



Breeding Status of Common Goldeneye in Southwestern British Columbia, including Vancouver Island, 1895 – 2014

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Abstract

The breeding status of Common Goldeneye (*Bucephala clangula*) in extreme southwestern coastal British Columbia, including the Sunshine Coast, Lower Mainland, and Vancouver Island, has been determined from historical records transferred from the field notes of ornithologists, naturalists and birdwatchers to the British Columbia Nest Record Scheme (see Campbell et al. 2013). There are at least 44 records for these regions from 35 different locations reported between 1895 and 2014, allowing breeding

ranges to be delineated. Common Goldeneye has been documented breeding on the northern portion of the Sunshine Coast, from Burnaby and Pitt Meadows to Popkum in the Lower Mainland, and the central interior of Vancouver Island. The breeding chronology for the province has been extended by a month for both the egg and fledging periods. Since many large and small lakes, and larger wetlands, have not been visited in the region by humans searching for breeding Common Goldeneyes they actually may be more widely distributed than is currently recognized.



Figure 1. Common Goldeneye is not a difficult species to identify when the sexes are together, especially in breeding plumage. *Photo by R. Wayne Campbell, Esquimalt Lagoon, BC, 20 January 2007.*

Introduction

Common Goldeneye (*Bucephala clangula*; Figure 1) breeds throughout forested regions in North America from Alaska south through Canada to the northern United States (Eadie et al. 1995). In western North America, the species is widely distributed in summer where it breeds only throughout the central interior of Alaska, Yukon Territory, and British Columbia. Common Goldeneye is a rare breeder in Washington State (Wahl et al. 2005) and does not breed in Oregon (Marshall et al. 2006) or California (Small 1994).

Common Goldeneye is a much less common breeding species in British Columbia than the congeneric Barrow's Goldeneye (*B. islandica*) with 90% of the world's breeding population of Barrow's Goldeneye occurring in Alaska and British Columbia (Eadie et al. 1995).

Prior to 1950, the breeding status of Common Goldeneye in British Columbia was not well defined as summer numbers were low (mainly migrants), locations were widely scattered, and confirmed breeding records were few. Also, breeding information was only slowly accepted as the females of Common and Barrow's goldeneye are difficult to separate in the field (see Figure 2).

Brooks and Swarth (1925) suggested that while there were a few breeding records for the southern portion of the interior of the province, Common Goldeneye was "probably a more common breeder in the northern interior." Munro (1935, 1939) mentions four instances of American [Common] Goldeneye nesting in British Columbia, although two of these records "were based solely on the presence of mated pairs during the nesting season." Munro and Cowan (1947) list three confirmed breeding records, all of broods with an accompanying female. These were reported from Swan Lake (Vernon) in the north Okanagan valley on 11 June 1930, Vanderhoof on 22 June 1945 (although not listed by Munro 1946, 1947), and Swan Lake in the southern Peace River region on 25 June 1938 (Cowan 1939). The authors (op. cit.) suggested that Common Goldeneye "nests in the Peace River parklands and occasionally, elsewhere in the interior." Between 1945 and 1985, Common Goldeneye slowly expanded its breeding range to

include much of the interior of British Columbia wherever suitable nesting habitat was available (e.g., Savard 1984, Butler et al. 1986, Campbell et al. 1990).

Range expansion in the interior continued southwest, towards the coast, but the breeding status and distribution for the Sunshine Coast, the lower Fraser River valley (e.g., Lower Mainland), and Vancouver Island had not yet been fully determined (Campbell et al. 1990). There was, however, a single early breeding record of a female Common Goldeneye, with a half-grown brood, seen in August 1895 on Sumas Lake in the upper Fraser River valley. Since the record was well out of the known range for the species, Brooks and Swarth (1925) suggested it "may have been the result of the mating of a crippled bird or pair." Munro and Cowan (1947) and Palmer (1976) did not accept the Sumas Lake breeding record, however, after further research Campbell et al. (1990) included it in the updated *The Birds of British Columbia* and suggested that by 1989 Common Goldeneye "occasionally breeds on the coast."

Distinguishing Female Goldeneyes

Identifying female Barrow's and Common goldeneyes is always challenging and breeding records accepted in this paper have been made by experienced observers and are usually accompanied by field notes. Glenn Ryder (GRR) consistently recorded field marks such as "females all have some yellow on bill tips as yet", "yellow tip on bill", "she [Common Goldeneye] still has the yellow tip on her bill", or "female has a touch of yellow on bill tip." Other observers included details of the head shape and bill profile. Tobish (1986) and Di Labio et al. (1997) emphasize that the combination of head shape and details of the bill are the best field marks to distinguish female Common and Barrow's goldeneye (Figure 2). Lateral views of head shape, however, change depending on the bird's behavior such as when relaxed, diving, or alert. Bill shape and colour may also vary with season and between geographical populations (Sibley 2010).

All breeding records involving adult females with broods reported in this paper are individuals in typical definitive alternate plumage. Females are characterized by sloping foreheads that continue

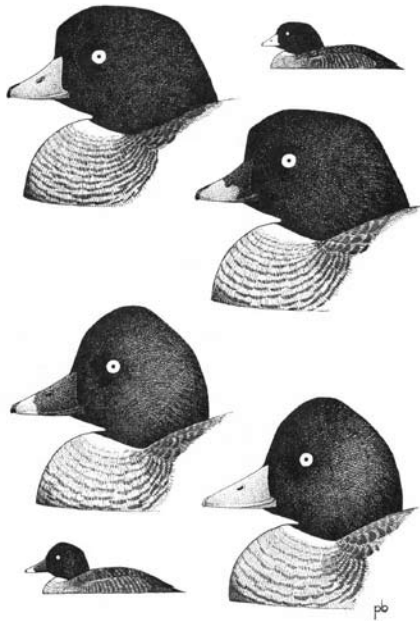


Figure 2. The classic distinguishing features of a female Common Goldeneye (side view, bottom) in breeding plumage are yellow-tipped bill, rounded and somewhat peaked head, and sloping profile of bill with forehead. In the female Barrow's Goldeneye, the bill is mostly yellow, top of the head is flatter, and the forehead is steep. *Reproduced from Ontario Birds (see Di Labio et al. 1997) with permission from artist Peter Burke.*

along the profile of a straight bill, “peaked” not flat crowns, and a blackish bill with a small yellowish tip. (Figure 3). Sibley (2010) notes that the bi-coloured bill is evident from about November to May. GRR, however, recorded in 1956 that the full yellow tip was still evident in late May and mid-June and by 12 July the bill still had a “touch” of yellow at the tip.

