British Columbia Nest Record Scheme

Instruction Manual

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Biodiversity Centre for Wildlife Studies

Society History

On 31 August 2004, after years of gathering information from the public domain, the Biodiversity Centre for Wildlife Studies was formally established. The formation of the Society was based on the recognition that no registered society or government agency in British Columbia was presently compiling and archiving historical and current information on all wildlife in the province. By recognizing the need for information to make informed decisions about wildlife conservation and management, the Society was formed to fulfill this need by way of a comprehensive collection of wildlife information. Essentially, one-stop shopping.

The primary function of the Biodiversity Centre for Wildlife Studies is to operate and maintain the Wildlife Data Centre, the location for gathering, compiling, archiving, and summarizing information on wildlife in British Columbia.

The Biodiversity Centre for Wildlife Studies is a provincially registered non-profit society under the British Columbia Societies Act. #S-48037.

The Biodiversity Centre for Wildlife Studies is a federally approved charitable organization #84950-8478-RR0001

Society Objectives

1. Create and maintain a permanent central repository in British Columbia for all historical and current information on wildlife.
2. Save British Columbia wildlife information so that it is not lost to, nor fragmented across, national, international, and provincial databases.
3. Summarize information and make it available to diverse audiences through workshops, lectures, publications, and a web site.
4. Help educate all that wish to learn more about nature in British Columbia and increase awareness and enjoyment of the rich biodiversity in the province

Society Memberships

Annual membership dues to the Biodiversity Centre for Wildlife Studies include society voting privileges and two successive copies of the bi-annual journal *Wildlife Afield*.

Annual membership dues are:

Individual $30.00
Family $40.00
Student $20.00 (proof required)
Life $500.00

To join, please visit www.wildlifebc.org

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Introduction

In the spring of 1955 professor Dr. Miklos D.F. Udvardy and graduate student M. Timothy Myres of the Department of Zoology at the University of British Columbia in Vancouver, British Columbia, initiated the British Columbia Nest Record Scheme. It was based on a similar scheme organized by the British Trust for Ornithology in Great Britain and was the first to be operated on the North American continent. It was hoped that knowledge of the breeding biology of Pacific coast birds could be acquired in the same way.

A team of mostly volunteer observers, both amateur and professional, note nesting and habitat information on cards and a central repository stores them for scientific work and conservation activities.

The initial interest in amassing nesting information in the British Columbia Nest Record Scheme was to compare the breeding of similar species of birds along the Pacific coast and determine the causes of these differences.

Specific goals of the British Columbia Nest Record Scheme were to determine:

- when birds start to lay their eggs; whether all birds of one species do so at the same time; and whether they do so at the same time each year;
- the average number of eggs and how clutch size varies both through the course of the summer and from year to year;
- the degree of success that birds have in hatching and rearing their young and how this varies;
- whether the nature of the vegetation around the nest influences success.

During its 53-year history the purpose of the British Columbia Nest Record Scheme has changed little. It remains a volunteer-based project supported and financed by its passionate contributors and operated independently from government, industry, and commercial groups.

Interest in the British Columbia Nest Record Scheme has grown steadily over the past five decades from a handful of visionary graduate students at the University of British Columbia to a large and diverse group of contributors today. It is the largest and longest-running regional nest record program in North America and is operated by the Biodiversity Centre for Wildlife Studies. For example, since 1997 when comprehensive annual reports were published, up to 524 active contributors submitted an average of 12,603 nest records per year for as many as 266 different species.

Over the years the British Columbia Nest Record Scheme has been a major source of information on the breeding biology and distribution of birds, and results from the program have been used in thousands of publications and reports, including the landmark four-volume set *The Birds of British Columbia*. The data are also used to address a range of conservation and management questions.

In the coming decades it will be important to maintain focus by supporting the British Columbia Nest Record Scheme so that it can continue to provide long term breeding data on birds in the province.

British Columbia Nest Record Scheme Single Nest Card – Front Side.

British Columbia Nest Record Scheme

Species:	Map Grid:	Name of Observer:				
Locality: (place name and specific location)		Cowbird Parasitism		Yes	No	REMARKS (building, incubating, eggs cold, just hatched, fledged, yng. dead, etc)
		NUMBER OF EGGS OR YOUNG per VISIT				
		Day	Month	Year	Eggs	Yng.
Elevation: _____m						
Habitat: (surrounding vegetation)						
		If more than 7 visits are paid to a single nest use another card for further visits				

NEST DESCRIPTION

General Location: Materials:

Position

Height above ground/cliff-base/water _____m

UTM Zone _____ UTM Easting:_____ UTM Northing:_____

British Columbia Nest Record Scheme Single Nest Card – Back Side.

ADDITIONAL INFORMATION
(i.e., behaviour, predation, mortality, weather, personal stories, etc.)

Did the nest successfully fledge at least one young? YES NO UNKNOWN

Address of Observer(s)

An instruction manual for recording and submitting bird sightings and nest record cards is available to participants from the address below.

PLEASE RETURN COMPLETED CARD BY OCTOBER 1st TO:
B.C. Nest Record Scheme, P.O. Box 55053, 3825 Cadboro Bay Road,
Victoria, B.C. V8N 6L8

British Columbia Nest Record Scheme Colony Card – Front Side.

OBSERVER			SPECIES		MAP GRID	DATE OF VISIT
FILL IN NUMBER OF NESTS CONTAINING (Y = Young, E = Egg)						LOCALITY
EMPTY	1Y	2Y	3Y	4Y	5Y	6Y
1E	1E 1Y	1E 2Y	1E 3Y	1E 4Y	1E 5Y	
2E	2E 1Y	2E 2Y	2E 3Y	2E 4Y	DESCRIPTION OF NESTS AND SITES	Number of nests tallied on this card
3E	3E 1Y	3E 2Y	3E 3Y			Estimated total number of nests in colony
4E	4E 1Y	4E 2Y				Estimated total number of pairs in colony
5E	5E 1Y		Extra combinations	HABITAT DESCRIPTION		GENERAL STATEMENT (few eggs yet, or YNG small, or YNG about to fly, etc)
6E						

British Columbia Nest Record Scheme Colony Card – Back Side.

COLONY CARD

1. Always fill in one of these cards when you make a single visit to a colony of swallows, grebes, etc.
2. Take care to disturb the birds as little as possible.
3. Try to make accurate total counts. If you cannot tally nest contents still fill in rest of card.
4. If one nest is being watched on several visits, use individual nest cards.

ADDRESS OF OBSERVER

OTHER BIRDS NESTING AT THIS COLONY

SPECIES	NO. OF PAIRS
1.	
2.	
3.	
4.	
5.	
6.	

Fill in the appropriate card for each species

NOTES

(Diagram of colony with location of nests or information on access; or nest predation, mortality, or interesting species seen around colony; or any notes the observer feels are important.)

UTM Zone _____

UTM Easting _____

UTM Northing _____

Mail in by Oct. 1 to:
B.C. Nest Record Scheme
PO Box 55053
3825 Cadboro Bay Road
Victoria, British Columbia
V8N 6L8 CANADA

Participation in the Scheme

It is not necessary for any participant to be a member of a group or society in order to submit records to the British Columbia Nest Record Scheme (BCNRS). Any observer that is able to identify and make accurate notes on the species and nests he/she finds will be accepted into the database. A contributor may also submit a friend's records if he/she is confident of their skills: both people's names should be given on the card. The value and power of the BCNRS is proportional to the support it gets from all parts of British Columbia, so that every contribution, be it one or more cards, is useful. Nest record cards are issued freely to contributions of the BCNRS, although cards may be purchased for private use.

Types of Information Wanted

Full details of the information required and how best to obtain it are given in later sections, but the requirements are briefly summarized here. A card should be completed for every nest whose contents have been counted at least once (even if it is never revisited or is totally destroyed the next day). A nest found before any eggs are laid, or nests containing remnants of destroyed eggs on a repeat visit, should also be recorded. For inaccessible nests (e.g., in holes and cavities), cards are worth completing if dates of laying, hatching, or fledging are known. If you take part, it is essential to complete cards for all nests that meet these conditions, and do not select merely the more interesting or unusual cases. Cards are not wanted for nests in which no eggs are laid, for nests which failed before being found, or for which none of the above information is available.

Colonial Nesting Birds

Colony Nest Record Cards are available on request, on which many nests at one colony can be recorded for a single visit with minimum labor. For multiple visits to a colonial nesting species, more than one card should be used. Multiple cards may be attached with a staple or paperclip and submitted as a set. Colonial nesting birds in British Columbia include Grebes, Storm-Petrels, Pelicans, Cormorants, Herons, some diving ducks, Gulls, Terns, Alcids, Martins, Swallows, Wrens, Blackbirds, and Grackles.

Ring-billed Gull colony at Salmon Arm.

Rare and Uncommon Species

Nest records of scarcer species are normally seen only by researchers of the Biodiversity Center for Wildlife Studies, or by individuals working on species-specific projects. A person conducting a serious study of one of these species may, with approval, be allowed access to relevant historical cards, but only on condition that breeding localities are kept confidential. Additionally, the use of data in the BCNRS by other participants is encouraged, however, the breeding localities of species that are threatened, endangered, or are naturally limited, will only be revealed based on special request criteria (e.g. Peregrine Falcon).

Records for Past Years

These are required for all species from all areas of the province. Especially useful are historical breeding records for colonial-nesting species (e.g., Cliff Swallow), birds of prey, all fish-eating birds (e.g., loons, grebes, etc.), and insectivorous birds.

Study Areas and General Planning of Fieldwork

This section is mainly for people planning to spend a fair amount of time on nest-recording, but they should not discourage the completion of cards by those who find only a few nests. Generally, far better records are obtained from regular observations in one or a few places than by ranging far and wide with little chance of revisiting nests. Studies in relatively natural rural habitats are encouraged, to provide adequate samples for comparison with the more easily compiled records from homes and gardens. It is highly desirable to avoid bias, and so continuing your observations right through the summer, compared to stopping once spring enthusiasm wears off.

Fresh wood chips excavated by a pair of Northern Flickers provide early evidence of an active nest site.

When choosing areas to study, do not be over-ambitious at the start. Hedges, bushes, and forest floors that are largely bare of leaves in early spring, may become dense masses of foliage or undergrowth in the summer. The same piece of ground can take at least three or four times as long to search properly in late May or June (when it should, however, yield a far more rewarding selection of nests). If many nests are under observation, it is useful to maintain a list of “active” nests and the date when each is due for its next visit. Photos and a coordinated numbering system are highly valuable, both for short-term (annual nests such as in most songbirds) and long-term (multi-year nest re-use such as in Osprey) nest monitoring.

It is important to cooperate with other observers working in the same area to ensure that sites of mutual interest receive efficient, but not excessive coverage, and that more than one card is not completed for the same nest. Division of labour and joint-completion of nest cards is especially useful for collating information on the breeding period.

Timing Visits to a Nest

In general, you should plan to obtain the required information – particularly clutch-size and numbers hatched and reared – with a minimum of judiciously timed visits. Of course, if a nest is passed each day, it is worth noting whether a bird is sitting, but there is no need to disturb it every time. The safety of the nest must always be borne in mind. Limitations of time, and difficulty of access to some nests, often prevent the kind of visiting program outlined here, from being carried out.

Nevertheless, even if the cards contain only one or two entries, they are still important. In order not to present a false picture of breeding success, it is essential to complete cards for nests that fail, as well as for those which succeed.

The most important times to make visits are as follows:

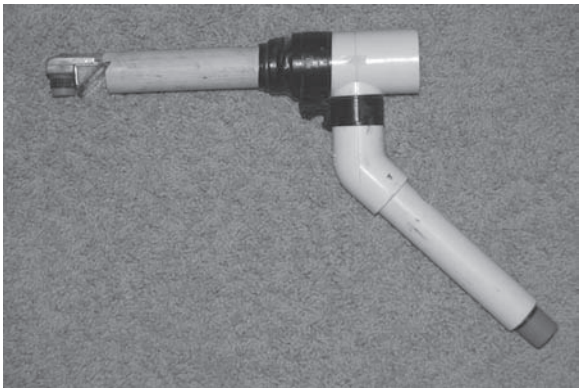
a) during nest building.
b) one or 2 afternoon visits during laying to establish first-egg date.
c) one or 2 afternoon visits during incubation, long enough after the expected clutch-completion to be sure of recording full clutch-size.
d) a visit every few days to ensure date of hatching.
e) one or 2 visits around, or just after the expected hatching, to record incubation period and hatching success.
f) about 3 days after hatching should have occurred (in small birds) is the best time for recording the number hatched.
g) as a rule the easiest time of all to count young is when they are at, or just past, the halfway stage of development.
h) a careful count of young when they are ¾ grown is extremely useful and is worth a special effort to obtain.
i) further checks (from a discreet distance) may be made to confirm success, and perhaps record an exact fledging period.
j) after the nest has been vacated, an inspection should be made to see if any young died when fully grown.
k) look for the next clutch by the same pair.

Code of Conduct

Each observer must exercise a sense of responsibility, always putting the birds' interests first if a visit might endanger the nest. This applies with redoubled force where rare species are involved.

