



SUMMER NEWSLETTER 2011

THE (NOT SO) LAZY DAYS OF SUMMER

The winter of year four of the Atlas was slow to release its cold, icy grip, but it did not cool planning for this year. On the contrary it's been a hot year for the atlas thanks to a fresh injection of funding and lots of planning to gain complete, even coverage across the province. This season is stacking up to be a very busy year for the Atlas, so before you sit back and enjoy the August sun, there's lots of work to do to help the project reach its goal for the fourth season. The information in this newsletter will help any birder, expert or amateur, choose a square where they can still help.

The big flurry of activity just ahead of the field season for the atlas office was due to a series of timely funding contributions. These provided a stable financial backbone for this year allowing us to complete more field work in under-atlased areas. We are delighted to confirm a series of very important funding commitments to the BC Breeding Bird Atlas for 2011-12, including critical financial recommitment from the BC Government, increased contributions from the Habitat Conservation Trust Foundation and BC Hydro – both the

teams, and staff to conduct a sweep of surveys to begin filling the large gaps in coverage in northern and central regions, and support volunteer travel and access to priority remote and higher elevation areas.

Once again this year we will reach inaccessible regions of the province through a growing partnership with the BC Floatplane Association members and floatplane owners. Funding from the Community Foundation of Whistler provides the opportunity to thoroughly survey the Whistler area and reach inaccessible mountain areas. Canadian Mountain Holidays is giving us a lift to their

continue next page...

Columbia Basin Fish and Wildlife, and the Peace-Williston Compensation Programs, and continued contributions from the Bailie Fund, BCFO, Columbia Basin Trust, and SFI, plus an enormously valuable contribution from a private donor. These sources are helping fund individuals,

Photo: Christopher Di Corrado

Early alpine atlasing at the Salmon Glacier, Terrace Region

WHAT'S INSIDE:

Breaking for roadkill	2
Mica Bird Survey Project	3
Local Research Butterfly & Hawk	4
Local Research Nutcracker & Poorwill	5
Prioritising the next two years	6
Map: Incomplete squares - point count	8
Online tools update	10
Mt Albert Edward atlasing	11
Incomplete squares - general atlasing	12
RC Spotlight	14
Mapping Hybrid Zones	15
Wanted! Swallow colony locations	20
Sponsors	20

Species that have not yet been confirmed for the BC Atlas:

Species	Max Breeding Evidence
Greater Scaup	P
Surf Scoter	P
Long-tailed Duck	H
Northern Fulmar	V
Brandt's Cormorant	H
American Bittern	A
Least Bittern	T
Black-crowned Night-Heron	H
Gyr Falcon	P
Yellow Rail	T
Black-necked Stilt	P
Wandering Tattler	A
Baird's Sandpiper	H
Short-billed Dowitcher	H
Red-necked Phalarope	P
Western Gull	H
Caspian Tern	D
Common Tern	H
Forster's Tern	D
Burrowing Owl	H
Boreal Owl	A
Ruby-throated Hummingbird	D
White-headed Woodpecker	H
Winter Wren (Eastern)	T
Palm Warbler	A
Bay-breasted Warbler	S
Grasshopper Sparrow	T
Nelson's Sparrow	S
Smith's Longspur	S
Snow Bunting	H
Indigo Bunting	S



lodges in the Columbia Mountains, and other groups of atlasers are working to get to new heights around Revelstoke and the Chilcotin. On behalf of the Atlas Steering Committee, and everyone involved in this large partnership, we extend a special thank you to all our funders, supporters and in-kind contributors.

With only two seasons left, you could say the theme of this newsletter is "get it finished!" This newsletter is packed with information designed to help atlasers focus on completing squares either in your own region of the province or an area you may be travelling to. The atlas planning team is looking at the big picture, and working to fill in at least four squares in each 100-km block and large areas of regions that still have no data. BC is big and remote and

there are still a lot of open spaces. But it's still useful for you to look to your own square or local area to determine what needs to be completed. In more populated areas atlas participants are starting to bump into each other. Contact a local regional coordinator if you want to help finish a square. You likely don't have to travel far. See inside for an exhaustive, up-to-date list of squares that have more than ten hours of survey effort and only need a few more hours to reach the goal of 20 hours. If you are able to conduct point counts, review the map indicating squares that still had less than 15 point counts after the last 2010 season. But be sure to view the "Data Summaries" page and communicate with the appropriate regional coordinator as someone may already be surveying incomplete squares this summer.

BREAKING FOR ROADKILLS

by David F. Fraser, Victoria, BC

While atlasing last summer in the northwest corner of the province I found a number of road killed birds. It wasn't until I had passed the first one that I realized that I may be able to do better than just record the species as an "H" for the square. I turned around and went back to a recently demised female Ruffed Grouse and sure enough, there was further evidence of breeding – brood patches! I was able to record my first "B" for a species, and moved the species from a "Possible" to a "Probable" for that square. I do notice that the code is restricted to females, however, where the male also incubates the males also have a brood patch (such as the dead Northern Flicker I found on the same day). Severely damaged specimens can be defeathered by abrasion, so you have to be cautious.

A brood patch is a patch of featherless skin, well supplied with blood vessels, on the underside of birds during the nesting season. Their purpose is to enable birds to transfer heat to their eggs when incubating. Ducks and geese pluck their feathers and use them to line the nest, in most other species the feathers shed on their own. The feathers grow back soon after the eggs hatch in the case of birds that have young that are active very soon after hatching,



but may be delayed in those birds having young that stay in the nest for a protracted period of time.

The positions of brood patches can vary, most have a single brood patch in the middle of the belly while some shorebirds have one patch on each side of the belly. Gulls and some chicken-like birds shed feathers in all three places and can have three brood patches. Some birds don't have brood patches - for instance you won't find one on the next pelican you hit with a car.

Just a word of caution, road kill birding must be done carefully...adding your corpse to the one already on the road doesn't help the atlas at all (especially since you won't have entered all your data yet). You can also look for brood patches on window kills, which has the added benefit that you usually don't need to watch for cars.

MICA BIRD SURVEY PROJECT

by Giles Shearing, BC Hydro Natural Resource Specialist, Revelstoke, BC (photos: Giles Shearing.)

“When John and I heard, ‘Oh-sweet-canada-canada-canada,’ we knew we had heard something unique. John knew instantly from his time out east, I didn’t have a clue.”

As the BC Bird Breeding Atlas website states: “birds can tell us important things about our environment.” So with 5 years of capital projects planned at Mica Dam, BC Hydro is interested in establishing a baseline record of breeding birds in the area.



In May 2010, Dr. John Woods, Regional Bird Atlas Coordinator and Giles Shearing, Natural Resource Specialist with BC Hydro, spent 3 exciting days surveying breeding birds in and around Mica Dam, west Kinbasket Lake and Upper Revelstoke Lake.

“The Atlas provided us with a unique opportunity to create records for the Mica area that will build on the understanding of bird breeding behaviours across the province, while helping BC Hydro decision makers assess the environmental impacts associated with future projects around Mica Dam” said Giles Shearing.

John and Giles spent three days by road and foot covering land in 7 atlas squares looking for bird breeding evidence. They observed birds from 4:00 a.m. to 9:00 p.m. each day. In total, breeding evidence of 83 unique species of birds was observed.

“Evidence came in all forms,” added Giles. “Including the courtship dance of a male Ruffed Grouse, an active Chestnut-backed Chickadee nest in a snag, the drumming of an American Three-toed Woodpecker, the occupied nest of an American Dipper underside a logging road bridge and the mating song of a male White-Throated Sparrow, a first ever breeding evidence record for this beautiful vocalist in

the Columbia Mountains.”

“And just because you observe a bird, it doesn’t necessarily mean that it’s breeding, it could just be stopping by en route to its destination, such as the eight male Red-necked Phalaropes observed swimming in circles feeding.”



“Other highlights included a great life-look at a rock wren on the Dutchman’s Ridge Forest Service Road, every species of teal duck in the subsequently named Teal Pond Wetlands near Sprague Bay and the ever-present swifts over Revelstoke Lake in the evenings.”

So what did this survey teach BC Hydro about the local environment? Data from the survey last spring has already supported BC Hydro projects including where to place raptor poles downstream of the dam and the design of nesting eves for swallows at the Mica Townsite.

This June, John and Giles repeated their journey to Mica, accessing the local alpine environments and completing the point-counts for the Mica squares in one of the first “heli-atlassing” events of 2011.



WANTED: VOLUNTEER ATLASSERS FOR THE BC BUTTERFLY ATLAS

by Patrick Lilley

Photo: Patrick Lilley

Hooked on atlassing? Looking for another way to use or develop your observation skills? Following on the success of the Breeding Bird Atlas, the BC Butterfly Atlas is a multi-year effort to inventory and assess the status of butterflies in British Columbia. The BC Butterfly Atlas is aimed at promoting butterfly conservation in BC and collecting valuable information to support butterfly conservation efforts. Like the Breeding Bird Atlas, participation from a broad range of volunteer observers, from amateurs to experts, will be key to the success of the project.

BC-specific butterfly atlassing methods (based on the same 10 km x 10 km squares as the bird atlas) and a network of participants are being developed in 2011. Full atlassing efforts will begin in 2012. A website is also being developed to provide more information on survey methods, butterfly identification, and to show

the results graphically. Whether you currently know your butterflies or not, count yourself in to participate! To join the BC Butterfly Atlas, request more information, or submit your interesting butterfly records and photos from the 2011 field season, contact Patrick Lilley at :



Anise Swallowtail (*Papilio zelicaon*) at Christmas Hill Nature Sanctuary in Saanich, BC.

patrick@raincoastappliedecology.ca.

