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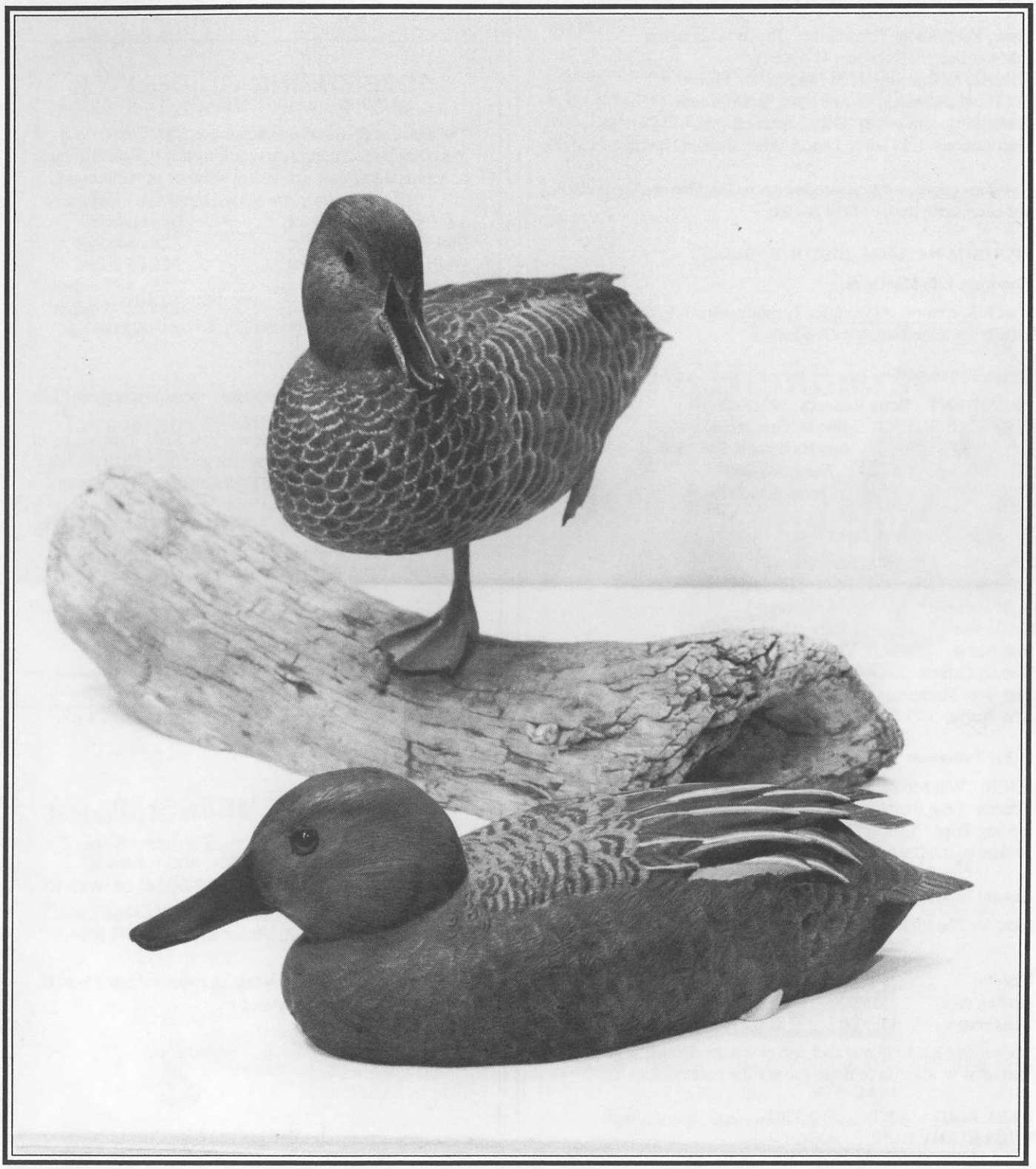

The Victoria NATURALIST

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Remember to renew your membership, if you haven't already done so!

Contents

Cinnamon Teal pair

VNHS member Peter Axhorn is the carver of the Cinnamon Teal pair featured on our cover. The female (standing) was carved from basswood, and the male was carved from jelutong (a Malaysian soft wood). Both were painted with acrylic paints. Peter also works in bronze, iron and stone. His subjects reflect his longstanding interest in the natural world.

During the winter Peter draws his inspiration from the view at his studio on the water in East Sooke; the rest of the year from cruising the north coast waters of B.C. as master of a Fisheries Patrol vessel.

The Cinnamon Teal decoys were photographed by Sheila Wincup.

W. Winston Mair

1914 - 1990

Winston Mair passed away on January 22, 1990, after a distinguished career as a naturalist and administrator.

Shortly after retiring from government service in 1975, he and his wife Jeanne became members of the Victoria Natural History Society. He became vice-president in 1979, president in 1979-81, and served again as a member of the Board of Directors in 1985-86. He also served on the boards of the Federation of B.C. Naturalists (1984-88) and the Canadian Nature Federation (1984-85).

Winston was born in North Battleford, Saskatchewan, in 1914, and served with the Canadian army overseas from 1940 to 1946, retiring with the rank of Lieutenant Colonel.

From 1946 to 1949 he attended the University of British Columbia, majoring in zoology and wildlife management, and earning a BA in 1949 and his MA in 1952. He received a PhD in public administration from the University of Beverley Hills in 1982.

Winston served as Supervisor of Predator Control for the B.C. Game Commission from 1949 to 1952. He then became Chief, Canadian Wildlife Service, Ottawa, for a period of eleven years, and then Chief, National Parks Service, Ottawa, for three years.

Between 1966 and 1972 Winston worked in Winnipeg as Deputy Minister of Mines, Resources and Environmental Management for the Province of Manitoba. He resumed his career with the Government of Canada in 1973, when he was named Director General – British Columbia, Western Region, Department of Regional Economic Expansion, based in Victoria.

In 1975 Winston retired from government service and became an independent consultant on matters relating to the environment, land use, and Indian socioeconomic development. He had an empathy with native peoples that made him particularly effective in negotiations between them and government bodies, and his services were much in demand.

Likewise, because of his broad experience in environmental issues, he became involved in solving various pipeline, water management, and highway problems. He served as a member of the Alaska Highway Pipeline Panel, conducting an independent study of the physical, biological, and socioeconomic impacts of the proposed Alaska Highway gas pipeline and the Dempster lateral to the Mackenzie Delta.

His published reports cover a wide range of subjects. Perhaps the most notable is "Forgotten Land, Forgotten People," a report on the Alaska Highway Gas Pipeline Hearings in British Columbia.

Winston is survived by his wife Jeanne, daughter Nancy James and family in Victoria, and son Kenneth William and wife in Oakville, Ontario.

– Douglas Turnbull

REPORT MARINE MAMMAL SIGHTINGS AND STRANDINGS TO:

380-1925 in the Victoria area
On the water: **VHF channel 68** to the vessel *Sundiver*
1-800-334-8832 toll-free anywhere in B.C.

All sightings, no matter how old, are useful for research purposes, and are put into a computer data base. Records are available to all researchers. When current local sightings of killer whales, or any unusual species, are reported promptly, researchers will try to respond to them. Please report date, time, location, a description of the animals, and number and direction of travel, as well as your name and phone number in case further information is required.

The 1989 birding year

by Keith Taylor

With the introduction of the new Checklist of Birds, complete with bar-graphs, it was hoped that birdwatchers would have a clearer picture of which species were rare or had not yet occurred *in particular seasons*, and would therefore be encouraged to report sightings of these species for documentation. The Checklist may, in fact, be responsible for the high number of 'out-of-season' reports for 1989.

These sightings need to be examined carefully before acceptance by the checklist committee (to be formed). The following are 'new' records. The categories reflect how I would vote, and are not the views of a committee.

An Emperor Goose at Esquimalt Lagoon. Photo by Bruce Whittington.

Acceptable records

The following sightings were confirmed by at least two observers, or are acceptable as stated.

Brown Pelican - two records, one in early June and another in early July, are new records for these seasons. The birds were seen by inexperienced observers but the records are acceptable, based on the ease of identification and the probability of occurrence.

Redhead - the first summer record. A bird was seen in late August and early September. The probability of an escape from the introduced stock at Reifel Refuge seems unlikely, as recent populations have been eradicated.

Swainson's Hawk - the first early May record. Although unconfirmed, this sighting is accepted on the probability of occurrence (May 4).

Sora - one seen on 9 February (confirmed), and another on 27 October that was unconfirmed. Both are accepted on the probability of occurrence.

'Pacific' Lesser Golden-plover - first record for August (10th).

Lesser Yellowlegs - the first record for June (June 28).

Marbled Godwit - the first records for late May (24th) and June (4th).

Western Sandpiper - the first late winter record (7 February).

Stilt Sandpiper - the first early May record and only the second spring record.

Red Phalarope - the first spring record (early May).

Little Gull - the first early July (13th) record.

Solitary Vireo - the first record for October (3rd). The probability of occurrence is good, as it winters rarely in northern California.

Nashville Warbler - the first record for December (17th-31st).

Black-throated Gray Warbler - the first record for early April (11th). The previous early record was 15 April.

Palm Warbler - first record for September (25th).

Wilson's Warbler - the first records for late January and February (1st).

Vesper Sparrow - the first record for October (2nd-3rd).

Swamp Sparrow - the first for early October (7th).

Unacceptable or unconfirmed records

An unconfirmed, very brief sighting of a **frigatebird species** was made – a new species for the checklist. Unconfirmed sightings were made of a **Black-crowned Night-Heron** (seen flying at night), a **White-faced Ibis** (14-18 October), an early **Osprey** (9 March), a **Ferruginous Hawk** (an escaped falconer's bird), a **Long-billed Curlew** (1 June: out of season), a **Lesser Golden-plover** (26 June - photo not yet available), and a **nighthawk species** (see below). A **Horned Puffin** was reported for 29 July, but remains unconfirmed for the Victoria checklist. A **Cliff Swallow** (18 March) was the first March record, and was exceptionally early for this species. The first August records for the **Hermit Thrush** for the 'lowlands' remain unconfirmed and seem exceptionally early.

