



In This Issue:

2017 Harvest

Species of Interest—shrubby cinquefoil (*Dasiphora fruticosa*)

Phenology and Climate Change

Large White Ground Cherry (*Leucophysalis grandiflora*): A Wildfire Survivor

2017 Harvest

NAOS

76 L green alder
35.75 L river alder
72.55 L Saskatoon
46.5 L bearberry
30.75 L resin birch
40.5 L buffaloberry
10 L beaked hazelnut
32.25 L dogwood
6 L shrubby cinquefoil
35.25 L chokecherry
11 L Labrador tea
5.35 L currant/gooseberry
12.25 L prickly rose
0.75 L dewberry
21.25 L dwarf blueberry
26 L bog cranberry
52.5 L lowbush cranberry

Total: 516.65 L

SAOS

119 L green alder
TBA black spruce

COLK

No seed harvest in 2017.

Species of Interest

Dasiphora fruticosa or shrubby cinquefoil is a ubiquitous, circumpolar species found in a variety of habitats in Alberta: from moist grasslands to subalpine and north into the boreal forest and taiga shield. Although not characteristic to a particular ecosite, it is an early seral species and common on marginal sites that are often low in nutrients and higher in salinity. Shrubby cinquefoil's ability to thrive in these areas makes it an ideal species for reclamation projects, especially where coarse textured mineral soil is mixed with peat. Direct seeding trials on reclaimed sites at Mildred Lake, Aurora and Suncor were successful and seedlings bloomed within three years, making it possible for this species to spread in a very short time. Seed production

is prolific and harvest is relatively easy; flowering branchlets are cut from the parent plant and placed into breathable bags (paper or Tyvek) to dry. During drying, seeds often drop to the bottom of the bag. Seed is held on the plant into the fall allowing some flexibility in harvest timing. Germination of shrubby cinquefoil can be optimized if seeds are given a 4 week cold stratification. Seedlings have been produced reliably in nursery environments at a fill rate of 5 seeds per cavity. Out-planting success has not been monitored, but one practitioner estimated 75% survival.

This plant species has been the subject of a number of name changes over the past years which can be confusing. The following are synonyms:

Potentilla fruticosa, *Dasiphora floribunda* *Pentaphylloides fruticosa*.



Shrubby cinquefoil flower.
Photo courtesy of Wikimedia.

Publications of Interest

Kaur J, AL Schoonmaker & J-M Sobze. 2016. Length of cold stratification period affects germination in green alder (*Alnus viridis* (chaix) DC subspecies *crispa* (Aiton) Turill) seed collected from northwestern Alberta. *Native Plants Journal* 17(2):95-101.

[Link](#)

Pinno BD, EHY Li, B Khadka & A Schoonmaker. 2017. Germination and early growth of boreal understory plants on three reclamation soil types under simulated drought conditions. *Native Plants Journal* 18(2):92-105. [Link](#)

Vogt, N & A Janin. 2017. Native seed bank in Yukon: State of the Art. Yukon Research Centre. Yukon College.

Phenology

Plant phenology is the seasonal timing of each stage in the annual cycle of plant growth and development. Phenology of individual plant species varies by location. Plants take their cues for developmental processes, such as bud break, blooming and seed set, from their local climate. Phenology is extremely important to harvesters as it guides decisions regarding when to harvest.

Climate Change and Phenology

For a long time, climate change has flooded headlines and raised concerns. Climate scenarios predict not only increased summer temperatures, but also larger variation in snowfall and winter temperatures (Aerts *et al.* 2004). Understanding phenological responses of plants is a key aspect of understanding the impact of climate warming (Pop *et al.* 2000). Spring flowering and leafing dates are often a function of accumulated temperature (Delbart *et al.* 2015), which will occur earlier as temperatures increase. The effects of earlier snow melt and variation in summer and winter precipitation will affect plant development as well.

While some species are adapted to take advantage of a longer growing season (Pop *et al.*) others will be more prone to drought stress (Cahoon *et al.* 2016). Early flowering can also increase the risk of damage due to late frosts and affect seed production (Beaubien and Hamann 2011). Additionally, pollinating insects may not be present if blooming occurs too early. Phenological information for common boreal revegetation species continues to be documented by the OSVC and is used to plan annual seed collections.

