



Annual Use of a Farm Pond by Hooded Mergansers on Salt Spring Island, British Columbia

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Hooded Mergansers (*Lophodytes cucullata*; Figures 1 and 2) are small diving ducks widely distributed across the southern two-thirds of British Columbia, including Haida Gwaii, Vancouver Island, and the Gulf Islands (Campbell et al. 1990). On Salt Spring Island, they occur on lakes and ponds in summer but are local and uncommon; in winter they are common (Fraser 1989). Hooded Mergansers hunt by sight underwater for diverse foods. They nest in cavities in trees or artificial nest boxes and move seasonally to fresh or salt unfrozen water bodies.

This note is about Hooded Mergansers using an artificial pond built recently on a farm on Salt Spring Island in one of the Canadian Gulf Islands on the

southwest coast of British Columbia. I did not set out to study any denizen of the pond scientifically, but merely, out of long habit, to write down what I saw from a favourite chair in spare moments. Hooded Mergansers, an unfamiliar bird to me, drew my attention. My accumulated notes yield impressions of life patterns among these odd little ducks.

Early farmers cleared woods in the district between 1860 and 1930. Our 17-acre (6.9 ha) farm has the patchwork of vegetation typical of the Gulf Islands, including active crop and pastureland, formerly cleared fields now clad in shrubs and small trees, and a grove of 40-70 year-old, second growth conifers. An extensive forest of similar regrowth

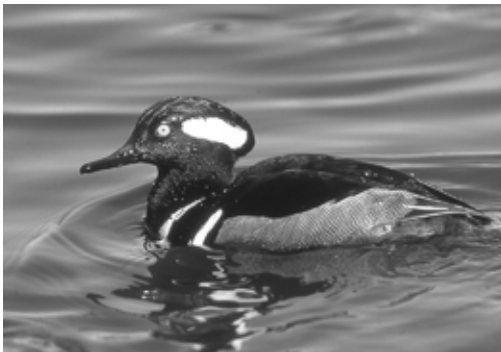


Figure 1. The biology of Hooded Merganser, the only merganser restricted to North America, is not well known compared to many other species of waterfowl. On Salt Spring Island, the species is uncommon and local during the breeding season. Photo by R. Wayne Campbell, April 1, 1997.



Figure 2. The adult female Hooded Merganser selects the nest site, constructs and maintains the nest, incubates the eggs, and raises the young. Males abandon females shortly after the start of incubation (Mallory et al. 1993). Photo by R. Wayne Campbell, May 18, 2001.

abuts the farm on the east and south.

The previous owner excavated a half-acre (0.2 ha) pond in a deep bed of clay, forming a levee around one-half of the pond's circumference with the spoil. A pipe drains the winter surplus water into a shrubby wetland, where it joins spring and run-off water to form McFadden Creek (Figure 3).

For a short time after its excavation in 1982 the pond's terrestrial margins were without plant cover out to widths of 0.9 to 6.1 metres. The farmer seeded the levee top with hayfield grasses. In 1992, when I began watching, pioneering plants had created a herb/grass border with scattered seedling red alders (*Alnus rubra*) up to three metres tall. Now, beds of emergent rushes, sedges, cattails, non-native yellow iris, and true aquatics (yellow water lily (*Nuphar lutea*), white water lily (*Nymphaea* sp.), floating-leafed pondweed (*Potamogeton natans*), and bladderwort (*Utricularia* sp.) have flourished. Red alders from 3 to 12 m tall ring two-thirds of the pond edge, absent only where I cut them to maintain my view and to create a flight path for diving ducks.