There were no new, confirmed species added to the checklist this year, except for the hypothetical frigatebird.

The year in review

The weather in January was mild, which was responsible for high numbers of wintering warblers, with five species recorded on the Christmas Count, including a Wilson's. A **Palm Warbler** was at Quick's Bottom (1-29 January). Unprecedented numbers of **Emperor Geese** invaded the area with sightings at Quamichan-Somenos Lakes (17 December-25 February), Sooke-Metchosin (1 January-16 April) and Mandarte Island (4-14 April). High numbers of **Pine Siskins** and low numbers of **Evening Grosbeaks** were reported. The unconfirmed immature frigatebird seen at Mill Bay (IW), was probably not the same bird seen in the Seattle area, as that individual was seen on the Washington coast at the same time. A **Northern Mockingbird** was seen at Saltspring Island (12-15 January) and a **Tree Sparrow** at the Somenos Nature Centre, Duncan (17 December 1988-25 February 1989). Two hypothetical sightings were received: a **Pygmy Nuthatch** at Cordova Bay (23 January) and a **Black-billed Magpie** in Victoria (29 January).

February began with an Arctic cold front which lasted into the third week, with heavy snow until early March. Associated with the front was an influx of **Red-breasted Sapsuckers** and **Hermit Thrushes**. Noteworthy sightings were three **Western Sandpipers** at Patricia Bay (7 February), a **Sora** at Swan Lake (9 February), a **Common Grackle** in Central Saanich (12 February-18 March). A **Tufted Duck** was seen for the third year in a row on the Cowichan River near the Sewage Lagoon (DJ). A **Wandering Tattler** at Macaulay Point (19 March), was probably a rare wintering bird, not an early migrant.

The weather was cooler than usual in March, but warmer than usual from mid-April through mid-May. The unusually fine weather caused many migrants to pass through undetected. An astounding 11 **Mountain Bluebirds** were seen on Mt. Tuam (9 April; AM), and a pair during their normal passage in November (29th-30th; BD) at the airport. Other sightings were a **Nashville Warbler** in Central Saanich (22 April), a **Swainson's Hawk** in North Saanich (4 May; BB), and a **Stilt Sandpiper** at Ascot Pond in May (RS). **Western Tanagers** arrived one week early, and were common by 7 May.

An extremely early **nighthawk**, identified as a Common, was seen at Courtland Flats on 6 May. The average arrival date is 6 June. This might have been a **Lesser Nighthawk**, which migrates earlier and reaches Northern California in early March. The Common reaches this area in mid-May. Another tentatively-identified Common Nighthawk was seen on 18 October, which was very late. Swifts and nighthawks usually migrate in large flocks and on precise dates.

Fair numbers of **Solitary Sandpipers** frequented flooded fields in early May, but no **Wilson's Phalaropes**. Droughts in the interior had earlier brought good numbers of these phalaropes locally. In early May, **Red-necked Phalaropes** invaded the Victoria waterfront, and a **Red Phalarope** was seen off Victoria (RS). Other reports are for a **Marbled Godwit** at Sidney Spit (24 May-4 June; RS), and a **White-winged Crossbill** in Central Saanich (24 May; DC).

The first week of June was very warm, the rest cool with much rain. July and August remained cool. Noteworthy sightings were a **Pectoral Sandpiper** at Swan Lake (1 June - the first June record), a **Long-billed Curlew** at Cowichan Bay (1 June; DA), two **Parasitic Jaegers** at Clover Point (8 June and 29 July - very rare in summer), several **Lesser Yellowlegs** at Cowichan Bay (28 June - the first June records), two alternate-plumaged **Lesser Golden-plovers** (one photographed at Cowichan Bay on 26 June; and a *fulva* race at Clover Point on 19 August; KT), a **Rock Wren** at a gravel pit in Duncan (18 July-16 August; DM), a male **Redhead** (Sidney Spit and Cowichan Bay - the first summer records).

New **Northern Oriole** nest sites were found, one on Granville Road in Lombardy Poplars, but the population continues to remain stable. What factors are involved? The range of **House Wrens** extended to the Mount Douglas area and a singing male was at Mt. Tolmie, where the species has not been recorded in 30 years! **Northern Saw-Whet Owl** breeding numbers appeared to be higher, with most records from the southeast lowlands, north of the Saanich Peninsula.

Clover Point was active in July with an early **Little Gull** (13 July). Little Gull sightings were down from previous years with 4-5 sightings, compared with the 11 in 1988. A **Horned Puffin** flew past the point on 29 July (RS).

On 5 July a **Yellow-billed Cuckoo** was hit by a car and died at the S.P.C.A. This is the first record for Victoria since 28 June 1904.

Summer finally arrived in early September, warm with sunshine, and lasted through 10 October, when a storm front arrived. A good 'drop-out' occurred on 16 September during two cool days. Cowichan Bay was 'hot', with many good shorebirds recorded, including **Stilt Sandpipers** (up to five seen together), and a juvenile **Ruff** (17-29 September; DM), the second record for Cowichan Bay. A **Buff-breasted Sandpiper** (KT) was seen at Cowichan Bay, then at the 'Fun Pacific Field' in Duncan, providing the annual September record. This field also produced a late **Vesper Sparrow** and **Solitary Vireo** and an early summer **Swamp Sparrow**.

A 'fly-by' **Forster's Tern** was at Ogden Pt. breakwater on 31 October (VG), providing the third island record, presumably the same individual. A winter-plumaged adult **ibis** (GH), either White-faced or Glossy) eluded observers from 14-18 October. It was first seen over the university, and lastly at Martindale Flats (KT). It was never seen on the ground by experienced birders, and the eye colour was not detected. A late **Sora** was at Martindale Road on 27 October.

Jordan River produced an unprecedented 36 **Common Terns** (16 September). They are rare on the west coast. The annual spectacle of the **Vaux's Swift** fall migration was noted, with a conservative estimate of 30,000 birds sweeping past on a single day in early September. Two new birds were added to the southwest coast list: **Black-throated Gray Warbler** and **Lesser Golden-plover** (both races).

The *M.V. Coho* trips in mid-October and November were extremely dull. No strong storm fronts occurred this fall to push tubenoses into the straits, except for one **Short-tailed Shearwater** (26 November). December was calm, wet and rather mild. The Christmas Count was rather dull, except for a dead **Long-eared Owl** at Swan Lake and a **Nashville Warbler** found the next day at Saanich (JG), the first December record.

Two exceptional rarities recorded on Vancouver Island this year were a **Snowy Plover** photographed at Qualicum Beach (13 May), and the first record of a **Hooded Warbler** photographed by AD at Tofino (14-16 December).

Observers: D. Aldcroft (DA); B. Begg (BB); D. Carsen (DC); B. Diakow (BD); A. Dorst (AD); J. Gaskin (JG); V. Goodwill (VG); G.F. Houston (GH); D. Johnston (DJ); A. MacLeod (AM); D. Marven (DM); R. Satterfield (RS); K. Taylor (KT); I. Weston (IW).

Parasitism in the flowering plants

by Job Kuijt

The question of what is, and what is not, a parasite is a difficult one in both the animal and plant worlds. In the animal world, especially, every biologist seems to have a pet concept of what parasitism is all about, and the concept strains to contain such situations as we find in the "social parasitism" of the European Cuckoo and our cowbirds, the life of the "parasitic" jaegers, mosquitoes, ticks, infectious protozoans, and the highly reduced crustacea of the genus *Sacculina*. In plants, similarly, there are few, if any, common denominators. Is the fungus partner of a lichen parasitic on the algal component? Or is it the other way around? Or perhaps both ways?

Since I am focussing on the parasites among the flowering plants, I can take some shortcuts in this morass by defining parasites in that group on the basis of the specialized structures that such plants use to penetrate living host tissues to provide anchorage and a source of water and nutrients. This diagnostic structure is called the **haustorium**. In other words, I am limiting the concept of parasitism in the higher plants to those that have haustoria.

Paradoxically, this is not to deny that parasitism of various sorts does occur outside this definition. Normal plant life cycles in most groups contain one or more phases that are obligately parasitic on each other. In the seed plants, for example, the developing embryo is parasitic on the surrounding tissues. Obviously, to refer to all seed plants as parasites because of this makes no sense. A definition based on the haustorium also leaves out carnivorous plants like sundew, bladderwort, pitcher plants, and others, for that mode of life is a very different one.

Even many professional botanists have difficulties accepting that such "obvious" parasites as Indian Pipe (*Monotropa*) and Pine Drops (*Pterospora*) are, in fact, not parasites at all. Such plants are highly advanced saprophytes that have lost all chlorophyll and obtain organic materials from decaying humus via the collaboration of a mycorrhizal fungus; but there is no sign of any haustorial organ on the part of the vascular partner. The same thing is true for the coralroot orchids. The argument that the mycorrhizal combination is, after all, a form of parasitism once again backfires, even though there is much truth in it: it turns out that the vast majority of vascular plants have mycorrhizal associates, and calling them all parasites on their fungus partners destroys the usefulness of the concept altogether. If we follow this line of argument we will have to call all conifers, blueberries, and alders parasites, and we would have to invent a different term for plants with haustoria.

Another item that needs to be clarified is that of **epiphytism**. Plants that grow on others are not necessarily parasitic even if, as sometimes is the case, their effect is one of smothering the "host's" branches. The so-called Spanish moss of the deep South (not a moss at all, but a relative of the pineapple and not to be confused with the long, pendulous lichens in B.C.) and many of its tropical relatives are such epiphytes, as are vast numbers of orchids and ferns. They simply use the tree for support, but do not penetrate its tissues or take materials from it. Some of our coastal ferns and other plants behave the same way.

The haustoria of true parasites range in size from a fraction of a millimetre to a foot or more in some tropical mistletoes. In some of the more advanced groups such as broomrapes and mistletoes, the tip of the seedling's radicle transforms itself into a haustorium when it comes into contact with host tissues. In others, such as all the herbaceous parasites of the figwort and sandalwood families, haustoria are formed only as small, lateral organs of young roots. The single (primary) haustorium may sometimes become quite large; the multiple (secondary) haustoria are frequently ephemeral and replaced every growing season, even if the plant is perennial. Some of our broomrapes have both primary and secondary haustoria. In one of our parasitic groups, the dodders, the haustoria are formed from the twining stem only, as there is no root system at all.