There are essentially three potential risks:

1) accidentally damaging the nest,
2) causing desertion, and
3) revealing a nest to predators.



A "nest-snooper" such as this can be used to check contents of nest cavities with minimal disturbance to the nest.

In practice, the exercise of due care eliminates the chance of accidental damage. Desertion may arise through natural causes, such as adverse weather, food shortage, or death of a parent, as well as from human disturbance. Sometimes, too, for one of several reasons, an entire clutch fails to hatch despite being incubated well beyond the normal period; eventually the nest is abandoned, but clearly not through any immediate outside influence.

With most species the great majority of nesting failures is due to predation by reptiles, birds, and mammals. Observers often fear that increased predation may result from their leaving a track or scent to nests, but recent investigations of this possibility have showed that nests visited frequently had a similar rate of success to others left undisturbed between laying and fledging. This finding is supported by the consistency of the results obtained when analyzing different observers' records.

Intelligent planning, care while searching for nests and approaching and leaving nests, and caution while checking a nest will significantly reduce any human impact on the success of the nest.

Filling in the Cards

Please use ink or dark ballpoint pen, not pencil that shows up far less clearly, especially when photocopying cards. It is best to complete cards while nests are under observation, and is quicker than leaving the season's notes to be copied out later. Always remember that, while a nest and its history is vivid in your own mind, an analyst knows nothing at all about it except what you enter on the card. Cards received are filed according to species, map grid, and year, and may be analyzed by more than one person. Therefore, a fact relevant to a number of nests (e.g. a storm that causes widespread losses) should be mentioned on all the cards affected. Many observers find it useful to number their cards. Such numbers can be put in the OBSERVER space or on the back. This number is also useful to BCNRS coordinators as sorting of cards is a very large, time-consuming, and at times, a confusing task. As nest records are entered into our databases, each individual card will receive a unique number.

Accuracy

Record only what you have observed. Please make no guesses. Make certain that each count of nest-contents recorded is correct. When re-visiting, never assume that the number of eggs or young is unchanged without counting them. If a nest can only be examined from an angle (rather than from directly above) or if a mirror is used, take care not to miss eggs/small young hidden by the rim of the nest.

Doubtful or Unusual Records

If identification is uncertain, please do not send the record unless there is an accompanying photograph that might aid in the identification. When a record is in any way unusual – for instance, if the nest is in an unusual site, occurs at an abnormally early or late date, or if there is an abnormally long incubation period – add a special note to emphasize that the details are correct.

Use One Card for Each Clutch / Brood

If a nest is used twice, complete a separate (cross-referenced) card for each attempt; these may be clipped together. The same procedure should be used for successive nests known to be built by the same pair. If two species lay in one nest, complete two cards, both giving details for the occurrence, so that one can be filed under each species. A typical example may be a Brown-headed Cowbird (BHCO) that has laid its own eggs in the nest of another species (i.e., the host). In this case, use one card for BHCO and one for the host. On each card, write the code for the species for which the card belongs (i.e., BHCO) and the other species (in this case the host) in parentheses next to the BHCO (e.g. (YEWA)). For contents, use a + symbol to show the contents for the species in parentheses (e.g., for eggs, 1+2 would indicate that BHCO had one egg, and YEWA had two eggs). Be sure to note the appropriate changes for each species during repeat visits. If more than 7 visits are paid to a single nest, use another card for further visits and staple them together.

Most Spotted Sandpiper nests contain four eggs, although clutches of 3 or 5 are known, and often are confirmed through repeat visits.

Card Components – Individual and Colony Cards

1. Species

Write common name in full (e.g. Canada Goose) or use standard four-letter code (e.g. CAGO) listed in Appendix 5. Always note a secondary species in parentheses to identify which species the nest card is for (e.g., in the event of nest parasitism)

2. Map Grid

Major and minor map grids of the National Topographic Grid Series for British Columbia are the broad references used to locate nesting species. Major map grids, representing the 1:250,000 scale encompasses 1° latitude by 2° longitude (e.g., 082P, 072E, 083H, etc.). This grid is further divided into 16 smaller grids, representing the 1:50:000 scale and encompassing ¼° latitude by ½° longitude (e.g., 082P06, 072E13, 083H16, etc.). For example, Victoria is 092B06, Creston is 082F01, Smithers is 093L14, Atlin is 104N12, and Fort St. John is 094A02. The code system for 1:50,000 maps is always three numbers (###), one letter (L), and two numbers (##) without spaces. If you are able to provide the 1:20 000 reference grid for your nest records, please do so. The numbering is similar, except that the 1:1,000,000 grid is divided into 100 smaller grids, thus giving three numbers (###), one letter (L), and three numbers (###).

3. Observer

List only the name of the principle observer. Addresses and other observers can be listed on the back of the card.

4. Location and Elevation

Give the name of the nearest place name, which may include a village, town, lake, river, or other gazetted landmark. Also, give the specific location of the nest. This may include a local name for an island in a lake (e.g., Avocet Island, Alki Lake), a combination of mileage and direction from a place name (e.g., 1.5 km north of Sechelt on Redroofs Road), an address for a private yard, or distance from a main highway or road. Elevation above sea level, when known, should be given to the nearest metre (m). For users of Global Positioning Systems (GPS), please include the precise locations using UTM coordinates. Space is provided on the cards to record your UTM Zone (Zones 8 through 11 occur in British Columbia), UTM Easting (X coordinates), and UTM Northing (Y coordinates). Elevation can also be obtained from GPS units that have four or more satellites feeding information to the GPS receiver.

Recording nest locations with GPS, such as for this White-breasted Nuthatch near Invermere, provides exact locations of nesting activity, and thus a better understanding of habitat use and requirements.

5. Habitat (surrounding vegetation)

The Habitat Codes in Appendix 1 have been updated to include more habitat types and classes in British Columbia than were in earlier BCNRS manuals. The new additions are primarily from coastal areas and the Peace River region as extensive nesting research has been done in those areas in the past few years (2000-2007). New codes have also been added for interior regions where applicable.

As far as possible using the terms listed in the Habitat Codes in Appendix 1, please describe the most important features of the area around the nest – say within 50 metres for a small passerine. Some larger birds, such as hawks and crows, range more widely for food, so some idea of the surroundings over a broader area should be given.

Appendix 1 shows habitats divided into three major categories, namely Habitat Type, Habitat Class, and Habitat Specific. Habitat Type is subdivided into 7 subsections. Each of these 7 subsections is further subdivided into many Habitat Classes, followed by a Specific Habitat description. Generally, these categories may help in describing the vegetation surrounding the nest site. Habitat descriptions should be written out using Appendix 1 as a guide; alternatively, you can provide the codes directly from Appendix 1 in the habitat section on the nest card. Information pertaining to the Biogeoclimatic Ecosystem Classification (BEC) system of British Columbia is now done automatically when the data are added to the BCNRS database that is managed by the Biodiversity Centre for Wildlife Studies.

Assessing habitat in the vicinity of nest boxes each year can provide valuable information on the use of nest boxes by one or more species. It should not be assumed that habitat remains constant – changes may occur gradually, and have long term, cumulative effects.

6. Nest Description

Describe the General Location of the nest using the categories listed in Appendix 2. For example, “in coniferous tree”, “floating over water”, “among tree roots”, “on bridge”, etc. If the list of choices in Appendix 2 do not satisfy what you observed, please describe the situation so that it may be included in subsequent BCNRS manual updates.

Describe the Position of the nest using the categories listed in Appendix 3. For example, “saddled on a branch”, “above a doorway”, “on a rocky ledge”, “in a natural cavity”, etc. If the list of choices in Appendix 3 do not satisfy what you observed, please describe the situation so that it may be included in subsequent BCNRS manual updates.

Describe Materials (and lining) using the categories listed in Appendix 4. For example, “coarse grasses”, “mud”, “feathers”, etc. If the list of choices in Appendix 4 do not satisfy what you observed, please describe additional materials so that they may be included in subsequent BCNRS manual updates.

Note the following points on recording Height above ground/cliff face/water. The height to the bottom of the nest-cup, where the eggs lie, is the basic value required; for cavity-nests in trees, give also the height to the entrance and also the diameter of the tree at 1.6 m above ground (i.e., diameter at breast height; DBH). With a cliff or tree nest, please also state how far it is from the top (e.g., ¾ way up cliff, on ledge beneath overhang, or topmost for of tree). Cases where the ground level is irregular may be dealt with as: “holly hedge above sunken road; nest 2.5 m above road, 1 m above field-level” or “recess in bank of 1 m deep ditch; 1.5 m from bottom”. Finally, for nests among aquatic plants such as reeds and cattails, give both the height above water, and, if possible, the depth of the water below the nest.

The presence of certain nest materials, such as binding twine in this Osprey nest, may not be deliberately added by the nesting birds, but instead may be blown into the nest by the wind. The consequences of those materials may be fatal, and so it is important to document such incidences, and to note any associated mortality.

7. Recording Visits

NOTE: The following instructions apply mainly to Individual Nest Cards. For colony cards and multiple visits, use separate Colony Cards for each visit and staple or clip them together. It is additionally helpful to number the cards.

Visits made before any eggs are laid, (i.e., stage of building from quarter built to finished), may be summarized as ¼B, ½B, ¾B, FB. During building, visits need only be recorded when there has been some progress, and a good deal of summarizing may be done as long as the last visit before laying begins is recorded.

Once laying begins, every visit should, as a rule, be recorded. If necessary, continue on a second card and staple the two together. If a nest is under constant surveillance, one entry per day is sufficient, unless a change occurs.

There is a space on each line for brief notes, so that it should usually be possible to enter all details of one visit in one place, avoiding constant turning over to the back. Two lines may be used for one visit if more convenient.

For dates, please write as 16 Jun 1998. This should help to avoid mistakes like 16/6/1997 followed by 6/6/1997, or 5/4/1997 instead of 4/5/1997. Use the first three letters for each month (e.g. Jan, Feb, Mar, etc.).

A value for eggs or young (yng.) should only be entered if you are certain of the count. If eggs or young are present but not counted, put a check or question mark. If bird is sitting and is left undisturbed, please leave columns for eggs and young blank (do not guess the contents) and write “on” or “sitting” in the space for notes. Denote sex if distinguishable (do not do this simply because books indicate that a male for example does most of the incubation when the sexes cannot be clearly identified (e.g., Warbling Vireo). If the bird leaves as you approach, “on” or “sitting” should still be entered in the Remarks space, and the eggs or young columns completed in the usual way. If the bird is not sitting, record whether eggs are warm or cold (if easily reachable). Also note briefly any sign of “interest” in the nest by the parents – especially alarm notes. If no such extra information is given, desertion – perhaps weeks previously – must be suspected, thus reducing the card’s value for analysis.

Some species, such as Eastern Phoebe, are faithful to their old nests or nest sites. Visiting such nests anually can greatly enhance the value of the BCNRS for those species, and identify nest sites of local importance.

It is very important that you give a note about the age or description of the young, unless the age is obvious from earlier visits, as it helps in calculating the date of laying, and also the chances of success. Figure 1 shows the stages of nestling growth for passerines, and Figure 2 shows the stages of nestling growth for ducks. Examples of helpful descriptions are: a) hatching still in progress, b) young still wet, c) egg-tooth still present, d) young naked or downy, e) eyes not open/just open a slit/open, f) wing feathers in pin, i.e., quills present, g) wing feathers beginning to sprout from quills, h) well-feathered, i.e., mostly out of quill.

Since the words “fledged” and “fledging” can have alternate meanings, they are best avoided when completing cards for young still in the nest. If members of a brood differ greatly in size, mention the fact.

8. Outcome of Nest

If the nest has “finished” by your last visit, show this in the last entry on the front of the card, giving the date, not just something like “later flew” or “later robbed”. Nests are classed as successful even if only one youngster from a brood survives. A new addition to our nest cards is a simple “yes”, “no”, or “unknown” response to whether the nest successfully fledged at least one young. This means, that from the entire clutch, if just one bird leaves the nest, the nest was successful, even if that bird dies shortly thereafter. In the case of the latter, such information should be noted in the space provided on the back of the card, along with the known or probable cause of death.

Evidence for success such as young capable of leaving the nest, feather flakes in the nest, droppings in the nest, etc., can provide clues for determining the outcome. Conversely, evidence for failure should also be recorded in the Remarks section. This might include infertile or addled eggs, dead nestlings, abnormally long incubation period, nest disrupted, predation, weather, etc. If any unhatched eggs get broken, record what they contained: small or large embryos, stinking fluid or clear yolks – and in the last case whether or not partly dried up.

9. Brown-headed Cowbird Parasitism

Please complete 2 cards for any nest parasitized by a Brown-headed Cowbird, including details of all visits on each, so that one can be filed under Brown-headed Cowbird, the other with cards for the foster-species. Under Species write “Brown-headed Cowbird”, then the host in brackets – e.g., Brown-headed Cowbird (Song Sparrow) or BHCO (SOSP). First give the number of eggs or young of the host, then put “+1, +2, etc.” for the Brown-headed Cowbird egg(s) or chick(s). Do the same, but in reverse for the host species’ card. Each nest cards has a space to indicate “Yes” or “No” regarding cowbird parasitism. It is located above the date, eggs, and yng. columns and should be answered for all nests. If the question is left blank, it assumed that cowbird parasitism is not applicable.