HARLAN'S HAWK RESEARCH

by Bill Clark

Harlan's Hawks (*Buteo (jamaicensis) harlani*) (but not Western Red-tailed Hawks) have been reported breeding in extreme northwestern BC, primarily around Atlin, where many specimens have been collected, all dark-morph individuals. However, I saw an adult Western Red-tailed Hawk (*B. jamaicensis calurus*) there in June 2007, about 12 km south of Atlin. Western Red-tailed Hawks breed throughout the rest of BC, except for *B. j. alascensis*, which is the resident breeder west of the coastal mountains and on coastal

islands. However, a specimen of a dark-morph Harlan's nestling was taken near Hazelton in July 1938 (U. of Mich.). Another dark harlani nestling was collected in Jasper National Park in July 1946, just over the border from BC. I took a photo of an adult dark Harlan's Hawk about 100 km west of Ft. Nelson in June 2007.

Mike Boyd saw three light-morph adult Harlan's while conducting breeding bird surveys in northeastern BC last summer. He gave me the exact locations of the sightings, and added that one of them seemed to be breeding. I was able to find this adult, along with its nest, mate, and two young. The nest was about 30 km west of Ft. St. John. Its mate appeared to be a hybrid between red-tailed and harlans. The two chicks appeared to be light juvenile harlans. I saw typical Western red-tail adults a few km both east and west of this nesting pair. I was unable, in the short time available, to find either of the other two light adults Mike had seen. I did find some more adult light Harlan's breeding in Alberta, especially around Edmonton.

I plan to be in BC this coming summer (2011) and would welcome any information on nesting Harlan's Hawks. My email is raptours@earthlink.net.



HELPING WITH CLARK'S NUTCRACKER RESEARCH

by Rosamund Pojar, Bulkley Valley (33) Regional Coordinator

Clark's Nutcrackers are an essential component of the whitebark pine ecosystems in B.C. Because whitebark pine (*Pinus albicaulis*) is being killed by both a fungus and the Mountain Pine Beetle, this ecosystem is now considered to be endangered. Two biology researchers based in Smithers, Sybille Haeussler and Alana Clason, are going to be researching various aspects of this ecosystem in the mountains of west central BC and have invited birders with the Breeding Bird Atlas and the Bulkley Valley Naturalists to get involved.

Breeding Bird Atlasers are asked to gather the following information when they are out atlasing and to send it to Rosamund Pojar (rpojar@gmail.com) who has agreed to collate the information:-

1. Location of observations of Clark's Nutcrackers anywhere and everywhere in the area of BC north of the range of Ponderosa pine (*Pinus ponderosa*).
2. What the birds are doing i.e. breeding evidence, how many, and what tree species they are feeding on. (While reports of birds at feeders are interesting, we really want to know what trees they are going to for food in their natural environment, especially in the absence of whitebark pine).
3. If there is whitebark pine present in the area (and if it is dead or alive).

Note: Whitebark pine is a 5-needle pine that grows at higher elevations with short, stubby cones whose scales are never open. [The other 5-needle pine, western white pine (*Pinus monticola*), has long curved cones with white pitch blobs on the open scales]

Photo: Mike Boyd

HELP FIND COMMON POORWILLS WITH THE BC POORWILL SURVEY!

by Mike Boyd - WildResearch Director

Determining whether a species or a population is declining requires population trend data. Like other declining aerial insectivores, the Common Poorwill has a limited geographic distribution and a large portion of its breeding habitat is being lost and degraded. The data available for several other species of aerial insectivores indicates that this guild in particular has suffered from population declines over the past few decades. This suggests a need to monitor Common Poorwill in British Columbia (BC). However, trends for nightjars such as the Common Poorwill are poorly known across North America because of their nocturnal habits and little is known about population trends in BC.

Breeding bird atlases provide an opportunity to highlight species that are in need of specific or increased monitoring, and generate data that can be used for conservation purposes. The Ontario Breeding Bird Atlases have been an excellent example of generating this data, in particular for nightjars. During the period between the first and second atlases populations of both Common Nighthawks and Whip-poor-will were found to have declined dramatically, as number of squares occupied by both species were reduced considerably. This data was then used to help list both of these species under COSEWIC. The BC Breeding Bird Atlas presents an opportunity to start a long-term monitoring program to map out the distribution and

relative abundance of the Common Poorwill in British Columbia.



WildResearch will be initiating the BC Poorwill Survey to map and monitor the trends and distribution of poorwills in BC. The work done on this project will provide excellent data for the BC Breeding Bird Atlas in mapping out the distribution of Common Poorwill in BC. In addition, other nocturnal species, such as Common Nighthawks and owls, will also be recorded to provide further insight into their populations and distribution across BC. We will use protocols developed by the U.S. Nightjar Survey to allow the data collected to be compared to work done elsewhere across North America. This will help provide a clearer picture of the overall health of poorwill populations, in addition to their status in BC.

WildResearch is now seeking volunteers to be part of the first team to survey the province for poorwills! Please check our website www.wildresearch.ca to find available routes, read protocols, and download data sheets. Survey routes will be located across southern BC in suitable poorwill habitat. Due to the behaviour of Common Poorwills, surveys can only be conducted on calm, clear nights around the full moon in June (9-23) and July (7-22). Routes are approximately 16 km in length and typically take less than two hours to complete. If you have any questions or would like to request a route please email: bcpoorwill@gmail.com.

PRIORITISING THE FINAL YEARS: WHAT TO COMPLETE AND WHERE, YEAR 4

By Christopher Di Corrado - Atlas Coordinator

As we move into season four, the gaps in atlas coverage still remain stark. In order to improve the accuracy and application of our final maps, we are working to get an even coverage across BC by reviewing the data we already have and pulling out areas that are lacking sufficient data. We set priority areas and blocks and have refined our habitat and biogeographic areas of interest prioritisation by adding 'evenness of coverage' to the equation, trying to ensure we fill the gaps as efficiently as possible. To do this the atlas office focuses on the big, province-wide level, and regional coordinators continue to focus on the square coverage in their region. Priority squares have been designated in most atlas regions and are available from the regional coordinators or the atlas office. However there are also so many partially completed squares.

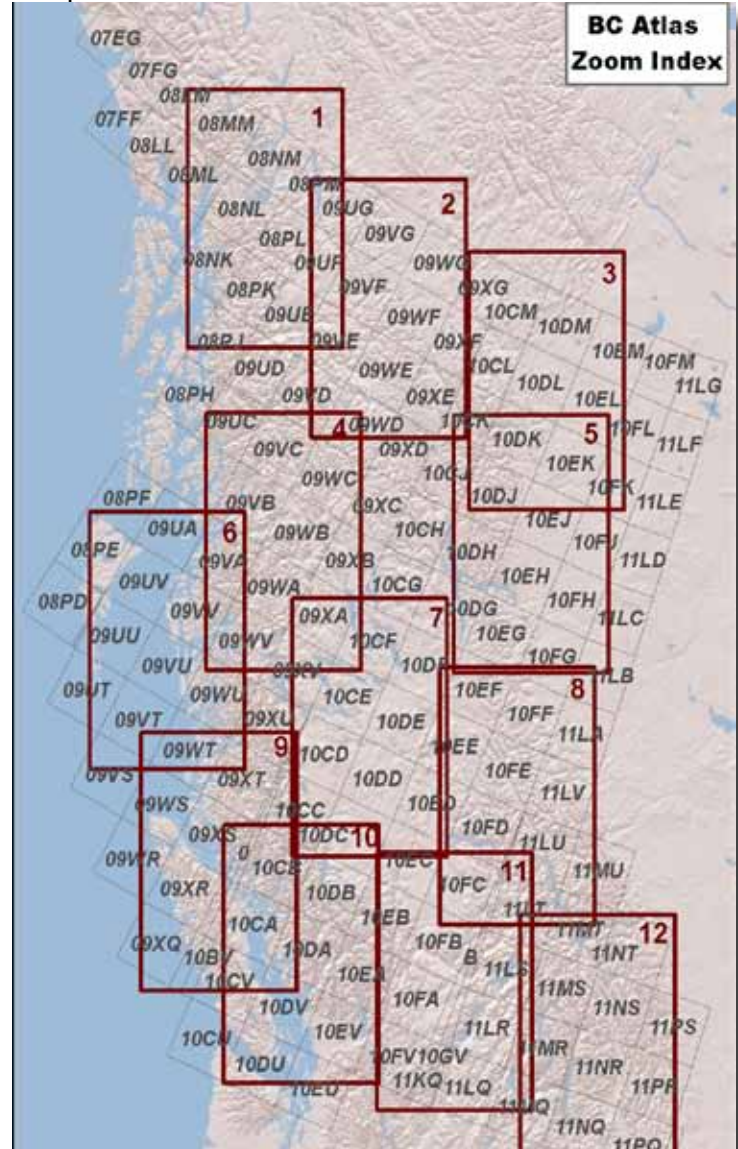
So, what next? The answer is simple: Finish what you started. Before even thinking about regional coordinator-designated priority squares or a new square, there are plenty of unfinished squares in your region, and likely in your backyard. There are of course two ways to help: completing point counts or general atlassing.