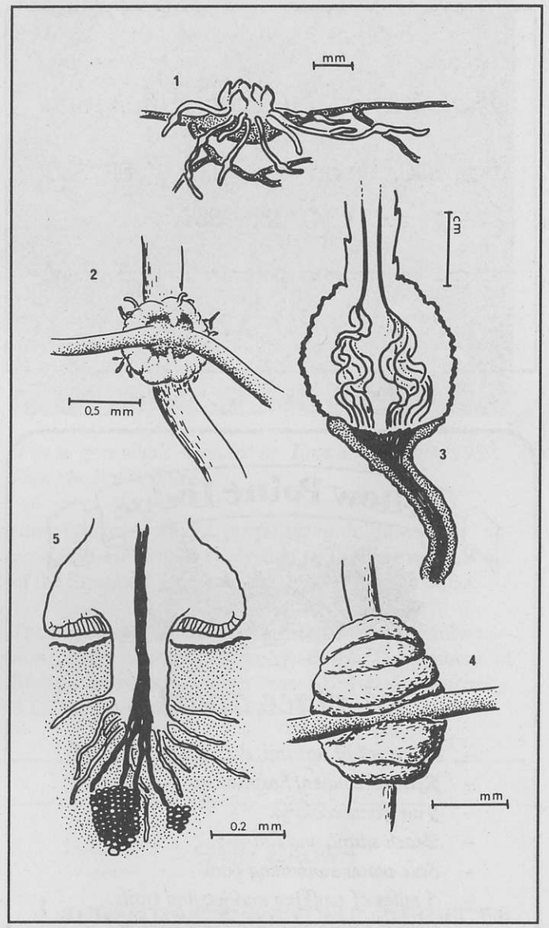
The internal structure of haustoria is sometimes rather simple, as in some broomrapes and in many parasitic figworts such as the paintbrushes. In those cases, it seems mostly a matter of tapping into the host's xylem tissues which carry water and minerals; a direct xylem bridge always seems to be present in such cases. That no specialized connection is present for the phloem (sugar-conducting tissue) seems reasonable for the green hemiparasites, which are photosynthetic themselves. The fact that many (or most) holoparasites (for example, our groundcone, *Boschniakia*) have no real phloem connection, however, remains a continuing puzzle and we do not know how, or via what tissues, the sugars that are necessary for the parasite's growth are transported from the host.

In some other parasites, like our bastard toadflax, the haustorium turns out to be one of the most complex organs in the plant world, its development being only poorly understood. For example, a glandular cavity is formed in the centre which is a continuing puzzle to students wrestling with a functional explanation. Little, if any, of this complexity is visible from the outside of this simple-looking, saddle-like structure.

One further development has taken place in the dwarf mistletoes, the only native mistletoes occurring in Canada. When the haustorium penetrates the tree's living tissues it fragments immediately, growing into delicate, branching strands in various directions, and invading an ever-expanding part of the host stem. The haustorium in such cases is no longer a single, unified organ. This **haustorial system** has some of the characteristics of a fungus mycelium. At certain times, this haustorial system produces mistletoe shoots that emerge from the host bark. Zoologists acquainted with the remarkable crustacean parasite *Sacculina* will be struck by the close parallel, as in both cases the parasite consists of nothing but a fragmented, absorptive system internal to the host and the reproductive structures that emerge from it.

In what groups of vascular plants, then, has parasitism in this sense evolved? Probably in about nine different places in the system--surprisingly, all in the dicot group of flowering plants. There are no parasitic ferns, fern-like plants, conifers, or even monocots. We do not know why that is so, for monocots otherwise have been at least as adventurous evolutionarily as dicots (except for the striking fact that there are no carnivorous monocots, either). In the dicots, a number of parasitic families are only found in tropical and subtropical regions, some representing fantastic, mushroom-like or otherwise extraordinarily reduced plant forms.

Does a parasitic plant kill its host? There is no simple answer to that question but, generally, the answer is: no, it does not. The host may be seriously weakened or stunted and this, in turn, may make the host vulnerable (or attractive) to secondary parasites or other attacking organisms. Dwarf mistletoe infections, for example, may attract bark beetles. The more direct effect of the parasite depends upon the intensity of attack and the size and vigour of the host. A single mistletoe plant on a large tree has no measurable effect; but many mistletoes on a small host may well cripple and deform it for life and prevent it from reproducing. Biologically, of course, it would make little sense for a parasite to kill its host; that would be a form of suicide.



*Some representative haustoria (host tissues shaded): (1) Young broomrape (*Orobanche*) plant, its main haustorium below the influorescence bud and numerous additional, small haustoria on the slender roots. (2) Paintbrush (*Castilleja*). (3) Haustorium of groundcone (*Boschniakia*) as seen in longitudinal section, showing vascular connection to a salal root. (4) Bastard toadflax (*Comandra*). (5) A mature haustorium of dodder (*Cuscuta*) in longitudinal section, showing vascular connections to vascular tissues of the host stem below.*

The vast majority of parasitic flowering plants are totally unimportant economically, having evolved a balanced parasitism with native plants in their natural surroundings. But in cultivated fields over large stretches of the Old World, some extremely serious parasitic angiosperms exist. A couple of the broomrapes of the Mediterranean are in that category, and can utterly devastate crops of various legumes and others. Witchweed, especially in the semi-arid African Sahel, makes cultivation of desperately-needed millets and other crops nearly impossible over vast areas. A broomrape in Southeast Asia wreaks havoc in sugarcane fields. In the Pacific Northwest, the dwarf mistletoes are serious forest pathogens, decreasing both yield and quality of many conifers. Nevertheless, it needs to be said that such instances, on the whole, are highly exceptional.

The rapid destruction of tropical forests will also leave its mark on the world of parasitic flowering plants. The largest flower in the world, a Sumatran species of *Rafflesia* nearly a metre in diameter, may already have been extinct for decades, and all other species of this extraordinary genus are seriously endangered. It is almost certain that some mistletoes, being obligately dependent upon trees, are already extinct and that many others are sure to follow in rapid succession. The glorious rare Andean mistletoe with brilliant red and yellow tubular flowers nearly a foot in length, which I saw in southern Ecuador four years ago, may never again be seen by a specialist. These and numerous other exotic parasites are, of course, only some examples of the vast biological diversity going up in smoke in the tropics every day.

In B.C., there are five groups of flowering plants that are parasitic: one subfamily of the figwort family (*Scrophulariaceae*), the broomrapes (*Orobanchaceae*), the dodders (*Cuscuta*), the sandalwood family (*Santalaceae*), and one of the mistletoe families, nowadays called *Viscaceae*. These represent modes of parasitism that are very different, and I hope to write a brief account of each of these in the future.

Victoria to host killer whale meeting

Victoria is the perfect location for an international conference on killer whales, as it is probably the best city in the world for viewing killer whales right along the waterfront. It's fitting, therefore, that the **Third International Orca Symposium**, taking place **March 9-12, 1990**, will be held in Victoria, co-hosted by the Royal British Columbia Museum and The Whale Museum in Friday Harbor. All sessions will take place in the Newcombe Theatre.

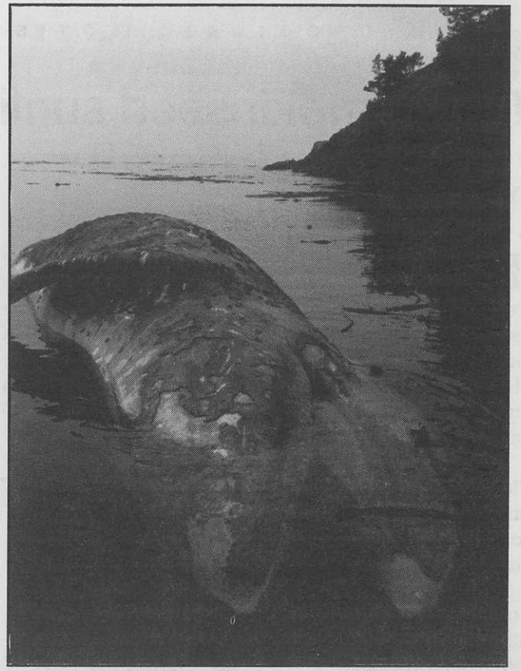
The meeting will include more than 50 papers and poster presentations on topics ranging from general biology to captive and wild behavioural studies, acoustic communication, feeding ecology, socioecology, genetics and management issues. In addition there will be a session devoted to comparing killer whale social systems with those of other higher animals, such as wolves, elephants, baboons, ravens, lions, and another cetacean, the bottlenose dolphin. Research from at least six different countries should be presented. For further information contact Richard Osborne at The Whale Museum, P.O Box 945, Friday Harbor, WA 98250 (206) 378-4710.

WANTED:

Information on gray whale strandings (dead or alive) and collisions with fishing gear in British Columbia

The Scientific Committee of the International Whaling Commission is conducting a comprehensive assessment of the status of the gray whale. The purpose of this study is to test the IWC's population evaluation procedures on the most well known population of baleen whale. In order to evaluate the effects of collisions with fishing gear and other causes of mortality on populations, the Committee is collecting information on these incidents in British Columbia, for presentation at a special meeting in Seattle in late April. This research is being undertaken under contract to the Department of Fisheries and Oceans in Ottawa.

Gray whale populations are increasing, and incidental catches are not a serious problem, so this has no restrictive management implications for British Columbia. Anyone knowing of such incidents from any year is asked to provide details to Robin Baird at the address below. Details on all strandings, even if they may already be known to researchers, are valuable, in case more detailed information on the possibility of gear entanglement is available. Contributors will be fully acknowledged in the report and will also receive a copy. Please include date, location, the observer's name, phone number, address, the type of incident (gear collision, stranding [dead or alive], floating carcass), and any other available details, such as photographs, measurements, gender, etc. Information received on gear entanglements or strandings of other species of whales, porpoises or dolphins is also appreciated, and will be entered in the long term data base of the Stranded Whale and Dolphin Program of B.C.



A dead gray whale stranded at East Sooke Park, 1989. Photo by Robin Baird.