In British Columbia the distribution of Brown-headed Cowbird has changed substantially in the last 100 years. The number of host species is growing, and some regional populations may be seriously threatened because of excessive nest parasitism. It is not only important to document nests with cowbird eggs or young, but also to note host species feeding cowbird young out of the nest.

10. Nest Success or Failure

On the back of each nest card is the question of whether the nest was successful. The standard for determining whether a nest is successful is to determine if at least one nestling successfully fledges. Please indicate “yes” (i.e., successfully fledged 1 or more young), “no” (nest failed), or “unknown” on each card. Such information can provide meaningful regional comparisons.

Sending in Cards

Please check cards for omissions and mistakes. It is helpful if they are organized in phylogenic order, i.e. Loons (Red-throated Loon) to Old World Sparrows (House Sparrow). Completed cards should be returned (preferably as a single batch) at the end of each breeding season and, if at all possible, by October 1st, to:

British Columbia Nest Record Scheme
PO Box 55053
3825 Cadboro Bay Road
Victoria, British Columbia
V8N 6L8

The Data Which Nest Record Analysis Provides

The overall picture of the breeding cycle of each species can be formed as sufficient records accumulate. Cards for the commonest species are especially valuable because, with numerous observers cooperating, large enough samples of cards become available to allow studies of correlation's between laying dates, clutch-sizes, and breeding success, and how these in turn vary under different conditions of weather, habitat, latitude, and altitude.

Differences in nesting between different populations of the same species provide some insight into basic factors that regulate breeding biology. The records for a number of "common" species can be analyzed annually to keep check on their "productivity" (clutch-size, fertility, family-size, percentage nest-success) and any marked effect on breeding success caused by changes in the environment, such as the introduction of new farming methods and chemicals or changes in forestry practices, should thus be detected.

The habitats and nest sites chosen by different species, and by one species in different areas, can be studied as topics of interest in themselves, and because of the influence they may have on family sizes, nest success, and laying dates. Nest Record Cards often prove of value in distribution surveys, while the actual numbers of records received for each species provide a rough index of population levels.

When it comes to nest-finding, patience is a virture. The value of your observations, be it 1 or 100, will have lasting value toward our understanding of the breeding birds of British Columbia.

Figure 1. Stages of Nestling Growth

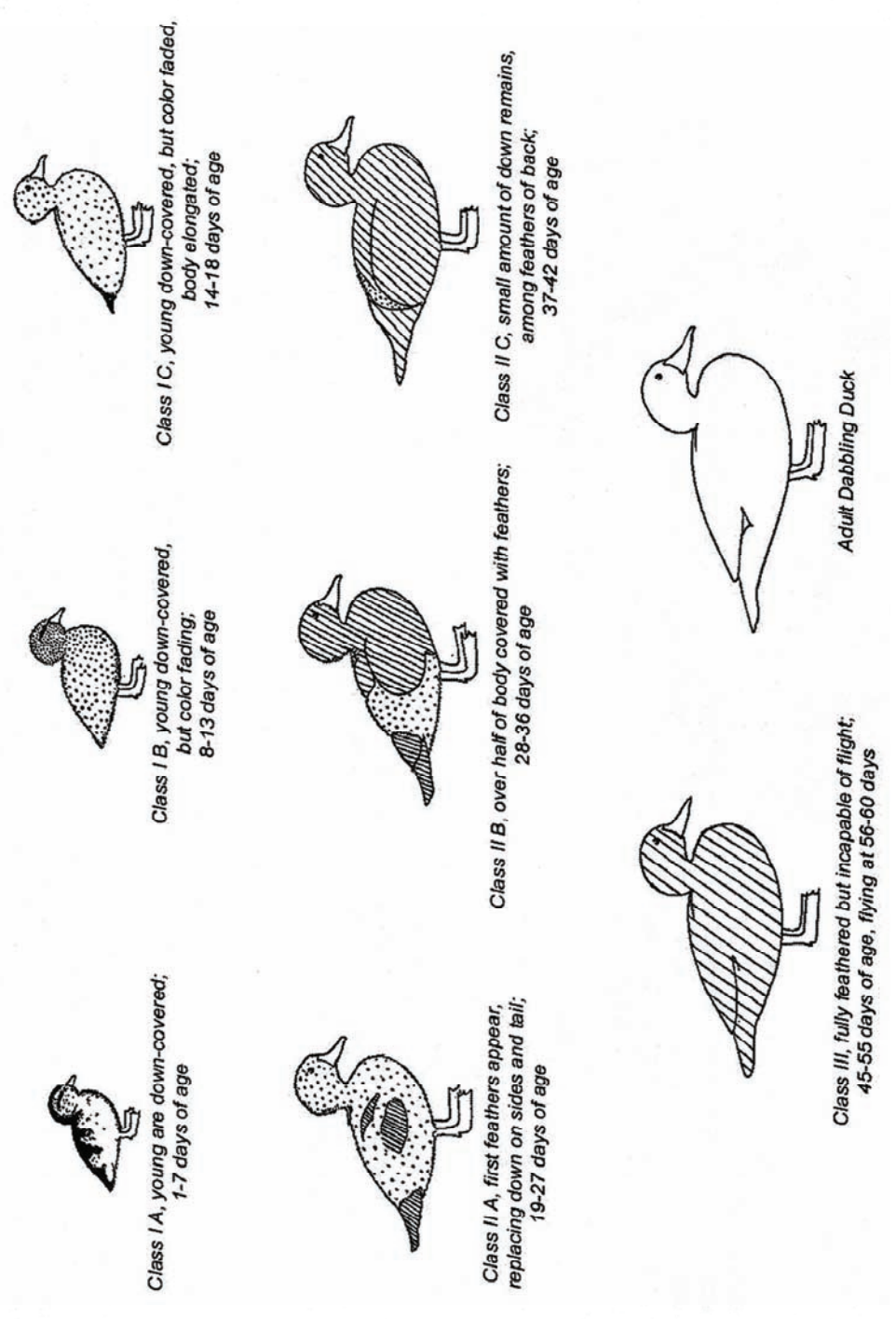


Figure 2. Aging waterfowl from hatching to adult stage.

Field Tips and Techniques

Over the years, various BCNRS participants, as well as BCNRS coordinators, have discovered or developed various field tips and techniques that contribute to the long-term value of the BCNRS. Many of these tips and techniques are published in annual BCNRS reports. A few are re-printed here for reference.

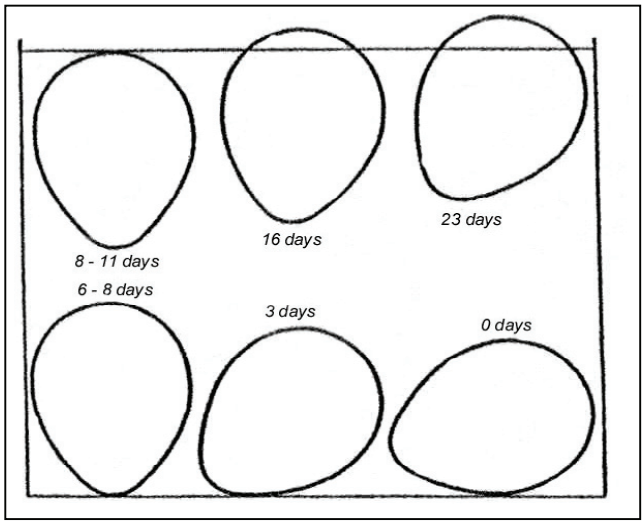
Cavity Nesters – How Many Young?: 46th Annual Report, 2000.

Most times the contents of nests for many cavity-nesting birds, like woodpeckers, swallows, chickadees, and bluebirds, are difficult to determine because of the height of the nest and depth of the cavity. John McWilliams, an old nest finder from Seattle, WA, wrote to say that with patience the number of young might be determined with some accuracy by watching the behaviour of the adults leaving their nest.

Nestlings, mainly the songbirds, void their excrement within a small, whitish *fecal sac* that the parents either eat or carry away. This activity keeps the nest clean and the feathers of developing young from becoming matted. By patiently watching a nest site over a short period of time an estimate of the number of young can be made.

Ring-necked Pheasant Eggs – Determining Their Age: 46th Annual Report, 2000.

For many years gamebird breeders and egg collectors have been able to determine the stage of incubation and embryo development in an egg by a simple "water test". They have used this information to calculate the dates of egg-laying, initiation of incubation, critical stages during incubation, and hatching.



Position of viable "floating" eggs in relation to number of days incubated for Ring-necked Pheasant.

During incubation, an egg gradually loses weight through evaporation of water and gases. As the chick develops an air cell grows between the parchment-like shell membrane and the broad end of the egg. The older the chick the larger the air cell. When an egg is gently placed in a jar of water it will respond according to its age. A freshly laid egg, with no air cell, will sink to the bottom and lay on its side while an egg ready to hatch floats high in the water because of the large air cell. The accompanying drawing shows the position of a Ring-necked Pheasant egg at various stages of its 23-day incubation period.

There was some concern that the "water test" may be harmful to the developing embryo, but recently other researchers have tested other species with absolutely no threat to the success of the egg hatching.

Nest Finding Lasts all Year: 47th Annual Report, 2001.

When the green leaves of spring cloak the shrubs and trees, trying to find a nest can be challenging and time consuming. If you can't find a nest be sure to return to the area in winter. Without the leaves you may be surprised (and embarrassed) to learn where they were hidden.

Looking for nests in vegetation without foliage in winter can be very rewarding because by returning to the site in the following nesting season you may be lucky to find the birds have returned to exactly the same nest site. Many species of birds such as Great Blue Heron, Red-tailed Hawk, Osprey, Black Swift, Belted Kingfisher, Western Kingbird, Cedar Waxwing, and American Robin will re-use the same nest.

To Climb or Not to Climb: 48th Annual Report, 2002.

Climbing trees to check the contents of nest boxes put up for cavity-nesting puddle and diving ducks can be a chore. And it becomes more difficult, and dangerous, to do as you get older!

You can save yourself scratches and bruises by closely examining the box from the ground before scaling the tree. Active duck nests frequently show traces of breast down at the entrance hole. The female may leave these feathers upon entering or leaving the nest. Sometimes down floats up from the actual nest while the female is changing incubation positions.

Duck down attached to the entrance hole of this nest box is a sign that the nest is active.

A small mirror, whether handheld or attached to a stick or extendable pole, can be useful for checking nest contents in difficult to reach locations.

A Nest and a Mirror: 48th Annual Report, 2002.

Sometimes nests tucked up close to rafters and roofs in homes can be difficult and dangerous to check by hand. **Patrick Chambers** cleverly used a small hand mirror to check an **American Robin** nest in **Clearwater**. The reflection in the mirror clearly showed two eggs and a nestling, data he collected without disturbing or damaging the contents of the nest.

Locating Hummingbird Nests: 49th Annual Report, 2003.

Hummingbird nests are very small and usually difficult to locate unless your are familiar with their nesting sites and habitats. For example, in south coastal forests the tips of low limbs on western redcedars, western hemlocks, and Douglas-firs can methodically be searched for "bumps" on the branches.

In the interior the challenge is greater, but D. Code used a hummingbird's behaviour to locate its nest near 100 Mile House. He was well aware that female hummingbirds chase all birds, large or small, away from the vicinity of their nests. By being patient and watching the birds during their brief squabble he watched a hummingbird return directly to its nest and continue its activities.

Nest-searching Cues: 50th Annual Report, 2004.

Everyone uses different cues and techniques to find nests. A study by Amanda D. Rodewald (see *Journal of Field Ornithology* 75:31-39, 2004) quantifies and reminds us of some of these methods. She found that 41% of successful nest discoveries in her study area were from parental behaviour such as carrying nesting material and food, displaying, alarms calls, defence strategies, and distraction displays. Another 37% were found by systematic searching of potential nesting sites and substrate, while flushing the parent (5%) and luck (17%) rounded off the categories.

Using Droppings as a Clue to Nest Finding: 51st Annual Report, 2005.

Finding the nests of grassland species, such as Savannah Sparrow, Horned Lark, Grasshopper Sparrow, and Vesper Sparrow, is mostly luck. It usually requires a systematic search of an area that results in flushing an incubating or brooding parent.

A reliable method to locate nests, without the tedious ground search, requires examining the tops of posts, poles, and rocks for fresh bird droppings. This is most effective during the nestling stage when adults are busy feeding their family. An adult will often land on a favourite perch before delivering food. If you are patient and remain motionless, or hidden by shrubs or a car door, the bird will fly directly to its nest.

The time before feeding varies depending on the species, the age of the young, and the sensitivity of individual birds to the immediate environment. We have had Horned Larks fly to their nests within 15 seconds and have waited for Savannah Sparrow for 12 minutes. The other benefit is that you reduce the possibility of trampling nests during physical ground searches.