Point count analyses from the last Ontario Atlas have shown that squares without a minimum number of point counts could not be used to map species relative abundance. So if you are skilled enough to do point counts, please do your best to increase partially completed squares to 15 points or as close as possible, to ensure that square is included in the analyses. The maps on pages 8-9 show the squares that are incomplete for point counts only (there are too many squares that need general atlassing to produce one map!) The overview BC Atlas zoom index map (right) indicates the general area of each of the 12 maps. These maps show the block name (e.g. 10FH) and the square has the number (e.g. 43) so by looking at map 12, for example, you can determine that 10FH43, in region 41 has only 1-9 point counts completed.

An important note that these maps show information entered **before March 2011** (after the data entry ended for 2010). You must check for updates, or investigate with the local regional coordinator to try and determine if someone is working in an area this year. To view point count information, go to the online summaries page and review any given square. Go to:

Data and Maps > Data Summaries > 3.) View list of completed Point Counts in square [(e.g. 10FH43)], and click the "view" button. To actually view locations in the square, you'll have to use GoogleEarth and download these point counts. View on the atlas website. Go to:

Resources > Predefined points > Enter your square number [(e.g. 10FH43)], and click "submit." Then click the link to "Download points into GoogleEarth (KML). You must have GoogleEarth (a free download) already installed on your computer.



Time is running out for point counts this year, but there are still many weeks that can be dedicated to general atlassing. If you can't conduct point counts you can still help tremendously by adding time to a square and confirming breeding species. Each square should have 20 hours of survey effort. This is as simple as keeping a tab on the time you spend birding in a square and entering your bird list. An exhaustive and up-to-date list of squares that are already have 10-19 hours of atlas effort is available on pages 12-13.

It is arranged by region, then square – you can see the number of: hours completed, species confirmed, species

listed (and even number of point counts completed). Some are so close to the required 20 hours and could potentially be completed in one day, or stopping in for a few hours while driving by. Keep in mind that volunteers are collecting data all spring and summer, but their data might not be entered until the winter, so checking in first with the appropriate RC is very important.

And where else should you go? Well, in a province the size of BC, the options are almost endless, but we are trying to guide you to certain areas. If you want to travel and explore and you live right around Vancouver, Victoria, or the south Okanagan, you'll notice a tonne of work has been completed, but not all! Visit a neighbouring region/area: Vancouver > Chilliwack; Victoria > Lake Cowichan or Port Alberni; Okanagan > Vernon or Creston, and the list goes on. The list on page 12-13 shows that every region has some incomplete squares. Many people comment that the atlas has given them a purpose to explore new areas and they are happy about the birds they find, behaviours they observe, and the people they meet.

Some regions are very big and could still use much help, including many regions in the northwest: Haida Gwaii, Prince Rupert, Terrace, Bulkley Valley, Dease Lake, and Atlin. If you are in a big region with a small population, you can be sure help is needed and you'll likely have your pick. Again, please contact the regional coordinator. They will know who has been assigned to squares in the region, such that you can avoid duplicating effort. Perhaps the "assigned" atlasser has completed point counts but cannot get back for general atlassing (or vice versa); here you can help by completing the square if you know help is needed. Only about 500 squares are completed thus far in BC, and the more we can complete with an even coverage spread across different ecosystems and geographic regions, the more robust assessment we will have of the current status and ranges of birds in BC.

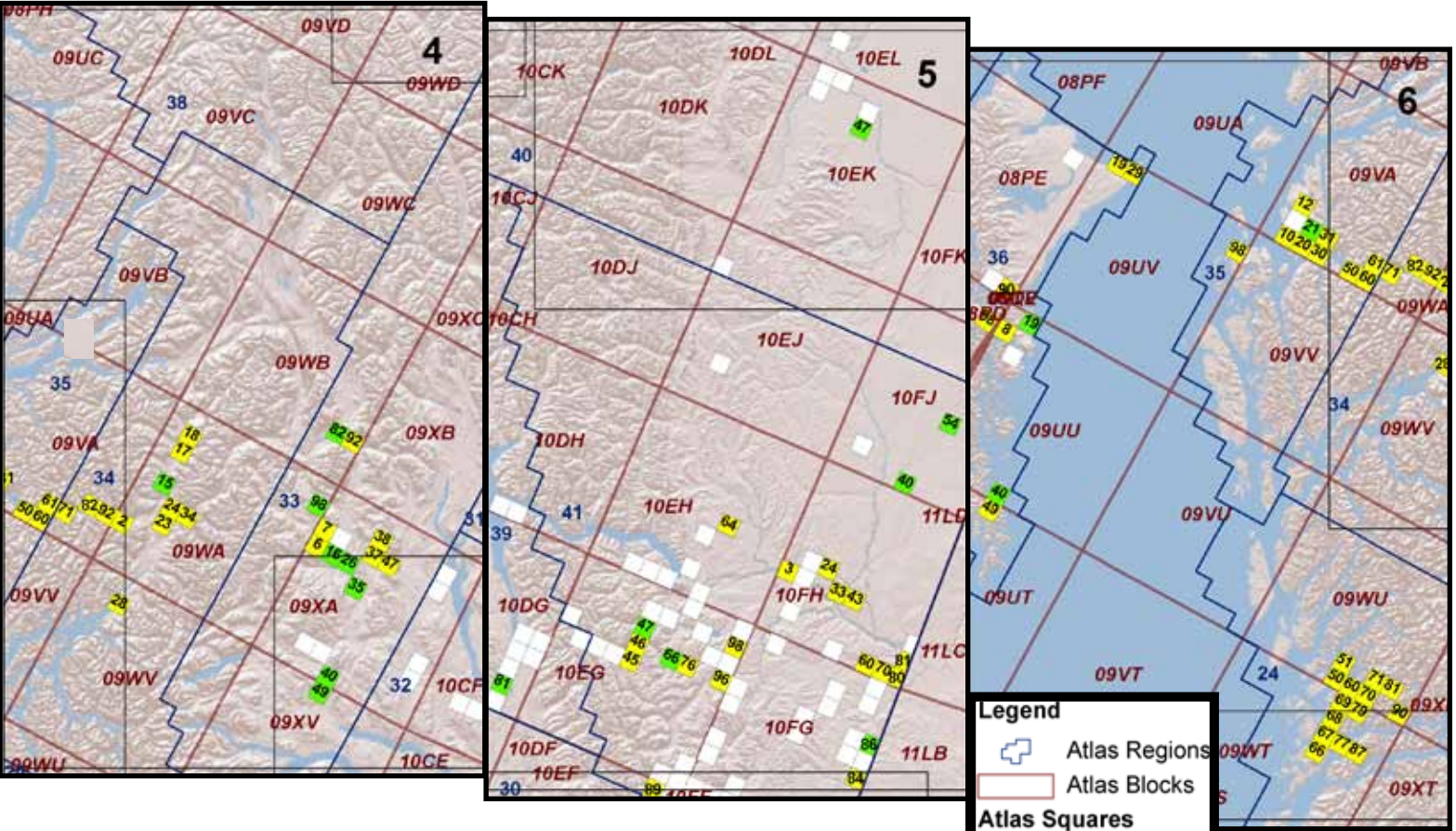
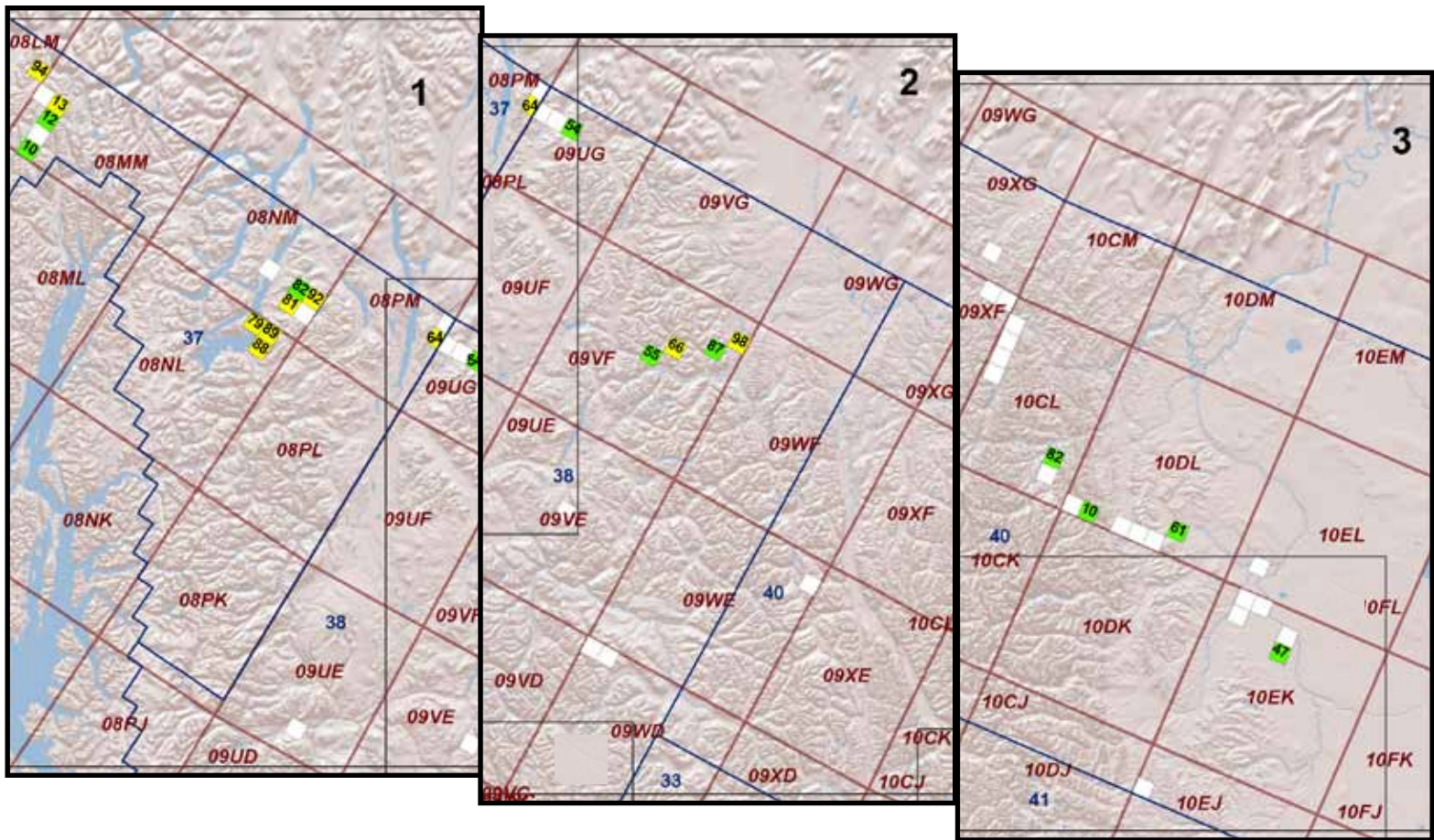
Thanks to continued and increased funding in 2011, the atlas has a multifaceted approach to getting crews and volunteers around this summer. Long-term crews are covering large areas and working intensely to get as much as they can completed in priority 100-km blocks, while other crews or individuals are focussed on smaller areas for shorter periods of time. Much work is being focussed in the Terrace, Dease Lake, and Fort Nelson regions, and in the Columbia and Peace-Williston watersheds. Many people can't spend so much time away from home; you can still help with a few hours each morning over the summer.