Thank you very much for your help. **For more information please contact: Robin W. Baird, Department of Biological Sciences, Simon Fraser University, Burnaby, B.C. V5A 1S6 (604) 380-1925.**

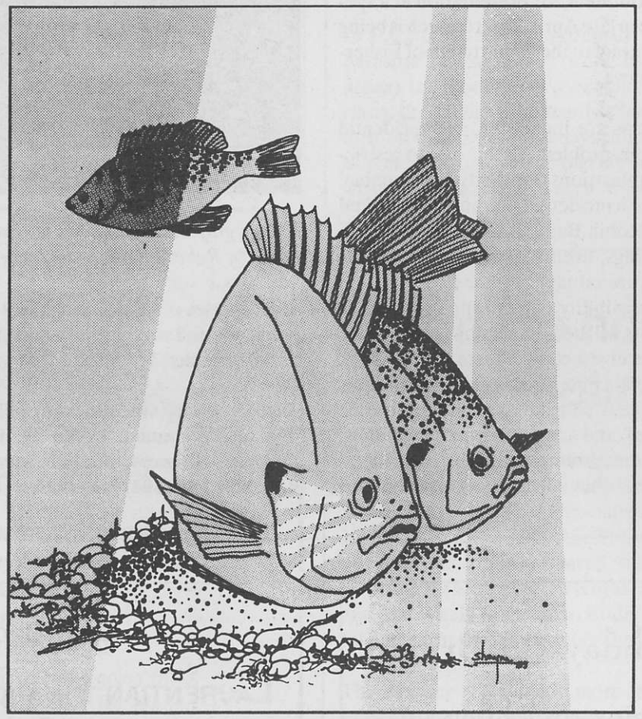
ICHTHYOLOGICAL NOTES

The pumpkinseed sunfish

by Graham E. Gillespie

The sunfishes, Family Centrarchidae, are a North American group of twenty species, with native ranges mostly confined to eastern North America. A California species, the Sacramento perch, *Archoplites interruptus*, is the only extant member of the family naturally present west of the Rocky Mountains (Nelson, 1984). Many sunfishes are held in regard by sport fishermen, and as such were widely introduced in western North America, England, and Europe.

The pumpkinseed sunfish, *Lepomis gibbosus*, is the most colourful member of the family found in British Columbia. Other British Columbian centrarchids are the smallmouth bass, *Micropterus dolemieui*, the largemouth bass, *Micropterus salmoides*, and the black crappie, *Pomoxis nigromaculatus*.



Pumpkinseed Sunfish can be seen in Swan Lake, and in the Nature House at Swan Lake. Illustration by Shayne E. MacLellan.

Assuming the pumpkinseed to be a form of perch, Linnaeus named it *Perca gibbosa* in 1758. The species has also been described under the genera *Sparus* (porgies), *Morone* (temperate basses), and under two sunfish genera now considered obsolete: *Pomotis* and *Eupomotis* (Jordan *et al.*, 1930; Scott and Crossman, 1973). The generic name *Lepomis* refers to the scaled operculum, or gill cover. The specific name *gibbosus* means gibbous, or in the shape of the full moon, and refers to the body outline.

Any fish of such widespread appeal to sportsmen endures a long and confusing list of colloquial names, as laymen rarely attribute any systematic significance to the names they apply, and different names are attributed to the same fish by people living in different areas. Common names reported for the pumpkinseed include common sunfish, bream, female perch, flatfish, flounder, harlequin roach, kiver, northern pomotis, perch, pond perch, pumpkinseed, punky, quiver, redbelly, roach, robin, robin perch, ruff, sand perch, sun bass, sunfish, sunny, tobaccobox, yellow perch, yellow sunfish and yellowbelly. The French common names are crapet-jaune and crapet-soleil (Jordan *et al.*, 1930; Scott and Crossman, 1973).

The pumpkinseed is a deep-bodied, laterally compressed fish. The mouth is small, with the maxillary (upper jaw) barely reaching to the front of the eye. The head is large, with an acutely rising forehead, and the long gill cover flap bearing a dark spot bounded by red. The dorsal fin is continuous, with no indentation to separate the spiny-rayed and soft-rayed portions. The pumpkinseed is golden in colour, mottled and spotted with orange, yellow, blue, and green. The sides of the head are highlighted with iridescent blue vermiculations. The breast is orange to yellow in colour. The sides are marked by seven to ten vertical dark bands. In the breeding male all the colours are intensified. The back is chrome-blue; breast and belly are orange; and the light blue facial lines and red opercular spot are vividly augmented.

Pumpkinseed sunfish are most easily viewed during their breeding season, which runs from late spring to early summer. The male pumpkinseed establishes a territory in the shallow nearshore waters, and constructs a nest, or redd. The nest is simple, merely a circular area of the bottom (usually with a diameter approximately twice the length of the individual), which has been cleared of debris, such that a shallow depression is formed. Any bottom type that can be cleaned to a hard substrate is satisfactory. In some locations nests may be so numerous as to fill the available space. Thus the territory of an individual male may be no bigger than the nest itself.

After nest construction, the male guards his territory from other males, and entices prospective mates to the nest. The females move over the territories, and select their mate. Once enticed to a nest by the appearance and initial displays of the male, the female settles into the nest. The pair face in the same direction, and slowly circle within the nest. The female tilts her body away from the male, and nudges the male's belly with her own. During these bumping episodes the eggs and milt are released in small batches. Spawning usually lasts 25 to 45 minutes, with the male breaking off from the spawning behaviour to threaten any other sunfish which might approach the nest (Miller, 1964).

Noble (1934) discussed sex recognition in the pumpkinseed, and his research indicated that colour is not the primary method of mate recognition by the male. He found that females may be attracted to the redd by a male's bright colouration, but that the male recognised the opposite sex primarily by behavioural cues. Stunned and preserved fish, as well as models, all elicited a mating response from males on the nest. It was apparent that a lack of response to the initial displays of the male was all that was needed to convince the male that the approaching fish was a prospective mate, and not a competitor. As the mating displays continued, some forms of tactile stimulation were required from the "female" of the pair.

When a mirror was placed at the edge of the redd, the male would make his initial displays at his own reflection, and, seeing them repeated, would become more agitated. Eventually the male could no longer stand the frustration of a strange male at the border of his territory, repeating every display, and would vigorously attack the mirror, attempting to drive the intruder away.

This behavioural programming is not unique to fishes. I recall seeing a documentary on the mating displays of grouse, with examples of behaviour of several species. A sequence was shown in which a male blue grouse displayed for a shy female. The female was complacent, neither returning his displays nor running terrified for the hills, so the male proceeded to attempt a mating. At this point, Dave Fraser, who was watching the sequence, asked: "What's wrong with this picture?" There were two problems. First, the female grouse was of a different species; it was a ruffed grouse. Second, the dreamy look in her eye wasn't romantic fervour: she was a taxidermied specimen. The male's behavioural program dealt primarily with other males returning displays, and the lack of response from the female, even though she was of a different species (and incapable of any response), merely spurred him on to the next series of behaviours in the sequence.

This same "bug" in the behavioural programming of the sunfish allows a second mating strategy, that of the cuckold, to be successfully employed by some males. Gross (1982) described alternative mating strategies in sunfishes, primarily the bluegill, *Lepomis macrochirus*. He outlined two male strategies: the parental male, which builds a nest, defends territory, and guards the young; and the cuckold male, which steals fertilizations from the females on the nests of parental males.

The strategies of the cuckold males took two forms: the sneaker and the satellite. Sneaker males are smaller than parentals, and have the same light body colour, though they lack the bright orange breast of the displaying parental male. They remain close to the substrate, hiding under the cover of plants or behind rocks or branches. When a pair of parentals are spawning in the nest, one or more sneakers will dart into the nest under the couple (either all at once or in rapid succession), release sperm, and fertilize some of the eggs. When several sneakers annoy a spawning pair, the male can become confused or distracted, allowing easier access for other sneakers to the eggs.

Satellite males are a little larger than sneakers, though still smaller than parental fish. They mimic female sunfish in appearance, being dark in colour with a faint orange breast and strong, dark vertical bars. They position themselves above the nest, and slowly descend between the spawning pair. If the satellite successfully mimics a female, and is not detected by the parental male, he releases his sperm along with the parental male, and fertilizes some of the eggs.

Gross estimated that the male spawning population at his test site was made up of 15% parental males, 21% satellites, and 64% sneakers. Thus "approximately 85% of the reproductively active males in the population are attempting to cuckold the 15% that build nests and provide care" (Gross, 1982). He reported that the cuckolds had only limited success in their attempts, with only 14% of the colony's spawning including fertilization by non-parental males. The role of the cuckold was a tough one, with increased mortality due to injuries inflicted by parental males, and slower growth due to the investment of energy into reproduction at a younger age (and thus smaller size). Sneaker males become satellite males as they grow older and larger, but never become parental males (which spawn for the first time at six or seven years of age).

At first glance, it may appear that the cuckold males are driven to this strategy by being unable to compete with the larger, more aggressive parental males. However, the sneakers are smaller because they have become reproductively mature at a younger age. The two mating patterns affect the growth rates of the fish: those which spawn during a given season have less energy to contribute to growth. The parental pathway, delayed mating until the sixth or seventh year, allows these males to grow more rapidly, and reach a greater size. But the cuckold males do not appear to be driven to their tactics, as both types of males are the same size at the age when the alternative pathway is entered (Gross, 1982). Furthermore, one would expect that the females would discriminate against the cuckolders, if they were competitively inferior to the parental males, but there is no evidence of this (Gross, 1986).

Gross calculated the frequency of successful fertilization by both parental and cuckold males in seven colonies over two years. His analyses indicated that both strategies provided nearly equal genetic payoffs, as measured by successful fertilization of eggs, which represents an individual's genetic contribution to successive generations--the ultimate evolutionary yardstick. By maturing younger, and at a smaller size, the cuckold males appear to be evolutionary equals to parental males, even though they do not live to be as old.

The sunfishes have been a favourite study animal of behavioural scientists for many years, mainly because they adapt well to captivity and have an extensive suite of interesting behaviours. Most descriptions of these behaviours have portrayed sunfish as highly interactive social animals, with breeding behaviour characterized by territoriality, complex mating displays, and extended parental care. The recent study of alternative mating strategies, and the surprising suggestion that these adaptations may be evolutionarily stable, adds another dimension to the puzzle, and emphasizes how complex the behaviours of the "lower vertebrates" really are.