This fence post, with Savannah Sparrow droppings, was evidence of a nearby nest. With patience, the nest was soon located.

Fledged Young: 52nd Annual Report, 2006.

To enhance the value of collecting breeding information, and time in the field, we want to encourage participants to fill out cards for fledged young even though a nest has not been found. A recently fledged young sitting on a branch, or one that has been out of the nest for awhile, but is being fed by its parents, is noteworthy.

Most birders can identify young birds but it is important to record the stage of development. Descriptions could include downy tufts on head, stubby or bob-tail versus short/long tail, gape colour (often yellow), adults feeding away from the nest, ability to fly, well or not at all, spotted breast, or the bird's behaviour such as begging for food.

The collage on the following page gives six examples of fledged young for which nests cards should be completed. They include young with tufts of down, stubby-tails, yellow gapes, being fed by parents, or well fledged but in juvenile plumage and known to have been raised locally.

Ageing Waterbirds: 52nd Annual Report, 2006.

Broods of waterbirds, especially cygnets, goslings, and ducklings of waterfowl, can be aged quite accurately following the criteria on plumage development. This additional information allows the hatching date to be calculated and other analysis such as correlating weather in a particular season to productivity and laying times. Also, knowing the age of waterbirds is very helpful when developing profiles for regional breeding chronologies.

The drawings in Figure 2 (see Page 18) can be photocopied and reduced for adding to a field notebook for quick reference.

Female Redhead with an 8-13 day-old brood. The plumage development for the ducklings is Class 1B, whereby the body is down-covered, but the hatching colour is fading.

Examples for which nest cards should be completed: (a) Yellow Warbler young recently fledged (ca 10 days old) showing tufts of down on head and large yellow gape at corner of mouth; **(b)** Red-winged Blackbird with tufts of down and pin feathers just out of nest, or 14 days post-hatching; **(c)** Black-billed Magpie young with two-inch tail that has to grow another 10 inches before it becomes an adult; **(d)** the bright yellow gape at the corner of the bill on these Eastern Kingbirds suggests that they have only been out of the nest a few days; **(e)** a fledged Tree Swallow young, estimated at four days out of nest, being fed by a parent; **(f)** it is important to try to separate the number of juveniles in broods and in pre-migratory flocks if you know that the birds nested nearby, as in this Bank Swallow colony.

APPENDICES

Appendix 1. List of Habitats and Codes for British Columbia

Habitat Types

1. Alpine
2. Aquatic
3. Forest
4. Grassland
5. Man-influenced
6. Shrubland
7. Wetland

Habitat Classes

1. Alpine
2. Aquatic
3. Forests
    a. Amabilis fir
    b. Deciduous
    c. Douglas-fir
    d. General habitats
    e. Miscellaneous
    f. Mountain hemlock
    g. Pine
    h. Spruce
    i. Subalpine Fir
    j. Western Hemlock
    k. Western redcedar
4. Grassland
5. Human-influenced
6. Shrubland
7. Wetland

Specific Habitats

Habitat Types and Classes

Alpine Habitats

TYPE	CLASS	CODE
1. ALPINE		
	ALPINE GRASSLAND	ALPGRA
	ALPINE HEATH	ALPHEA
	ALPINE MEADOW	ALPMEA
	ALPINE SHRUBLAND	ALPSHR
	ALPINE TUNDRA	ALPTUN
	ALPINE UNVEGETATED	ALPUNV
	GLACIER / ICE / SNOWFIELD	GLICSN
	ROCK / SCREE	ROCSCR
	TALUS	TALUS

Aquatic Habitats

TYPE	CLASS	CODE
2. AQUATIC		
	FAST PERENNIAL STREAM/RIVER	FAPESR
	FLOODED AREA, TEMPORARILY	TEFLAR
	INTERMITTENT STREAM/RIVER	INTSTR
	INTERTIDAL MARINE	INTMAR
	LARGE LAKE	LARLAK
	PELAGIC	PELAGI
	POND	POND
	SLOUGH	SLOUGH
	SLOW PERENNIAL STREAM/RIVER	SLPESR
	SMALL LAKE	SMALAK
	STREAM	STREAM

Forest Habitats

TYPE	CLASS	CODE
3. Forest		
a. Amabilis fir	AMABILIS FIR / DOUGLAS-FIR	AFDFIR
	AMABILIS FIR / GRAND FIR	AFGFIR
	AMABILIS FIR / WESTERN REDCEDAR	AFWRED
	AMABILIS FIR / YELLOW CEDAR	AFYCED
b. Deciduous	ARBUTUS	ARBUTU
	BALSAM POPLAR	BALPOP
	BIGLEAF MAPLE	BIGMAP
	BIGLEAF MAPLE / RED ALDER	BIMRAL
	BIRCH	BIRCH
	BLACK COTTONWOOD	BLCOTT

TYPE	CLASS	CODE
	BLACK COTTONWOOD / RIPARIAN	BLCORI
	DECIDUOUS	DECIDU
	GARRY OAK	GAROAK
	GARRY OAK / ARBUTUS	GAOAAR
	GREEN ALDER	GREALD
	PAPER BIRCH	PAPBIR
	RED ALDER	REDALD
	SILVER BIRCH	SILBIR
	TREMBLING ASPEN	TREASP
	TREMBLING ASPEN / BALSAM POPLAR	TRASBP
	TREMBLING ASPEN UPLANDS	TRASUP
	WESTERN COTTONWOOD	WESCOT
c. Douglas-fir	COASTAL DOUGLAS-FIR	CODOFI
	COASTAL DOUGLAS-FIR / RED ALDER	CDFRAL
	COASTAL DOUGLAS-FIR / WESTERN WHITE PINE	CDFWWP
	DOUGLAS-FIR	DOUGFI
	DOUGLAS-FIR / ARBUTUS	DOFIAR
	DOUGLAS-FIR / GARRY OAK	DFGOAK
	DOUGLAS-FIR / PONDEROSA PINE	DFPPIN
	DOUGLAS-FIR / LODGEPOLE PINE	DFLOPI
d. General Habitats	CONIFEROUS	CONIF
	DECIDUOUS	DECIDU
	MIXED	MIXED
	SUBALPINE	SUBALP
	WOODLOT	WOODLO
e. Miscellaneous	ALPINE LARCH	ALPLAR
	BALSAM FIR	BALFIR
	BALSAM FIR / BALSAM POPLAR	BFBAPO
	BALSAM FIR / SPRUCE	BAFISP
	BALSAM FIR / TREMBLING ASPEN	BFTRAS
	CHRISTMAS TREE FARM	CHTRFA
	CLEARCUT (see ‘Specific’ for stage of clearcut)	CLEARC
	GRAND FIR	GRAFIR
	LOGGED	LOGGED
	RANGLELAND	RANGEL
	ROCK, SPARSELY TREED	SPTRRO
	SWAMP, DEAD TREE	DETRSW
	TALUS, SPARSE OR DEAD TREE	TALUS
	TAMARACK / SPRUCE	TAMSPR
	TAMARACK / TREMBLING ASPEN	TAMTRA
f. Mountain hemlock	MOUNTAIN HEMLOCK / AMABILIS FIR	MHAFIR
	MOUNTAIN HEMLOCK / YELLOW CEDAR	MHYCED
	MOUNTAIN HEMLOCK FORESTED	MOHEFO
	MOUNTAIN HEMLOCK PARKLAND	MOHEPA

TYPE	CLASS	CODE
g. Pine	LODGEPOLE PINE	LODPIN
	LODGEPOLE PINE / TREMBLING ASPEN	LPTASP
	LODGEPOLE PINE OUTCROP	LOPIOU
	PONDEROSA PINE	PONPIN
	SHORE PINE / COASTAL DOUGLAS-FIR	SHOCDF
	WESTERN WHITE PINE	WEWHPI
	WHITE-BARK PINE	WBPINE
	WHITEBARK PINE / LIMBER PINE	WHPILP
	WHITEBARK PINE PARKLAND	WHPIPA
h. Spruce	BLACK SPRUCE	BLASPR
	BLACK SPRUCE / LODGEPOLE PINE	BSLPIN
	BOREAL SPRUCE HARDWOOD	BOSPHA
	BOREAL WHITE SPRUCE	BOWHSP
	BOREAL WHITE SPRUCE / LODGEPOLE PINE	BWSLPI
	BOREAL WHITE SPRUCE / TREMBLING ASPEN	BWSTAS
	ENGLEMANN SPRUCE	ENGSPR
	ENGLEMANN SPRUCE / SUBALPINE FIR	ESSFIR
	ENGLEMANN SPRUCE / SUBALPINE FIR DRY FORESTED	ESSFDF
	ENGLEMANN SPRUCE / SUBALPINE FIR DRY PARKLAND	ESSFDP
	ENGLEMANN SPRUCE / SUBALPINE FIR WET FORESTED	ESSFWF
	ENGLEMANN SPRUCE / SUBALPINE FIR WET PARKLAND	ESSFWP
	ENGLEMANN SPRUCE RIPARIAN	ENSPRI
	SITKA SPRUCE / BLACK COTTONWOOD RIPARIAN	SSBCRI
	SUBBOREAL WHITE SPRUCE	SUWHSP
	SUBBOREAL WHITE SPRUCE / TREMBLING ASPEN	SWSTAS
	WHITE SPRUCE	WHSPRU
	WHITE SPRUCE / BALSAM POPLAR RIPARIAN	WSBPRI
	WHITE SPRUCE / BLACK COTTONWOOD RIPARIAN	WSBCRI
	WHITE SPRUCE / DOUGLAS-FIR	WSDFIR
	WHITE SPRUCE / LODGEPOLE PINE	WSLPIN
	WHITE SPRUCE / PAPER BIRCH	WSPBIR
	WHITE SPRUCE / TREMBLING ASPEN	WHSTRA
i. Subalpine fir	SUBALPINE FIR	SUBFIR
	SUBALPINE FIR / ALPINE LARCH	SFALLA
	SUBALPINE FIR / SCRUB BIRCH	SFSBIR
	SUBALPINE FIR / SCRUB BIRCH KRUMMHOLZ	SFSBKR
	SUBALPINE FIR / WHITE SPRUCE	SFWSPR
j. Western Hemlock	COASTAL WESTERN HEMLOCK	COWEHE
	COASTAL WESTERN HEMLOCK / BIGLEAF MAPLE	CWHBIM
	COASTAL WESTERN HEMLOCK / DOUGLAS FIR	CWHDFI
	COASTAL WESTERN HEMLOCK / GRAND FIR	CWHGFI

TYPE	CLASS	CODE
	COASTAL WESTERN HEMLOCK / RED ALDER	CWHRAL
	COASTAL WESTERN HEMLOCK / SITKA SPRUCE	CWHSSP
	COASTAL WESTERN HEMLOCK / SUBALPINE FIR	CWHSFI
	COASTAL WESTERN HEMLOCK / WESTERN REDCEDAR	CWHWRE
	INTERIOR WESTERN HEMLOCK	IWEHE
	INTERIOR WESTERN HEMLOCK / GRAND FIR	IWHGFI
	INTERIOR WESTERN HEMLOCK / SUBALPINE FIR	IWHSFI
	WESTERN HEMLOCK / PAPER BIRCH	WHPBIR
k. Western Red Cedar	COASTAL WESTERN REDCEDAR / BIGLEAF MAPLE	CWRBIM
	COASTAL WESTERN REDCEDAR / DOUGLAS-FIR	CWRDFI
	COASTAL WESTERN REDCEDAR / GRAND FIR	CWRGFI
	COASTAL WESTERN REDCEDAR / GRAND FIR	CWRGFI
	COASTAL WESTERN REDCEDAR / RED ALDER	WRCRAL
	WESTERN REDCEDAR	CEDAR
	WESTERN REDCEDAR / BLACK COTTONWOOD RIPARIAN	WRBCRI
	WESTERN REDCEDAR / PAPER BIRCH	WRPBIR

Grassland Habitats

TYPE	CLASS	CODE
4. Grassland		
	(plant species code) GRASSLAND	____GR
	ARID	ARID
	BIG SAGEBRUSH	BIGSAB
	BUNCHGRASS	BUNGRA
	FESCUE GRASS, ROUGH	FESGRA
	FORB	FORB
	GRAMA GRASS	GRAGRA
	GRASS-FORB DOMINATED	GRFODO
	GRASS-SEDGE MEADOW	GRSEME
	MEADOW	MEADOW
	MONTANE SHRUB	MONSHR
	NEEDLE-WHEAT GRASS	NEWHGR
	RANGELAND	RANGLA
	ROCK	ROCK
	SPEAR-WHEAT GRASS	SPWHGR
	SUBALPINE	SUBALP
	SUBALPINE SHRUB	SUBSHR
	TALUS	TALUS