Source of Breeding Records

During the past several years, while breeding records were transferred from historical diaries and field notes of Glenn R. Ryder, Doug Innes, Allister Muir, Theed Pearse, John Comer, and the British Columbia Fish and Wildlife Branch (Nanaimo) to an



Figure 3. The main identification feature for adult female Common Goldeneyes during the breeding season is the mostly black bill with a yellow tip. *Photo by R. Wayne Campbell.*

electronic database (see Campbell et al. 2011), many previously unpublished breeding records for Common Goldeneye were uncovered for areas of extreme southwestern mainland British Columbia, including Vancouver Island. All were added to the files of the British Columbia Nest Record Scheme for archiving (see Campbell et al. 2013). Documented breeding records are listed below for three broad geographical regions in southwestern British Columbia. Acronyms are used for the authors: RWC (R. Wayne Campbell), DI (Doug Innes), and GRR (Glenn R. Ryder).

GEOGRAPHIC REGIONS

SUNSHINE COAST

The Sunshine Coast contains two regional districts on the southern mainland coast of British Columbia extending along the eastern shore of the Strait of Georgia. It is generally considered extending from the unincorporated village of Lund in the north to Langdale and Gibsons in the south, a straight line distance of about 110 km. Population centres include Powell River, Sechelt, and Gibsons.

There are no confirmed summer occurrences (i.e., mid-June through August) of Common Goldeneye for southern regions of the Sunshine Coast (e.g., Sunshine Coast Regional District) in either marine or freshwater locales but an asterisk on the species name on the regional checklist indicates that Common Goldeneye

is assumed to breed (Greenfield 2011). In 2014, Tony Greenfield (pers. comm.) stated that there are still no confirmed breeding records for the checklist area although there are recent summer occurrences (June-August) for Porpoise Bay (see Greenfield 1996).

The Powell River Regional District is located at the northern end of the Sunshine Coast and includes many more small and large lakes than occur in the south coast regional district. There are two confirmed breeding records of flightless broods accompanied by adult females in 1997 and 2001 and another record in 2005 of a female entering a tree cavity. In summer, between late May and August, lone male or female Common Goldeneyes (rarely pairs) have been observed on Cranberry Lake (Figure 4), Hammil Lake, Haslam Lake, Lois Lake, and West Lake.

Confirmed breeding locations are listed from north to south.



Figure 4. For many years, Clyde Burton, who lived on Cranberry Lake in the town of Powell River, BC, looked for broods of Common Goldeneye because adults were seen infrequently during the summer months. *Photo by R. Wayne Campbell, 8 May 1999.*

Goat Lake

(UTM coordinates: 10U 409571E 5545075N)

This narrow fresh-water lake, about eight kilometres long, is located 27 km northeast of Powell River at an elevation of 56 m. It is surrounded by mixed coniferous and deciduous forests with logging activities at the south end. In early June 2005, Clyde H. Burton (pers. comm.) recorded a male Common

Goldeneye with two females on Goat Lake. One of the females was observed flying into, and out of, a cavity in a bigleaf maple (*Acer macrophyllum*) tree within a shoreline forest.

Duck Lake

(UTM coordinates: 10U 396137E 5323299N)

This shallow, marshy wetland (Figure 5) is located about six kilometres northeast of Powell River. It is about 1.2 km long and 0.7 km wide and lies at 176 m elevation. In 2001, the lake and adjoining upland area, comprising 768 ha, was formally classified as the Duck Lake Protected Area (Anonymous 2003).



Figure 5. Duck Lake, now a protected area, is one of two sites in the northern portion of the Sunshine Coast where Common Goldeneye broods have been identified. *Photo by R. Wayne Campbell, 22 January 2001.*

On 18 June 2000, while exploring fishing spots around Powell River, Doug Sherman, a keen hunter and nature observer, noticed an agitated duck with a group of four small ducklings (Class IA) together in a tight group as a Bald Eagle (*Haliaeetus leucocephalus*) flew across the lake. The “Whistler” [common name used by hunters for goldeneyes] was described as a small duck with a brown head, white throat, and gray body. The tip of the bill was yellow. The family swam toward the shore with the female calling constantly.

Rainy Day Lake

(UTM coordinates: 10U 417602E 5516986N)

This fresh-water lake, about 0.63 km wide and 0.47 km long, is located three kilometres northeast of Saltery Bay at an elevation of 365 m. It is surrounded by coniferous forests and contains patches of floating fallen tree trunks and branches. Seasonally, the lake is used for camping, swimming, and fishing, mainly by residents of Powell River.

About mid-July 1997, Clyde H. Burton (pers. comm.) observed a female Common Goldeneye with three young, about half grown, swimming on the lake. No male was seen.

LOWER MAINLAND

The Lower Mainland, a name in popular usage for over a century, is the unofficial and loosely defined region that extends from Horseshoe Bay south to the Canada-United States border and east to Hope at the eastern end of the Fraser River valley. The Lower Mainland has been formally classified as a separate ecoregion due to its climate, ecology, and geology (Demarchi 2011). Major centres include Vancouver, Burnaby, Richmond, Delta, Surrey, Coquitlam, Maple Ridge, Langley, Mission, Abbotsford, Chilliwack, and Hope.

There are at least 18 breeding records for the Lower Mainland region from 17 different locations between 1895 and 1999. In addition, single males or females, or paired Common Goldeneyes have been reported during the breeding period (May through August) as nonbreeders on Alouette Lake, Campbell Creek (White Rock), Chilliwack Lake, Cultus Lake, Harrison Lake, Hatzic Lake, Hayward Lake, Lake Errock, Pitt Lake, and Serpentine River (Bothwell Park).

Common Goldeneye is not included as a breeding species (or in some cases as a summer visitor) on local bird checklists for Greater Vancouver (Weber et al. 2013), Burnaby Lake (Clulow et al. 1997), Pitt-Addington Marsh (Robinson 1994), Hayward Lake (Miller 1995), Central Fraser River valley (Central Valley Naturalists 1996), and Cheam Lake Wetlands Regional Park (Knopp 1995, Gadsen 2005).

Confirmed breeding locations for the Lower

Mainland are listed from west to east.