If you have more flexibility for time and travel, there are a few options available. We've worked on a few arrangements throughout the province to take volunteers to new heights, literally. We have volunteers flown by floatplanes to inaccessible lakes with members of the BC Floatplane Association and by helicopters to distant mountain tops. We are always looking to build more helpful relationships with more floatplane operators and helicopter companies. This will give some keen volunteer birders the chance to reach some areas that may have never been surveyed for birds and are rarely ever reached by humans! For those who want to keep their feet planted on terra firma, we will continue to support travel to volunteer groups that are driving to far-off squares to help augment coverage in under-surveyed regions. The link to this is always located on the atlas home-page ahead of the atlas season, and we still have some funding available to allocate if you think you can help.

The website bird maps and data summaries have the most up-to-date information. If you are curious about a whole region, go to Data & Map > Data Summaries > 2). View summary statistics: [by square] within region [select a region]. You will get the whole list of what has been completed. From the same summary page you can enter a square number in "5.) View species list for square or block no.: [xxxxxx]"

Have a look at the atlas maps online (www.birdatlas.bc.ca/bcdata/maps.jsp) to view the whole province or zoom in on north and south. Click on the dropdown list and click on "Number of point counts" or "Total number of hours per square" By selecting the north or south view of any map you are viewing, you will be able to see 100km-block boundaries. If you place your mouse cursor over a block you will see its name (e.g. 10DV). We have to fill in large white areas with no data, but your work over the next two years will help change yellow and green squares into a sea of blue. The more "blue" we are, the happier we will be at the end of the project (ironic, we know!)

To summarize, please finish, 1) your own assigned square, or neighbouring square(s); 2) local regional squares that are almost finished; 3) distant squares in your region or neighbouring regions; or 4) start (and finish) a priority square where very little work has been completed. Volunteers of all skill levels can help in any region by completing point counts or general atlassing (adding hours of effort or confirming breeding species) in incomplete squares, or both! And always let the local RC know of your plans before setting out.



Legend

- Atlas Regions
- Atlas Blocks

Atlas Squares

- Points 1 - 9
- Points 10 - 14
- Points 15 +

INCOMPLETE POINT COUNT SQUARES (as of March 2011)
 Check online data summaries and with local Regional Coordinator to find the latest update. 15+ point counts per square are generally considered complete.

Breeding Evidence Form (square 09V092, year 2011)
Observers and Effort

Save changes Reset changes Next page >>
Standard form Finish form

Observer Name	Observer No.	Square ID	Region	Year
Christopher Di Corrado	84331	09V092	34	2011

List of additional observers in this square
(check all those assistants that helped you in this square)

Add/Change observers

To hide the data entry fields that relate to the observations made through the Daily observation form and display the "classic" version of the Breeding evidence form, you can click on the Standard form button under the visit table.

Visit No.	Month	Day	Start Time	End Time	Party Hours	Dist. (km)	Locality (optional)	Complete list?	Easting (optional)	Northing (optional)
1	May	29	13 00	16 30	3 30	5	Old Aynash	<input checked="" type="radio"/> Yes <input type="radio"/> No	497789	6121650
2								<input type="radio"/> Yes <input type="radio"/> No		

Species	Visit	DE	Abund	Visit #1	
				05/29	06/05
Observed Flycatcher					
Western Wood Pewee					
Alder Flycatcher					
Willow Flycatcher					
Least Flycatcher					
Hammada Flycatcher					
Dusky Flycatcher					
Pacific-slope Flycatcher					
Sage's Phoebe					
Northern Shrike 1					
Cassin's Vireo 1					
Wandering Vireo					
Red-eyed Vireo					
Cooper's					

ONLINE UPDATES: A NEW WAY OF ATLASING - DAILY OBSERVATIONS

New this summer an OPTIONAL way of recording and entering atlas data. Daily observation forms allow you to keep track of the birds you see in any given square on any day. Read more here: www.birdatlas.bc.ca/english/daily.jsp

The main advantages of atlas daily observation forms are:

- Improved knowledge of breeding phenology. By recording the precise date of each observation, it will become much easier to define the breeding dates (safe dates) in each atlas region.
- Better indicators of relative abundance. Because the number of individual birds are recorded, atlas daily observation forms can be used to generate indices of relative abundance and, above all, to compare changes in abundance from atlas to atlas in a much more precise manner.
- Better efficiency of data entry (less work). For those who like to submit their atlas records to eBird, this can now be done on a single form! An export tool will be available that will produce a file for import into eBird. In addition, records from your atlas daily observations get transferred automatically to your breeding evidence form(s), making this the most efficient way of entering detailed data.

British Columbia Breeding Bird Atlas Data Entry

Visit Species 1 Species 2 Species 3 Species 4 Comments Codes Finish

Your form contains some invalid breeding codes. Please review your species list and check the breeding codes you used. Invalid codes will not be saved in the data form.

Your form contains records that still require additional documentation (click "Finish" to find out what species). Please fill in a rare colonial form for each of those observations.

Breeding Evidence Form (square 10DV33, year 2011)
Species Page 1 (Greese to Hawks)

Select a checklist to display: Atlas Region 15

Save changes Reset changes << Previous page Next page >> Finish form

Species	Visit	DE	Abund	Species	Visit	DE	Abund
Canada Goose				Sooty Grouse			
Mute Swan				Pied-billed Grebe			
Caution required: Caution, courtship may occur on migration. Consult Breeding Season Chart.				Double-crested Cormorant §‡			
Gadwall				Pelagic Cormorant §			
American Wigeon				American Bittern =‡			
Mallard				Great Blue Heron §‡			
Blue-winged Teal				[Rare/colonial] †			
Cinnamon Teal †	1	DD		Green Heron =‡			
Northern Shoveler				Black-crowned Night-Heron †§			
Green-winged Teal				Turkey Vulture			
Ring-necked Duck ‡				Osprey			
Harlequin Duck				Bald Eagle †	1	N	
Hooded Merganser				Invalid code: This code only applies to wrens and woodpeckers. Use NB for nest building.			
Common Merganser							

INSTANT ONLINE DATA ENTRY WARNING

The BC atlas website has a new feature on the data-entry web site, in the breeding evidence and the point count forms to warn you about potential data coding errors. If a breeding code is entered for a species that is considered unusual/erroneous, an explanation as to why that code is problematic will appear.

There are 3 levels of errors: caution (**green icon**); unusual code (**yellow**); and invalid code (**red icon**). you can leave your cursor over the icon or click on them for specific details in the yellow information boxes as shown.

ONLINE QUIZ

A new quiz tool has been installed on the web site at: www.birdatlas.bc.ca/bcdata/atlasquiz.jsp

This is a great way to test your knowledge of bird behaviour and the application of atlas codes.

Mount Albert Edward is situated in Strathcona Provincial Park, east of Buttle Lake and west of Courtenay, on Vancouver Island. Since moving to the island in 2006, I had heard many stories about Mount Albert Edward, especially stories about the endemic subspecies of ptarmigan. Though Justin Lynch and I got 12 of these elusive birds on Mount Cain, it didn't dissuade me from wanting to travel to the hallowed breeding grounds on Albert Edward.

After a restless sleep, I crawled out of bed and cancelled the snooze button. It was 4:45 a.m. We arrived at our start point, Raven Lodge, at 6:50 a.m. Raven Lodge is a cross-country facility located below the Mount Washington Alpine Resort. Ten-minutes later we were ready. The first two hours flew by. The initial easy boardwalk trail past Paradise Meadows, linked up with a wooded trail, which skirted Lake Helen Mackenzie, then to our first stop; the rangers cabin. Here we relaxed for a while and within minutes, four Gray Jays arrived and kept us company.