In Alberta, the **PlantWatch** program, under the direction of Elisabeth Beaubien (University of Alberta), seeks to track plant responses (of specific native and non-native species) over time to contribute to the understanding of climate change effects. The majority of this work relies on the work of volunteer citizen scientists.

Aerts, R., J.H.C. Cornellissen, E. Dorrepaal, R.S.P. vanLogtestijn and T.V. Callaghan. 2004. Effects of experimentally imposed climate scenarios on flowering phenology and flower production of subarctic bog species. *Global Change Biology* 10: 1599-1609.

Beaubien, E. and A. Hamann. 2011. Spring flowering response to climate change between 1936 and 2006 in Alberta, Canada. *BioScience* 61(7): 514-524.

Delbart, N., E. Beaubien, L. Kergoat and T. LeToan. 2015. Comparing land surface phenology with leafing and flowering observations from the PlantWatch citizen network. *Remote Sensing of Environment* 160: 273-280.

Pop, E.W., S.F. Oberbauer and G. Starr. 2000. Predicting vegetative bud break in two arctic deciduous shrub species, *Salix pulchra* and *Betula nana*. *Oecologia* 124: 176-184.

[Plantwatch.naturealberta.ca](http://plantwatch.naturealberta.ca)



As plants flower earlier in response to climate change, early bloomers, such as prairie crocus, aspen and willows, are more susceptible to frost.

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

Large White Ground Cherry (*Leucophysalis grandiflora*): A Wildfire Survivor

By Patricia A. Marlowe (abridged)

Leucophysalis grandiflora (large white ground cherry), is a pyrophyte (a plant that requires fire to survive) of northeastern Alberta. It is uncommon over most of its North American range and is ranked S1 in Alberta, the highest rare plant ranking of Nature Serve (ACIMS 2015).

Studies conducted in 1988-1989 obtained no germination using typical methods. A solution of 2000 ppm of gibberellic acids resulted in satisfactory germination, but the time delay was long, 2 months (D'Arcy *et al.* 1990). Continued experimentation by the same authors found that short periods of high heat (80°C) and rapid cooling obtained good seed coat shed and germination in almost a quarter of the time.



The Canadian Forest Service's post-fire research on the Richardson River fire of 2011, found that four years after the wildfire, "Burn severity had the greatest impact on post-fire plant communities" and *Leucophysalis grandiflora* was an indicator of the highest burn severity (Pinno & Errington 2016). High severity burns provide the exposed mineral soil and heat conditions for germination.

The fire cycle in the Regional Municipality of Wood Buffalo (RMWB) is estimated to be between 35 and 80 years (Andison 2005). Because seeds from this species have a mechanism for long-term survival, with the recent Horse River Fire of 2016, ground cherry should be abundant for a few years in the RMWB. Enjoy the opportunity to view this rare plant; it could be another 80 years before it is seen again.

All photos were taken in late July 2012 near McClelland Lake by the author.



Alberta Conservation Information Management System. 2015. List of Elements in Alberta - Vascular Plants. [Link](#)

Andison, David W. 2005. Natural levels of forest age-class variability on the RSDS landscape of Alberta. Bandaloop Landscape-Ecosystem Services, Vancouver, BC. Prepared for Cumulative Environmental Management Association, Sustainable Ecosystems Working Group. [Link](#)

D'Arcy, W. G., K. Pickett, and R. Keating. 1990. Investigation into *Leucophysalis grandiflora*. Wildflower, Vol. 3, No. 2, 20–26.

Pinno, Bradley D & Errington, Ruth C. 2016. Burn Severity Dominates Understory Plant Community Response to Fire in Xeric Jack Pine Forests. Natural Resources Canada, Canadian Forest Service, Northern Forestry Centre Edmonton, Edmonton, Canada. [Link](#)

Emerald Award

In June 2017, Ann Smreciu (Wild Rose Consulting, Inc.) received an Alberta Emerald Award for her work with native plants over the last 35 years. [LINK](#)