2018
BC Conservation Status Rank Review and Changes

Vascular Plants

• There were 32 vascular plants added to the Flora. The majority of additions in 2018 were the result of the establishment of 21 new Exotic species (including domestic cabbage and grapes, and Atlantic ivy). Additions also resulted from taxonomic work and herbarium reviews and a new field discovery (Canadian St. John's wort).

• There were 21 vascular plant taxa removed from the BC Flora. These are no longer considered part of the flora of BC due to re-identifications of herbarium specimens, misapplied names, and lack of specimens to adequately document the presence in the province.

• A total of 111 scientific names were changed. Changes included taxonomic splits and lumps (ca. equal numbers of these), genus transfers (e.g. *Minuartia* to *Sabulina*), and relocations of infraspecific ranks (i.e. from variety to subspecies or subspecies to variety)(Flora of North of America Editorial Committee (1997, 2002, 2003, 2005, 2007, 2009, 2010, 2014, 2015), Jepson e-flora, Pan Arctic Flora, and variety of primary literature listed below).

• Provincial conservation status ranks for 203 vascular plant taxa were reviewed and adjusted. Twenty-one were reviewed but the ranks remained the same.

Bryophytes

- There were three moss taxa added to the Flora, all of which were new field discoveries, one on Galiano Island by Olivia Lee of UBC Herbarium in 2017, and two on Pink Mountain (Wu et. al. 2018).
- An informal review of the hornwort species of BC—based on herbarium records, examination of a limited number of recently-collected specimens, and literature review—resulted in some updates and highlighted future work that needs to be conducted prior to refining the ranks. Recent morphological and molecular research on the hornworts of North America has led to numerous taxonomic updates, but none of the published studies incorporated specimens from BC. We conclude that *Phaeoceros oreganus* and *Paraphymatoceros pearsonii* are in BC, and that *Paraphymatoceros hallii* is only potentially present with no current specimens/field localities containing material that is confirmed as this species. These conclusions may be challenged by future specimen review and there may be more species of hornworts present in the province, including *Anthoceros agrestis, Phaeoceros carolinianus, and Paraphymatoceros proskauri.* One hornwort previously thought to be present, *Phaeoceros laevis* (syn. *Anthoceros laevis*), has been excluded from the North American flora (Stotler, R.E., & B. Crandall-Stotler, 2005; Söderström, L. et al. 2016). The BC material previously identified as this may represent *Paraphymatoceros hallii*, *P. pearsonii*, or possibly the intermediate species, *P. proskaurii*, which is currently known only from California. Curation of the specimens, verification by taxonomic specialists, and continued field observations will allow us to definitively assign meaningful conservation ranks to the hornworts in the province in 2019.

• There was only the one scientific name that was changed in the Bryophytes: *Phaeoceros hallii* became *Paraphymatoceros hallii*.

• Provincial conservation status ranks for three hornworts were reviewed and adjusted.

Macrolichens

• There was one macrolichen added and three were removed from the lichen list for BC.

• Four scientific names were changed: three *Dendriscocaulon* species were lumped into a single species, and one variety is now being treated as a species (*Bryoria americana*).

• Provincial conservation status ranks for 99 macrolichens were reviewed and adjusted. 125 were reviewed but the ranks remained the same.

References

Vascular Plants

Anderberg, A. A., Manns, U. & Källersjö, M. 2007. Phylogeny and floral evolution of the Lysimachieae (Ericales, Myrsinaceae): evidence from ndhF sequence data. Willdenowia 37: 407-421.

Babcock, E.B., & G.L. Stebbins. 1938. The American Species of *Crepis* their interrelationships and distribution as affected by polyploidy and apomixes. Carnegie Institution of Washington Publication No. 504.

Batten, pers. comm. 2017. Ryan Batten. Beacon Botanical Research. Victoria, BC.

Brummitt. 2011. Report of the nomenclature committee for vascular plants - *Aster bracteolatus*. Taxon 60 (1): 226-232.