Human-influenced Habitats

TYPE	CLASS	CODE
5. Human-influenced		
	CLEARCUT	CLECUT
	CULTIVATED FARMLAND (agricultural)	CULFAR
	FARMYARD	FARYAR
	DESERTED FARMLAND	DESFAR
	INDUSTRIAL	INDUST
	LOGGED	LOGGED
	PARK	PARK
	PASTURE	PASTUR
	RANCHLAND	RANCHL
	RECREATION AREA	RECARE
	RESERVOIR/DAM	RESDAM
	RURAL	RURAL
	SUBURB	SUBURB
	TREE FARM	TREFAR
	TRANSMISSION CORRIDOR	TRMCOR
	TRANSPORTATION CORRIDOR	TRPOCO
	URBAN	URBAN

Shrubland Habitats

TYPE	CLASS	CODE
6. Shrubland		
	(plant species) SHRUBLAND	____SH
	ALDER	ALDER
	ALDER-WILLOW	ALDWIL
	ARID	ARID
	AVALANCHE TRACK	AVALTR
	BIG SAGE GRASSLAND	BSGRAS
	BIRCH	BIRCH
	BIRCH-WILLOW	BIRWIL
	DOGWOOD	DOGWOO
	JUNIPER	JUNIPE
	MONTANE GRASSLAND	MONGRA
	PUSSY WILLOW	PUSWIL
	SHRUB/BUSH	SHRBRU
	SUBALPINE GRASSLAND	SUBGRA
	TALUS	TALUS

Wetland Habitats

TYPE	CLASS	CODE
7. Wetland		
	BLACK-SPRUCE BOG	BLSPBO
	CATTAIL-BULLRUSH MARSH	CATBUL
	GRASS-SEDGE MEADOW	GRSEME
	MARSH	MARSH
	MEADOW	MEADOW
	SEDGE FEN	SEDFEN
	SHALLOW OPEN WATER	SHOPWA
	SHRUB FEN	SHRFEN
	SHRUB SWAMP	SHRSWA
	SPHAGNUM BOG	SPHBOG
	SPRUCE-SKUNK CABBAGE	SPSKCA
	SUBLPINE MEADOW	SUBMEA
	SWAMP	SWAMP
	WILLOW SWAMP	WILSWA

Long term and continued wetland monitoring of breeding birds will prove to be an important component of the British Columbia Nest Record Scheme in the face of climate change and shrinking wetlands. On the left, R.W. Campbell systematically searches for Red-winged Blackbird, Yellow-headed Blackbird, Common Grackle, Marsh Wren, and other species in a cattail marsh. On the right J. Preston searches for Common Loon, Trumpeter Swan, and recently hatched waterfowl broods in northeastern British Columbia.

Specific Habitats

Specific Habitat	Code	Specific Habitat	Code
AIRPORT	AIRPOR	HEDGEROW	HEDROW
ALKALI	ALKALI	INDUSTRIAL PLANT	INDPLA
ALPINE, SPARSELY TREED	ALSPTR	ISLAND	ISLAND
BACKYARD / FARMLAND	BACFAR	ISLAND, FORESTED	FORISL
BANK	BANK	ISLAND, GRASS / SHRUB	GRSHIS
BANK, CLAY	CLBANK	ISLAND, ROCKY	ROCISL
BANK, DIRT	DIBANK	LAKESHORE	LAKESH
BANK, ROCK	ROBANK	MATURE FOREST	MATFOR
BANK, SAND	SABANK	MECHANICAL FOREST	MECFOR
BEACH, COBBLE	COBBEA	MINE, RECLAIMED	RECMIN
BEACH, GRAVEL	GRABEA	MINESHAFT	MINESH
BEACH, MUD	MUDBEA	MIXED AGE FOREST	MAGFOR
BEACH, SAND(Y)	SANBEA	NEAR WATER	NEAWAT
BEAVER POND	BEAPON	NURSERY	NURSER
BOAT DOCK	BOADOC	OPEN FIELD	OPEFIE
BURN (forest affected by fire)	BURN	OPEN HILLSIDE	OPEHIL
CAMPGROUND / PICNIC AREA	CAPIAR	ORCHARD	ORCHAR
CAMPUS / SCHOOL	CAMSCH	PARK	PARK
CANYON / RAVINE (gully, gorge)	CANRAV	PARKLAND	PARKLA
CEMETERY	CEMETE	PASTURE	PASTUR
CLEARCUT, RECENT	RECLCU	PEAT BOG	PEABOG
CLEARCUT, SHRUB REGEN	SHRECL	RAILWAY TRACK	RAITRA
CLEARCUT, YOUNG TREES	YTRECL	RANGELAND, OPEN	OPERAN
CLIFF	CLIFF	RECREATIONAL HOME	RECHOM
COMMERCIAL	COMMER	RECLAIMED MINE	RECMIN
CREEK BOTTOM	CREBOT	REGENERATING FOREST	REGFOR
DUNE	DUNE	RESIDENTIAL	RESIDE
EDGE	EDGE	RIPARIAN	RIPARI
FIELD, OPEN	OPEFIE	ROADSIDE	ROADSI
FOREST PATCH	FORPAT	ROCK	ROCK
FOREST, MATURE	MATFOR	SANCTUARY / RESERVE	SANRES
FOREST, SECOND GROWTH	SGFORE	SCHOOL / CAMPUS	SCHCAM
FOREST, UNSPECIFIED	UNSFOR	SECOND GROWTH FOREST	SGRFOR
FOREST, YOUNG	YOUFOR	SHORE	SHORE
GARBAGE DUMP	GARDUM	SINKHOLE	SINKHO
GARDEN	GARDEN	SPIT	SPIT
GOLF COURSE	GOLCOU	TALUS (slope)	TALUS
GRAVEL BEACH	GRABEA	UNSPECIFIED FOREST	UNSFOR
GRAVEL PIT	GRAPIT	WATER, NEAR (lake, river, marsh)	NEWATE
GROVE	GROVE	WILLOW THICKET	WILTHI

Appendix 2. List of General Nest Locations and Codes

Location	Code	Location	Code
BANK	BANK	MUD FLAT	MUDFLA
BANK, CLAY	CLBANK	NEST, OLD	OLDNES
BANK, DIRT	DIBANK	PICNIC SHELTER	PICSHE
BANK, GRAVEL	GRBANK	PLATFORM / LEDGE	PLATLE
BANK, SAND	SABANK	POLE (telephone or other)	POLE
BARN	BARN	ROCK, UNDER OR AMONG	UAROCK
BRIDGE	BRIDGE	ROOTS, AMONG TREE	AMTRRO
BUILDING	BUILDI	SAND DUNE	SANDUN
BUILDING, ABANDONED	ABANBU	SCRUB PILE	SCRPIL
BUILDING, UNSPECIFIED	UNSPBU	SHED	SHED
CAVE	CAVE	SHRUB / SCRUB / SAPLINGS	SBSSAP
CLIFF	CLIFF	SILO	SILO
CLIFF, GRANITE	GRCLIF	SINKHOLE	SINKHO
CLIFF, LIMESTONE	LICLIF	STRUCTURE, OTHER	OTSTRU
CLIFF, ROCK	ROCLIF	STUMP / STUB	STUSTU
CLIFF, SANDSTONE	SACLIF	TOWER / WATER TANK	TOWWAT
CULVERT	CULVER	TREE	TREE
DEAD BUSH	DEABUS	TREE, CONIFER	CONTRE
DEAD TREE / SNAG	DETRSN	TREE, DECIDUOUS	DECTRE
GARAGE / CAR PORT	GARCAP	TREE, (plant species) IN DEAD	____DT
GROUND, BARE	BAGROU	TREE, (plant species) IN LIVE	____LT
GROUND, NOT SPECIFIED	NSGROU	VEGETATION, (plant species) IN LIVE	____LV
GROUND, OPEN	OPENGR	VEGETATION, (plant species) IN DEAD	____DV
HAY STACK	HAYSTA	VEGETATION, LOW	LOWVEG
HEDGEROW	HEDROW	WATER, MOUND FLOATING OVER	MFOWAT
HOUSE (e.g., porch)	HOUSE	WATER, TANK / TOWER	TATOWA
LOG	LOG	WILLOW THICKET	WILTHI

* where “plant species” is provided, please write the full common or scientific name.

Appendix 3. List of Specific Nest Positions and Codes

Above Ground Nests

Location	Code	Location	Code
ARTIFICIAL CONTAINER	ARTCON	NEAR TOP (bush, shrub, tree)	NEATOP
BRANCH, ADJACENT TO TRUNK	BRADTR	NEST BOX	NESBOX
BRANCH, ATTACHED TO	ATTOBR	NEST, OLD	OLDNES
BRANCH, NEAR/END OF	NEENBR	ON TOP (depression)	ONTOP
BRANCH, HOLLOW	HOLBRA	OVERHANG, UNDER	UNDOVE
BRANCH, IN HOLLOW OR FORK OR CROTCH OF	HOFOCR	PLATFORM / BASKET	PLABAS
BRANCH, SADDLED ON	SADBRA	RAFTERS / GIRDERS / BEAMS	RAGIBE
BUILDING, UNDER EAVE OF	UNEABU	ROOF, FLAT	FLROOF
CATTAILS / BULRUSHES, ATTACHED TO	CABUAT	ROOTS, AMONG TREE	ATROOT
CAVITY, EXCAVATED BY OTHER SPECIES	EXCCAV	ROOTS, ON TOP OF	ONTORO
CAVITY, NATURAL	NATCAV	SHELF, PROJECTION / LEDGE	PRLESH
CAVITY, SELF EXCAVATED	SEEXCA	STEM(S)	STEM
CAVITY, UNKNOWN ORIGIN	UNORCA	TREE, FALLEN	FATREE
CREVICE	CREVIC	TREE, HOLLOW IN	HOINTR
CREVICE, BARK (loose tree bark)	BARCRE	TREE, ON TRUNK OR NEXT TO	TRNETR
DOORWAY, ABOVE	ABDOOR	TREE, UPRIGHT HOLE IN	UPHOTR
FIXTURE	FIXTUR	WALL, ATTACHED TO	ATWALL
LIGHT, OVER	OVLIGH	WALL, IN CHIMNEY / SILO / WELL	ICSWWA
		WITCH'S BROOM	WITBRO

Ground Nests

Location	Code	Location	Code
BURROW	BURROW	LEDGE, ROCKY	ROLEDG
CAVE, ON FLOOR OF	FLCAVE	LOG / ROCK / STUMP, BESIDE OR BENEATH	BBLRST
CAVE, WALL (shelf or ledge) OF	WALCAV	OPEN (completely open situation)	OPEN
FENCEROW / HEDGEROW, ALONG	ALFEHE	OTHER, BESIDE OR BENEATH	BBOTHE
FLAT ROOF	FLROOF	ROCKS, AMONG	AMROCK
GRASS, IN TALL	TALLGR	ROOTS OF TREE, AMONG	AMROTR
GROUND COVER, IN / AMONG	AMGRCO	TREE, AT BASE OF	BATREE
GROUND, DEPRESSION IN	DEPGRO	VEGETATION, BESIDE OR BENEATH CLUMP / TUFT OF	BBCTVE
HOLLOW LOG	HOLLOG	UPRIGHT STALK, FORK	UPSTFO
LEAVES, AMONG (on forest floor)	AMLEAV		

Appendix 4. List of Nest Materials, Linings, and Codes

Material	Code
BARK STRIPS	BARSTR
BULRUSH	BULRUS
CATTAIL	CATTAI
DOWN, BIRD	BIDOWN
DOWN, PLANT	PLDOWN
FAECES, BIRD	BIRFAE
FEATHERS	FEATHE
FIBRE, PLANT	PLFIBR
FORBS	FORBS
GRASSES	GRASS
GRASSES, COARSE (hay, straw)	COGRAS
GRASSES, FINE	FIGRAS
GRASSES, FRESH	FRGRAS
HAIR	HAIR
LEAF SKELETONS OR STEMS	LESKST
LEAVES	LEAVES
LICHENS	LICHEN
MAN-MADE	MANMAD
MANURE STRIPS	MANSTR
MOSSES	MOSSES
MUD	MUD
NEEDLES	NEEDLE
NO LINING	NOLINI
PAPER	PAPER
ROOTLETS	ROOTLE
SEDGE	SEDGE
SPIDER / COB WEBS	SPCOWE
STEMS	STEMS
STICKS OR BRANCHES	STIBRA
STRING OR TWINE	STRTWI
TWIGS	TWIGS
WOODCHIPS	WOODCH