We continued our westerly route past Whiskey Meadows and began the long slog to Circllet Lake. En-route, we made frequent stops and an hour-long respite just before Circllet Lake. Here we shared our shady nook with a family group of Gray Jays, including two juvenile birds.

The following hours were slow going and a real grind. We reached the plateau below the main ridge at about 5:00 p.m. Here we rested for half an hour, and when we set-off on the last push a little voice inside my head whispered, "give up, this is madness."



At the end of the ridge and at the beginning of the main slope we stopped again. Exhausted and in pain I dropped my pack to the ground, sat on a rock and looked up the slope. The mountain was physically and emotionally breaking my spirit. I felt overwhelmed. All day long the mountain had played tricks on me. Seemingly, getting



closer, only to be further away at every milestone. Justin's voice brought me back to planet earth. Approximately half way up the slope Justin pointed out a bird sitting on a rock. I raised my bins to see an American Pipit. It was preening on one of the alpine islands not covered in snow. Perfect breeding habitat for this bird, though we didn't get any evidence to back this up, only that this individual was there.

It probably took about twenty minutes from the pipit to reach the top. Once there, Justin ushered me to the highest point before handing out the high-fives. I was too knackered to be euphoric, I was just glad to stop. However, euphoria was on the cards! Not only had we made it to the summit, we also found a family group of Gray-crowned Rosy-Finch! There were two juveniles and two adults.

After resting and enjoying these alpine specialties and the magnificent views, we began, for the first time in a while, to head down hill. I was relieved, proud and for the first time in a few hours, happy. At the bottom of the slope we followed the ridge back down and chatted about how cool it would be to finish our quest with a ptarmigan, but not really believing it could happen. We stopped and Justin disappeared over some boulders near the edge of the ridge for a washroom break, only to reappear seconds later. I quizzically watched him as he made frantic hand gestures, pointing below his position. I frowned and called, "Rosy-Finch?" He shook his head. This could only mean one thing! I hobbled at a good pace to where he was crouched. On a rock, 18 ft in front of us was a White-tailed Ptarmigan with five young! We watched this family group for about twenty minutes, both female and young, pecking at the heather shoots, until finally all five young took refuge under her breast feathers. It was absolutely wonderful to witness this unique discovery and what better way to finish our day's journey.

Sometime after 9:00 p.m. we decided to stop and set up camp, which was just as well, as I couldn't have gone another step. The following morning we had instant oatmeal for breakfast, packed up, made it back to the truck in about 6 ½ hours. At Helen Mackenzie Lake we stopped once more, as we had reached the beginning of the boardwalk trail. Here, I exchanged my boots that had held me prisoner for the last 24 hours for a pair of flip-flops. Heaven! We arrived back at the truck at 1:30 p.m. We grabbed some food and drinks in Courtenay and headed home.

Squares, by region, with 10-19 hours (hrs) of survey time, and number of point counts completed (# Pt cts). Also listed # confirmed species (# Conf) and # species listed in square (# Spp).

Speak to your Regional Coord. before starting a new square to determine if someone is working on it. Note this table will not include 2011 data presently being collected.

Rgn	Square	Hrs	# Conf	# Spp	# Pt cts
1	11NQ59	13	2	55	13
1	11NQ69	11	4	51	12
1	11NQ74	13	2	4	
1	11NQ79	15	28	89	8
1	11NQ87	14	6	65	1
1	11NQ98	19	23	85	5
1	11NR75	14	11	40	1
1	11NR82	14	16	68	9
1	11NR91	14	8	94	
1	11PQ09	18	10	88	12
1	11PQ17	13	19	80	3
1	11PQ25	12	9	59	
1	11PQ26	12	4	15	
1	11PQ27	16	19	56	
1	11PQ33	11	8	67	
1	11PQ34	15	4	49	
1	11PQ36	13	3	37	
1	11PQ47	15	13	81	4
1	11PQ67	16	5	25	
1	11PR54	10	1	26	
2	11NR58	13	6	30	13
2	11NR76	19	7	62	
2	11NR88	14	0	41	9
2	11NS40	19	8	70	48
2	11NS43	16	18	88	16
2	11NS50	13	10	70	34
2	11NS56	16	12	32	
2	11NS67	19	12	47	9
2	11PR19	12	3	37	28
2	11PR29	13	7	20	
3	11NQ14	11	3	33	3
3	11NQ63	19	13	74	
3	11NR10	18	7	71	
4	11MQ32	13	1	57	8
4	11MQ49	16	7	44	
4	11MQ53	10	18	51	
4	11MQ59	19	18	71	
4	11MQ77	16	5	40	5
4	11MQ93	15	8	41	3
4	11MR19	13	2	18	
4	11MR40	13	4	45	
4	11MR41	13	7	18	
4	11MR44	10	4	44	2
4	11MR45	12	8	65	17
4	11MR56	18	6	49	14
4	11MR57	13	5	44	5

Rgn	Square	Hrs	# Conf	# Spp	# Pt cts
4	11MR73	15	15	52	
4	11NR01	10	24	66	
4	11NR04	11	14	71	14
4	11NR06	18	24	91	9
5	10GV15	10	9	49	6
5	11KQ87	19	13	39	2
5	11KQ95	15	24	102	16
5	11KQ98	16	27	82	7
5	11LQ27	15	7	74	15
5	11LQ36	10	3	45	15
5	11LQ37	16	2	29	2
5	11LQ39	16	3	33	15
5	11LQ44	11	6	54	
5	11LQ49	19	18	61	11
5	11LQ52	11	12	34	9
5	11LQ54	12	6	53	
5	11LQ69	17	4	60	10
5	11LQ93	16	16	48	
5	11LQ94	17	18	53	
5	11LQ97	12	2	46	
6	11LR01	14	19	92	15
6	11LR14	15	7	57	15
6	11LR31	11	9	49	
6	11LR42	17	19	70	15
6	11LR45	17	18	51	4
6	11LR51	11	14	52	16
7	11LR38	15	28	75	15
7	11LR46	18	5	7	
7	11LR58	13	17	39	6
7	11LR59	17	3	62	
7	11LR98	16	4	45	
7	11MS02	13	5	46	15
8	10FA41	11	4	58	19
8	10FA44	18	5	70	13
8	10FA45	17	6	85	17
8	10FA47	12	3	44	
8	10FA54	13	10	54	
8	10FA60	15	19	83	16
8	10FA65	11	17	85	
8	10FA70	18	38	79	
8	10FA87	13	19	91	
8	10FA90	17	11	47	
8	10FV43	15	13	51	
8	10FV55	18	9	26	
8	10FV78	12	16	80	15
8	10FV88	12	17	82	
9	10FA39	17	5	23	
9	10FA79	12	27	71	15
9	10FA99	18	8	57	
9	10FB15	16	26	59	
9	10FB32	17	20	78	16
9	10FB53	19	9	73	6
9	10FB81	13	29	83	
9	10FB90	12	5	91	
9	10FB92	11	16	73	
9	10FC90	13	21	76	16
9	10FC92	12	16	72	16
9	10GB00	12	20	59	
9	10GB02	12	21	81	
9	10GC05	11	5	76	15

Rgn	Square	Hrs	# Conf	# Spp	# Pt cts
9	11KT92	12	14	70	9
9	11LS02	17	35	94	
10	11LS10	10	6	46	
10	11LS14	11	8	57	15
10	11LS21	15	7	31	1
10	11LS30	12	16	75	3
10	11LS43	16	13	49	4
10	11LS44	15	6	59	13
11	10EV87	10	3	29	
12	10EA58	17	18	58	11
12	10EB12	12	3	61	18
12	10EB14	16	20	66	1
12	10EB30	11	15	51	6
12	10EB41	11	8	63	16
12	10EB50	17	2	38	16
12	10EB52	13	1	50	23
12	10EB74	19	16	76	
12	10FA06	11	3	51	13
12	10FA12	10	1	51	15
12	10FA36	18	7	72	18
12	10FB10	12	13	86	16
13	10EV36	19	11	38	
13	10EV46	11	4	37	
14	10DA89	17	7	39	13
14	10DB80	16	7	45	20
14	10DB91	12	2	25	
14	10EA29	16	9	47	22
14	10EA34	11	6	22	
14	10EA35	10	3	28	
14	10EA38	11	2	31	3
14	10EB02	14	4	43	4
15	10DV88	10	13	44	1
15	10EV07	11	10	62	20
15	10EV12	18	23	65	15
15	10EV16	19	27	71	15
15	10EV17	13	6	41	19
16	10DA72	15	14	67	2
16	10DA73	14	9	60	8
16	10DA74	12	4	48	8
16	10DA75	11	8	55	7
16	10DA85	14	6	30	4
16	10DA86	14	3	17	4
16	10DA93	12	17	55	
16	10EA00	10	10	45	5
16	10EA04	19	15	58	
17	10DA01	12	2	53	
17	10DA02	11	2	51	
17	10DA12	13	5	49	
17	10DA19	14	4	28	
17	10DB21	15	4	13	
17	10DV38	16	6	52	
17	10DV47	12	6	48	
17	10DV57	10	1	45	
17	10DV79	16	0	35	
18	10DU08	12	12	54	16
18	10DU16	10	8	34	15
18	10DU26	13	16	75	12
18	10DU27	18	12	47	
18	10DU35	16	25	72	14
18	10DU38	18	7	53	1

