2017 BC Conservation Status Rank Review and Changes

Invertebrate and Vertebrate Animals

A highlight this year is the inclusion of several new invertebrate groups!

This is a result of the federal General Status program which has a mandate to identify and assess the state of all of the species that occur in Canada. This project will likely be ongoing for many years. One of the benefits of this enormous task is that B.C. now has up to date lists for many of the invertebrate groups including indication of what occurs in the B.C. and for select species and groups where data were sufficient, a provincial conservation status rank (S-Rank).

The level of confidence in the assigned Conservation Status Rank for each of the groups varies widely and the CDC has provided comments within the downloadable pdf document with regards to this. These species have not been assigned to the red or blue list at this time since we do not currently have the capacity to actively track them. Note that most these groups have not been rigorously vetted by the BC CDC, exceptions being the tiger beetles and the *Bombus* (bumble) bees. We look forward to incorporating new data into the assessment process for these lesser known groups to strengthen the confidence around the assessments. These lists and ranks will provide the basis for further refinement and research.

Most of the amphibians and some populations or subspecies of birds and mammals were reviewed this year.

Invertebrates:

Ants, Bees and Wasps (Hymenoptera)

Ants

There are 104 known ant species in BC, seven of those are introduced. For most of these there is either enough data to know that they are fairly widespread in a variety of habitats and therefore not at risk, or there is so little known that they have been assigned an “SU”, or an unknown rank.

The taxonomic standards that were used were:

Bolton, B., G. Alpert, P.S. Ward and P. Naskrecki. 2003. Bolton’s Catalogue of the Ants of the World 1758 – 2005. Harvard University Press: 504 pp.

Bolton, B. 2003. Synopsis and classification of Formicidae. Memoirs of the American Entomological Institute: 370 PP. Gainesville, FL

Bees

There were a total of 429 bees added to the database.

The ranks that are associated with most of the bees were determined via the General Status program and have not been fully reviewed by the CDC. Spot checking indicated that they should be correct, or at least accurate relative to each other. The bees in the genera *Bombus* have had a thorough internal review and as such occur on the red, blue and yellow lists where appropriate. There are two species on the red list. *Bombus morrisoni* (Morrison Bumblebee) has not been collected since 1922 and is only known from a few specimens in the Lillooet, Ashcroft and Kamloops area. Six species are on the blue list. There is one introduced species of *Bombus*.

Wasps (Family Vespidae)

Sixty-six species of wasps from the Family Vespidae were added. These are the paper, mason, pollen and potter wasps, as well as the hornets. The General Status ranks that have been assigned have not been reviewed by the CDC. Most are likely less at risk than indicated, however their prevalence relative to each other appear accurate.

Major taxonomic references consulted by the author were:

Buck, M., S.A. Marshall and D.K.B. Cheung. 2008. Identification atlas of the Vespidae (Hymenoptera, Aculeata) of the northeastern Nearctic region. Canadian Journal of Arthropod Identification.

Kimsey L, Carpenter J (2012). The Vespinae of North America (Vespidae, Hymenoptera). Journal of Hymenoptera Research 28: 37-65. https://doi.org/10.3897/jhr.28.3514

Beetles (Coleoptera)

We had previously listed just the tiger beetles as they were relatively a well-known and manageable group at 17 species. We now have all of the known B.C. beetles –a whopping 3887 species! The ranks that are associated with the beetles were determined via the General Status program and have not been fully reviewed by the CDC. Spot checking indicated that they should be correct, or at least accurate relative to each other. The tiger beetles which include the genera *Cicindela, Omus* and *Coccinella,* have had a thorough review and as such occur on the red and blue list where appropriate.

The main taxonomic reference used was:

Bousquet, Y., Bouchard, P., Davies, A. E., Sikes, D. S. 2013. Checklist of beetles (Coleoptera) of Canada and Alaska, second edition. Pensoft Series Faunistica No 109: 402 pp.

Butterflies (Lepidoptera)

- **Silver -spotted Skipper, *Epargyreus clarus californicus:*** this subspecies had not been recorded in its range on the B.C. coast for at least 50 years; however, it was recently identified from a photograph taken on Cortes Island in 2014 (C. Guppy, pers. comm. 2017). The rank changed from SH to S1. This will be a priority for inventory to determine its extent on Cortes Island and to also take a hard look in areas where it had been previously collected.

