Oil Sands Vegetation Cooperative

In This Issue:

2019 Harvest

NAOS

aspen—14.5 L
beaked willow—23 L
buffaloberry—53 L
saskatoon—31.75 L
dwarf blueberry—36 L
pin cherry—15.5 L
dogwood—45 L
chokecherry—10 L
twinflower—1.75 L
paper birch—22.25 L
Labrador tea—37 L
currant/gooseberry—84.39 L
green alder—15 L
bog cranberry —22L
lowbush cranberry —39.75 L
Total: 450.89 L

SAOS—no harvest in 2019
COLK—no harvest in 2019

Species of Interest

Bunchberry is a common herbaceous perennial found under pine across Canada. The four white 'petals' are actually bracts and each of the tiny points in the center is a flower. Even more interesting, the four filaments are fused at the anthers, bending and tightening prior to ejecting their pollen into the air, allowing the wind to drift it more than a metre away (Whitaker and others 2007). (Take a look at high speed footage on YouTube!) Flowers that appear black have ejected their pollen to reveal the dark purple style, while those that are white still hold their stamens united, ready to let the pollen fly. Later in the season, each of these tiny flowers may develop a bright orange fleshy fruit containing a single seed. A carpet of these orange berries is common sight in late August and September. Although quite dissimilar from its relative, red-osier dogwood, a commonality is the distinctive leaf venation which appears parallel but is more accurately described as pinnately bowed. The seed of bunchberry is orthodox, meaning it can be stored for long periods once dried and frozen. The species is also rhizomatous, forming large mats by expansion of underground stems. It is possible for pieces of rhizomes in placed topsoil to initiate a new population on reclaimed sites. Although bunchberry was nominated to be Canada's national flower, the maple remains our botanic representative.

Whitaker, D. L., L. A. Webster, and J. Edwards. 2007. The biomechanics of Cornus canadensis stamens are ideal for catapulting pollen vertically. Functional Ecology. Vol 21: 219-225.

Publications of Interest

Jean, S.A. 2019. Resiliency of boreal forest tree species on a reclaimed oil sands mine and natural forest stands in northeastern Alberta. MSc Thesis, Department of Renewable Resources, University of Alberta, Edmonton, AB. 71 pages. (full document)

Dhar, A., P.G. Comeau and R. Vassov. 2019. Effects of cover soil stockpiling on plant community development following reclamation of oil sands sites in Alberta. Restoration Ecology 27(2): 352-360. (link only)

Sobze, J-M., C.K. Yucel, A. Smreciu and K.Gould. 2019. Effect of cold stratification on germination of 9 boreal sedges. Native Plants Journal 20 (1): 5-13. (link only)

Natural Colonization of a Syncrude Reclaimed Forest Stand by Bunchberry

Cornus canadensis is one of the boreal native understory species that colonizes naturally on reclaimed upland sites. According to Craig Farnden (Syncrude Canada Ltd, R&D – Mine Closure Research) several patches of this species have been observed on the Syncrude Mildred Lake lease. Two of the larger colonies are pictured below with information related to the sites on which they occur.

Syncrude Reclamation Area

Left ->

- Near crest of MLSB tailings dyke – substrate material is tailings sand
- Reclamation soil is 10 cm peat over 40 cm fine textured subsoil (1993)
- Planted to aspen in 1994
- Slope = 15%, aspect = east

<- Right

- Medium textured overburden
- Reclamation soil is 100 cm peat-mineral mix
- Planted to spruce and aspen in 1992
- Slope 5 to 10%, S aspect

Syncrude Reclamation Area

In both cases, Craig describes the stands as having continuous tree canopies, but with only a moderate level of canopy density – sufficient light comes through to support vigorous shrub and forb growth. The circumference of the colony pictured in the lower photo has been flagged such that further spread can be measured over time.