Rgn	Square	Hrs	# Conf	# Spp	# Pt cts
18	10DU86	14	10	35	
18	10DU89	16	10	53	19
18	10DV71	16	34	73	6
19	10CV87	18	28	71	16
19	10CV96	19	37	71	21
19	10DV15	14	38	81	
19	10DV16	18	36	77	19
19	10DV30	16	10	58	16
19	10DV34	18	49	84	15
19	10DV35	18	22	50	2
19	10DV40	13	30	77	1
19	10DV43	15	27	64	12
20	10CV32	15	3	24	
20	10CV45	13	3	36	
20	10CV51	11	7	48	10
20	10CV66	16	35	68	11
20	10CV67	18	15	56	14
21	09YR02	11	1	27	19
21	09YR11	10	6	40	24
21	10CA40	12	6	44	15
21	10CA44	12	11	40	
21	10CA52	13	13	43	11
21	10CV79	10	2	34	
22	10BV84	10	9	56	7
23	09WS51	17	4	29	9
23	09WS52	15	3	28	8
23	09WS63	19	7	30	15
23	09WS73	19	8	38	15
23	09XR65	11	0	27	
23	09XR66	11	4	42	
23	09XR76	14	8	54	15
23	09XS41	18	9	47	15
24	09WT66	11	0	30	6
24	09WT77	13	1	38	7
24	09WT79	14	1	37	4
24	09WU51	14	1	31	4
24	09WU71	14	3	39	2
24	09XU50	10	4	47	9
24	09XU90	12	2	39	1
25	10CC56	15	2	40	
25	10CC95	10	15	79	
25	10CD02	15	7	56	15
25	10CD35	12	2	28	
25	10CD42	18	18	87	
25	10CD72	10	3	12	
25	10DC00	13	2	48	
25	10DC03	19	16	86	2
25	10DD60	10	1	29	
25	10EB49	17	19	72	16
25	10EC24	16	10	66	1
25	10EC27	11	5	79	
26	10DD96	12	5	60	15
26	10DD99	17	7	64	
26	10EB58	15	2	30	4
26	10EB78	14	19	85	
26	10EB88	19	20	89	14
26	10EB97	17	17	79	
26	10EC40	10	7	48	4
26	10EC46	19	32	101	10
26	10EC50	18	6	20	3

Rgn	Square	Hrs	# Conf	# Spp	# Pt cts
26	10ED36	13	39	101	14
26	10ED72	17	5	56	15
26	10ED97	12	6	30	3
26	10FC43	14	7	60	
26	10FD03	17	2	36	
26	10FD08	10	0	45	16
27	11LS85	10	3	51	2
27	11LS93	18	11	74	15
27	11MS08	11	4	43	5
27	11MS17	12	4	50	22
27	11MS21	18	13	49	
27	11MS36	17	5	45	
27	11MS68	12	8	36	7
27	11MS84	16	16	27	
28	11MS99	14	18	59	
28	11MT62	15	8	54	15
28	11MT73	10	22	78	
28	11MT81	16	1	42	15
28	11NS09	16	8	36	
28	11NS17	11	28	34	
28	11NT40	18	26	63	4
29	10FE70	11	2	33	21
29	10FE80	15	13	78	9
29	10FE90	19	16	82	16
29	10FE91	17	7	47	21
29	11LU76	17	14	92	19
29	11LV30	10	1	28	12
30	10DE56	10	8	63	1
30	10DE66	14	7	77	10
30	10DE88	15	10	58	15
30	10DE89	12	5	35	
30	10EE06	11	9	60	16
30	10EE07	16	14	60	18
30	10EE26	15	13	70	15
30	10EE27	10	25	79	2
30	10EE36	14	6	47	10
30	10EE37	13	12	53	
30	10EE59	15	8	74	7
30	10FE09	13	5	43	2
31	10CF84	12	3	40	14
31	10CF90	18	9	67	17
31	10DF00	14	1	42	16
31	10DF14	13	13	52	
32	09XV78	12	8	46	
32	09XV88	11	17	50	
32	10CE09	15	22	47	
32	10CE52	13	6	53	15
32	10CE53	16	15	62	15
33	09WA98	19	1	28	11
33	09XA16	13	10	75	14
33	09XA18	14	19	77	
33	09XA19	19	5	37	
33	09XA24	14	7	29	
33	09XB60	10	2	23	
34	09VC81	19	4	21	
34	09WA23	18	14	50	4
34	09WA31	12	6	43	
34	09WV28	13	12	42	3
34	09WV29	15	4	21	4
35	09VA12	15	5	41	5

Rgn	Square	Hrs	# Conf	# Spp	# Pt cts
35	09VA20	18	8	56	14
35	09VA21	18	16	49	14
35	09VA30	19	6	44	18
35	09VA31	16	2	41	16
35	09VA41	15	2	42	12
35	09VV17	19	4	12	
36	08PE85	10	4	34	
36	08PE90	17	11	31	4
36	09UT57	11	9	34	6
36	09UU32	12	7	25	2
36	09UV10	12	18	35	12
36	09UV19	15	9	27	1
36	09UV29	10	6	27	1
37	08LL49	11	11	25	
37	08LM71	16	13	20	
37	08LM74	11	14	40	
37	08MM04	10	11	41	
37	08MM11	10	9	36	16
37	08MM12	17	14	47	10
37	08NL88	11	11	58	1
38	09UC39	18	16	60	
38	09UC48	13	6	51	
38	09UC69	12	0	1	
38	09UD22	10	1	31	
38	09UD30	16	2	51	
38	09UE61	10	2	36	15
38	09UG54	11	2	40	14
38	09VG25	11	14	35	
39	10CH67	10	2	32	6
39	10CH68	15	4	48	8
39	10DG83	15	43	99	18
39	10DG85	11	5	59	19
39	10DG91	15	15	69	16
39	10DG92	14	22	76	
39	10EG15	10	3	52	15
40	09XF69	16	18	56	17
41	10DJ84	12	12	55	
41	10EF99	13	0	41	23
41	10EG87	19	31	81	15
41	10EH40	12	1	67	52
41	10EH91	14	19	60	
41	10EH92	12	7	86	
41	10EJ92	10	5	54	3
41	10FF68	17	10	45	
41	10FF78	11	4	35	
41	10FF89	14	10	70	15
41	10FG07	17	42	79	
41	10FG31	10	2	14	
41	10FG45	13	3	68	16
41	10FG46	16	11	69	15
41	10FG78	17	39	91	15
41	10FG81	14	22	68	15
41	10FH01	13	19	66	
41	10FH03	19	12	98	8
41	10FH21	11	15	76	
41	10FH40	11	6	66	15
41	10FH43	15	36	86	2
41	10FH60	17	6	48	3
41	10FH70	16	15	53	7
41	10FH82	10	5	66	19



Regional Coordinator Spotlight!

CHRIS CHARLESWORTH: CENTRAL OKANAGAN (6)

Chris Charlesworth – Born and raised in the Okanagan Valley it was no wonder Chris got into birding at a young age. He and his family lived near Chichester Marsh in Kelowna, an excellent place for a young boy to explore nature and get hooked on birding. Chris led his first birding tour to Washington State in 2000 and since then has led dozens of trips to locations across North America. Chris formed his own tour company, Avocet Tours and works also for British tour company, Limosa Holidays. Chris feels

nothing is more satisfying than showing somebody a bird they've never seen before. His favourite places to go birding include Southeastern Arizona and Peru, both locations to which he will be leading tours in 2011. Birding his local patch in the Okanagan Valley is also one of Chris's favourite past times and assisting with the atlas he finds addicting and very rewarding.



CAM GILLIES: RADIUM-INVERMERE (2)

My interest in birds began as a kid with healthy encouragement from Larry Halverson, whom I now share regional coordinating duties with in. What a treat! After a period of only minor interest in birds, my passion was stoked when I had a chance to do surveys for Lewis's Woodpeckers in the Invermere area. Birds has been the theme from there onward, including a Ph.D. on bird movement in Costa Rica, work as a biologist studying birds, and ownership of Eagle-Eye Tours, a birding tour company. Now, I am loving atlasing! It has taken me areas to fascinating and beautiful areas of our region. Hiking into the alpine to do point counts has been great fun! From the wetlands at the valley bottom to the tops of the mountains, I am certainly

learning a great deal about the birds in our region from my excursions and the work of other atlasers and there is still lots more to do!



IAN ROUTLEY: LILLOOET-LYTTON (12)

The Breeding Bird Atlas has been a great opportunity to discover the wealth of breeding birds in the Lillooet area and Region 12. It has dovetailed my favourite hobbies of exploring our area, bird photography and discovering which birds are using our very diverse habitats. I love the fact that I can be listening to coastal birds along the Duffy Lake road one day and discovering a Lewis's woodpecker's nest while listening to the song of Long-billed Curlew the next. It has also served to increase awareness and interest of the birds in



our local community, which is always a good thing in a resource based town. I have always enjoyed "watching" birds but I credit Ken Wright with challenging my birding skills after his arrival in Lillooet 11 years ago. But for him I never would have had a call from Dick Cannings asking me to be the Regional coordinator for Region 12, with his words – "it won't entail much work". It hasn't been work, my day job as a rural physician is work, Atlasing is pure fun. Having used the "Birds of BC" series when I was first birding in Lillooet, I am glad to coordinate the opportunity to increase those red circles on the map for our region, in many cases with Red-listed species. One of our discoveries has led to a Wildlife Habitat Area in a sensitive riparian area close to our town. Through the Atlasing project I have also met an incredible group of dedicated and inspiring naturalists from all over BC. I am proud of my small part in this important project.