Deer Lake (Burnaby)

(UTM coordinates: 10U 502083E 5453716N)

Deer Lake, located in central Burnaby, is a mesotrophic lake about 863 m long and 404 m wide. The maximum depth is 6 m and it lies at 18 m elevation. The lake is a popular recreational site, with a few residential homes scattered around its shores.

On 12 May 1962, Blythe A. Eagles, Dean of the Faculty of Agriculture at the University of British Columbia, called RWC to report an “unusual” duck flying into a nest box in his front yard at Deer Lake in Burnaby. The box was erected in early spring 1961 as part of a much larger project to enhance Wood Duck nesting populations in the Lower Mainland with nest boxes (Campbell et al. 1972). RWC checked the box on 13 May to find a female Common Goldeneye incubating six eggs (Figure 6). The bird still showed the characteristic breeding dark bill and yellowish tip. The nest box was situated on the trunk of a large weeping willow (*Salix babylonica*) about 3.5 m from the ground and 15 m from water. Dry shavings in the bottom of the box had a thick layer of light grey down that nearly covered the clutch.



Figure 6. All three clutches of Common Goldeneye eggs found in nest boxes in the Lower Mainland were light greenish-blue in colour. *Photo by R. Wayne Campbell.*

A brood of four ducklings was first noticed on the lake on 19 May by Eagles and infrequently until late July when only three young were seen diving

with the female. The nest box was later cleaned and checked for eggs but none were found suggesting all had hatched.

Burnaby Lake

(UTM coordinates: 10U 503061E 5454440N)

Burnaby Lake (Figure 7), located in central Burnaby, is a shallow eutrophic lake about 3.3 km long and one kilometer at its widest point. It covers an area of 311 ha, is choked with vegetation, especially cattails (*Typha latifolia*) and pond-lilies (*Nuphar lutea* and *N. odorata*) in summer, and lies at 14 m elevation. Mature black cottonwoods (*Populus balsamifera*), potential nest sites, surround the lake.



Figure 7. As the breeding period for Common Goldeneye progresses, Burnaby Lake transforms from a lake with open water to having the surface choked by a luxuriant growth of pond lilies. *Photo by R. Wayne Campbell, 11 February 2005.*

Common Goldeneye did not use the nest box at Deer Lake again (B.A. Eagles pers. comm.) but a female was seen flying into a nest box in a birch tree near the junction of Deer Lake Brook [Creek] (Figure 8) at Burnaby Lake (M. DeAngeles pers. comm.) in May, 1963. This is about 1.3 km northeast of the Deer Lake site. The box was not checked for eggs but a brood of five young, two-to-three days old, was seen in Deer Creek on 30 May 1963 and occasionally at the west end of Burnaby Lake through the summer. It appeared the family was feeding on snails and aquatic insect larvae on pond lily leaves. No evidence of breeding was obtained the following or a subsequent year.



Figure 8. For the first week after hatching in 1963, the female Common Goldeneye and her brood stayed in the vicinity of the mouth of Deer Lake Brook where it enters Burnaby Lake. Later the family moved into open areas where they were observed feeding on snails and aquatic insects under pond-lily leaves. *Photo by R. Wayne Campbell.*

Katzie Marsh (Pitt Meadows)

(UTM coordinates: 10U 529791E 5466352N)

This shallow marshy lake is located at the south end of Pitt Lake and is part of Grant Narrows Regional Park. The actual marsh is about 1.5 km long and 1.6 km wide and lies at five metres elevation. Much of the surface is covered with pond-lilies (*Nuphar* spp.) and mature stands of riparian black cottonwood surround the shores which may provide nest sites for cavity-nesting ducks.

On 5 September 1966, GRR recorded a female Common Goldeneye with three medium-sized young (Class IIB) feeding near the edge of the marsh.

Langley (Robertson Creek)

(UTM coordinates: Undetermined)

On 5 May 1969, GRR located a female with seven small ducklings, one-to-two days old (Class IA), swimming in a little farm pond in Langley. The wetland was located on Brown Road (240th Street) south of the Fraser Highway on the west side of 240th Street and north of Robertson Creek and south of 48th Avenue. Mature stands of black cottonwoods were nearby.

The nest site, showing down at the entrance, was located in a Pileated Woodpecker (*Hylatomus pileatus*) cavity in a large black cottonwood.

MacLean Pond (South Langley)

(UTM coordinates: 10U 532600E 5429565N)

MacLean Pond [Lake] is located in the northern portion of Campbell Valley Regional Park in South Langley north of 16th Avenue. It is a large, shallow marshy pond with emergent cattails (Figure 9). The pond is bordered on the west by the Little Campbell River and on the east by a public picnic site and tree farm. The area southwest of the pond is a camp site [Camp MacLean] for Scouts Canada (Greater Vancouver Regional District 1998). MacLean Pond has a surface area of approximately 15,450 m² and is 1.55 ha (3.83 ac) in size (C. Kimmel pers. comm.). It lies at elevation 83 m.



Figure 9. Many wetlands in the Lower Mainland are being drained for urbanization so MacLean Pond, protected in Campbell Valley Regional Park in south Langley, is a gem for marsh birds and other wildlife. Photo by Chris Kimmel, Metro Vancouver.

GRR infrequently recorded single or pairs of Common Goldeneye on MacLean Pond between November and April (e.g., two pairs on 2 April 1968) from the early 1960s through 2012. There is only one breeding record for the park. On 16 May 1979, a female with eight very small ducklings (one-to-two days old; Class IA) were on MacLean Lake in Campbell River Park in south Langley. The family was feeding along the south side of the lake near cattails.

Summer occurrences and breeding status for Common Goldeneye were not included in the recent checklist of birds for the park (Langley Field Naturalists 2005).

Bertrand Creek (South Langley)

(UTM coordinates: 10U 534618E 5430440N)

Bertrand Creek flows south through Aldergrove and is a cross-border tributary of the Nooksack River in Washington State. It drains about 113 km² of land divided by the Canada/United States border. It flows through farmland at 67 m elevation and is bordered by riparian deciduous trees, including black cottonwood. During runoff in June small backwater pools are formed.

On 11 June 1990, while exploring the riparian corridor along the creek, GRR recorded an adult female with three half-grown young (Class IIA) swimming in a high-water pool.