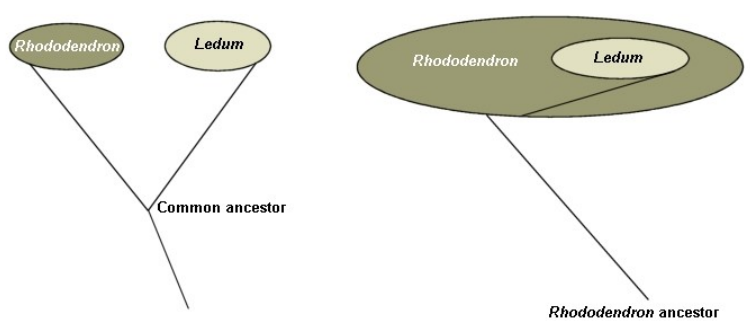
10 years of Cooperation

In 2019, the OSVC conducted our 10th harvest. To date, we have banked seeds of 50 species, with enough stored seed to grow 31.6 million seedlings. We look forward to many more years collaborating and improving our seed collection efforts and associated research to enhance the creation of functioning plant communities throughout the oil sands region.

To learn more about the OSVC, go to http://www.cosia.ca/oil-sands-vegetation-cooperative
For information regarding this newsletter, please contact kim.wildrose@shaw.ca

Taxonomy—Why is it *Rhododenron* and not *Ledum*?

Scientific names are relied upon to provide a universal language when it comes to species. However, they are not set in stone and a species' scientific name (especially the **genus** name) can change as more phylogenetic information becomes available. A great example is Labrador tea. Previously this species, and its closest relatives, were grouped into their own **genus**, *Ledum*, because it appeared so different from the rest of its relatives, *Rhododendron*. Classification of species trace down through common ancestry, so this arrangement presumed that the species of *Ledum* had a different ancestor than *Rhododendron*. However, genetic analysis reveals that rather than a separate branch, *Ledum* species are a subset of *Rhododendron*. This necessitated a change from *Ledum groenlandicum* to *Rhododendron groenlandicum*.



There are other rules governing the naming of **species**. These can be found in the International Code of Botanical Nomenclature. One rule dictates that a species reverts to its oldest given **species** name. This is the case is the recent change from *Alnus viridis* to *Alnus alnobetula*. This species was first named in the 1700s under the **genus** *Betula*. *B. alnobetula*, named in 1783 by Ehrhorn is older than *B. viridis* as named by Chaix in 1785. Until a recent study by Joyce Chery, this older name was not recognized. Now VasCan (Database of Vascular Plants of Canada) uses *A. alnobetula* as the accepted name for green alder.

Scientific names are hypotheses about how species are related to one another. Originally these hypotheses were based entirely on observable physical traits. In recent years (the last century) DNA analysis has allowed us to refine these hypotheses, and the refinement is not finished yet. We can expect more adjustments to fit species into genera and families.

Chery, J. 2015. New Nomenclature combinations in the green alder species complex (*Betulaceae*). PhytoKeys 56: 1-6.

Vegetative Propagation Update

The OSVC conducted a pilot trial to assess the feasibility of rooting softwood (or semi-softwood) cuttings of beaked hazelnut and lowbush cranberry. We have had some success with both species using StimRoot™ hormone treatment and application of mist. Although this preliminary trial is not rigorous enough for statistical analysis, a greater percentage of cuttings rooted when treated with hormone and when placed under mist compared with an open greenhouse bench. The result was more clear with lowbush cranberry cuttings, which rooted better overall (up to 90%). Hazelnut cuttings are somewhat less successful (up to 40%) but still encouraging. Further work is required to examine growth and development following rooting.

Also of Interest:

- NAIT Boreal Research Centre has taken and rooted cuttings from young dogwood seedlings. Little or no treatment was needed for these to quickly develop roots and new shoots.
- At CNRL, an opportunity arose to directly transplant lowbush cranberry plants on a newly reclaimed site. Although all existing leaves were shed, new shoots were observed before the end of the growing season.