MAPPING HYBRID ZONES

By Dick Cannings and Sampath Seneviratne, Bird Studies Canada

One of the more interesting aspects of birding in British Columbia is the presence of hybrid zones, where bird species and subspecies groups meet, producing an interesting variety of intermediate forms. Hopefully our efforts in the BC Breeding Bird Atlas will help us accurately map some of these zones. This year, Bird Studies Canada has secured a grant from the National Science and Engineering Research Council (NSERC) for a collaborative study with the University of British Columbia (UBC)'s Biodiversity Research Centre, which identified and published the Pacific – Winter Wren split, and is currently studying various other contact and hybrid zones, including Black-throated Green and Townsend's Warblers, and Swainson's Thrush subspecies. Our NSERC project, led by post-doctoral fellow Sampath Seneviratne, is studying the hybrid zones of Red-breasted, Red-naped and Yellow-bellied Sapsuckers in British Columbia. We aim to measure the dynamics of sapsucker hybrid zones to investigate some of the underlying mechanisms of bird evolution and taxonomy, and better understand how hybrid zones can be used as markers of change in predicting future responses of forest birds to changing climate. The past century has seen a high rate of deforestation and change in tree composition in BC's interior forests. According to published work based on climate models, interior BC is one of the most susceptible regions to global climate change: the predicted warming is ~0.5°C per decade for this region, and precipitation could drop to 20-40% of current levels. These changes are already influencing a higher rate of forest fires, large-scale epidemics (e.g. mountain pine beetle infestation) and droughts in BC. The predicted changes to forests based on climate models suggest that even as early as 2025, the bio-geoclimatic zones in BC could be substantially changed. Our project is one example of how Atlas-collected data can inform conservation research.

In this article, Dick Cannings first explores the reasons why British Columbia is such a hotspot for converging species-pairs and hybrid zones, adapted from text in *British Columbia: A Natural History* by Richard and Sydney Cannings (Greystone Books), and then Sampath Seneviratne helps us better understand how, and where, to distinguish hybrid sapsuckers.

Why are hybrid zones so prominent in British Columbia?

Much of the reason is rooted in the cold history of the Ice Ages. During the glacial advances of the Pleistocene, there were four primary ice-free areas where birds from British Columbia survived: (1) the forests, grasslands and shoreline habitats of coastal California, Oregon and southern Washington; (2) the tundra, forests and grasslands of the interior southwestern United States; (3) the forests and grasslands of the southeastern United States; and (4) the tundra and cold steppes of central and northern Yukon and Alaska (Fig 1). As they followed the retreat of the glaciers, some birds spread across British Columbia, but many were thwarted by barriers of mountain ranges, ice caps and wide rivers. The more restricted distribution of these species today can be directly related to their home during the ice ages. For example, some songbirds such as the Cape May Warbler emigrated from the southeastern United States but hardly ever manage to cross the Rocky Mountains—in British Columbia species such as this are found only in the Dawson Creek and Fort Nelson areas (though two pairs were found by atlasers west of the Rockies this year!).

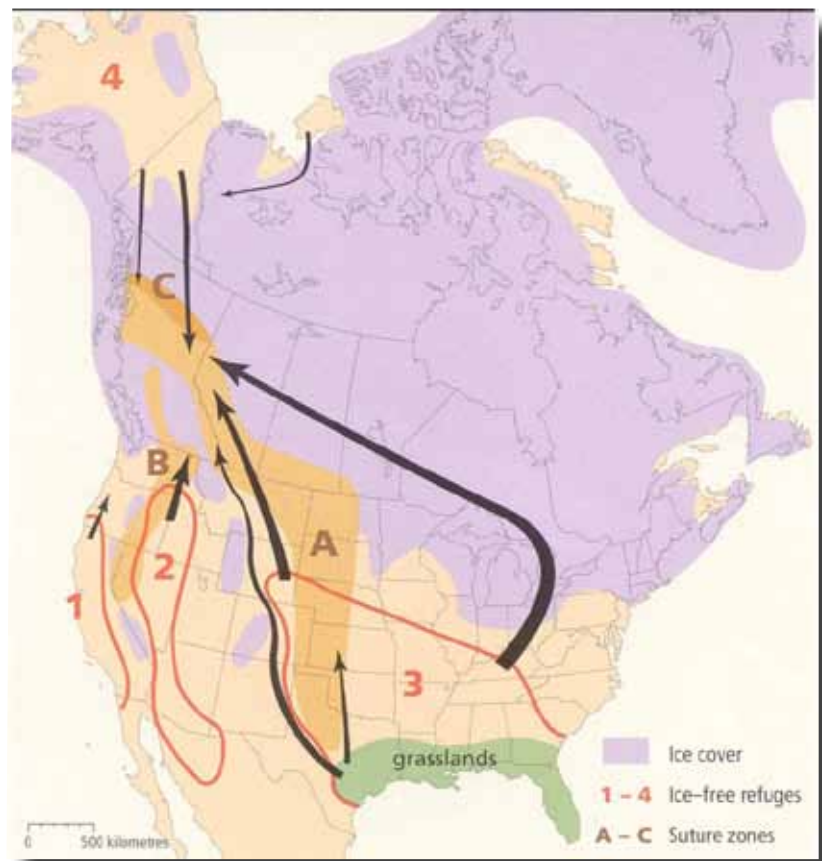


Fig 1: Ice-free Refuges

Species that were widespread in northern North America were split apart by the Pleistocene ice sheets, and this had profound effects on their evolution. Not only were major eastern and western groups separated from each other, but many populations in the west were fragmented into still smaller groups by mountain ranges and desert basins.

In a small, isolated population, random genetic changes that begin in an individual can become firmly established throughout the population over relatively few generations, even without the pressures of adaptation and natural selection. This means that chance differences in characteristics such as appearance can evolve rapidly. And because the isolated populations are living in different places, their appearance, behaviour and ecological requirements often change through adaptation to new habitats or climates. For example, the ranges of species of the northern forests, such as the Yellow-rumped Warbler, were split in two during glacial periods. Forced south by the advancing ice sheets, eastern and western populations were separated by inhospitable, treeless plains. Over the centuries, they evolved different appearances and, to some extent, different ecological strategies. Examples of west-east pairs abound in British Columbia.

in different parts of the Canadian west. As the Pleistocene ice sheets melted, the first corridor to open up the north and connect ice-free southern North America with ice-free Yukon and Alaska was probably along the thin edge of the continental sheet on the east slope of the Rocky Mountains. This corridor was invaded early by White Spruce and its eastern companions. As the ice continued to melt, these species moved through the low passes in the northern Rockies and colonized northern British Columbia. Their western siblings, however, were isolated from the north by huge ice domes that persisted in central British Columbia. These populations remain south of Prince George even today—an ecological case of first come, first served.

West of the Rocky Mountains, many forest animals and plants were separated into coastal and Interior populations by harsh, dry conditions in the Interior northwest during the Pleistocene glaciations; today these groups come into contact along the crest of the Cascade and Coast ranges. Examples (east-west) include the Dusky and Sooty Grouse, Red-naped and Red-breasted Sapsuckers, and Cordilleran and Pacific-slope Flycatchers.

To the north, another group of animals and plants flourished in the cool but ice-free lands of the Yukon, Alaska and eastern Asia. During the height of glaciation, so much of the world's water was tied up in ice that sea

level was about 100 metres lower than it is now. The unglaciated portion of Alaska and the Yukon was broadly connected by the Bering land bridge to eastern Siberia. Totally isolated from the rest of North America by immense glaciers, this area (termed Beringia by geographers) was biologically more Asian than North American during the Pleistocene. The plants and animals that lived in Beringia were citizens of the tundra and arctic steppe, and when the intervening glaciers melted, many species dispersed down the alpine

spines of the Rockies and the Coast Mountains.

Just as some species were divided east and west by glaciation, others were split into populations north and south of the ice sheets. In British Columbia, the only bird examples of a hybrid zone in this category are the Harlan's and Red-tailed Hawks. Northern and Loggerhead Shrikes may well meet some day and may or may not hybridize, but the Bohemian and Cedar Waxwings are apparently too different in various ways to allow any significant interbreeding. Some Beringian species are still confined to the far northwest.

Several populations meet and hybridize along an east-west zone stretching through Prince George. This

WEST	EAST
Red-naped/Red-breasted Sapsuckers	Yellow-bellied Sapsucker
Northern (Red-shafted) Flicker	Northern (Yellow-shafted) Flicker
Pacific Wren	Winter Wren
Yellow-rumped (Audubon's) Warbler	Yellow-rumped (Myrtle) Warbler
Townsend's Warbler	Black-throated Green Warbler
MacGillivray's Warbler	Mourning Warbler
Black-headed Grosbeak	Rose-breasted Grosbeak
Dark-eyed (Oregon) Junco	Dark-eyed (Slate-colored) Junco
Lazuli Bunting	Indigo Bunting
Bullock's Oriole	Baltimore Oriole

Table. West-east pairs of bird species and subspecies groups that meet in British Columbia (subspecies names in parentheses)

With few exceptions (the oriole pair being one), the "eastern" member of these pairs is today the northern member and the "western" member is really the southern, mountain one. The eastern Yellow-shafted Flicker, for example, is found right across northern British Columbia and, in Alaska, extends much farther west than the western Red-shafted Flicker. This fascinating, consistent pattern is the result of the timing of deglaciation

is a textbook suture zone—a narrow band that marks the meeting of two biotas, or areas of different types of flora and fauna, that were once separated but are now in contact again. Such zones provide vital biological field laboratories for studying the great changes that have occurred over the last 100,000 years.