Whonnock Lake

(UTM coordinates: 10U 540153E 5451243N)

Whonnock Lake, 1.7 km north of Ruskin and 3.7 km north of the Fraser River, is a bog/muskeg, pond-like lake that is situated in a rural-residential environment near the eastern boundary of the Municipality of Maple Ridge. It has a surface area of 45 ha, a mean depth of 3.1 m, a maximum depth of 10 m, and lies at 177 m elevation. The lake is a popular recreational site for swimming, picnicking, and fishing and is bordered by a mixture of mature coniferous and deciduous trees. Water flow into the lake is regulated by a small colony of Beavers (*Castor canadensis*). Both Green Frog (*Lithobates clamitans*) and Bullfrog (*Lithobates catesbeianus*)

were introduced into the lake after the 1950s and GRR observed Common Goldeneyes feeding on their tadpoles in summer.

On 16 June 1954, GRR observed a female Common Goldeneye with 10 small ducklings (Class IA) swimming behind in a long line near the shore. The brood was estimated at four-to-five days old.

Thomas Lake

(UTM coordinates: 10U 540611E 5491635N)

This high-elevation lake (Figure 10) lies just outside the administrative boundaries of the Lower Mainland in the northeastern portion of Golden Ears Provincial Park about 11.8 km northeast of the north end of Pitt Lake. At 927 m elevation, it is located in the Coast Mountains, specifically the South Pacific Ranges bordering the Lower Mainland (Demarchi et al. 1990). The clear lake is about 3.2 km long and 0.8 km wide. It is accessible by float plane and is visited mainly by fishermen.



Figure 10. A brood of cavity-nesting Common Goldeneye was a surprise discovery at Thomas Lake since coniferous forests surround the high-elevation lake. Photo by R. Wayne Campbell, 31 July 1970.

On 31 July 1970, RWC, Eileen C. Campbell, and Milo DeAngeles observed an adult female with a brood of three half-grown young (Class IIA) swimming along the shore at the east end of the lake. A lone male Ring-necked Duck (*Aythya collaris*) was also on the lake.

Silvermere [Hullah's] Lake

(UTM coordinates: 10U 543106E 5447125N)

Silvermere Lake, locally referred to as Hullah's Lake, is located adjacent to Stave River and just north of Highway 7 (Lougheed Highway) and about four kilometres east of Whonnock. The man-made lake is about 1.8 km long and 0.7 km wide and lies at 8 m elevation. It is a high-recreation site with fishing and water-skiing and homes along the shore.

On 15 July 1999, Glen McInnes observed a female with a brood of four young, about one month old (Class IIB), resting on a wooden wharf at the southeast corner of the lake. The birds seemed undisturbed by nearby boating activity. Faint yellow showed on the tip of the female's bill.

Rolley Lake

(UTM coordinates: 10U 544592E 5454892N)

Rolley Lake is located just west of the lower west Stave Lake arm and is 13.3 km northwest of Mission in the central Fraser River valley. It is a mesotrophic lake, surrounded by a mainly mixed mature coniferous forest of western hemlock (*Tsuga heterophylla*), western redcedar (*Thuja plicata*), and Douglas-fir (*Pseudotsuga menziesii*), and deciduous trees including red alder (*Alnus rubra*) and bigleaf maple. The lake is about 1,040 m long and 310 m wide, has a maximum depth of 15 m, and lies at 222 m elevation. A provincial park, about 115 ha in size, is established along the east side and includes 65 maintained campsites, picnic tables, and walking trails. No power boats are allowed on the lake.

On 21 May 1959, GRR recorded a female Common Goldeneye with eight small young, two-to-three days old (Class IA), on the lake. The female still had the yellow tip on her bill and the family was swimming along the lakeshore close to flooded willows (*Salix* spp.). No male was seen.

The only diving ducks reported for Rolley Lake by Grass (1992, 1995) are Ring-necked Duck and Common Merganser (*Mergus merganser*).

Steelhead (Unnamed wetland)

(UTM coordinates: 10U 549321E 5454258N)

This wetland is located about 2.2 km north northwest of the rural community of Steelhead in the central Fraser River valley and is east of the south end of Stave Lake. It is a bog-lake, about 255 m long and 108 m wide and is surrounded by lodgepole pine (*Pinus contorta*). It lies at 237 m elevation.

On 27 July 1999, GRR found a family of eight flightless young, nearly three-quarters full grown (Class IIIA) swimming with an adult female.

Cox [Landing] Station

(UTM coordinates: 10U 560690E 5442890N)

Cox Station is located on the south bank of the Fraser River about 11.3 km upstream from the Abbotsford-Mission bridge. The area is a rock quarry and just to the east there is a long slough along the north side of Sumas Mountain. The wetland is marshy and is about 485 m long, 65 m wide, and lies at five metres elevation. Stands of mature black cottonwood border the slough.

On 17 June 1956, GRR recorded a female with nine small downy young, about two weeks old (Class IC), swimming and diving about mid-slough.

Sumas Lake (Formerly)

(UTM coordinates: 10U 561238E 5431893N)

Sumas Lake was formerly located between Sumas Mountain and Vedder Mountain (between Abbotsford and Chilliwack) and straddled the United States/Canada border. It originally occupied nearly 4,000 ha and when flooded reached an area of 12,140 ha. The lake was drained to create more farmland in 1923 and 1924, forming part of Sumas Prairie. Prior to drainage, the extensive wetland provided a diverse array of wildlife, including salmon, sturgeon, waterfowl, elk, and deer (Thom and Cameron 1997).

In August 1895, a female accompanied by two half grown young were observed at Sumas Lake (Brooks and Swarth 1925). It was suggested that the record “may have been the result of the mating of a crippled bird or pair.” Munro and Cowan (1947) either overlooked or did not accept the record. Campbell et

al. (1990) accepted the record.

Goose (Little Sumas) Lake

(UTM coordinates: 10U 562349E 5437751N)

Goose [Little Sumas] Lake (Figure 11) is all that remains of vast Sumas Lake that was drained in the early 1920s. It is also known locally as Lakemount Marsh and is located 13.8 km east of the centre of Abbotsford and north of the east end of Lakemount Road and north of a widening of the Sumas River. The shallow lake, with cattail and pond lilies, is about 57 ha in size, 860 m long, and 350 m wide. It lies at an elevation of six metres. A program was recently developed by the Abbotsford Fish & Game Club to dredge invading cattails to provide more open water for waterfowl. Nearby mature black cottonwoods may provide a nesting site.