Caddisflies (Trichoptera)

The ranks as given by the General Status Program reflect our state of knowledge about this group. The ones that have been well collected or are found across a broad range are S4S5 and if there have been few collections and no information about the habitat, the rank is unknown (SU), with a few exceptions.

The main reference that was used to build this list of 324 species was:

Nimmo, A.P. & Scudder, G.G.E. (1978). An annotated checklist of the Trichoptera (Insecta) of British Columbia. Syesis 11: 117-134.

Taxonomy was based on:

Morse, J. C. (Ed.). 2014. Trichoptera World Checklist. Clemson University Arthropod Collection. Http://www.clemson.edu/cafls/departments/esps/database/trichopt/index.htm.

Lacewings (Neuroptera)

We have 79 known species of Lacewings in B.C. There are five that are introduced (SNA). Most have not been ranked (SNR) at this point with a few exceptions where the data made it clear that they were widespread and common.

The taxonomic reference used for the Lacewings:

Oswald, J. D. (Ed.). 2014. Lacewing Digital Library. Department of Entomology, Texas A&M University. Http://lacewing.tamu.edu/index.html.

Mayflies (Ephemeroptera)

There are 98 known species of mayfly in B.C. The majority of ranks are unknown. SNR (not ranked) has been given to species where there appears to be adequate data but not yet the time to provide a rank.

Major taxonomic references consulted by the author were:

McCafferty, P., Jacobus, L. M. 2014. North America Mayfly Species List. Mayfly Central, Purdue University. Http://www.entm.purdue.edu/mayfly/na-species-list.php.

Stoneflies (Plecoptera)

Just under half of the province's 146 species of stoneflies had enough data to be able to assess them as not at risk. The rest are either unknown or they have not been ranked yet.

DeWalt, R. E., Maehr, M. D., Neu-Becker, U., Stueber, G. 2013. Plecoptera Species File Online, version 5.0/5.0. Http://Plecoptera.SpeciesFile.org.

True Flies (a selection of Diptera)

- **Bee Flies (Bombyliidae)**

There are 70 species of Bee Flies known in B.C. Many are pollinators and are often bee mimics. Many of the ranks reflect the lack of survey effort for this group.

The taxonomic resource used for this group was:

Evenhuis, N. L., Greathead, D. J. 2003. World catalog of bee flies (Diptera: Bombyliidae) web site. Bishop Museum, Hawaii. Http://hbs.bishopmuseum.org/bombcat/.

- **Blackflies (Simuliidae)**:

The Blackflies are important economically and have had a number of researchers working on them over the years. This provides a greater degree of confidence in the S ranks. Of the 81 species in B.C., 58 have been ranked as secure or likely secure and 13 are unknown. The remainder have a range rank or are known to only occur in habitats that are at risk.

The taxonomy is based on:

Adler, P. H., Crosskey, R. W. 2014. World blackflies (Diptera: Simuliidae): a comprehensive revision of the taxonomic and geographical inventory. Clemson University: 122 pp.

Adler, P.H., D.C. Currie and D.M. Wood. 2004. The Black Flies (Simuliidae) of North America. Cornell University Press, Ithaca, NY.

- **Mosquitos (Culicidae):**

There are 46 species of mosquitoes in B.C. and, like the Blackflies, are relatively well known compared to other insect groups. There is one introduced species, *Aedes togoi* from Japan.

The taxonomic resource used for this group was:

Gaffigan, T. V., Wilkerson, R. C., Pecor, J. E., Stoffer, J. A., Anderson, T. 2015. Systematic Catalog of Culicidae. Walter Reed Biosystematics Unit. Http://www.mosquitocatalog.org.

- **Horse Flies and Deer Flies (Tabanidae)**:

Another one of the “biting fly” groups are the Deer and Horse Flies. There are 64 species found in B.C.

The taxonomic references used for this group were:

Thomas, A. W., Marshall, S. A. 2009. Tabanidae of Canada, east of the Rocky Mountains 1: a photographic key to the species of Chrysopsinae and Pangoniinae (Diptera: Tabanidae). Canadian Journal of Arthropod Identification 8. Http://cjai.biologicalsurvey.ca/tm_08/tm_08.html.

Thomas, A. W. 2011. Tabanidae of Canada, east of the Rocky Mountains 2: a photographic key to the genera and species of Tabaninae (Diptera: Tabanidae). Canadian Journal of Arthropod Identification 13. Http://cjai.biologicalsurvey.ca/t_13/t_13.html.

