

## BC Parks Long Term Ecological Monitoring Program ~ Monitoring Protocols

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<b>Indicator</b>	Soapberry (Soopalalie) Production Counts
<b>Measure(s)</b>	Index of soapberry ( <i>Shepherdia canadensis</i> ) production. In regions where soapberries are not common, red huckleberry ( <i>Vaccinium parviflorum</i> ) can be substituted.
<b>Justification</b>	Soapberries are an important food for grizzly bears and other mammals and birds. Soapberry production varies greatly from year to year. Soapberries are an indicator of ecosystem productivity.
<b>Description</b>	We count the number of berries produced on the exact same stems of soapberry bushes each year to give an index of soapberry production. We do not attempt to measure the total biomass production of soapberries per hectare.
<b>Measurement Frequency</b>	Once per year, when berries are nearly ripe. This will vary across the province.
<b>Biome(s)</b>	All forested biomes with soapberry/red huckleberry
<b>Sampling Strategy</b>	An area rich in soapberries is located for permanent monitoring. Choose 10 robust plants. Mark 2 branches on each plant for sampling.
<b>Protocol Source</b>	Yukon Ecological Monitoring Protocols ( <a href="http://www.zoology.ubc.ca/~krebs/downloads/field_manual2011.pdf">http://www.zoology.ubc.ca/~krebs/downloads/field_manual2011.pdf</a> )
<b>Unit(s) of Measure</b>	Number of berries Comments – record any general comments about plants
<b>Standard/Reference Condition</b>	Year over year
<b>QA/QC</b>	Repeat measures by multiple independent observers
<b>References</b>	Yukon Ecological Monitoring Protocol
<b>Comments/Notes</b>	Establishment of the monitoring locations is the most time consuming part of the protocol. Note that once established, repeated data collection in future years is a significantly smaller task.

### Detailed Protocol

- Locate and establish plots

Locate an accessible area rich in soapberries. This should be an area that is not frequented by visitors who might remove flagging tape and other identification. Take a GPS location of the site. Choose 10 robust plants with berries. Soapberry bushes may be male or female and only the female bushes produce berries. Two branches from each plant are permanently marked. These can be major branches, or stems. Mark the stem or branch at the base of the portion that is to be counted. The plant should be marked with flagging tape. Use the marker pen to label the flagging tape with the bush number. Tag the branch to be sampled LOOSELY (to allow for branch growth), as near the base as possible with permanent aluminum tags with unique numbers. Each of the two branches should also be marked loosely with flagging.

- Data Collection



The unit of measure is an individual soapberry plant BRANCH or STEM - not the entire plant. Berries should be counted on 2 branches from each of 10 plants. A total of 20 branches (10 plants) should be counted in each area if possible. Count the berries on the exact same stems of soapberry bushes each year to give an index of soapberry production.

The counts should be made in July (estimate) of each summer when the berries are still green in order to minimize the amount of harvesting by bears, birds, and mice which occurs once the

berries begin to ripen. [Note: This was written for the Yukon. Our prime sampling time will differ depending on where you are in the province.] The optimal timing of counts may vary from year to year and some monitoring in late June should give a good estimate of when counts should be conducted.

For each branch counted, measure the diameter (in millimeters) of the branch near its base. Count the total number of berries produced, including shriveled ones. Measure the branch diameters each year since the branches will grow. If the tagged branch has died, change the tags to a new branch and note this in the comments.

Soapberries may vary in size from year to year and a collection of 20-30 ripe red berries should be obtained in August and weighed so that an estimate of the average wet weight of a single berry from each area can be obtained.

**IMPORTANT:** Soapberry branches will bruise and easily break at the junctions if not handled carefully.

- Materials

- Data sheets or field hardware such as iPad
- GPS to locate soapberry bushes (or field hardware)
- Aluminum tags
- Flagging to mark individual branches
- Permanent marking pen to mark the bush number on the flagging tape



- Caliper (to measure branch diameter)
  - Clicker (tally counter for berries)
  - Container to store picked berries for weighing.
  - Scale
- Personnel resources:

This could be carried out with one person, but would go twice as fast with two.