Figure 11. The best view of Goose [Little Sumas] Lake is from one of the viewpoints on Sumas Mountain, a favourite spot of the late Glenn Ryder. *Photo by Philip S. Henderson.*

On 16 June 1955, GRR found a female with a brood of six medium-sized young (Class IIA) on the wetland. No male was present. The following year, on 15 June, an adult female was observed feeding for a long time before she flew up into the foothills of Sumas Mountain above the old railway bed. On 12 July 1956, an adult female was feeding with her four medium-sized (Class IIC) young. The female still had a touch of yellow on the tip of the bill.

Chadsey [Lost] Lake (Sumas Mountain)

(UTM coordinates: 10U 562417E 5441579N)

Chadsey Lake, locally known as Lost Lake, is located on top of Sumas Mountain about 15.8 km northeast of the city of Abbotsford in the central Fraser River valley. It occupies the northern part of Sumas Mountain Regional Park and lies at 640 m elevation. The clear mesotrophic lake is about 360 m long and 240 m wide and has an average depth of four metres. There is a small forested island and the lake is surrounded by mixed coniferous forests.

The lake was visited twice in 1955 by GRR. On 8 May, three adult female Common Goldeneyes were swimming on the east side of the island and on 20 June an adult female with seven small young, less than a week old (Class IA), were swimming at the east end of the lake where shrubs provided escape sites.

Sumas River Mouth (Unnamed Pond)

(UTM coordinates: 10U 566820E 5443461N)

Referred to by GRR as “Cottonwood Flats” in his notes, this location is really a large pond located on the north side of the Canadian National Railway track about 0.88 km due east of the Sumas River in the central Fraser River valley. The shallow drying pond is about 360 m long and 133 m wide and is surrounded by large black cottonwood trees. It lies at 6 m elevation.

On 23 August 1954, GRR and his brother Donald noticed a female Common Goldeneye with three young about three-quarters full grown (Class IIC) swimming together in a tight group. They surmised that the female likely nested in a Pileated Woodpecker cavity in a nearby cottonwood.

Cheam Lake Wetlands Regional Park (UTM coordinates: 10U 590785E 5449702N)

Cheam Lake wetlands (Figure 12) is a 93 ha (250 ac) marshy lake surrounded by a mixed forested upland located on the north side of Highway 1 about 0.8 km east of the community of Bridal Falls in the central Fraser River valley. It was created as a regional park in 1990 and is about 1.1 km long by 0.5 km wide and lies at 38 m elevation. A water control structure was built in 1992 to allow the lake to re-flood and as a result wetland habitats are changing and the avifauna is becoming more diverse.



Figure 12. The wildlife value of Cheam Lake wetlands was recognized and advocated in the 1980s and at the start of the new decade the area was formally designated a regional park. *Photo by R. Wayne Campbell.*

On 11 June 1995, RWC observed an adult female with a brood of five young, about two-to-three days old (Class IA), swimming in a line near the marshy southwest end of the wetland (Figure 13). The female's yellowish tip was still prominent. A pair of Ring-necked Ducks loafed nearby.

VANCOUVER ISLAND

Vancouver Island, located off southwest British Columbia, is 460 km (290 mi) long, 80 km (50 mi) at its widest point, and about 32,134 km² (12,407 mi²) in area. It has hundreds of lakes, the largest being Buttle Lake, Campbell Lake, Cowichan Lake, Great Central Lake, Kennedy Lake, Nimpkish Lake, Sproat Lake, and Woss Lake. The Vancouver Island Ranges,



Figure 13. Brood sizes reported for the Lower Mainland ranged from one to 10 ducklings with a mean of five young. *Photo by R. Wayne Campbell.*

dotted with lakes, occupies the central portion of the island and reaches a maximum height of 2,195 m (7,201 ft). Major cities include Campbell River, Courtenay, Nanaimo, Port Alberni, and Victoria.

The first confirmed breeding record for Vancouver Island is 1970 (coastal) and 1974 (inland) although 1989 is listed by Campbell et al. (1990). Carl (1944), however, noted “An immature [juvenile] bird, possibly a female, as present on Croteau Lake [Forbidden Plateau] during our stay in camp [23 August to 2 September 1943]. It apparently was unable to take off from the water.” The Comox Valley checklist, that includes part of eastern Strathcona Park, lists Common Goldeneye as “possible breeding” (Martell 2012).

There are at least 23 breeding records for Vancouver Island from 16 different locations between 1970 and 2012. In addition, lone males or females, or paired Common Goldeneyes have been reported during the breeding period (May through August) as nonbreeders on Alice Lake, Amphitheatre Lake, Brewster Lake (Figure 14), Cameron Lake, Comox Lake, Croteau Lake, Fairy Lake, Gracie Lake,

Hairtrigger Lake, Horne Lake, Junior Lake, Kwai Lake, Lake Beautiful, Mariwood Lake, Moat Lake, Quamichan Lake, Schoen Lake, Victoria Lake, and Woss Lake.

Confirmed breeding locations for Vancouver Island are listed from north to south.



Figure 14. Brewster Lake, located 24 km northwest of Campbell River, BC, is one of the many lakes on Vancouver Island on which non-breeding Common Goldeneyes have been reported during the breeding season. *Photo by R. Wayne Campbell.*

Nisnak Lake (Schoen Lake Park)

(9U 699650E 5561698N)

Nisnak Lake is a high-elevation lake in the Nimpkish Valley about 2.6 km southeast of the east end of Schoen Lake. The clear lake is about 936 m long by 500 m at its widest point. It lies at 514 m elevation and is surrounded by mixed coniferous forests.

On 15 July 1989, Betty J. Brooks (pers. comm.) watched a female with a brood of 10 downy young (Class 1C) feeding on Nisnak Lake in Schoen Lake Park (Figure 15). Campbell et al. (1990) published this breeding record as the first confirmed for Vancouver Island.



Figure 15. Some duck species form a crèche that occurs when two or more recently hatched broods amalgamate under the supervision of a single female, such as the 21 Common Goldeneye ducklings with a female shown in this photograph. While this breeding strategy has been reported for the interior of the province (Campbell et al. 1990) it has yet to be recorded for the southwest coast where the two largest broods reported each contained 10 young. *Photo by R. Wayne Campbell.*

Crest Lake

(10U 290852E 5525129N)

This roadside lake is located 14 km east of Gold River along Highway 28. It is about 480 m long and 336 m wide, lies at 328 m elevation, and is surrounded by mixed coniferous forests.

