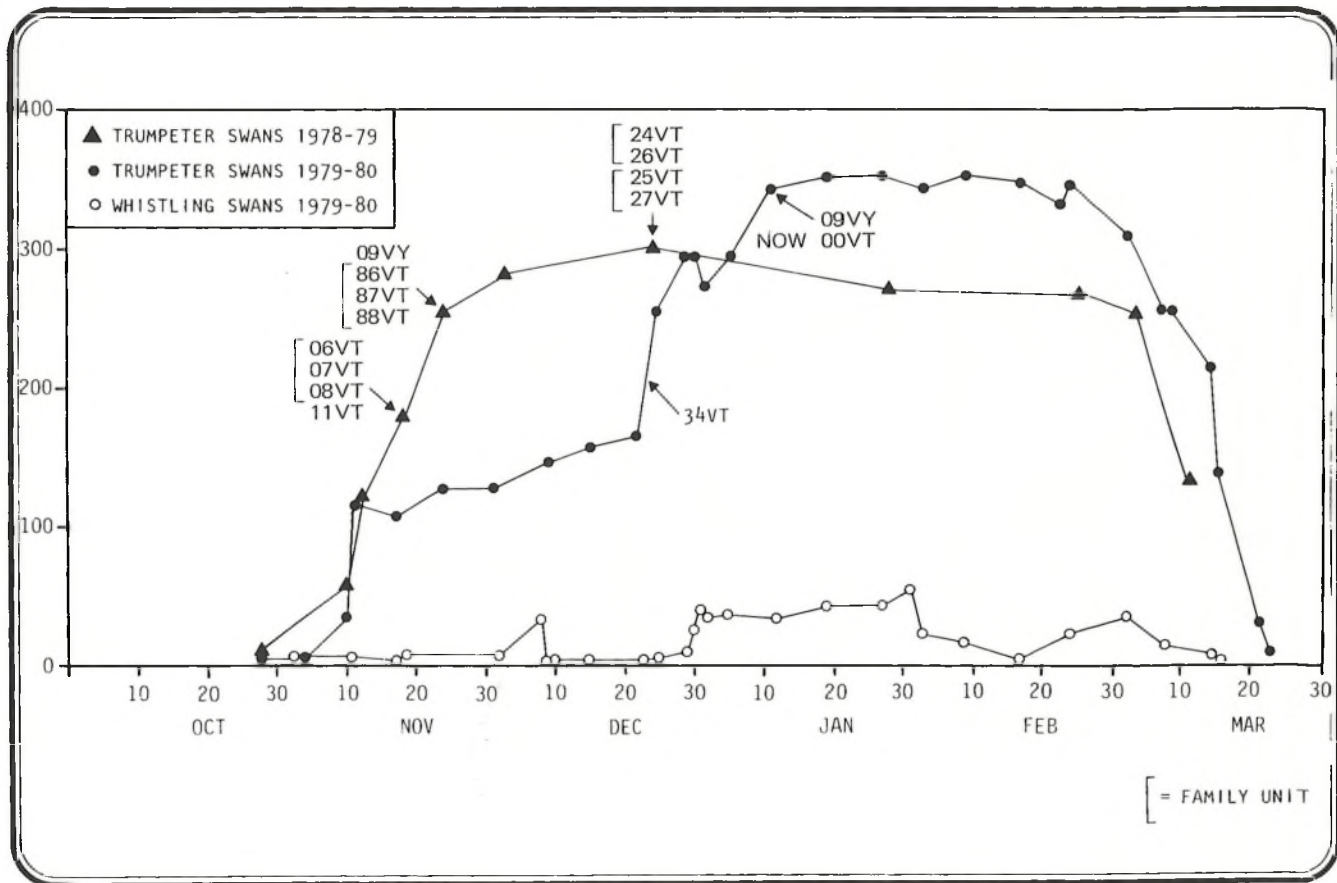


Fig 3. Maximum counts of *Cygnus cygnus buccinator* for the Skagit Valley (and of *Cygnus columbianus columbianus* for Barney Lake).

of Nookachamps Creek and consists of approximately 40 ha of lake/marsh. By September most of the surface area is dry while the subsurface remains wet. Fall and winter rains provide open water, but the level fluctuates throughout the winter. During high water periods, the surface area may double in size, often flooding peripheral pasture land. The lake is primarily used for feeding and night roosting, although late in the season swans may rest and preen here.

Judy Reservoir, approximately 5 km northeast, was built in the early 1940s as a municipal water supply and has a surface area of 64 ha. The reservoir receives the heaviest use by swans from late October through December. Although food resources appear to be minimal, the swans use the east bank for resting, bathing and preening. As dusk approaches they move to roosting areas at Barney Lake and DeBay Slough. The latter, an oxbow of the Skagit River, lies north of Barney Lake. It provides additional roosting area and the shore's dairy pasture is used for grazing.

East of Barney Lake lie the Barney flats, a basin containing wet pastureland. This area receives its heaviest use during January and February. Grass is available for grazing, and the flats are used as another primary resting and preening area.

Clear Lake, with a surface area of approximately 80 ha, is located between Judy Reservoir and Barney Lake, and the swans frequently use its south end as a refuge to escape disturbance or harassment in other areas.