The pond's builder brought Stickleback (*Gasterosteus* sp.) fish to the new pond from another Salt Spring Island pond. All other pond animals arrived naturally. Invertebrates include dragonflies, caddis flies, and snails. Pacific Tree Frog (*Pseudacris regilla*), Red-legged Frog (*Rana aurora*), and Rough-skinned Newt (*Taricha granulosa*) use the pond. Among mammals, Northern Raccoon (*Procyon lotor*), Northern River Otter (*Lutra canadensis*), and American Mink (*Neovison vison*) are potential waterfowl predators; the first is an abundant resident, the other two are occasional visitors. Canada Geese (*Branta canadensis*), which mildly bully Hooded Mergansers (to which the ducks pay little heed), nest at the pond and often visit all year. Wood Ducks (*Aix sponsa*) feed on the pond frequently (Figure 4), especially in spring and summer, laying eggs in a duck box about one year in four. Ring-necked Ducks (*Aythya collaris*), Common Goldeneye (*Bucephala clangula*), Barrow's Goldeneye (*Bucephala islandica*) and Buffleheads (*Bucephala albeola*), whose diets overlap that of Hooded Mergansers, visit daily in



Figure 3. The cumulative impact of small wetlands in British Columbia for migratory, breeding, and wintering water birds is significant. This half-acre pond on private property on Salt Spring Island hosts a wide variety of aquatic plants and animals. Photo by Judy Weeden, Salt Spring Island, BC.

winter, ranging in numbers from 1-20. Great Blue Herons (*Ardea herodias*) and Belted Kingfishers (*Megaceryle alcyon*) come often, mostly from October through April. They, too, may compete with the mergansers for food, but in both species potential food competition is lessened because first-comers chase off late-arriving conspecifics.



Figure 4. Wood Ducks breed occasionally on the pond, competing with Hooded Mergansers for the two nest boxes available. *Photo by R. Wayne Campbell, April 1, 1997.*

St. Mary Lake, over three kilometres long, is situated 0.75 km northwest and west of the pond; it is the likely rearing area for Hooded Mergansers hatching on our farm. Hooded Mergansers also use the lake all winter except for short periods every few years when the lake freezes. The other possible brood destination and certain wintering area is Trincomali Channel, part of the Gulf of Georgia, a half-mile east of the pond.

Calendar of Pond Use

Hooded Mergansers use the pond all year except when it freezes or when winter rains cloud the pond with silt. From July through September, when juveniles fledge and adult females moult elsewhere, Hooded Mergansers come only occasionally. The period of greatest activity is between February and early June. Non-resident wintering ducks use the pond, as well as localized adults and immatures, until mid-April, after which residents mate and rear broods. Breeding males leave the pond when females are mid-way through incubation.

Nesting Behaviour

Between late March and late April adult females choose one of the two nest boxes after many inspections. Flying to a box, the female stands on top, peers into the hole, and pops inside. Her mate rejoins her when she lands on the pond again. The pair spends most of each day together, feeding, loafing, preening, and courting. Egg-laying is signaled when the female begins to spend 15 to 60 minutes in the nest box. I couldn't measure intervals between egg depositions, but other authors report an average interval of two days (Morse et al. 1969, Dugger et al. 1994), the same for Buffleheads (Erskine 1972).

Females at our pond start incubating as early as April 6 and as late as May 10. Nest attendance increases abruptly to 3 to 5 hours at a time. Males loaf or feed, periodically spending some minutes swimming slowly under the nest cavity. During the first half of incubation hens end an incubation session by flying from the box onto the pond, joining the male. Occasionally the pair flies together toward St. Mary Lake (less often toward Trincomali Channel). Male and female then come back to the pond. The female bathes vigorously for 5 or 10 minutes (Figure 5) and flies into the nest cavity. When incubation is 2 to 3 weeks along the hen flies directly from the box to the St. Mary Lake or Trincomali Channel without landing on the pond; she returns the same way. The male doesn't come to the pond at all, or only briefly after accompanying its returning mate. The male probably needs a bigger body of water while moulting. His



Figure 5. Prior to flying to the nest box, the female Hooded Merganser bathes vigorously. *Photo by R. Wayne Campbell, May 18, 2001.*

absence also reduces activity and scent near the nest box, as does the female's habit of spending pauses in incubation elsewhere.