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Thanks to Shayne MacLellan for her illustration of the pumpkinseed sunfish.

Victoria Christmas Bird Count 1989

Introduction by Mike McGrenere

With visions of 150 species dancing in their heads, the Victoria Christmas bird counters set out on the morning of December 16, 1989, to search every hedgerow, shoreline, and hawthorne bush in the count area to make sure that no bird species went unobserved.

Participation in this year's count was at an all-time high for Victoria, with 218 participants – 191 field observers and 27 feeder watchers. The weather was not as cooperative as on the previous two Christmas counts. The day was characterized by grey overcast skies and people in higher areas found themselves counting in the fog during the morning.

A total of 137 species were observed, which is 10 species short of our Canadian record of 147 species, established last year. Despite the drop from last year's total, this year's count of 137 species represents the fifth highest Christmas bird count for Victoria. As well, our total was high enough to again beat the Vancouver count, which recorded 134 species.

All-time high totals were set for 26 species this year. Notable among this group were 90 Trumpeter Swans, a species that has made a remarkable recovery over the past few decades. Canada Geese were also at an all-time high, with an increase of almost 500 birds over last year's count, which was also a record high. Eight species that were observed in record numbers can be considered "backyard species"; these include Rufous-sided Towhee, Golden-crowned Sparrow, Dark-eyed Junco, House Finch, and House Sparrow.

The post-count gathering was held for the first time at the Gordon Head United Church. Another count high was set here, with approximately 120 people turning out for the post-count festivities. Thanks to Kaye Goodall for another superlative effort in organizing the dinner and table decorations.

Participants in the 1989 Count

Anne Adamson, Hector Alexander, Anne Algard, Gladys and Jerry Anderson, Doug Andrews, Muriel Andrews, Peter Axhorn, Bill Barkley, Ann Bayles, Wendy Beauchamp, Barbara Begg, A. Belither, Bruce Bennett, Mike Bentley, Gail Berg, Joanne Bertrand, B. and H. Borris, Peter Bricknell, Colleen Bryden, Alan Burger, Giff Calvert, El Carr, Keith Carr, Dannie Carsen, Alice Cassidy, Beth Chatwin, Trudy Chatwin, Stephen Cheeseman, Dorothy Clark, John Cooper, Audrey Copping, Christian Cote, Dan Cox, Joan Crabbe, Helen Currie, Eleanor Davidson, Denny Davis, L. Davis, John and Katie Dawson, Lois Dellert, G. and J. Devey, Brent Diakow, Christine Drinnan, Warren Drinnan, Mike Edgell, Jennifer Emms, Don Eastman, Terry Finch, Mary Finnegan, Shane Ford, David Fraser, Arlene Galloway, Jan Garnett, Jeff Gaskin, Bryan Gates, Nick Gibbs, Margaret Gillard, Tom Gillespie, Bev Glover, Sharon Godkin, Coryn and Tony Gooch, Peggy and Vic Goodwill, G. and J. Greer, Robert Grieg, Vera Guernsey, Alan Guilbault, Leah Halsall, Sally Hamill, Barbara and Bruce Hanwell, Andrew Harcombe, Megan Harris, Sharon Hartwell, Connie Hawley, Al Henderson, Dorothy Henderson, Doreen Higgin, Gordon and Gwennie Hooper, Tracy Hooper, Bob Houston, Wilson Hunsburger, Alan and Barbara Irwin, Kaye Johannes, B. Kennedy, Barbara Kirby, Jim Kirby, Mike Klazek, Ann Knowles, Kay Komaric, Marilyn Lambert, Ann Laws, Dorothy McCann, Barb McClintock, Dolena McCuish, Wally Macgregor, Barb and Mike McGrenere, Margaret and Rob Mackenzie-Grieve, Alan MacLeod, M. McNall, Liz McNelly, Art McPhalen, Sandy McRuer, J. Mayall, Marilyn Miller, Gail and Stephen Mitchell, Faye Mogensen, Joan Monier-Williams, Ken Morgan, Hugo Mowinckel, Betty and Jim Mundy, Christian Nielsen, Evelyn Nixon, Elizabeth North, Brian Nyberg, Mark Nyhof, Colleen O'Brien, Marie O'Shaughnessy, Patti Parrish, David Pearce, Flo Pikula, Jan Pikula, Leah Ramsay, Wayne Robertson, Dianne Robinson, Robert Robinson, Donald and Donna Ross, Paul Ross, Christine Rushforth, Sheila Rymer, Chris Sandham, Joy and Ron Satterfield, Anne Scarfe, Bayla Schecter, Jim Selk, John Shaneman, Sandy Shaw, Cynthia and Michael Shepard (compilers; 1241 Broad Street, Victoria, B.C. V8W 2A4), Val Siemens, Sheila South, John Steele, S. Steuart, David Stirling, Dennis and Kaye Suttill, Renee Sweeney, Germaine Taylor, Mike Toochin, John Topham, Brenda Trotter, Margaret Turner, Hank Vander Pol, Harry Van Oort, Marg and Roy Wainwright, Richard and Sally Wait, Marie and Reuben Ware, David and Morgan Warren, Richard Watts, Danny Weston, Inez and Tom Weston, Jim Weston, Bruce Whittington, E. Williams, Bud Wilson, Neville Winchester, Al Wisely, Lorna Wood, Mark Wynja, Mark Yunker.

Victoria Christmas Bird Count 1989

Species Name	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7	Area 8	Area 9	Area 10	Area 11
Red-throated Loon							3	5		6	1
Pacific Loon			3			5				4	64
Common Loon						5	6	8		14	4
Pied-billed Grebe	1				8				5	2	
Horned Grebe	5					15	11	20		35	37
Red-necked Grebe	2		6			10	6	60		54	7
Eared Grebe											
Western Grebe						265	2075	25		12	56
Double-crested Cormorant	3	1	12	14	27	39	10	35	78	125	25
Brandt's Cormorant					0	9		9		34	0
Pelagic Cormorant						5	2	15	1	27	14
Great Blue Heron	1	1	1	1	1	18	6	15	9	8	1
Trumpeter Swan				5							
Mute Swan							11		6		2
Snow Goose											
Greater White-fronted Goose											
Canada Goose	62			286	16	3	82	1	144		
Wood Duck		2					2				
Green-winged Teal				124	232				3		
Mallard	484		35	231	345	219	303	43	346	249	679
Northern Pintail				134	43	33	2		17		1
Northern Shoveler				3	56						
Gadwall				2			2		3		
Eurasian Wigeon				1	1	6				1	3
American Wigeon	135		33	205	168	542	317	4	250	383	368
Canvasback									45		
Redhead									1		
Ring-necked Duck	4	1		21	31				1		
Greater Scaup			1			32		1	60		
Lesser Scaup	1				1	0			328	0	3
scaup sp.		1									
Harlequin Duck						14	10	21		25	29
Oldsquaw						14	2	32		3	1
Black Scoter											
Surf Scoter			11			33	83	23		48	25
White-winged Scoter						4	22	1			5
Common Goldeneye	19		21			57	38	73	4	78	17
Barrow's Goldeneye	4		26								
Bufflehead	43	4	79	15	11	187	145	175	445	73	49
Hooded Merganser	17	8		29	5	47	20	69	42	52	7
Common Merganser	8	1	36	30	15		5	15	10	12	
Red-breasted Merganser	1					39	99	33	1	101	8
Ruddy Duck									5		
Bald Eagle (adult)	3		3	3	2		4	3		2	2
Bald Eagle (imm)	3		12								
Bald Eagle (u)						7					
Sharp-shinned Hawk	1			1	3	1	1		2		
Cooper's Hawk	2			2	3	1	1			2	2
Northern Goshawk											
Red-tailed Hawk	4		4	1	3	3	1		1	0	0
Merlin	1			1		1					1
Peregrine Falcon	1					1	1				
Ruffed Grouse		2									
Ring-necked Pheasant	3										
California Quail	60	30			13	8	2		10		
Virginia Rail					1			1			
American Coot	1			5	32	7	105		80	1	
Black-bellied Plover							4	20			
Killdeer				14			34			3	
Black Oystercatcher					0	0		1		2	8
Greater Yellowlegs							18			1	1
Spotted Sandpiper											
Whimbrel											
Black Turnstone						1	37	30		28	13
Surfbird						4		2		10	4
Sanderling							6	5		6	7
Rock Sandpiper											
Dunlin							32	5			
Common Snipe	1			22	12	1	2	2			
sandpiper sp.											