Appendix 5. Alphabetical List of Bird Species and 4-letter Codes

Common Name	Scientific Name	4-letter Code
Acadian Flycatcher	*Empidonax virescens*	ACFL
Acorn Woodpecker	*Melanerpes formicivorus*	ACWO
Alder Flycatcher	*Empidonax alnorum*	ALFL
Aleutian Tern	*Onychoprion aleuticus*	ALTE
American Avocet	*Recurvirostra americana*	AMAV
American Bittern	*Botaurus lentiginosus*	AMBI
American Black Duck	*Anas rubripes*	ABDU
American Coot	*Fulica americana*	AMCO
American Crow	*Corvus brachyrhynchos*	AMCR
American Dipper	*Cinclus mexicanus*	AMDI
American Golden-Plover	*Pluvialis dominica*	AGPL
American Goldfinch	*Carduelis tristis*	AMGO
American Kestrel	*Falco sparverius*	AMKE
American Pipit	*Anthus rubescens*	AMPI
American Redstart	*Setophaga ruticilla*	AMRE
American Robin	*Turdus migratorius*	AMRO
American Three-toed Woodpecker	*Picoides dorsalis*	ATTW
American Tree Sparrow	*Spizella arborea*	ATSP
American White Pelican	*Pelecanus erythrorhynchos*	AWPE
American Wigeon	*Anas americana*	AMWI
Ancient Murrelet	*Synthliboramphus antiquus*	ANMU
Anna's Hummingbird	*Calypte anna*	ANHU
Arctic Tern	*Sterna paradisaea*	ARTE
Ash-throated Flycatcher	*Myiarchus cinerascens*	ATFL
Baikal Teal	*Anas formosa*	BATE
Baird's Sandpiper	*Calidris bairdii*	BASA
Baird's Sparrow	*Ammodramus bairdii*	BASP
Bald Eagle	*Haliaeetus leucocephalus*	BAEA
Baltimore Oriole	*Icterus galbula*	BAOR
Band-tailed Pigeon	*Patagioenas fasciata*	BTPI
Bank Swallow	*Riparia riparia*	BKSW
Barn Owl	*Tyto alba*	BNOW
Barn Swallow	*Hirundo rustica*	BASW
Barred Owl	*Strix varia*	BAOW
Barrow's Goldeneye	*Bucephala islandica*	BAGO
Bar-tailed Godwit	*Limosa lapponica*	BTGO
Bay-breasted Warbler	*Dendroica castanea*	BAYW
Belted Kingfisher	*Ceryle alcyon*	BEKI
Bewick's Wren	*Thryomanes bewickii*	BEWR
Black Oystercatcher	*Haematopus bachmani*	BLOY
Black Phoebe	*Sayornis nigricans*	BLPH

Common Name	Scientific Name	4-letter Code
Black Scoter	*Melanitta nigra*	BLSC
Black Swift	*Cypseloides niger*	BLSW
Black Tern	*Chlidonias niger*	BLTE
Black Turnstone	*Arenaria melanocephala*	BLTU
Black Vulture	*Coragyps atratus*	BLVU
Black-and-white Warbler	*Mniotilta varia*	BAWW
Black-backed Woodpecker	*Picoides arcticus*	BBWO
Black-bellied Plover	*Pluvialis squatarola*	BBPL
Black-billed Cuckoo	*Coccyzus erythropthalmus*	BBCU
Black-billed Magpie	*Pica hudsonia*	BBMA
Blackburnian Warbler	*Dendroica fusca*	BBNW
Black-capped Chickadee	*Poecile atricapillus*	BCCH
Black-chinned Hummingbird	*Archilochus alexandri*	BCHU
Black-crowned Night-Heron	*Nycticorax nycticorax*	BCNH
Black-footed Albatross	*Phoebastria nigripes*	BFAL
Black-headed Grosbeak	*Pheucticus melanocephalus*	BHGR
Black-headed Gull	*Larus ridibundus*	BHGU
Black-legged Kittiwake	*Rissa tridactyla*	BLKI
Black-necked Stilt	*Himantopus mexicanus*	BNST
Blackpoll Warbler	*Dendroica striata*	BKPW
Black-tailed Gull	*Larus crassirostris*	BTGU
Black-throated Blue Warbler	*Dendroica caerulescens*	BTBW
Black-throated Gray Warbler	*Dendroica nigrescens*	BTGW
Black-throated Green Warbler	*Dendroica virens*	BTNW
Black-throated Sparrow	*Amphispiza bilineata*	BTSP
Black-vented Shearwater	*Puffinus opisthomelas*	BVSH
Blue Grosbeak	*Passerina caerulea*	BLGB
Blue Jay	*Cyanocitta cristata*	BLJA
Blue-gray Gnatcatcher	*Polioptila caerulea*	BGGN
Blue-headed Vireo	*Vireo solitarius*	BHVI
Blue-winged Teal	*Anas discors*	BWTE
Bobolink	*Dolichonyx oryzivorus*	BOBO
Bohemian Waxwing	*Bombycilla garrulus*	BOWA
Bonaparte's Gull	*Larus philadelphia*	BOGU
Boreal Chickadee	*Poecile hudsonica*	BOCH
Boreal Owl	*Aegolius funereus*	BOOW
Brambling	*Fringilla montifringilla*	BRAM
Brandt's Cormorant	*Phalacrocorax penicillatus*	BRCO
Brant	*Branta bernicla*	BRAN
Brewer's Blackbird	*Euphagus cyanocephalus*	BRBL
Brewer's Sparrow	*Spizella breweri*	BRSP
Bristle-thighed Curlew	*Numenius tahitiensis*	BTCU

Common Name	Scientific Name	4-letter Code
Broad-tailed Hummingbird	*Selasphorus platycercus*	BTHU
Broad-winged Hawk	*Buteo platypterus*	BWHA
Brown Creeper	*Certhia americana*	BRCR
Brown Pelican	*Pelecanus occidentalis*	BRPE
Brown Thrasher	*Toxostoma rufum*	BRTH
Brown-headed Cowbird	*Molothrus ater*	BHCO
Buff-breasted Sandpiper	*Tryngites subruficollis*	BBSA
Bufflehead	*Bucephala albeola*	BUFF
Buller's Shearwater	*Puffinus bulleri*	BLSH
Bullock's Oriole	*Icterus bullockii*	BUOR
Burrowing Owl	*Athene cunicularia*	BUOW
Bushtit	*Psaltriparus minimus*	BUSH
Cackling Goose	*Branta hutchinsii*	CACG
California Gull	*Larus californicus*	CAGU
California Quail	*Callipepla californica*	CAQU
Calliope Hummingbird	*Stellula calliope*	CAHU
Canada Goose	*Branta canadensis*	CAGO
Canada Warbler	*Wilsonia canadensis*	CAWA
Canvasback	*Aythya valisineria*	CANV
Canyon Wren	*Catherpes mexicanus*	CAWR
Cape May Warbler	*Dendroica tigrina*	CMWA
Caspian Tern	*Hydroprogne caspia*	CATE
Cassin's Auklet	*Ptychoramphus aleuticus*	CAAU
Cassin's Finch	*Carpodacus cassinii*	CAFI
Cassin's Vireo	*Vireo cassinii*	CAVI
Cattle Egret	*Bubulcus ibis*	CAEG
Cedar Waxwing	*Bombycilla cedrorum*	CEWA
Chestnut-backed Chickadee	*Poecile rufescens*	CBCH
Chestnut-collared Longspur	*Calcarius ornatus*	CCLO
Chestnut-sided Warbler	*Dendroica pensylvanica*	CSWA
Chipping Sparrow	*Spizella passerina*	CHSP
Chukar	*Alectoris chukar*	CHUK
Cinnamon Teal	*Anas cyanoptera*	CITE
Clark's Grebe	*Aechmophorus clarkii*	CLGR
Clark's Nutcracker	*Nucifraga columbiana*	CLNU
Clay-colored Sparrow	*Spizella pallida*	CCSP
Cliff Swallow	*Petrochelidon pyrrhonota*	CLSW
Common Eider	*Somateria mollissima*	COEI
Common Goldeneye	*Bucephala clangula*	COGO
Common Grackle	*Quiscalus quiscula*	COGR
Common Loon	*Gavia immer*	COLO
Common Merganser	*Mergus merganser*	COME

Common Name	Scientific Name	4-letter Code
Common Moorhen	*Gallinula chloropus*	COMO
Common Murre	*Uria aalge*	COMU
Common Nighthawk	*Chordeiles minor*	CONI
Common Poorwill	*Phalaenoptilus nuttallii*	COPO
Common Raven	*Corvus corax*	CORA
Common Redpoll	*Carduelis flammea*	CORE
Common Tern	*Sterna hirundo*	COTE
Common Yellowthroat	*Geothlypis trichas*	COYE
Connecticut Warbler	*Oporornis agilis*	COWA
Cooper's Hawk	*Accipiter cooperii*	COHA
Cordilleran Flycatcher	*Empidonax occidentalis*	COFL
Costa's Hummingbird	*Calypte costae*	COHU
Crested Auklet	*Aethia cristatella*	CRAU
Crested Caracara	*Caracara cheriway*	CRCA
Crested Myna	*Acridotheres cristatellus*	CRMY
Curlew Sandpiper	*Calidris ferruginea*	CUSA
Dark-eyed Junco	*Junco hyemalis*	DEJU
Dickcissel	*Spiza americana*	DICK
Double-crested Cormorant	*Phalacrocorax auritus*	DCCO
Downy Woodpecker	*Picoides pubescens*	DOWO
Dunlin	*Calidris alpina*	DUNL
Dusky Flycatcher	*Empidonax oberholseri*	DUFL
Dusky Grouse	*Dendragapus obscurus*	DUGR
Dusky Thrush	*Turdus naumanni*	DUTH
Eared Grebe	*Podiceps nigricollis*	EAGR
Eastern Kingbird	*Tyrannus tyrannus*	EAKI
Eastern Phoebe	*Sayornis phoebe*	EAPH
Eastern Yellow Wagtail	*Motacilla tschutschensis*	EYWA
Elegant Tern	*Thalasseus elegans*	ELTE
Emperor Goose	*Chen canagica*	EMGO
Eurasian Collared-Dove	*Streptopelia decaocto*	ECDO
Eurasian Kestrel	*Falco tinnunculus*	EUKE
Eurasian Wigeon	*Anas penelope*	EUWI
European Starling	*Sturnus vulgaris*	EUST
Evening Grosbeak	*Coccothraustes vespertinus*	EVGR
Falcated Duck	*Anas falcata*	FADU
Far Eastern Curlew	*Numenius madagascariensis*	FECU
Ferruginous Hawk	*Buteo regalis*	FEHA
Fieldfare	*Turdus pilaris*	FIEL
Flammulated Owl	*Otus flammeolus*	FLOW
Flesh-footed Shearwater	*Puffinus carneipes*	FFSH
Fork-tailed Storm-Petrel	*Oceanodroma furcata*	FTSP

Common Name	Scientific Name	4-letter Code
Forster's Tern	*Sterna forsteri*	FOTE
Fox Sparrow	*Passerella iliaca*	FOSP
Franklin's Gull	*Larus pipixcan*	FRGU
Fulvous Whistling-Duck	*Dendrocygna bicolor*	FWDU
Gadwall	*Anas strepera*	GADW
Garganey	*Anas querquedula*	GARG
Glaucous Gull	*Larus hyperboreus*	GLGU
Glaucous-winged Gull	*Larus glaucescens*	GWGU
Golden Eagle	*Aquila chrysaetos*	GOEA
Golden-crowned Kinglet	*Regulus satrapa*	GCKI
Golden-crowned Sparrow	*Zonotrichia atricapilla*	GCSP
Grasshopper Sparrow	*Ammodramus savannarum*	GRSP
Gray Catbird	*Dumetella carolinensis*	GRCA
Gray Flycatcher	*Empidonax wrightii*	GRFL
Gray Jay	*Perisoreus canadensis*	GRJA
Gray Kingbird	*Tyrannus dominicensis*	GRKI
Gray Partridge	*Perdix perdix*	GRPA
Gray Wagtail	*Motacilla cinerea*	GRWA
Gray-cheeked Thrush	*Catharus minimus*	GCTH
Gray-crowned Rosy-Finch	*Leucosticte tephrocotis*	GCRF
Great Black-backed Gull	*Larus marinus*	GBBG
Great Blue Heron	*Ardea herodias*	GBHE
Great Crested Flycatcher	*Myiarchus crinitus*	GCFL
Great Egret	*Ardea alba*	GREG
Great Gray Owl	*Strix nebulosa*	GGOW
Great Horned Owl	*Bubo virginianus*	GHOW
Great Knot	*Calidris tenuirostris*	GRKN
Greater Sage-Grouse	*Centrocercus urophasianus*	GSGR
Greater Scaup	*Aythya marila*	GRSC
Greater White-fronted Goose	*Anser albifrons*	GWFG
Greater Yellowlegs	*Tringa melanoleuca*	GRYE
Great-tailed Grackle	*Quiscalus mexicanus*	GTGR
Green Heron	*Butorides virescens*	GRHE
Green-tailed Towhee	*Pipilo chlorurus*	GTTO
Green-winged Teal	*Anas crecca*	GWTE
Gyrfalcon	*Falco rusticolus*	GYRF
Hairy Woodpecker	*Picoides villosus*	HAWO
Hammond's Flycatcher	*Empidonax hammondii*	HAFL
Harlequin Duck	*Histrionicus histrionicus*	HADU
Harris's Sparrow	*Zonotrichia querula*	HASP
Heermann's Gull	*Larus heermanni*	HEEG
Hermit Thrush	*Catharus guttatus*	HETH