Carex working group. 2015. Making *Carex* monophyletic (Cyperaceae, tribe Cariceae): a new broader circumscription. Botanical Journal of the Linnean Society, 2015,179, 1–42.

Chambers, K.L. and S.C. Meyers. 2011. Nomenclatural changes for some taxa in the Oregon flora. Journal of the Botanical Research Institute of Texas 5(2):619-623.

Chiapella, J. 2007. A Molecular Phylogenetic Study of *Deschampsia* (Poaceae: Aveneae) Inferred from Nuclear ITS and Plastid trnL Sequence Data: Support for the Recognition of Avenella and Vahlodea. Taxon. Vol. 56, No. 1, pp. 55-64.

Chinnappa, C.C., G.M. Donald, R. Sasidharan, and R.J.N. Emery. 2005. The biology of Stellaria longipes (Caryophyllaceae). Canadian Journal of Botany, 83: 1367-1383.

Dillenberger, M.S. & Kadereit, J.W. 2014. Maximum polyphyly: Multiple origins and delimitation with plesiomorphic characters require a new circumscription of *Minuartia* (Caryophyllaceae). Taxon 63: 64–88. http://dx.doi.org/10.12705/631.5

Elven, R, D.F. Murray, V.Y. Razzhivin, & B.A. Yurtsev. 2011. Annotated Checklist of the Panarctic Flora (PAF) Vascular plants version 1.0. Accessed online September 2017.

Emadzade, K., Lehnebach, C., Lockhart, P. and Hörandl, E. 2010. A molecular phylogeny, morphology and classification of genera of Ranunculeae - TAXON 59 (3) 809–828

Eriksson, T. and Donoghue, M. 1997. Phylogenetic Relationships of *Sambucus* and *Adoxa* based on Nuclear Ribosomal ITS Sequences and preliminary Morphological Data. Systematic Botany, Vol. 22, No. 3, pp. 555-573.

Fenneman, pers. comm. 2017. Jamie Fenneman. PhD candidate Botany Dept. University of British Columbia, Vancouver, BC.

Flora of North America Editorial Committee, eds. 1993+. Flora of North America North of Mexico. 20+ vols. New York and Oxford. Vol. 1, 1993; vol. 2, 1993; vol. 3, 1997; vol. 4, 2003; vol. 5, 2005; vol. 6, 2015; vol. 7, 2010; vol. 8, 2009; vol. 9, 2014; vol. 12, 2016; vol. 19, 2006; vol. 20, 2006; vol. 21, 2006; vol. 22, 2000; vol. 23, 2002; vol. 24, 2007; vol. 25, 2003; vol. 26, 2002; vol. 27, 2007; vol 28, 2014.

Foster, B. 2015. A Taxonomic Reevaluation of Trifolium variegatum Nutt. Based on Morphology. Electronic Thesis or Dissertation. Miami University, 2015. https://etd.ohiolink.edu/

Frajman, B., Thollesson, M. and Oxelman, B. 2013. Taxonomic revision of *Atocion* and *Viscaria* (Sileneae, Carophyllaceae). Botanical Journal of the Linnean Society 173: 194-210.

Fuentes-Bazan, S., Uotila, P. and Borsch, T. 2012. A novel phylogeny-based generic classification for *Chenopodium* sensu lato, and a tribal rearrangement of Chenopodioideae (Chenopodiaceae). Willdenowia 42(1):5-24.

Kirschner, J. 2002. Species Plantarum: Flora of the World - Part 6: Juncaceae (Parts 1-8). Environment Australia, Department of Environment and Heritage, Canberra, AU. Lammer (2007).

Lomer, pers. comm. 2017,18. Frank Lomer. Botanist. New Westminister, BC.

Marr, pers. comm. 2017. Dr. Ken Marr. Curator of Botany Royal BC Museum. Victoria, BC.