AREA 1: Butchart's Gardens - Northern Highlands
AREA 2: Central Highlands
AREA 3: Goldstream - Finlayson Arm
AREA 4: Thetis Lake - Hastings Flats
AREA 5: Langford Lake
AREA 6: Albert Head - Triangle Mountain
AREA 7: Esquimalt Lagoon - Mill Hill
AREA 8: Esquimalt Harbour
AREA 9: Portage Inlet - The Gorge
AREA 10: Victoria Harbour
AREA 11: Beacon Hill Park
AREA 12: Oak Bay

Victoria Christmas Bird Count 1989

Area 12	Area 13	Area 14	Area 15	Area 16	Area 17	Area 18	Area 19	Area 20	Area 21-23	Totals	
		2						2		19	
2	2	2	1					43	8	134	second highest
8	4	8	9			4		20	1	91	
				1		6	1			24	
41	13	31	106			101		74	18	507	
48	6	15	5			13		107	8	347	
						15				15	
	2		1			1		2	2	2441	
7	45	23	9	4	2	39	10	5	8	521	second highest
4		18	17			11	0	3	251	356	
169	1	47	128			68		10	50	537	
8	10	3		1	2	4	3	5	12	110	
								85		90	all time high (previous high 64
				1	2					22	in 1986)
								1		1	
					6		2	1		9	second highest
					210	161	376	214		1555	all time high (prev high 1079
										4	in 1988)
				3		2	21	3		388	
36	292	47	4	545	893	232	365	766	3	6117	
					16	2	9	43		300	
				6			8	3		76	
					4	2	27	3		43	
1							2	5		20	
262	87	24		446	214	89	189	707	13	4436	lowest since 1968
						5	1			51	
										1	
					12	5	194	8		277	
1			12			62				169	
						0	0	11		344	
		1								2	
41	2	38	14			8		5	57	264	
28	2	25	36			21		125	19	308	
								2		2	
27	2	73	51			47		94	44	561	
11	8	25	7			27		3	6	119	
115	51	26	65			19	3	22	4	612	
1						1				32	
211	115	48	51			119	2	85	164	2021	
24	11	21	1			26	3	15	34	431	
	7				2	185	16			342	
65	3	13	10			43	4	28	10	458	second highest
				2		1				8	
1	4	4	4			8	2	3	2	50	all time high (previous high 48
		1	1			3	1	2		23	in 1984)
										7	
1		1	1		3	1	1	2		19	second highest
4	3		1	1	1	1	2	3		29	all time high (previous high 25
1										1	in 1988)
					3	0	3	5	1	29	
1			1	1		1	2	1		11	second highest
				1			1	1	1	7	
										2	
					1	3	8	4		19	
25	13	6		8	39	23	50	71		358	highest since 1968
						4	5			11	second highest
18				44		27	2	3		325	
								14	88	126	
3					52	13		21	1	141	
9	16	3				0	0		4	43	
1	3									24	
		1								1	
		1								1	
19	3	1							8	140	
										20	all time high (tie)
									3	27	
									1	1	
								1	140	178	
2						8		2	1	53	
						170				170	

AREA 13: University - Cadboro Bay
AREA 14: Ten Mile Point - Arbutus Road
AREA 15: Gordon Head - Mt. Douglas
AREA 16: Swan Lake - Cedar Hill
AREA 17: Blenkinsop Lake - Panama Flats
AREA 18: Elk Lake - Cordova Bay
AREA 19: Prospect Lake - Quick's Bottom
AREA 20: Martindale - Bear Hill
AREAS 21-23: Ocean (Zero Rock, Chain Islets, Juan de Fuca)

Victoria Christmas Bird Count 1989

Species Name	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7	Area 8	Area 9	Area 10	Area 11
Bonaparte's Gull						1				1	1
Mew Gull	15		24	28	6	274	103	450	16	108	134
Herring Gull	9		2					15			
Thayer's Gull	456		31	1				450	6	1	7
Western Gull	5		1			1		1	1	2	
Glaucous-winged Gull	4735	17	543	133	372	1614	369	68	653	881	180
Glaucous Gull	1		1								
gull sp.											
Common Murre								6		8	1
Pigeon Guillemot					0	5		2		7	7
Marbled Murrelet	2					18		6		9	
Ancient Murrelet							1	24		2003	2
Rhinoceros Auklet								1		7	
Rock Dove	80	12		168	8	2	17	130	109	91	162
Band-tailed Pigeon					2		2				
Mourning Dove											
Common Barn-Owl											
Western Screech-Owl	2			1	1						
Great Horned Owl					1	2		1	1		
Northern Pygmy-Owl	1				2	0				0	0
Barred Owl											
Short-eared Owl											
Anna's Hummingbird					7	2					
Belted Kingfisher	3	2	9		1	9	5	10	6	7	1
Red-breasted Sapsucker									1		
Downy Woodpecker	2	3	1	3	5		3	1	10	3	9
Hairy Woodpecker	3		1	2	2						
Northern Flicker	12	4	2	29	26	25	42	25	30	4	16
"Yellow-shafted" Flicker											
Pileated Woodpecker	1		1	2	1	0	1	1	1	0	0
Steller's Jay	5	9	13	10	42	22	15				
Northwestern Crow	992	37	235	939	368	236	103	66	175	182	81
Common Raven	39	13	8	14	10	15	8	6	2		
Chestnut-backed Chickadee	107	20	75	91	88	46	76	30	61	24	91
Bushtit	61		10	6	25	4	29	7	89	46	32
Red-breasted Nuthatch	8	8	3	12	5	4	6	4	7		13
Brown Creeper	4	1	4	11	6	2	4	1	11		13
Bewick's Wren	8	2	3	4	29	4	4	5	11	2	6
Winter Wren	14	17	29	20	32	20	19	5	13	2	7
Marsh Wren	2		2	1	1	0	4	3		0	0
American Dipper			9								
Golden-crowned Kinglet	182	94	29	188	134	142	171	20	72	2	36
Ruby-crowned Kinglet	7	2	8	7	36	20	25	3	10		13
Hermit Thrush	1	1	3	1	1						
American Robin	107	5	4	110	34	168	46	40	119	50	175
Varied Thrush	11	14	6	24	17	11	35	4	26		17
Townsend's Solitaire											
Water Pipit											
Cedar Waxwing	5	8		3							
Northern Shrike					0	0			1	0	0
European Starling	550		64	232	65	198	54	7	317	214	637
Hutton's Vireo				1	1						
Yellow-rumped Warbler							1				
Townsend's Warbler											1
Rufous-sided Towhee	35	22	5	28	88	28	22	9	24	1	22
Savannah Sparrow	5										
Fox Sparrow	6		1	2	24	16	10	4	15	5	9
Song Sparrow	16	9	13	13	43	50	13	11	23	20	22
Lincoln's Sparrow											
White-throated Sparrow					0	0		1	1	0	0
Golden-crowned Sparrow	51	18		17	47	14	25	12	66	19	31
White-crowned Sparrow	2			2	2		1	1	8	2	
Harris' Sparrow				1					1		
Dark-eyed Junco	182	57	30	252	296	398	164	90	117	54	73
"Slate-colored" Junco			1								
Red-winged Blackbird				5	18	2				15	
Western Meadowlark	21										
Brewer's Blackbird				2	14	30	22			50	
Purple Finch	6	3		3	9	5	5	1	1		2
House Finch	17			24	45	34	10	75	72	53	15
Red Crossbill				4							
Pine Siskin	105	160	110	106	126	483	151	235	155	34	210
American Goldfinch											
House Sparrow	8		8	67	6		1	96	123	137	35
Total Individuals	8754	589	1572	3717	3075	5541	5077	2679	4251	5445	3505

Victoria Christmas Bird Count 1989

Area 12	Area 13	Area 14	Area 15	Area 16	Area 17	Area 18	Area 19	Area 20	Area 21-23	Totals	
										3	
1886	135	665	21	2	3	63	22	76	12	4043	
3				1				3		33	
275					302		12	5		1546	second highest
					1					12	all time high (previous high 9 in 1986)
127	110	164	113	213	365	1773	882	284	236	13832	
							249			2	
										249	
1		3				3		2	400	424	
17	3	9	1			2	0	8	24	85	
4			1						4	44	
		40				2		9	150	2231	second highest
										8	
37	13	2	40	80	32	8	31	161		1183	all time high (prev high 1062 in 1976)
3		1	10			25				43	
								1		1	
								1		1	
							5			9	
		1		1			5			12	all time high (previous high 8)
						1	0			4	all time high (previous high 2)
		1				2	1			4	all time high (previous high 1 in 1988)
								1		1	
1	13	16				1				40	
1	4	6	2		2	1	1		1	71	all time high (previous high 55 in 1988)
						1				2	
4	2	9	1	5	4	5	7	7	1	85	
			1			2	1			12	
16	12	24	9	16	29	28	52	20	12	433	all time high (previous high before 1971)
							1			1	
	2	1				8	7	3		29	all time high (previous high 24 in 1987)
						2	11			129	
72	148	149	225	136	370	297	586	825	5	6227	
2	4	12	1	1	11	17	37	9	1	210	
20	80	140	24	47	66	165	274	74	7	1606	all time high (prev high 1368)
25	80	178	55	140	60	90	112	34	12	1095	all time high (prev high 765 in 1987)
1	3	9	3	2	6	8	20	8		130	
2	3	4		8	7	12	18	12	3	126	all time high (previous high 70 in 1988)
4	2	9	6	16	7	8	19	23		172	
4	4	12	3	3	8	31	55	25	6	329	all time high (prev high 285 in 1983)
				1	1	0	7	3	2	27	
	1									10	second highest
33	14	62	66	20	117	367	938	99	26	2812	all time high (prev high 1886 in 1987)
3	5	8	3	15	31	17	34	34	3	284	second highest
	1				1					9	
196	85	111	110	45	87	152	113	183		1940	
4	8	15	10	6	6	10	52	11	1	288	
1										1	
								15		15	
		15	8		2	15	3			59	second highest
						0	0	1	1	3	
466	170	109	335	183	287	39	248	1749	15	5939	
		1	1				1	1		6	second highest
	1			2						4	
										1	
13	21	42	14	39	55	54	78	50	2	652	all time high (prev high 451 in 1987)
								1	1	7	
3	7	16	7	38	33	17	20	29	2	264	
19	19	32	22	22	78	46	59	92	33	655	all time high (prev high 630 in 1987)
					1		1	3		5	
	1			2		0	0			5	all time high (previous high 4)
3	45	54	25	25	46	41	247	99	2	887	all time high (prev high 739
	14		20	2	7	3	1	53		118	second highest in 1987)
										2	
23	143	398	99	143	163	257	527	245	74	3785	all time high (prev high 3258 in 1988)
			2				1			4	
		3	8		4	40	131	90		316	
								1	2	24	
		3			29		42	94		286	
3	12		9	12		28	3			102	
47	70	105	61	42	52	69	72	83	9	955	all time high (prev high 922 in 1988)
3		3								10	
	125	121	61	29	36	357	626	505		3735	all time high (prev high 2961 in 1975)
4										4	
76	120	81	39	171	121	86	65	40		1280	all time high (prev high before 1971)
4597	2185	3142	1951	2532	3892	5734	6990	7705	2009	84942	

Welcome to new members

Nov. 22 Flo Pikula, of Alvarado Terrace.

Nov. 23 Dr. Jane Wright, of Slater Street. Gift membership from present member Helen Currie.

Nov. 24 Donna Macey, of Beechwood Avenue. Gift membership from present member Fran Aitkens.

Nov. 24 Sarah Greer, of Beach Drive. Gift subscription from present member Beryl Borris.