Common Name	Scientific Name	4-letter Code
Hermit Warbler	*Dendroica occidentalis*	HEWA
Herring Gull	*Larus argentatus*	HEGU
Hoary Redpoll	*Carduelis hornemanni*	HORE
Hooded Merganser	*Lophodytes cucullatus*	HOME
Hooded Oriole	*Icterus cucullatus*	HOOR
Hooded Warbler	*Wilsonia citrina*	HOWA
Horned Grebe	*Podiceps auritus*	HOGR
Horned Lark	*Eremophila alpestris*	HOLA
Horned Puffin	*Fratercula corniculata*	HOPU
House Finch	*Carpodacus mexicanus*	HOFI
House Sparrow	*Passer domesticus*	HOSP
House Wren	*Troglodytes aedon*	HOWR
Hudsonian Godwit	*Limosa haemastica*	HUGO
Hutton's Vireo	*Vireo huttoni*	HUVI
Iceland Gull	*Larus glaucoides*	ICGU
Indigo Bunting	*Passerina cyanea*	INBU
Ivory Gull	*Pagophila eburnea*	IVGU
Killdeer	*Charadrius vociferus*	KILL
King Eider	*Somateria spectabilis*	KIEI
Kittlitz's Murrelet	*Brachyramphus brevirostris*	KIMU
Lapland Longspur	*Calcarius lapponicus*	LALO
Lark Bunting	*Calamospiza melanocorys*	LKBU
Lark Sparrow	*Chondestes grammacus*	LASP
Laughing Gull	*Larus atricilla*	LAGU
Laysan Albatross	*Phoebastria immutabilis*	LAAL
Lazuli Bunting	*Passerina amoena*	LZBU
Le Conte's Sparrow	*Ammodramus leconteii*	LCSP
Leach's Storm-Petrel	*Oceanodroma leucorhoa*	LSPE
Least Bittern	*Ixobrychus exilis*	LEBI
Least Flycatcher	*Empidonax minimus*	LEFL
Least Sandpiper	*Calidris minutilla*	LESA
Least Tern	*Sternula antillarum*	LETE
Lesser Black-backed Gull	*Larus fuscus*	LBBG
Lesser Goldfinch	*Carduelis psaltria*	LEGO
Lesser Nighthawk	*Chordeiles acutipennis*	LENI
Lesser Sand-Plover	*Charadrius mongolus*	LSPL
Lesser Scaup	*Aythya affinis*	LESC
Lesser Yellowlegs	*Tringa flavipes*	LEYE
Lewis's Woodpecker	*Melanerpes lewis*	LEWO
Lincoln's Sparrow	*Melospiza lincolnii*	LISP
Little Blue Heron	*Egretta caerulea*	LBHE
Little Gull	*Larus minutus*	LIGU

Common Name	Scientific Name	4-letter Code
Little Stint	*Calidris minuta*	LIST
Loggerhead Shrike	*Lanius ludovicianus*	LOSH
Long-billed Curlew	*Numenius americanus*	LBCU
Long-billed Dowitcher	*Limnodromus scolopaceus*	LBDO
Long-eared Owl	*Asio otus*	LEOW
Long-tailed Duck	*Clangula hyemalis*	LTDU
Long-tailed Jaeger	*Stercorarius longicaudus*	LTJA
MacGillivray's Warbler	*Oporornis tolmiei*	MACW
Magnificent Frigatebird	*Fregata magnificens*	MAFR
Magnolia Warbler	*Dendroica magnolia*	MGNW
Mallard	*Anas platyrhynchos*	MALL
Manx Shearwater	*Puffinus puffinus*	MASH
Marbled Godwit	*Limosa fedoa*	MAGO
Marbled Murrelet	*Brachyramphus marmoratus*	MAMU
Marsh Wren	*Cistothorus palustris*	MAWR
McCown's Longspur	*Calcarius mccownii*	MCLO
McKay's Bunting	*Plectrophenax hyperboreus*	MCBU
Merlin	*Falco columbarius*	MERL
Mew Gull	*Larus canus*	MEGU
Mottled Petrel	*Pterodroma inexpectata*	MOPE
Mountain Bluebird	*Sialia currucoides*	MOBL
Mountain Chickadee	*Poecile gambeli*	MOCH
Mountain Plover	*Charadrius montanus*	MOPL
Mountain Quail	*Oreortyx pictus*	MOQU
Mourning Dove	*Zenaida macroura*	MODO
Mourning Warbler	*Oporornis philadelphia*	MOWA
Murphy's Petrel	*Pterodroma ultima*	MUPE
Mute Swan	*Cygnus olor*	MUSW
Nashville Warbler	*Vermivora ruficapilla*	NAWA
Nelson's Sharp-tailed Sparrow	*Ammodramus nelsoni*	NSTS
Northern Flicker	*Colaptes auratus*	NOFL
Northern Fulmar	*Fulmarus glacialis*	NOFU
Northern Goshawk	*Accipiter gentilis*	NOGO
Northern Harrier	*Circus cyaneus*	NOHA
Northern Hawk Owl	*Surnia ulula*	NHOW
Northern Mockingbird	*Mimus polyglottos*	NOMO
Northern Parula	*Parula americana*	NOPA
Northern Pintail	*Anas acuta*	NOPI
Northern Pygmy-Owl	*Glaucidium gnoma*	NPOW
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	NRWS
Northern Saw-whet Owl	*Aegolius acadicus*	NSWO
Northern Shoveler	*Anas clypeata*	NOSL

Common Name	Scientific Name	4-letter Code
Northern Shrike	*Lanius excubitor*	NOSH
Northern Waterthrush	*Seiurus noveboracensis*	NOWA
Northern Wheatear	*Oenanthe oenanthe*	NOWH
Northwestern Crow	*Corvus caurinus*	NOCR
Olive-sided Flycatcher	*Contopus cooperi*	OSFL
Orange-crowned Warbler	*Vermivora celata*	OCWA
Orchard Oriole	*Icterus spurius*	OROR
Oriental Turtle-Dove	*Streptopelia orientalis*	OTDO
Osprey	*Pandion haliaetus*	OSPR
Ovenbird	*Seiurus aurocapilla*	OVEN
Pacific Golden-Plover	*Pluvialis fulva*	PGPL
Pacific Loon	*Gavia pacifica*	PALO
Pacific-slope Flycatcher	*Empidonax difficilis*	PSFL
Painted Bunting	*Passerina ciris*	PABU
Painted Redstart	*Myioborus pictus*	PARE
Palm Warbler	*Dendroica palmarum*	PAWA
Parakeet Auklet	*Aethia psittacula*	PAAU
Parasitic Jaeger	*Stercorarius parasiticus*	PAJA
Passenger Pigeon	*Ectopistes migratorius*	PAPI
Pectoral Sandpiper	*Calidris melanotos*	PESA
Pelagic Cormorant	*Phalacrocorax pelagicus*	PECO
Peregrine Falcon	*Falco peregrinus*	PEFA
Philadelphia Vireo	*Vireo philadelphicus*	PHVI
Pied-billed Grebe	*Podilymbus podiceps*	PBGR
Pigeon Guillemot	*Cepphus columba*	PIGU
Pileated Woodpecker	*Dryocopus pileatus*	PIWO
Pine Grosbeak	*Pinicola enucleator*	PIGR
Pine Siskin	*Carduelis pinus*	PISI
Pine Warbler	*Dendroica pinus*	PIWA
Pink-footed Shearwater	*Puffinus creatopus*	PFSH
Pinyon Jay	*Gymnorhinus cyanocephalus*	PIJA
Pomarine Jaeger	*Stercorarius pomarinus*	POJA
Prairie Falcon	*Falco mexicanus*	PRFA
Prairie Warbler	*Dendroica discolor*	PRWA
Prothonotary Warbler	*Protonotaria citrea*	PROW
Purple Finch	*Carpodacus purpureus*	PUFI
Purple Martin	*Progne subis*	PUMA
Pygmy Nuthatch	*Sitta pygmaea*	PYNU
Red Crossbill	*Loxia curvirostra*	RECR
Red Knot	*Calidris canutus*	REKN
Red Phalarope	*Phalaropus fulicarius*	REPH
Red-breasted Merganser	*Mergus serrator*	RBME

Common Name	Scientific Name	4-letter Code
Red-breasted Nuthatch	*Sitta canadensis*	RBNU
Red-breasted Sapsucker	*Sphyrapicus ruber*	RBSA
Red-eyed Vireo	*Vireo olivaceus*	REVI
Red-faced Cormorant	*Phalacrocorax urile*	RFCO
Redhead	*Aythya americana*	REDH
Red-headed Woodpecker	*Melanerpes erythrocephalus*	RHWO
Red-legged Kittiwake	*Rissa brevirostris*	RLKI
Red-naped Sapsucker	*Sphyrapicus nuchalis*	RNSA
Red-necked Grebe	*Podiceps grisegena*	RNGR
Red-necked Phalarope	*Phalaropus lobatus*	RNPL
Red-necked Stint	*Calidris ruficollis*	RNST
Red-tailed Hawk	*Buteo jamaicensis*	RTHA
Red-tailed Tropicbird	*Phaethon rubricauda*	RTTR
Red-throated Loon	*Gavia stellata*	RTLO
Red-throated Pipit	*Anthus cervinus*	RTPI
Red-winged Blackbird	*Agelaius phoeniceus*	RWBL
Rhinoceros Auklet	*Cerorhinca monocerata*	RHAU
Ring-billed Gull	*Larus delawarensis*	RBGU
Ring-necked Duck	*Aythya collaris*	RNDU
Ring-necked Pheasant	*Phasianus colchicus*	RNPH
Rock Pigeon	*Columba livia*	ROPI
Rock Ptarmigan	*Lagopus muta*	ROPT
Rock Sandpiper	*Calidris ptilocnemis*	ROSA
Rock Wren	*Salpinctes obsoletus*	ROWR
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	RBGR
Ross's Goose	*Chen rossii*	ROGO
Ross's Gull	*Rhodostethia rosea*	ROGU
Rough-legged Hawk	*Buteo lagopus*	RLHA
Ruby-crowned Kinglet	*Regulus calendula*	RCKI
Ruby-throated Hummingbird	*Archilochus colubris*	RTHU
Ruddy Duck	*Oxyura jamaicensis*	RUDU
Ruddy Turnstone	*Arenaria interpres*	RUTU
Ruff	*Philomachus pugnax*	RUFF
Ruffed Grouse	*Bonasa umbellus*	RUGR
Rufous Hummingbird	*Selasphorus rufus*	RUHU
Rustic Bunting	*Emberiza rustica*	RUBU
Rusty Blackbird	*Euphagus carolinus*	RUBL
Sabine's Gull	*Xema sabini*	SAGU
Sage Sparrow	*Amphispiza belli*	SASP
Sage Thrasher	*Oreoscoptes montanus*	SATH
Sanderling	*Calidris alba*	SAND
Sandhill Crane	*Grus canadensis*	SACR

Common Name	Scientific Name	4-letter Code
Savannah Sparrow	*Passerculus sandwichensis*	SAVS
Say's Phoebe	*Sayornis saya*	SAPH
Scarlet Tanager	*Piranga olivacea*	SCTA
Scissor-tailed Flycatcher	*Tyrannus forficatus*	STFL
Sedge Wren	*Cistothorus platensis*	SEWR
Semipalmated Plover	*Charadrius semipalmatus*	SEPL
Semipalmated Sandpiper	*Calidris pusilla*	SESA
Sharp-shinned Hawk	*Accipiter striatus*	SSHA
Sharp-tailed Grouse	*Tympanuchus phasianellus*	STGR
Sharp-tailed Sandpiper	*Calidris acuminata*	SHSA
Short-billed Dowitcher	*Limnodromus griseus*	SBDO
Short-eared Owl	*Asio flammeus*	SEOW
Short-tailed Albatross	*Phoebastria albatrus*	STAL
Short-tailed Shearwater	*Puffinus tenuirostris*	STSH
Siberian Accentor	*Prunella montanella*	SIAC
Sky Lark	*Alauda arvensis*	SKLA
Slaty-backed Gull	*Larus schistisagus*	SBGU
Smew	*Mergellus albellus*	SMEW
Smith's Longspur	*Calcarius pictus*	SMLO
Snow Bunting	*Plectrophenax nivalis*	SNBU
Snow Goose	*Chen caerulescens*	SNGO
Snowy Egret	*Egretta thula*	SNEG
Snowy Owl	*Bubo scandiacus*	SNOW
Snowy Plover	*Charadrius alexandrinus*	SNPL
Solitary Sandpiper	*Tringa solitaria*	SOSA
Song Sparrow	*Melospiza melodia*	SOSP
Sooty Grouse	*Dendragapus fuliginosus*	SOGR
Sooty Shearwater	*Puffinus griseus*	SOSH
Sora	*Porzana carolina*	SORA
South Polar Skua	*Stercorarius maccormicki*	SPSK
Spectacled Eider	*Somateria fischeri*	SPEI
Spoon-billed Sandpiper	*Eurynorhynchus pygmeus*	SBSA
Spotted Owl	*Strix occidentalis*	SPOW
Spotted Redshank	*Tringa erythropus*	SPRE
Spotted Sandpiper	*Actitis macularius*	SPSA
Spotted Towhee	*Pipilo maculatus*	SPTO
Sprague's Pipit	*Anthus spragueii*	SPPI
Spruce Grouse	*Falcipennis canadensis*	SPGR
Steller's Eider	*Polysticta stelleri*	STEI
Steller's Jay	*Cyanocitta stelleri*	STJA
Stilt Sandpiper	*Calidris himantopus*	STSA
Surf Scoter	*Melanitta perspicillata*	SUSC