Campbell et al. (1990) and Morse et al. (1969) suggest that the incubation period for Hooded Mergansers ranges between 29 and 37 days (an average of 33 days) in British Columbia and Oregon, respectively. I determined incubation length in only two cases; one hen incubated for 29 days, another for 27 days.

In the final few days before the eggs hatch the female occasionally drops from the nest box to the pond below, swimming in circles close to the nest tree and sometimes calling. Other biologists have reported hearing pre-hatch young peep from within the egg for a day or more before breaking out of the shell. Parent and ducklings must be communicating, the hen urging the young to increase their efforts to break free. They need help, as Hooded Merganser eggshells are unusually thick (Mallory et al., 1994). Finally, the ducklings jump to the water and join the hen. Usually the female leads them to a plank I anchored on the pond as a loafing place for ducks.

Broods usually leave the pond within 12 to 24 hours after hatching. A note on May 9, 2017, is typical. A female with 8 hatchlings rested in mid-morning on the plank. At 11:00 a.m. PST she swam with her ducklings 15 m to a place where the bank sloped gently. Several of the downies rode on her back or stiffly held, partly fanned tail. The family climbed the bank and headed across the levee toward the marshy course of McFadden Creek. They didn't return. Two Island friends have small ponds where Hooded Mergansers nest. They, too, see broods only briefly after hatching. This behaviour might be encouraged by a number of things, including better food in bigger water bodies, higher vulnerability to predators on small ponds, and the need to prevent moulting females from being trapped through lack of space to become airborne.

I saw two broods stay on the pond longer. In 1996, when there were no nest boxes, a brood of 7, 2- or 3-day old Hooded Mergansers came to the pond June 10 and stayed until June 18. A neighbour reported a hen with 7 ducklings that day on a graveled road 200 m from the pond, walking toward Trincomali Channel. On May 17, 2003 a brood of 6 left the nest box but stayed on the pond until June 4.

Nesting Records

I placed a nesting box on a red alder overhanging the pond in 2002. A Hooded Merganser nested there in 2002 but failed to bring off a brood. A hen used the box in 2003, hatching 6 ducklings on May 16. A Wood Duck used the cavity in 2004. In 2005, a Hooded Merganser laid 11 eggs there but the embryos died 5-7 days before hatching.

I erected a second box 9 m from the first, and 1.8 m lower, on April 12, 2006. Wood Ducks and Hooded Mergansers investigated the box several times but didn't nest there. This occurred in 2007 as well. From 2008-2017 one or both boxes were used every year. In brief summary, the two boxes could have hosted 20 nests in the 10 years of records. In reality, Hooded Mergansers nested 14 times and Wood Ducks nested twice. I found an average of 8.6 eggs in the eight Hooded Merganser nests inspected. Eight broods averaged 7.9 ducklings at hatching.

I am intrigued by the long hikes broods take between our nesting pond and either St. Mary Lake or Trincomali Channel, about 0.87 and 0.77 km away respectively. The ducklings must be very strong to make the trip. Perhaps the relatively long interval between egg depositions allows females to pack nutrients into an egg, and the long incubation period typical of the species assures duckling maturation (Figure 6).



Figure 6. Ducklings hatched on the farm pond mature to juveniles on St. Mary's Lake after a perilous 1.6 km trip through the forest. *Photo by R. Wayne Campbell, July 20, 1997.*

Another aspect of the post-hatch journey is that the brood usually travels across a variety of plant and animal communities, favoring the ability to secure and digest many kinds of food. The female, just ending a long period of weight loss, has a similar need.

The journey seems likely to expose the ducks to several dangers, including predation, human and vehicle encounters, and loss of lagging ducklings. Is it worth it? The behaviour may long pre-date recent times when cavity-rich old forests were cut and replaced with young woodlands offering few nest holes. Boxes erected at water's edge offer nest sites that were once less common. Before European settlement any successful nests from the depths of forests, even with losses during the necessary hike of broods to suitable water, might have been a net addition to the population.