Nov. 27 Mike Klazek, of Selkirk Avenue. Recently moved here from Calgary. Interested in birding.

Nov. 28 Margaret and Sandy Argue of Lockhaven Drive. Interests: Marine biology; ornithology; botany, general.

Dec. 4 Richard and Marie Thompson, of Mann Avenue.

Dec. 4 Jim Selk, of View Royal Avenue.

Dec. 4 Paul de Niverville, of Niagara Street.

Dec. 5 Larry Wagner, of Amphion Street. Interests: All forms of natural life.

Dec. 8 Jan Kirkby, of Pender Island. Welcome back!

Dec. 11 Janice Cox, of Kynaston Road. Gift membership from David Cox.

Dec. 12 G. Ken Arnott, of Carolwood Drive. Particular interests: Birding, wild flowers.

Dec. 12 Nicholas Gibbs. New Junior. We neglected to get his address. If you know Nicholas and his location, please contact Ed Coffin, so that he will receive his magazines.

Dec. 13 Bob Osborne, of Kingsmill Street. Gift membership from Flora King.

Dec. 13 Germaine Taylor, of Sidney. Particular interest: birding.

Dec. 27 Dan C. Cox, of Sidney. Gift membership from present member Dan P. Cox.

Dec. 27 Sherman and Catherine Waddell, of Gorge Road. Primary focus is birds. They have enjoyed our publication for several months and look forward to future issues.

Dec. 28 E. Lyn Lewis, of Bedford Road. Particular interests: Birds, geology.

Dec. 28 Mark and Bruce Ferguson, of Davie Street. Interested in environmental geography, research, astronomy, resource management, photography. Gift membership from Marilyn Ferguson.

Dec. 28 Henry Niezen, of Ramsay Place. Interested in birds and conservation.

Dec. 30 Joan C. Kerik, of Eberts Street. Particular interest: botany.

Jan. 4 Gordon B. Moore, of Saanichton. Paricular interest: birding.

Jan. 8 Barb and Jim Kirby, of Browning Street. Particular interests: birdwatching, botany.

Jan. 9 Helen Taylor, of Joseph Street.

Jan. 9 Arlene Frater, of Newport Avenue.

Jan. 9 Allen Wiseley, of Sidney. Particular interests: birding; conservation; field trips.

Jan. 11 Jeannie R. Kemp, of Lampson Street. Interests: environment, wild flowers, birds.

Jan. 11 Sharon Hartwell, of Craigowan Road. Interests: botany, birds, conservation issues.

Jan. 12 Violet Chungranes, of Bowser. Visits Victoria often and would like to take part in field trips.

Jan. 15 Frank S. Kirby, of Sidney. Recruited (via matrimony) by Phyl (formerly) Downey.

Jan. 16 Richard Watts, of St. Andrews Street.

Jan. 17 Shirley d'Estrubé, of Athlone Drive. Interests: birds, environmental concerns.

Jan. 18 Lynn Thompson, of Union Bay. Involved in photography.

– compiled by Ed Coffin

Reflections on a frantic Bushtit

by Charlie Trotter

Many of us have seen a frantic cockrobin beating himself against his reflection in a window. Recently, I have had a frantic Bushtit doing the same thing. For more than a month, this silly bird has been acting this way at my breakfast nook window.

He has a routine: light on the clothesline, hop to the fat feeder, onto the honeysuckle, and then to the grapevine that leans against the windowpane. He sits there tapping fiercely on the glass. Then he repeats the routine--clothesline, feeder, honeysuckle, grapevine.

When his mate comes, as she does a couple of times a day, his antics become even more frenzied. Not only are his circuits speeded up, but he adds a kind of fluttering, presumably to impress the female with what a fighting, brave, protective mate he is. But if this goes on, I'm afraid he won't have enough strength to perform his fatherly duties!

Laughing, Howling and 725 other falls in Canada

by John de Bondt

There are 727 waterfalls in Canada, according to an official federal government list. Presumably there are more, but they have no names and are, therefore, not listed.

All the highest ones are here in British Columbia. Della Falls, 1,443 feet high, tops them all, but Hunlen Falls at 1,300 feet and Takakkaw Falls at 1,248 feet also easily out-fall all falls in the other provinces.

More than a third of all Canadian waterfalls – 288 to be exact – are in Ontario. The most famous of all, of course, is Niagara Falls and, as everyone knows, there are two: the Canadian or Horseshoe Falls at lat. 43° 04'. Altogether there are four Horseshoe Falls in Canada: two in Ontario, one here in British Columbia and one in Alberta.

The Horseshoe Falls at Niagara is 162 feet high – a mere rapid compared to our high mountain falls, but its majestic beauty lies in its shape and 2,600-foot width.

Canada has several Great, Grand, Big, Little and Lower Falls, one Bad one and even a Bloody one. There are Square Falls and Crooked Falls, Burnt, Broken and Ragged Falls, Winding Falls, and several Reversing Falls. There are Silver, White, Brown and Vermillion Falls, Glassy Falls, Crystal Falls, Gravel, Granite and Marble Falls, Iron Falls and Wood Falls.

There are Singing Falls, Talking Falls, Laughing and Howling Falls in Canada. The province of Quebec has both the Chute Devil and the Chute du Diable, and British Columbia has the Angels' Staircase Falls as well as the Lord Waterfall. Girls' names abound, from Alexandra to Virginia, and family names include Jones Falls, Smith Falls and Schwartzenback Falls. Two provinces, British Columbia and Manitoba, have Seven Sisters Falls, and both British Columbia and Ontario have Bridal Veil Falls.

Ontario has a natural monument to bilingualism called Chute Falls, and Manitoba has what must be the meanest of them all – Lower Conjuring Falls.

Waterfalls named after animals include Bear, Beaver and Bee Falls, Caribou Falls, Deer, Dog, Eagle, Elk, Frog, Goat, Goose and Gopher Falls, Heron Falls, Lion Falls and Loon Falls, Magpie, Moose and Muskrat Falls, Otter, Panther, Partridge, Pelican, Pigeon, Raven, Salmon, Sea Gull, Snake, Squirrel, Stork, Sturgeon, Trout, Turtle, Wolf, Whitefish and Wildcat Falls.

There are Jam Falls and Sugar Falls, Tea Falls and Kettle Falls.

Alberta has Punchbowl Falls; British Columbia has Brandywine Falls; Ontario has Whiskey Falls and Nova Scotia Guzzle Falls. No wonder there are 21 High Falls in Canada!

Robins do it, too!

by Barbara Begg

It's common knowledge that owls and hawks cast pellets. This practice is not peculiar to raptors, however.

In North Saanich on February 5, 1989, while studying a partially albinistic American Robin (*Turdus migratorius*) perched in a tree, I was surprised to see it disgorge what appeared to be pellets. They were about 5 mm in length and quite narrow. The bird cast two pellets in about 15 seconds, each time elevating its bill slightly, and with a retching motion, expelling a pellet. The pellet appeared to be light in colour. The time of day, mid-afternoon, would be consistent with the average length of time for pellet formation (from an early-morning feeding). When the bird flew away, I tried to find the pellets, but was unsuccessful, as they were in three-inch-long grass on the edge of a golf course.

Birds (other than owls and hawks) that cast pellets include grebes, cormorants, herons, grouse, rails, shorebirds, gulls, terns, nightjars, swifts, kingfishers, flycatchers, swallows, corvids, dippers, thrushes, wagtails, shrikes, starlings, warblers, and possibly all insect-eating birds. The pellets can contain indigestible insect and crustacean parts, bones, fish scales, grit, plant fibres, and seeds. The American Robin also disgorges pits, such as cherry and olive pits, that are too large to pass beyond the stomach. This takes place soon after ingestion.

Due to the lack of pit-containing fruits at this time of the year at our northern latitude, and due to the pellet-like shape of the projectiles I saw, I concluded that the expelled objects were indeed pellets.

References

Eiserer, L. 1976. The American Robin. Nelson-Hall Inc., Chicago, Ill.

Terres, J.J. 1987. The Audubon Society Encyclopedia of North American Birds. Alfred A. Knopf, N.Y.

Wallace, G.J. 1955. An Introduction to Ornithology. The MacMillan Co., N.Y.

Welty, J.C. 1962. The Life of Birds. W.B. Saunders Co., Philadelphia, PA.

Calendar

Regular meetings are held as follows: Board of Directors meetings the first Tuesday of each month; general meetings the second Tuesday of each month; Botany Night the third Tuesday, and Birders' Night the fourth Wednesday of each month. Locations are given in the calendar listings.

Field Trips: Please meet at the location indicated for each trip and **BRING A LUNCH**. Be equipped for changes in the weather, with hat, rain gear and boots if necessary. **Always phone the VNHS Events Tape at 479-2054 before a trip** to get further details or find out about changes in plans. On VNHS trips participants usually pool vehicles to reduce parking problems and costs. The Board suggests that fuel costs be shared with the driver.

March Events

Tuesday, Mar. 6. General Meeting of the Victoria Horticultural Society. Wayne Campbell will be speaking on **"The Birds in Your Garden."** Members of the VNHS have been invited to attend. The meeting is held in the First United Church Hall, at Quadra/Balmoral/North Park, beginning with a short business meeting at **7:30 p.m.** The speaker starts about 8:30 p.m. but **visitors should be there by 8:15** to get a seat.

Sunday, Mar. 11. Birding along Island View Road and at the beach with Brent Diakow. Meet at Saanwood Farm Market (corner of Island View Rd. and Pat Bay Highway) at **9 a.m.**

Tuesday, Mar. 13. VNHS Annual General Meeting and Book Auction. This meeting is very important since we will be approving revisions to our bylaws as well as electing a new executive. After the meeting, commencing at **8 p.m. in Begbie 159 at UVic,** an auction will be held of the extra, non-essential books from the VNHS library. Our library committee worked long and hard to streamline our library, and the extra books will be offered by auction to give the membership first opportunity to buy. See page 11 of the Jan.-Feb. *Naturalist* for a list of some of the books being auctioned.

Thursday, Mar. 15. Geology of the Victoria Area at 8 p.m. in the Swan Lake Nature Centre. Hugh Nasmith will discuss the local geology, with special reference to Swan Lake and Christmas Hill.