Beaver and Mud Lakes, located near Clear Lake, seem to be used only when the preferred habitats become unfavourable due to human disturbance.

The Francis Road area north of Barney Lake is primarily dairy pasture or grass fields and is used primarily for feeding. In 1979/80, due in part to human disturbance and in part to heavy flooding, use of this area dropped to almost zero by the end of the season.

The most northern part of the Skagit Valley, the Gardener Road area, has dairy pasture and grass fields, with some ploughed grain fields. Most of the pasture is wet with sporadic standing water. This area does not appear to be heavily used by feeding swans in the early part of the season unless there is a hard prolonged freeze.

In general, pastureland in the Skagit Valley appears to play a major role in the winter ecology of *C. c. buccinator*. The swans are attracted to dairy pastures by the abundant vegetation and the standing water in fields.

Pasture areas provided primarily orchard grass *Dactylis glomerata* and ryegrass *Lolium* sp. A variety of water habitats in the area include lakes, flooded fields, reservoirs, and flowing streams and rivers. Prominent vegetation and the most abundant food plants in the central body of Barney Lake are: water plantain

Alisma plantago-aquatica, inflated sedge *Carex vesicaria*, common spikerush *Eleocharis palustris*, ovoid spikerush *E. ovata*, water horsetail rush *Equisetum fluviatile*, spatterdock *Nuphar polysepalum*, reed canary grass *Phalaris arundinacea*, smartweed *Polygonum hydropiper*, waterpepper *P. hydropiperoides*, arrowhead *Sagittaria cuneata*, softstem bulrush *Scirpus validus* and common cat-tail *Typha latifolia*.

Future perspectives

Despite the presence of swans on Barney Lake since 1957, public concern has been growing only since the winter of 1977/78, when people were encouraged to look for neck-banded *C. c. buccinator* by Dr W J L Sladen and to discover the wildlife resources at Barney Lake and in the Skagit Valley.

Involvement with neck-banded resighting became more intense in 1978/79, partly due to the large number of banded swans in the area. Popularity of Barney Lake grew as word spread that *C. c. buccinator* had indeed become a regular winter visitor to the Skagit Valley.

Most of the land in the Skagit Valley is privately owned, including all of Barney Lake. There is little public access to the swan habitats. Trespassing by bird-watchers, photographers and other observers to get 'a closer look' has become a growing problem.

The now frequent disturbance at Barney Lake has been approaching unacceptable limits for landowners and swans alike. Currently, some of the lake landowners and other concerned citizens are working in co-operation with the Washington Department of Game (WDG) to provide an observation blind and controlled public access.

Recently, Mount Vernon expanded its city limits to within 0.5 km of Barney Lake to incorporate a new housing development. Other similar land developments are planned for areas to the south and northwest.

Currently, an effort is under way by concerned citizens of the State, Pilchuck Audubon Society, Friends of the Swan (a local citizen's group), WDG and The Nature Conservancy to ensure that agricultural areas remain available for wildlife use.

Many species of ducks as well as swans use Barney Lake; lead shot use in waterfowl hunting has given rise to an increased mortality for swans from lead poisoning. As a result, in March 1979 Friends of the Swan and other concerned groups encouraged WDG to designate Barney Lake and the surrounding area as a 'steel shot ammunition – only' hunting area for the 1979/80 and future waterfowl seasons. After several months of work with WDG, and a petition drive, Barney Lake and a con-

siderable portion of surrounding land were so designated.

Citizen participation and co-operation with state and federal agencies is a continuing process. The neck-band resighting project involves many people in an ongoing effort. Friends of the Swan provides local information and active support. Pilchuck Audubon Society and other Audubon chapters conduct count surveys and are assisting The Nature Conservancy in its long-range plan to preserve the integrity of Barney Lake and other swan habitats.

Acknowledgements

We are grateful to Dr William Sladen for his comments, suggestions, technical and editorial advice, and to Larry Brewer and Michael Davison of the Washington Department of Game, Michael Kyte, Meredith Pfahl and Elizabeth Parrott Anderson for comments and biological insights. We thank Fugro Northwest, Inc, for their assistance with graphics; and John Munn and others for assistance in the neck-band resighting effort and the many people who have given their time for the swan cause.

Summary

Cygnus cygnus buccinator was first recorded in the Skagit Valley in 1957, but numbers grew in the 1970s and a maximum of 355 wintering birds was recorded in 1980. Details of neck-banded individuals, of the habitat used and its vegetation are given. The resulting increase in public interest has led to designation of Barney Lake as a steel shot only hunting area, and to long-term plans to conserve habitat for wildlife use.

References

- Banko, W E (1960). *The Trumpeter Swan: its history, habits and population in the United States*. North Am Fauna 63, Bur Sport Fish & Wildl, Washington, DC. 214 p.
- Jewett, S G, W P Taylor, W T Shaw and J W Aldrich (1953). *Birds of Washington State*. Univ of Washington Press, Seattle. 767 p.
- Washington Department of Game (1979). Status Report, Trumpeter Swan Numbers and Losses in Skagit County.

M JORDAN
527-2212 Street SW
Bothell
WA 98011
USA

R CANNIFF
3106 22nd Street
Everett
WA 98201
USA