Vertebrates:

Amphibians

Twenty B.C. amphibians were reviewed this year which resulted in rank changes for 10 species. **Boreal Chorus Frog and Great Basin Spadefoot** will be ranked next year, when further information is gathered.

Since the last rank assessment, more information became available as a result of COSEWIC reports and expert threats assessments:

- **Wandering Salamander:** Data from the 2014 COSEWIC report was used, as well as an expert threats assessment**.** Threats were higher than previously estimated. The rank changed from S3S4 to S3 and this species remains on the blue list.

- **Western Toad:** During the last rank assessment, we estimated a score of "High" for threats based on the presence and concerns about Bd. Bd, *Batrachochytrium dendrobatidis*, is a fungus that causes the disease chytridiomycosis in amphibians. Since then, there has been a COSEWIC status report (2012) and an expert threats assessment, which included impacts of Bd. The threats were lower than previously estimated, taking this wide-ranging species from S3S4 to S4. It will now be on the yellow list, but will be assessed regularly in case there is a change in threat or trend.

- **Rocky Mountain Tailed Frog**: Data from the 2013 COSEWIC report was used, as well as an expert threats assessment**.** This species moved from S2 to S2S3 and is now on the blue list. Factors in this change include short-term trends (changed from a decline of 10-30% to unknown, until further research is conducted) and the excellent news that new locations are being found as a result of Edna surveys.

- **Coastal Tailed Frog:** Data from the 2011 COSEWIC report was used, as well as an expert threats assessment. This species changed from S3S4 to S4 which takes it off the blue list and on to the yellow list. New locations are being found as a result of eDNA surveys.

- **Northern Red-legged Frog:** Data from the 2015 COSEWIC report was used, as well as an expert threats assessment. Threats are higher than previously estimated. This species changed from S3S4 to S3 and remains on the blue list.

- **Coastal Giant Salamander:** Data from the 2014 COSEWIC report was used, as well as an expert threats assessment. This species changed from S2 to S2S3, which takes it off of the red list and on to the blue list.

The following species had slight rank changes, and remain on the yellow list. The changes were the result of small tweaks and refinement of the criteria.

- Pacific Chorus Frog (S5 to S4S5)
- Columbia Spotted Frog (S4 to S5?)
- Wood Frog (S4 to S4S5)
- Long-toed Salamander (S4S5 to S5)

Birds:

There were changes in the following four subspecies of birds.

- **Northern Goshawk, *atricapillus* ssp.** Intensive inventory and monitoring of the mainland subspecies of Northern Goshawk in the northwestern region of BC has shown significant declines and repeated nest failures. A detailed threat assessment involving experts across the province indicated the overall threats were very high. Putting this all together resulted in a rank change from S4 to S3S4 and it is now on the Blue List.

- **Western Screech-owl, *macfarlanei* and *kennicotti* subspecies**. Both subspecies were assessed and both had small changes based on more inventory completed and detailed threats assessments made since the last assessments in 2009. The coastal subspecies, *kennicotti* went from S3 to an S2S3, based on declines in the southern portion of its range and high to very high threats. The interior subspecies has been found over a slightly larger range than previously thought and had medium to high threats based on an expert assessment.

- **Horned Lark, *merrilli* ssp.** had a small tweak with a change of S3S4 to S3?. The slight increase in imperilment is a result of increased threats and possible declines.

Mammals

- **Caribou:** The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) did a re-evaluation of the designatable units of Caribou in Canada and based on this analysis the province followed suit. We now have four populations whereas in the past there were three ecotypes considered (Fig. 1).

    - **Central Mountain Caribou**: This is the first year that this population of caribou was assessed provincially. This new grouping was ranked S1S2 (red list) and consists of six herds in B.C. that have undergone precipitous declines in the past 20 years and has a number of ongoing threats.

    - **Boreal Caribou**: With an updated expert threat assessment, new numbers and trends the rank was tweaked from S2 to S2? It remains on the red list.

- **Stone's Sheep** was an S4 and is now S3S4 (blue listed). A thorough threats assessment was completed and these came out high. A couple of the higher ranking threats were the risk of disease transmission from domestic sheep and goats and

climate change implications that result in increased frequency of icing events (making winter range forage inaccessible) and heavy snowfall events.