Mosyakin, S. 2016. Nomenclatural notes on North American taxa of *Anemonastrum* and *Pulsatilla* (Ranunculaceae), with comments on the circumscription of Anemone and related genera. Phytoneuron. 79: 1-12.

Nesom, G. 2017. Taxonomic review of the *Erythranthe moschata* complex (Phrymaceae). Phytoneuron 17: 1–29.Pan Arctic Flora.

Roemer, pers. comm. 2017. Dr. Hans Roemer. Retired Botanist/Ecologist. Victoria, BC.

Saarela, J. 2008. Taxonomy of *Bromus* sections *Bromopsis, Bromus*, and *Genea* in British Columbia. Journal of the Botanical Research Institute of Texas.

Schuster, T., Wilson, K. and Kron, K. 2011. Phylogenetic relationships of *Muehlenbeckia, Fallopia* and *Reynoutria* (Polygonaceae) investigated with chloroplast and nuclear sequence data. Int. J. Pl. Sci. 172: 1053–1066.

Semple, J.C., Y. Ma, and L. Tong. 2016. On *Solidago simplex* (Asteraceae: Astereae): A multivariate study including *S. glutinosa, S. leiocarpa, S. multiradiata*, and *S. spathulata*. Phytoneuron 2016-87: 1–2

Testo, W., Haines, A and Gilman, A. 2016. *Huperzia continentalis* (Lycopodiaceae), a New Species of Gemmiferous Firmoss Separated from *Huperzia haleakalae*. Systematic Botany 41(4):894-901.

Villaverde, T. et al. 2015. Direct long-distance dispersal best explains the bipolar distribution of *Carex arctogena*. Journal of Biogeography 42, 1514–1525.

Wilson, B.L., R.E. Brainerd, D. Lytjen, B. Newhouse, & N. Otting (of the Carex Working Group) 2008. Field Guide to the Sedges of the Pacific NW.Oregon State University Press. Corvallis.

Zika, P. 2006. *Impatiens x pacifica* (Balsaminaceae), a new hybrid jewelweed from the Pacific Northwest coast of North America. Novon 16:443–448.

Zomlefer, W. and Judd, W. 2002. Resurrection of segregates of the polyphyletic genus *Zigadenus* s.l. (Liliales: Melanthiaceae) and resulting new combinations. Novon 12(2): 299-308. 2002. (8 Jul 2002).

Bryophytes

Söderström, L., A. Hagborg, M. von Konrat, S. Bartholomew-Began, D. Bell, L. Briscoe, E. Brown, D. C. Cargill, D. Pinheiro da Costa, B. J. Crandall-Stotler, E.Dante Cooper, G. Dauphin, J. Engel, K. Feldberg, D. Glenny, S. Robbert Gradstein, X. He, J. Heinrichs, J. Hentschel, Anna Luiza Ilkiu-Borges, Tomoyuki Katagiri, Nadezhda A. Konstantinova, Juan Larraín, D. Long, M. Nebel, T. Pócs, F. Puche, E. Reiner-Drehwald, M. Renner, A. Sass-Gyarmati, A. Schäfer-Verwimp, J. Gabriel Segarra-Moragues, R. E. Stotler, P. Sukkharak, B. Thiers, J. Uribe, J. Váňa, J. Villarreal, M. Wigginton, L. Zhang, and R. Zhu. 2016. World checklist of hornworts and liverworts. PhytoKeys 59: 1–828.

Stotler, R.E., & B. Crandall-Stotler. 2005. A Revised Classification of the Anthocerotophyta and a Checklist of the Hornworts of North America, North of Mexico. The Bryologist 108(1): 16-26.

Wu, E.T.Y., D.P. Mosquin, and R.D. Guy. 2018. An inventory of bryophytes on the summit of Pink Mountain (Peace River District, British Columbia, Canada). Western North American Naturalist. Vol. 78. No. 1.

Macrolichens

Björk, pers. comm. 2018. Curtis Björk. Enlichened Consulting Ltd. Clearwater, BC.