On 12 June 1994, Doug and Marian Innes recorded an adult female with a single young, between eight and 10 days old (Class IB), swimming near an island in the lake.

Buttle Narrows

(10U 311434E 5524264N)

A narrows, about 105 m across, that separates Buttle Lake from Upper Campbell Lake. It lies at 105 m elevation and is lined with mixed species coniferous forest.

On 12 June 1994, Betty J. Brooks and Vicki Hansen noted an adult female swimming near the bridge with two young about eight to 10 days old (Class IB).

Darkis Lake

(10U 310705E 5523348N)

A small, shallow lake (Figure 16), 462 m long and 228 m wide, located immediately west of the Buttle Lake campground. The lake is on private forest lands of Timberwest just outside the boundary of Strathcona Park. The lake is surrounded by second-growth coniferous forest and lies at 224 m elevation.



Figure 16. Water levels in some of the shallow Common Goldeneye brood-rearing lakes, like Darkis Lake, drop as the summer progresses. The gentle shores of islets are often used for loafing as the young mature. *Photo by Krista Kaptein, 2 August 2014.*

On 12 June 1994, Doug and Marian Innes observed an adult female with a single young swimming and foraging near the centre of the shallow lake. The duckling was estimated to be two to three days old (Class IA).

On 23 June 2000, British Columbia Parks staff (pers. comm.) observed an adult female with four young, about a week old (Class IA), diving in the centre of the lake.

Helen Mackenzie Lake (Unnamed Pond)

(10U 332720E 5511035N)

This pond is situated 744 m north of Helen Mackenzie Lake in the northeast corner of Strathcona Park. It is shallow and about 165 m long and 95 m wide and lies at 1,092 m elevation. The open pond is surrounded by a mixed coniferous forest of western hemlock, western redcedar, and Douglas-fir. Old standing and down snags in water are evident on the shores.

On 4 July 1997, Doug Innes observed an adult female, still with a small amount of yellow near the tip of the bill, swimming with four young in a tight family group. The “natal plumage” (e.g., Class IA) was noted. Doug could hear the ducklings calling.

On 3 July 1998, a member of the Comox Valley Naturalists reported to DI that they had observed a family of six Common Goldeneyes swimming towards the middle of the lake. The “babies” were tiny (Class IA).

Battleship Lake (Forbidden Plateau)

(10U 333554E 5510513N)

Battleship Lake (Figure 17) is located in the eastern extension of Strathcona Park on the Forbidden Plateau, the oldest park in British Columbia. It is a clear, high-elevation lake about 1.03 km long and 0.2 km at the widest point. It lies at 1,166 m elevation and is surrounded by mixed coniferous forests. From one-to-four females, all without broods (Figure 18), have been reported on Battleship Lake most summers since they were first recorded breeding in 1978.

On 17 July 1978, Howard A. Telosky recorded an adult female with of brood of eight young about five to seven days old (Class IA) swimming on the lake. This was the earliest breeding record for Strathcona Park.

During a survey of lakes in the Forbidden Plateau area in July 1981, Kathleen Fry and M. Keith found an adult female with a brood of four young, about two weeks old (Class IC), swimming along the nearshore of the lake on 11 July.

On 4 August 1990, a member of the Alpine Club of Canada (Vancouver Island Section) reported to DI that he and his wife saw a family of Common Goldeneyes being harassed by an adult Bald Eagle on



Figure 17. Most breeding records of Common Goldeneye from a single location on Vancouver Island are from Battleship Lake. *Photo by Krista Kaptein, 14 September 2013.*



Figure 18. A lone female Common Goldeneye, swimming on Battleship Lake in summer, suggests that it may be nesting nearby. Since Barrow’s Goldeneye also occurs in Strathcona Park, photographic records of female goldeneyes should be archived in a provincial photo-file for later reference (see Campbell and Stirling 1971). *Photo by Krista Kaptein, Battleship Lake, BC, 15 June 2013.* BC Photo 4104.

the lake. After three “lazy” dives the eagle flew off. The brood of four young was estimated to be about half grown (Class IIB).

On 1 July 2000, British Columbia Parks staff (pers. comm.) observed an adult female with three young, about two weeks old (Class IC), swimming close together.

On 4 July, 2014, Krista Kaptein photographed a female feeding with four ducklings, three-to-five days old (Class IA) (Figure 19).



Figure 19. Photographs of female goldeneyes in summer on coastal lakes and wetlands in British Columbia, especially with broods, help document the occurrence and status of the species. Three of four ducklings are shown in the photo and a faint yellow tip on the bill of the female is visible when the image is enlarged. *Photo by Krista Kaptein, Battleship Lake, BC, 4 July 2014. BC Photo 4105.*

Battleship Lake (Unnamed Ponds)
(10U 333535E 5509803N)

These small, shallow ponds (Figure 20) are located on Forbidden Plateau (the eastern extension of Strathcona Park) at the south end of Battleship Lake at 1,166 m elevation. Together they are about 106 m long and 34 m wide and are surrounded by mixed coniferous forests.



Figure 20. Crevices and cavities in standing snags, such as those surrounding these unnamed ponds at the south end of Battleship Lake, may provide suitable nesting sites for Common Goldeneyes in Strathcona Park. *Photo by Krista Kaptein, 14 August 2012.*

On 23 June 1991, Willie Haras watched an adult female with seven downy ducklings, estimated to be two-to-three days old (Class IA), swimming close together on the pond. The female called nervously.

Lady Lake (Forbidden Plateau)
(10U 333222E 5509008N)

This subalpine lake (Figure 21) is located on Forbidden Plateau (the eastern extension of Strathcona Park) about 600 m southeast of Helen Mackenzie Lake. It has a maximum length of 603 m and maximum width of 414 m and lies at 1,172 m elevation. The lake is surrounded by mixed coniferous forests.



Figure 21. Many of the brood-rearing lakes on Vancouver Island, like Lady Lake, contain fallen tree trunks and floating forest debris used by Common Goldeneye families for loafing. *Photo by Krista Kaptein, 14 August 2012.*

During a survey of lakes in the Forbidden Plateau area in July 1981, Kathleen Fry and M. Keith found an adult female with a single young, about two weeks old (Class 1C), swimming on the lake on 12 July.

Croteau Lake
(10U 332655E 5508158N)

This subalpine, clear lake (Figure 22) is located on Forbidden Plateau (the eastern extension of Strathcona Park) and lies about 492 m southwest of Lady Lake. It is about 317 m long by 153 m wide and lies at 1,221 m elevation.