A number of suture zones snake across North America; three make their way into British Columbia. The longest is the zone mentioned above, where northern and eastern populations meet their western counterparts. This zone follows the 100th meridian north along the boundary of the humid eastern woodlands and the dry western plains and then swings west to the crest of the Rockies, continuing north before swinging west through central British Columbia. Another zone follows the crest of the Cascade and Coast Mountains, and a third zone marks where plants and animals of the far north-west meet their siblings of the southern mountains.

Some species pairs hybridize extensively in suture zones; others hybridize much less readily or do not even come into contact. Whether or not these pairs are new, separate species is a matter of some debate and depends on the individual circumstances as well as the various specialists' concept of what a species is. For example, Yellow-shafted and Red-shafted Flickers hybridize so widely that ornithologists generally agree that they are only well-marked, geographic subspecies. The Yellow-rumped Warbler hybridizes less frequently, and is often cited as a candidate for splitting back into its east-west parts, the Audubon's and Myrtle Warblers. The Western Flycatcher was split into Cordilleran and Pacific-slope Flycatcher, but recent studies of its genetics and vocalizations suggest that this split may have been premature.

So when you're atlassing this summer, especially if you're in the Coast Mountains, the Rocky Mountains, or anywhere across the central plateau around Prince George—watch out for mixed pairs or hybrids! They are an important and intriguing part of the bird world in British Columbia.

Identification of hybrid sapsuckers

Over the past two years I (S. S.) have been catching sapsuckers, measuring their plumage and other body features and studying several gene regions throughout British Columbia as a part of a study of hybrid zones and character variation of this group. This study also includes museum skins collected from this same region. In my opinion, the accurate field identification of adult sapsuckers in western Canada is based on the redness in

the plumage (nape, face and breast), appearance of the mantle and geographic location in the breeding season. My comments below are purely based on studies in BC, and do not deal with the southern subspecies of Red-breasted Sapsucker (*Syrphicus ruber daggetti*), or of first-year birds of any species.

Red colour patches

Crown is red in all three species in both sexes, except rarely some female Yellow-bellied Sapsuckers (*S. varius*) show no red plumes in any part of the body. Nape is red in Red-breasted Sapsucker (*S. ruber ruber*), but a prominent black band is found in other two species. Below the black band is white in most *varius*, and red in most Red-naped Sapsuckers (*S. nuchalis*). About 10% of *varius* (males) and less than 5% of *nuchalis* (mostly females), however, have the opposite colour arrangement in that region. When expressed in *varius*, the red below-nape is a narrow vertical band compared to the broad red band goes across the neck in *nuchalis*. Similarly the 'white-naped' *nuchalis* has muddy, off-white feathers in the nape below the black band.

The chin and throat are the next places to look at. Chin and throat are red in males of all three species (Fig 2). In females; *ruber* has red chin and throat, *varius* does not have any red in these regions, and *nuchalis* has a red throat and a white chin (Fig 3). However the extent of white in the chin is highly variable in the latter and could hinder the identification of the sex – the white chin is prominent in most females but in some individuals (~30%) it is been reduced to a few white feathers at the bill base. Several second-year females of all three species have a scaly chin and throat that looks pale from a distance.

Both sexes of *ruber* have red in the face and a black patch near the ear, hence no distinct supercilium, or a black sub-moustachial band lining the throat. Female *ruber* has some black in the sides of the face between the eye and the ear, less red in the nape and the white moustache runs well beyond the base of the eye (Fig 3). Some females have several white feathers above the eye – reminiscent of a white supercilium. In males, the white moustache is limited to the base of the nares to the base of the eye, and in some individuals the white near the nares is stained with red. Both sexes in *varius* have a white supercilium and a white moustache bordered with black bands. The supercilium is contiguous with the white nape and the moustache continues down the breast sides to the belly, bordering the black breast 'bib'. Female *nuchalis* has a similar face pattern to *varius*. Male



S. ruber



S. nuchalis



S. varius



S. ruber X S. nuchalis



S. ruber X S. varius

Fig 2: Male sapsuckers and some examples of hybrids.

nuchalis however do not have a complete sub-moustachial band bordering the lower white moustache (Fig 2), which is a reliable identification feature for male nuchalis. In both sexes of latter the supercilium, black behind the eye and moustache can show a few red feathers (Figs 2 & 3). The same is true for the black bib of nuchalis. The black bib of varius is clean black and broad, contrasting strongly with the yellow belly and white sides. Some females of both species have white tips to the breast feathers giving a scaly appearance (Fig 3). Ruber completely lacks the black bib, however some females show faint dark shading as the bib.

Mantle and back

The mantle of ruber is black with a two rows of yellow-white patches running longitudinally, covering 5-30% of the mantle-back. The yellow-white patches can be replaced by yellow and in some birds (I think mostly in the birds of northwestern rainforests) by red, giving the back a much darker appearance than the other two species (Fig

3). In my opinion the best field identification feature for nuchalis and varius is the white patterning on the mantle-back. Varius has extensive white in the mantle (60-80% of the area) spreading more or less evenly in a 'V' shape, comprising fine black and white lines. Nuchalis in the other hand, has more squareish/blotched

white patches aligned in two vertical rows as in ruber. The extent of white in nuchalis is 40-70% (Fig 2).

The belly of ruber is always sulphur yellow. Varius and nuchalis have a yellowish belly but sometimes it is paler and looks whitish.

Geographic location

Pure ruber are found in the west to the crest of the Coast Mountains, northwest of the Chilcotin Plateau all the way to the Alaskan border, on Vancouver Island and Haida-Gwaii. Pure-ish nuchalis are in interior and southern BC, west of the crest of The Rockies, south of Highway 1 and east of the Fraser Valley. The Peace region and northeastern BC east to the crest of The Rockies is where pure varius is found. The intervening areas of BC are where the meeting of these three species taking place – the hybrid zones - the focus of my study.



Female *S. ruber*



Female *S. nuchalis*



Female *S. varius*



S. ruber



S. nuchalis



S. varius

Fig 3: Female sapsuckers and the back of males to illustrate the differences of the mantle.

Regions of hybridization

- The Eastern slope of the Coast Mountains support ruber, nuchalis and their hybrids. The hybrid zone of ruber and nuchalis on the Chilcotin Plateau seems to lie near Anahim Lake, however hybrids of these two species are found across the plateau, intermixed with pure nuchalis.
- Prince George, north of Prince George, and the area from northeast of Francoise Lake (Burns Lake, Fort St. James and Mackenzie) support ruber, varius and their hybrids. Birds in Francoise Lake and Burns Lake look like ruber but they have hybrid genotypes. The theoretical centre of the ruber-varius hybrid zone lies about 50km west of Mackenzie.
- East of the crest of Rockies (mainly in the Kananaskis – Lethbridge area up to Drumheller) lies the

hybrid zone of varius and nuchalis. Sapsuckers in all these regions need special attention to the plumage in the nape, breast, face and mantle for accurate identification of their origins.

Hybrids

- Ruber-like hybrids are the hardest to identify in the field as some of them have the plumage of a pure female ruber (as seen in the Francoise Lake – Burns Lake area). However in general, ruber-like hybrids (hybridized with either varius or nuchalis) have a faint but long pale moustache, more black near the eye and a faint supercilium. Most of them have a discontinuous black nape and a faint blackish bib.

- Nuchalis-like hybrids of the ruber-nuchalis hybrid group have a discontinuous black nape (sometimes black nape is absent) and a discontinuous black bib. The black plumage in these areas and the face is somewhat replaced by the red plumes. The white moustache and supercilium also shows some red feathers (Fig 2). The bill appears to be slightly longer than the nuchalis, and the mantle appears a bit darker. Pure-ish nuchalis also sometimes express few red feathers in the face and breast, making these features inconclusive for confirming hybrid status (this is where genes come in handy!).

- The ruber-varius hybrids frustratingly have the same features listed above for the ruber-nuchalis hybrids. The things to focus on are the 'whitish' fine-barred mantle (Fig 3) and the geographic location. The varius-nuchalis hybrids have a darker mantle than the pure types and disrupted black sub-moustache below the prominent white moustache. As mentioned above, the red below-nape is confusing and not a good primary feature to determine hybrids between varius and nuchalis.

WANTED! SWALLOW COLONY LOCATIONS

by Nancy Mahony Research Biologist, Environment Canada

Environment Canada is interested in enlisting the help of Atlasers in documenting locations and colony sizes of colonial swallows including Barn, Cliff and Bank Swallows. Many swallow species, especially the colonial ones appear to be declining across many regions of Canada and Atlas projects provide the perfect opportunity for acquiring the baseline data necessary for exploring the rates and causes of decline. Therefore, please remember to use the colonial species form to document confirmed breeding colonies for these species.

Current Atlas guidelines ask for colonial species cards for Bank Swallow colonies of 100 or more nests or Cliff Swallow colonies of 8 or more nests. Barn Swallows are not currently on the colonial species form, as they may nest singly or in fairly loose colonies. However, due to the conservation concern for these species, documenting any sized colony for these species would be helpful. Where Barn Swallows are nesting singly, documentation is not necessary.

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