Conservation Notes

Fully feathered adult Hooded Mergansers sometimes try several times to fly from our pond before they clear the slopes and trees around it. They would have a much harder time if I didn't cut saplings regularly from one side of the pond. Flightless young and moulting females would be trapped on our small pond if they didn't make the overland journey on foot soon after hatching. Consequently, efforts to enlist people in programs to erect nest boxes – rightly fun and popular – need to consider minimum pond size and maximum distance to larger rearing ponds.

Watching Hooded Mergansers thrash the mucus from Rough-skinned Newts (*Taricha granulosa*; Figure 7) before eating them, I wonder whether this amphibian, a species of special concern in British Columbia, might be a loser for my encouragement of the ducks. As well, Red-legged Frogs and Pacific Tree Frogs, the former a species at risk, live in our pond and are potential merganser prey. Nymphs of two dragonflies (Blue Dasher [*Pachydiplax longipennis*] and Western Pondhawk [*Erythemis collocata*]), likely merganser food, are found locally and are officially at risk. Close study may reveal more examples. Biologists designing local duck-box projects need to know their aquatic communities well and be ready to make difficult conservation judgments. †



Figure 7. In British Columbia, the only other known predator of Rough-skinned Newt is the Common Garter Snake (*Thamnophis sirtalis*), which seems resistant to the toxic secretions of the newt's skin (Green and Campbell 1984). Newts frequently cling to vegetation in a pond where they are vulnerable to foraging Hooded Mergansers. Photo by R. Wayne Campbell, June 30, 2001.

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About the Author

Bob was born in Massachusetts in 1933 but to hear him tell it life began in 1959. That year he finished schooling at UBC, married Judy Stenger, and drove to Alaska to start his job as research biologist with the brand new Alaska Department of Fish and Game. For a decade he supervised studies of waterfowl and fur animals and did his own research on ptarmigan population dynamics. In 1970 he joined the faculty of the University of Alaska Fairbanks, enthusiastically teaching wildlife and natural resource management there for the next 20 years. His classes were small, his students maturing fast, and he and his students shared the excitement of Alaska's social, political, and economic foment in the '70s and '80s. His first two books, *Alaska, Promises to Keep* (1978) and *Messages From Earth* (1993) came out of those times.

Within six months of moving to Alaska, Bob joined a handful of others to start the State's first environmental non-profit. Volunteer advocacy quickly became a big part of his life, one he continued for 58 years. He served on government boards and commissions like the Alaska Environmental Advisory Council, the federal Marine Fisheries Advisory Committee, the US Marine Mammal Commission, and the Alaska Power Authority, and on boards of environmental groups (National Audubon Society, Trout Unlimited, and Student Conservation Society).

In 1975-76, Bob took leave from the University of Alaska to become Director of the Division of Policy Development and Planning in the Office of the Governor in Juneau, serving as a member of Governor Jay Hammond's cabinet. The State faced problems including designing broad strategies for using or saving the State's share of oil revenues; adjusting every aspect of Alaskan affairs to the recent congressional settlement of native land claims; and negotiating on behalf of the State as over 200 million

acres of federal public land came "up for grabs." Heady times!

Retiring to Salt Spring Island, BC, in 1990, Bob planted 200 heritage-variety fruit trees and restored neglected fields on a farm cleared in the 1860s. He joined a group raising money to build an arts center (ArtSpring) now in its 20th year of operation. He joined the first board of directors of the Salt Spring Island Conservancy, serving as director and frequent officer during its first 21 years.

Retirement brought time to read and write. He published a book of essays, *The Country of Heart, Eye and Hand*, in 2013. Since 2013, Bob has written monthly essays on nature and culture in the *Gulf Islands Driftwood*; he's now shaping them into a book.

Since boyhood in New England, his love of birds has been a constant, enlivening theme in his life. This note on Hooded Mergansers is the latest in a string of writings about birds spanning half a century.



Photo by Judy Weeden.