Common Name	Scientific Name	4-letter Code
Surfbird	*Aphriza virgata*	SURF
Swainson's Hawk	*Buteo swainsoni*	SWHA
Swainson's Thrush	*Catharus ustulatus*	SWTH
Swamp Sparrow	*Melospiza georgiana*	SWSP
Temminck's Stint	*Calidris temminckii*	TEST
Tennessee Warbler	*Vermivora peregrina*	TEWA
Terek Sandpiper	*Xenus cinereus*	TESA
Thayer's Gull	*Larus thayeri*	THGU
Thick-billed Kingbird	*Tyrannus crassirostris*	TBKI
Thick-billed Murre	*Uria lomvia*	TBMU
Townsend's Solitaire	*Myadestes townsendi*	TOSO
Townsend's Warbler	*Dendroica townsendi*	TOWA
Tree Swallow	*Tachycineta bicolor*	TRSW
Tropical Kingbird	*Tyrannus melancholicus*	TRKI
Trumpeter Swan	*Cygnus buccinator*	TRUS
Tufted Duck	*Aythya fuligula*	TUDU
Tufted Puffin	*Fratercula cirrhata*	TUPU
Tundra Swan	*Cygnus columbianus*	TUSW
Turkey Vulture	*Cathartes aura*	TUVU
Upland Sandpiper	*Bartramia longicauda*	UPSA
Varied Thrush	*Ixoreus naevius*	VATH
Vaux's Swift	*Chaetura vauxi*	VASW
Veery	*Catharus fuscescens*	VEER
Vermilion Flycatcher	*Pyrocephalus rubinus*	VEFL
Vesper Sparrow	*Pooecetes gramineus*	VESP
Violet-green Swallow	*Tachycineta thalassina*	VGSW
Virginia Rail	*Rallus limicola*	VIRA
Wandering Tattler	*Tringa incana*	WATA
Warbling Vireo	*Vireo gilvus*	WAVI
Western Bluebird	*Sialia mexicana*	WEBL
Western Grebe	*Aechmophorus occidentalis*	WEGR
Western Gull	*Larus occidentalis*	WEGU
Western Kingbird	*Tyrannus verticalis*	WEKI
Western Meadowlark	*Sturnella neglecta*	WEME
Western Sandpiper	*Calidris mauri*	WESA
Western Screech-Owl	*Megascops kennicottii*	WSOW
Western Scrub-Jay	*Aphelocoma californica*	WSJA
Western Tanager	*Piranga ludoviciana*	WETA
Western Wood-Pewee	*Contopus sordidulus*	WWPE
Whimbrel	*Numenius phaeopus*	WHIM
Whip-poor-will	*Caprimulgus vociferus*	WPWI
Whiskered Auklet	*Aethia pygmaea*	WHAU

Common Name	Scientific Name	4-letter Code
White Wagtail	*Motacilla alba*	WHWA
White-breasted Nuthatch	*Sitta carolinensis*	WBNU
White-crowned Sparrow	*Zonotrichia leucophrys*	WCSP
White-faced Ibis	*Plegadis chihi*	WFIB
White-headed Woodpecker	*Picoides albolarvatus*	WHWO
White-rumped Sandpiper	*Calidris fuscicollis*	WRSA
White-tailed Kite	*Elanus leucurus*	WTKI
White-tailed Ptarmigan	*Lagopus leucura*	WTPT
White-throated Sparrow	*Zonotrichia albicollis*	WTSP
White-throated Swift	*Aeronautes saxatalis*	WTSW
White-winged Crossbill	*Loxia leucoptera*	WWCR
White-winged Dove	*Zenaida asiatica*	WWDO
White-winged Scoter	*Melanitta fusca*	WWSC
Whooper Swan	*Cygnus cygnus*	WHSW
Whooping Crane	*Grus americana*	WHCR
Wild Turkey	*Meleagris gallopavo*	WITU
Willet	*Tringa semipalmata*	WILL
Williamson's Sapsucker	*Sphyrapicus thyroideus*	WISA
Willow Flycatcher	*Empidonax traillii*	WIFL
Willow Ptarmigan	*Lagopus lagopus*	WIPT
Wilson's Phalarope	*Phalaropus tricolor*	WIPH
Wilson's Snipe	*Gallinago delicata*	WISN
Wilson's Warbler	*Wilsonia pusilla*	WIWA
Winter Wren	*Troglodytes troglodytes*	WIWR
Wood Duck	*Aix sponsa*	WODU
Wood Sandpiper	*Tringa glareola*	WOSA
Wood Stork	*Mycteria americana*	WOST
Xantus's Hummingbird	*Hylocharis xantusii*	XAHU
Xantus's Murrelet	*Synthliboramphus hypoleucus*	XAMU
Yellow Rail	*Coturnicops noveboracensis*	YERA
Yellow Warbler	*Dendroica petechia*	YEWA
Yellow-bellied Flycatcher	*Empidonax flaviventris*	YBFL
Yellow-bellied Sapsucker	*Sphyrapicus varius*	YBSA
Yellow-billed Cuckoo	*Coccyzus americanus*	YBCU
Yellow-billed Loon	*Gavia adamsii*	YBLO
Yellow-breasted Chat	*Icteria virens*	YBCH
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*	YHBL
Yellow-rumped Warbler	*Dendroica coronata*	YRWA
Yellow-throated Warbler	*Dendroica dominica*	YTWA

Requesting and Submitting Cards

The British Columbia Nest Record Scheme Instruction Manual and new nest cards for either colony or individual nests may be obtained from:

British Columbia Nest Record Scheme
PO Box 55053
3825 Cadboro Bay Road
Victoria, British Columbia
V8N 6L8
1-250-477-0465

Please return completed cards by October 1st so that annual reports can be compiled, published and distributed early in the new year. If you wish to submit cards earlier, this is encouraged, as we can begin compiling the report earlier.

As a reminder, **PLEASE** use a dark ballpoint pen or dark ink (not pencil) and write clearly. For species acting as hosts for Brown-headed Cowbird (or other) eggs or young, please fill out a separate card for the Brown-headed Cowbird and cross-reference it to its host. For young or recently fledged Brown-headed Cowbirds, be sure to indicate if the young were in the nest.

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To learn more about the Biodiversity Centre for Wildlife Studies, or to obtain information on membership, please see the inside front cover of this manual, or visit www.wildlifebc.org

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British Columbia Nest Record Scheme and *Wildlife Afield*

In addition to providing specific information on individual species, nests, and colonies, participants in the British Columbia Nest Record Scheme often discover or learn new things about the biology and natural history of breeding birds in the province. These findings have important implications for our understanding of bird biology, life history, management, and conservation, and there is huge value in publishing those observations. Below is a selection of recent articles published in *Wildlife Afield*, the bi-annual journal of the Biodiversity Centre for Wildlife Studies.

Campbell, R.W., M.I. Preston, L.M. Van Damme, and D. MacRae. 2005. Featured Species - Turkey Vulture. Wildlife Afield 2:96-116.

Campbell, R.W., M.K. McNicholl, R.M. Brigham, J. Ng. 2006. Featured Species - Common Nighthawk. Wildlife Afield 3:32-71.

Van Damme, L.M., B. Stubbs., and P. Dupas. 2006. First confirmed breeding record of the Sandhill Crane in the Creston valley, British Columbia. Wildlife Afield 3:105-111.

Carter, H.R., K.H. Morgan, T. Chatwin, and F. Bruhwiler. 2006. Notes on recent breeding of Common Murres at Starlight Reef and Cleland Island, British Columbia. Wildlife Afield 3:117-121.

Van Damme, L.M. 2006. Western Grebe parasitism of Red-necked Grebe nests on Duck Lake in the Creston valley, British Columbia. Wildlife Afield 3:121-125.

Arndt, J. E. Moore, L. Prosser, and R. Wege. 2006. Ten years of monitoring nesting Ospreys (*Pandion haliaetus*) in the West Kootenay region of British Columbia. Wildlife Afield 3:125-133.

Burton, C.H. 2006. Red-throated Loon breeding on the south mainland coast of British Columbia. Wildlife Afield 3:140-142.

Gronau, C.W. 2006. Triple nesting record for Pied-billed Grebe in British Columbia. Wildlife Afield 3:142-144.

Burton, C. H. 2006. Southernmost breeding record of the Pacific Loon (*Gavia pacifica*) in British Columbia. Wildlife Afield 3:144-146.

Siddle, C. 2006. A coastal breeding record for the Yellow-breasted Chat in Mission, British Columbia. Wildlife Afield 3:148-149.

Nicholson, D., and V. Harris. 2006. Noteworthy record of the Northern Hawk Owl breeding in southeastern British Columbia. Wildlife Afield 3:150-151.

Matsuda, B. 2006. Unusual nest site for an American Kestrel in British Columbia. Wildlife Afield 3:151-152.

Gronau, C. 2007. Annual chronology and nesting success of Common Loons on Anvil Lake, Cortes Island, British Columbia. Wildlife Afield 4:54-57.

Van Damme, L.M., and M. Long. 2007. Noteworthy breeding records of the Northern Saw-whet Owl in the Creston valley, British Columbia. Wildlife Afield 4:80-82.

Conway, Z., D. Conway, and E. Coulson. 2007. Successful relocation of a Cedar Waxwing nest with eggs. Wildlife Afield 4:83-84.

Campbell, R.W. 2007. Northern Rough-winged Swallow nesting in an American Beaver lodge. Wildlife Afield 4:90-92.

Campbell, R.W., M.I. Preston, M. Phinney, C. Siddle, and J. Deal. 2007. Featured Species – Canada Warbler. Wildlife Afield 4:95-160.

Back-issues of BCNRS Annual Reports Currently Available

Campbell, R.W., M.L. Funk, and L. Davis. 1998. British Columbia Nest Records Scheme: 43rd Annual Report – 1997 Nesting Season. WBT Wild Bird Trust of British Columbia Wildlife Report No. 3. 21 pp.

Campbell, R.W., M.L. Funk, L. Davis, and J.V. Kimm. 1999. British Columbia Nest Records Scheme: 44th Annual Report – 1998 Nesting Season. WBT Wild Bird Trust of British Columbia Wildlife Report No. 5. 24 pp.

Campbell, R.W., A.R. Norris, M.L. Funk, and J.V. Kimm. 2000. British Columbia Nest Record Scheme: 45th Annual Report – 1999 Nesting Season. WBT Wild Bird Trust of British Columbia Wildlife Report No. 6. 26 pp.

Campbell, R.W., and M.I. Preston. 2001. British Columbia Nest Record Scheme: 46th Annual Report – 2000 Nesting Season. WBT Wild Bird Trust of British Columbia Wildlife Report No. 7. 26 pp.

Campbell, R.W., M.I. Preston, L.M. Van Damme. 2002. British Columbia Nest Record Scheme: 47th Annual Report – 2001 Nesting Season. WBT Wild Bird Trust of British Columbia Wildlife Report No. 8. 26 pp.

Campbell, R.W., M.I. Preston, L.M. Van Damme. 2003. British Columbia Nest Record Scheme: 48th Annual Report – 2002 Nesting Season. WBT Wild Bird Trust of British Columbia Wildlife Report No. 9. 30 pp.

Campbell, R.W., M.I. Preston, L.M. Van Damme. 2004. British Columbia Nest Record Scheme: 49th Annual Report – 2003 Nesting Season. Biodiversity Centre for Wildlife Studies Report No. 2. 30 pp.

Campbell, R.W., M.I. Preston, L.M. Van Damme. 2005. British Columbia Nest Record Scheme: 50th Annual Report – 2004 Nesting Season. Biodiversity Centre for Wildlife Studies Report No. 3. 26 pp.

Campbell, R.W., M.I. Preston, L.M. Van Damme. 2006. British Columbia Nest Record Scheme: 51st Annual Report – 2005 Nesting Season. Biodiversity Centre for Wildlife Studies Report No. 6. 30 pp.

Campbell, R.W., M.I. Preston, L.M. Van Damme. 2007. British Columbia Nest Record Scheme: 52nd Annual Report – 2006 Nesting Season. Biodiversity Centre for Wildlife Studies Report No. 8. 54 pp.

Campbell, R.W., M.I. Preston, L.M. Van Damme. 2008. British Columbia Nest Record Scheme: 53rd Annual Report – 2007 Nesting Season. Biodiversity Centre for Wildlife Studies Report No. 9, Victoria, BC. 54 pp.

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Campbell, R.W., L.M. Van Damme, M. Nyhof and M.I. Preston. 2010. British Columbia Nest Record Scheme 55th Annual report – 2009 Nesting Season. Biodiversity Centre for Wildlife Studies Report No. 12, Victoria, BC. 92 pp.

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