Figure 22. It was a surprise in the 1970s when Common Goldeneye was reported breeding at high-elevation lakes, such as Croteau Lake in Strathcona Park on Vancouver Island. *Photo by Krista Kaptein, 14 September 2013.*

On 17 July 1979, Howard A. Telosky reported an adult female swimming with a brood of six young about 10 to 12 days old (Class IB).

McPhee Lake (Forbidden Plateau)
(10U 328730E 5508000N)

This subalpine lake, located on Forbidden Plateau (the eastern extension of Strathcona Park) about one kilometre southwest of Strata Mountain and 280 m east of the east end of Circlet Lake. It is about 206 m long and 156 m wide and lies at 1,171 m elevation.

On 12 July 1984, biologists from the British Columbia Fish and Wildlife Branch recorded an adult female with a brood of four young, four-to-five days old (Class IA), diving for food. The female was feeding on fish fry. An immature Bald Eagle attempted unsuccessfully to take young.

Circlet Lake (Forbidden Plateau)
(10U 328089E 5507610N)

Circlet Lake is a small, clear subalpine lake located on Forbidden Plateau (the eastern extension of Strathcona Park) about 3.6 km northeast of Mount Albert Edward. It lies at an elevation of 1,183 m and is about 725 m long and 555 m wide. Submerged and floating logs are present in shallows in the lake and open mixed coniferous forests with snags surround

the lake.

During a survey of lakes in the Forbidden Plateau area in July 1981, Kathleen Fry and M. Keith found an adult female with a brood of three young, nearly full grown (Class 3A), swimming and feeding on the lake on 12 July.

Circlet Lake (Unnamed Pond)
(10U 328606E 5507508N)

This unnamed pond lies about 170 m east of Circlet Lake located on Forbidden Plateau (the eastern extension of Strathcona Park) at an elevation of 1,205 m. It is about 184 m long and 88 m at its widest point.

On 22 July 1991, Willie Haras observed an adult female with six young, about three weeks old (Class IIA), swimming and diving together.

Megin Lake
(UTM coordinates: 9U 711700E 5486208N)

Megin Lake (Figure 23) is located about 40 km northwest of Tofino in the southwest corner of Strathcona Park. It is about 3.4 km long and 0.56 km wide and lies at 27 m elevation. It is a small, clear, shallow lake, surrounded by mixed forests and is accessed by float plane or by canoe via the Megin River.



Figure 23. Megin Lake is the most western breeding location for Common Goldeneye on Vancouver Island. *Photo by Adrian Dorst.*

A female with a brood of seven ducklings, about three weeks old (Class IIA) were observed by Leslie Fox and Susan Fleck during a provincial wildlife inventory of lakes in Strathcona Park on 6 July 1974. The family group was swimming and feeding on the lake and all were seen again on 7, 14 and 15 July.

Sundew Lake

(UTM coordinates: 10U 306263E 5479251N)

This small lake is located in the southern portion of Strathcona Park along the Bedwell River [Centennial] Trail on the south side of the river between Ashwood Creek and Blaney Creek. It lies at 240 m elevation.

On 6 July 1974, Ian D. Smith recorded an adult female with six ducklings, less than one month old (Class IIB), swimming in a tight group. The entire family was still present on 15 July.

Klitsa Mountain (Unnamed Lake)

(UTM coordinates: 10U 336383E 5459155N)

This unnamed, small, high-elevation lake is located 3.6 km southwest of the west end of Sproat Lake on the west side of Klitsa Mountain. The lake is clear and shallow, about 472 m long and 245 m wide, and lies at 1,203 m elevation. It is surrounded by a mixed coniferous forest. Access is by hiking.

On 27 July 1986, Adrian Dorst recorded an adult female with a half-grown young (Class IIA) swimming on the lake. The family group was subsequently seen on 28 and 29 July.

Cowichan Bay

(10U 453786E 55399383N)

Cowichan Bay (Figure 24) is a coastal marine community about 7.2 km southeast of Duncan. The Cowichan River empties into the bay at the western end. Mature riparian stands of mixed deciduous trees, especially black cottonwood, line the Cowichan River and its nearby tributary the Koksilah River. These may provide natural nest sites. The following three records are the only ones reported for marine habitats in the reporting area.



Figure 24. It was suspected that Common Goldeneyes nesting in Cowichan Bay, BC in the 1970s used natural cavities in mature black cottonwood bordering rivers rather than holes in large pylons in the bay. *Photo by R. Wayne Campbell, 3 March 2001.*

On 25 July 1970, John Comer and birdwatchers from the Cowichan Bird Society observed an adult female swimming and diving with a lone flightless young about a month old (Class IIB). Taylor (2014) listed this record as the “most valid” for Vancouver Island.

On 20 July 1974, John Comer, and birdwatchers from the Cowichan Bird Society, observed an adult female swimming just offshore with a lone flightless young about a month old (Class IIB) (Crowell and Nehls 1974).

On 16 July 1977, John Comer, and birdwatchers from the Cowichan Bird Society observed an adult female (and nearby moulting male) with three young about a month old (Class IIB). The tip of the bill of the female still showed traces of yellow. The same family group was also seen on 23 July.

SUMMARY OF BREEDING STATUS

Breeding Range and Elevation

Since at least the mid-1950s, a small breeding population of Common Goldeneye has become established on the southwest mainland coast of British Columbia, including the Sunshine Coast, Lower Mainland, and Vancouver Island. Much of the historical information, especially for the Lower Mainland, was not available for inclusion in Campbell

et al. (1990) because information had not yet been transferred to nest cards from field notebooks of naturalists and unpublished waterfowl surveys by biologists. As a result, this region is not included in the breeding range for Common Goldeneye in current field guides (e.g., Sibley 2000) and summary accounts for the species in North America (e.g., Edie et al. 1995).

Two confirmed and another possible breeding record has been documented for the Sunshine Coast. All sites are from the northern regions where there is an abundance of lakes. The known breeding range here extends about 26 km between Goat Lake in the north and Rainy Day Lake to the south. Breeding sites range between 56 m and 365 m elevation and all sites are on large lakes.