Thursday, Mar. 15. General Meeting of the **Thetis Park Nature Sanctuary Association, 8 p.m.** at Christ Church Cathedral Auditorium. Speaker Joyce Clearihue takes us on more of her travels.

Saturday, Mar. 17. Annual Thetis Park Clean-up Day, organized by the Thetis Park Nature Sanctuary Association. Meet in the Thetis Lake parking lot, **9 a.m.** Bring work gloves and a large garbage bag. All helpers welcome! For information call 385-2864.

Tuesday, Mar. 20. Botany Night at 7:30 p.m. Members, bring some slides and share your stories of a botanical trip or a particular theme.

Saturday, Mar. 24. Birding at Beaver Lake with Wally McGregor. Meet at the main parking lot at Beaver Lake at **9:30 a.m.**

Wednesday, Mar. 28. Birders Night. Held in the Begbie Building, UVic at 7:30 p.m. Coffee and cookies served. Program: Bird Identification Night. From his vast collection of slides, bird photographer **Tim Zurowski** will team up with Bryan Gates to provide an educational yet challenging test of your bird identification skills. Local and not-so-local birds will be featured. Novices will learn. Experts will assist.

April Events

Saturday, Apr. 7. Looking for Macoun's Meadow Foam. Join Oluna and Adolf Ceska on this outing to the Metchosin area. **Meet at Helmcken Park & Ride at 9 a.m.**

Sunday, Apr. 8. Birding on Saltspring Island. Join Dave Fraser to look for Bluebirds on Mt. Tuam. Catch the **7:15 a.m. ferry over to Saltspring and the return ferry at 3:45 p.m.** Phone Dave at 479-0016 to register. Space is limited.

Tuesday, Apr. 10. General Meeting and Program: Robert Bateman speaks on "An Artist's View of Wildlife Preservation." This is a very special program that will outline the work that Robert Bateman is doing for wildlife preservation and some of the important issues that we should be aware of. **Meeting begins at 8 p.m. in Begbie 159, UVic,** with the presentation to follow.

Thursday, Apr. 19. General Meeting of the **Thetis Park Nature Sanctuary Association, 8 p.m.** at Christ Church Cathedral Auditorium. Alison Nicholson of CBC Radio's "Saturday Morning" fame will be the guest speaker.

Sunday, Apr. 22. Earth Day. 10 a.m. to 4 p.m. at Witty's Lagoon. Come and see what's going on.

Wednesday, Apr. 25. "Birding in Foreign Countries" is the topic for discussion at **Birders Night, 7:30 p.m. in the Begbie Building, UVic.** Coffee and cookies served. One or more guests will show slides and give insights into birds of the world. Details will be announced on the events tape.

Sunday, Apr. 29. Botany and birding on the Gowlland Range. Join Nancy McMinn, Adolf Ceska and Lyndis Davis to explore the ridge that overlooks the Malahat and Saanich Inlet. Adolf will show us *Crocidium* (Spring Gold), and Lyndis will be on the lookout for the Mountain Quail as well as spring arrivals. Bring lunch and wear good walking gear. Meet at **9 a.m.** at the junction of Martlet Rd. at the end of Millstream Road (about 1 km. past Lone Tree Hill Park.)

May Events

Sunday, May 6. Birding at Cowichan Bay with **Bryan Gates.** Meet at **7:30 a.m. at Helmcken Park & Ride or 8:15 a.m. on the Dock Rd., Cowichan Bay.** This is a good opportunity to see and learn about migrants: the Purple Martins should be back. This is birding at its easiest with a knowledgeable leader, and little walking involved.

Tuesday, May 8. Natural History Workshop at Swan Lake. Come to the Swan Lake Nature Centre and with Ann Scarfe as your guide, participate in an interactive workshop where you learn more about life forms in the lake and the history of eutrophication. Sampling lake water for typical pond life and using microscopes to examine the results will all be part of the program. **Takes the place of the May General Meeting** and begins at **7 p.m.** at the Swan Lake Nature Centre.

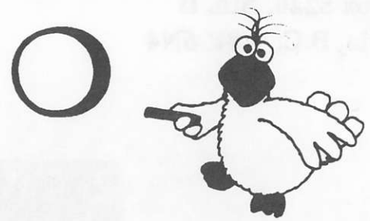
Bulletin Board

Items for the Bulletin Board should be submitted to the editor by two weeks prior to the publication date. We cannot guarantee inclusion after that point.

Carmanah Valley Trip—May 19-21, 1990. A few places are left for this natural history excursion to the home of Canada's tallest sitka spruce. For those who have already signed up, please note that your confirmation, along with a $50 deposit, should be sent to #205-429 Linden Avenue, Victoria, V8V 4G2, **not later than April 19.** When your confirmation is received, you will be sent an itinerary for the trip, plus a checklist of items you should plan to bring along (camera, binoculars, etc.).

The trip is being managed by the Western Canada Wilderness Committee, the environmentalist group that has done most in the battle to save the valley from logging. The WCWC will take care of transportation, tents and meals; however, participants will have to provide one bag lunch for the first day of the trip, as well as their own snacks, sleeping bag and sleeping pad. The final cost of the trip will not be known until an exact numjber of participants is tallied, but it will not exceed $100. For further information contact Dannie Carsen at 384-4924.

Seeing spots?



Do you have an orange dot on this circle? If so, you have not paid your dues prior to the January 1, 1990 deadline, and you have already received two free copies of the *Naturalist*. To ensure that you receive the next issue of the magazine and continue your membership in the Society, please forward your dues immediately to Box 5220, Stn. B., Victoria, B.C. V8R 6N4.

The Victoria Naturalist needs a **managing editor** to coordinate the efforts of its hard-working volunteers. If you have some time and some editorial/administrative skills to contribute, please call Bruce Whittington at 388-4174 or 652-1529.

Photographers: If you have interesting prints or slides that you think would reproduce reasonably well in black and white, *The Victoria Naturalist* would like to give you some exposure. Photos needn't be accompanied by a full story, but please provide as many details as you can about the subject so that we can provide an informative caption. If we feel we won't be able to use a photo in an early issue of the magazine, we will of course return it. **Prints are preferred** for publication. Photos can be dropped off at the Field-Naturalist if it's convenient for you.

The Victoria NATURALIST

Second Class Mail Reg. 6428

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James A. Rainer
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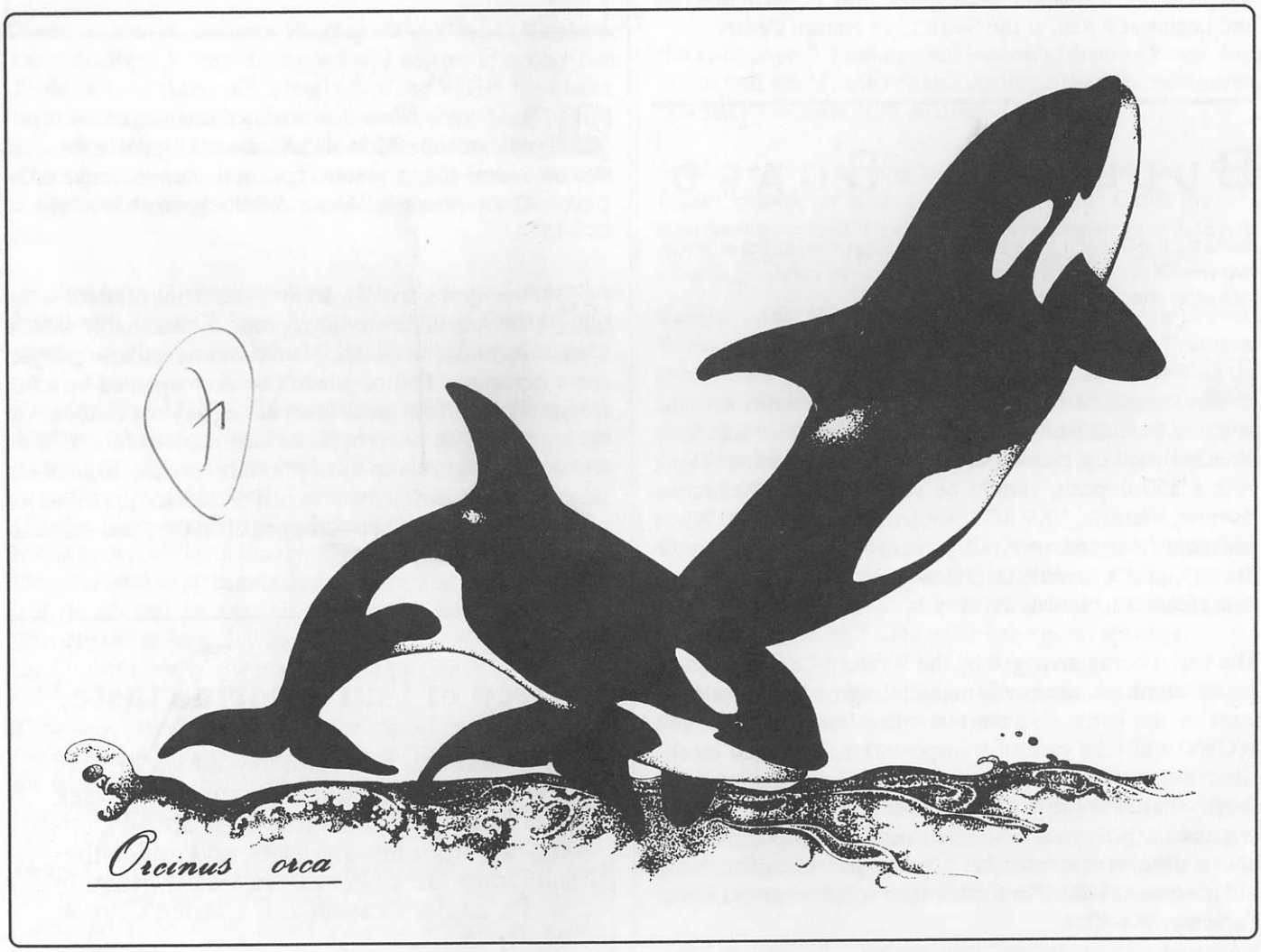

Pen and ink drawing by Marie Aude l'Hyver.