The breeding range for Common Goldeneye in the Lower Mainland has been delineated mostly by the extensive field work of GRR between 1954 and 2012 (see Campbell and Henderson 2013). The known breeding range extends about 88 km from Deer Lake (Burnaby; Figure 25) east to Cheam Lake (Popkum) and from Katzie Marsh (Pitt Meadows) in the north to near the United States border in the south. Breeding sites range from near five metres to



Figure 25. Deer Lake (foreground) and Burnaby Lake, only one kilometer apart, are the observed western extremity of the breeding range for Common Goldeneye in the Lower Mainland region of southwestern British Columbia. *Photo by R. Wayne Campbell, April 1965.*

640 m elevation. The mean elevation is 109 m. Brood-rearing habitats recorded included lakes ranging from eutrophic (high productivity) to oligotrophic (very low productivity), marshes, sloughs, and man-made lakes. Habitat descriptions for potential nest sites in adjoining forests and woodlands were not collected.

On Vancouver Island, Common Goldeneye was first confirmed breeding in 1970 near Cowichan Bay and over the following 43 years it was found breeding at an additional 15 locations (24 records), mostly in the high elevation wetlands in Strathcona Park. Currently, the breeding range extends from Nisnak Lake in the Nimpkish Valley, about 68 km northwest of Campbell River south to Cowichan Bay near Duncan. The western boundary is Megin Lake. Breeding sites ranged from near sea level to 1,221 m elevation. The mean elevation is 763 m.

There remain hundreds of large and small lakes, as well as large marshes and sloughs, on the Sunshine Coast, Lower Mainland, and Vancouver Island that have not been visited by naturalists who can identify female Common and Barrow's goldeneyes. In addition, it is possible that many of these wetlands have never been explored by naturalists and biologists. Consequently, breeding Common Goldeneyes may be more widely distributed than realized.

Breeding Chronology

The date birds breed in British Columbia varies with geographical locations that mainly include changes in latitude, longitude, and elevation (Campbell et al. 1990). Since the province is so ecologically diverse, precise information for the breeding period is necessary for all ecoprovinces and ecoregions for management and conservation purposes. The calculated breeding period, including dates for eggs and young, for the Sunshine Coast, Lower Mainland, and Vancouver Island, is shown in Table 1.

The full breeding period, calculated from first egg to first flight, for the Sunshine Coast extends from 4 May to August 15, a total of 103 days (Table 1). The breeding chronology in the Lower Mainland is longer. It may extend from 16 March to 5 October, a total of 204 days (Table 1). On Vancouver Island, the breeding period extends from 21 April to 11 September, a total of 144 days (Table 1).

Table 1. Calculated dates for eggs (egg-laying and incubation) and fledging stage (first flight) for the Common Goldeneye in southwest coastal British Columbia. Data used for calculating the egg-laying, incubation, and hatching periods are from Mallory and Weatherhead (1993) and Eadie et al. (1995) and the fledging period is from Johnsgard (1978) and Bellrose (1980).

REGION	RANGE OF DATES	
	Eggs	Young
Sunshine Coast (2) ¹	May 4 – June 11	June 12 – August 15
Lower Mainland (18)	March 16 – July 18	May 6 – October 5
Vancouver Island (23)	April 21 – July 10	June 3 – September 11

¹Total records with specific dates used to calculate the entire breeding chronology.

The egg dates reported by Campbell et al. (1990) for the interior of British Columbia ranged from about 1 April through June. On the southwest coast egg-laying may begin two weeks earlier and extend to at least mid-July, two weeks later than previously reported. Dates for flightless young in the interior of the province ranged from early May to early September (Campbell et al. 1990). On the southwest coast, the dates range from early May to early October, an extension of about a month in the autumn (Table 1). The complete breeding period for Common Goldeneye in British Columbia, from initiation of egg-laying to first flight, may last 204 days or about 56% of a total year. †

Acknowledgements

Breeding information for Common Goldeneye in southwestern British Columbia was obtained from the following individuals, agencies, and organizations: Alpine Club of Canada (Vancouver Island Section), Errol Anderson, Milo DeAngeles (Figure 26), Frank L. Beebe, British Columbia Parks [Branch], Betty J. Brooks, British Columbia Fish and Wildlife Branch (Nanaimo), Clyde H. Burton, R. Wayne and Eileen C. Campbell, G. Clifford Carl, John Comer, Comox Valley Naturalists Society [Comox Valley Nature], Jack K. Cooper, Adrian Dorst, Blythe A. Eagles, Susan Fleck, Leslie Fox, Kathleen Fry, Tony Greenfield, Willie Haras, Vicki Hansen, Doug and Marian Innes, Krista Kaptein, M. Keith, Ken Kennedy,



Figure 26. During the 1960s and early 1970s, Burnaby Lake resident Milo DeAngeles (pointing) sponsored the building of 50 swallow boxes and 14 Wood Duck boxes. They were put up around Burnaby Lake by a local Boy Scout group. One of the duck nest boxes was used successfully by a Common Goldeneye. Photo by R. Wayne Campbell, Burnaby Lake, BC, 8 March 1970.

Glen McInnes, Allister Muir, Theed Pearse, Donald Ryder, Glenn R. Ryder, Barbara Sedgwick, Doug Sherman, Ian D. Smith, Ken R. Summers, Howard A. Telosky, and David Woolgar.

Chip Weseloh facilitated permission from artist Peter Burke for use of the drawings in Figure 2 reproduced from *Ontario Birds*. Chris Kimmel and Wendy DaDalt, Metro Vancouver staff, provided photographs of MacLean's Pond in Campbell Valley Regional Park. Krista Kaptein and Adrian Dorst contributed their photographs to document Common Goldeneye breeding locations and brood-rearing habitats for Vancouver Island.

Review comments were gratefully received from Spencer G. Sealy, Patricia Huet, and Dennis A. Demarchi.

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About the Authors

Wayne retired from the provincial civil service in 2000 and has since has been actively involved in maintaining the mandate of the Biodiversity Centre for Wildlife Studies as a director and associate editor of their bi-annual journal *Wildlife Afield*.



A few years prior to Glenn's death on October 2, 2013, he was compiling breeding records of Common Goldeneye in the Lower Mainland for this status article. A complete biography of Glenn's remarkable life and accomplishments has recently been published

by the Biodiversity Centre for Wildlife Studies (see Campbell and Henderson 2013).



Doug passed away on December 9, 2000 (Campbell 2004). In the 1990s, he began collecting records of Common Goldeneyes breeding on Vancouver Island, especially in Strathcona Park, and submitting them to the BC Nest Record Scheme. He had hoped to publish a paper on his findings.

