

Wildcrafting *Lomatium dissectum* Roots

Following are a series of articles, letters to United Plant Savers, and field notes concerning *Lomatium dissectum* by Michael Pilarski, Friends of the Trees Wildcrafted Botanicals.

A few thoughts on wildcrafting *Lomatium dissectum*.

A report from personal experience.

Lomatium dissectum has a very broad range in western North America, ranging from British Columbia and Alberta south to Colorado, Arizona and California. There are three varieties: *L. dissectum* var. *dissectum*, var. *multifidum*, and var. *eatonii*. The variety I have personal experience with is var. *dissectum*.

I personally believe that United Plant Savers has jumped to conclusions in listing this species in the UPS At Risk List. In the area I collect it is widespread in the habitats it is adapted to. I know of thousands of acres of abundant stands on the east slopes of the North Cascades which contain tens of thousands of tons of roots. Some stands have several tons to the acre. In a recent conversation with Rus Willis of Bighorn Botanicals of Noxon, Montana, Willis said that there is a similar abundance in some parts of Montana. Loring Jones of Northplan Seed Co., a botanist and seed collector familiar with Idaho and southeast Washington, says it is abundant in that region. I have also heard reports of abundant areas in eastern Oregon. I do not know the situation in other parts of *Lomatium dissectum*'s widespread range, but I suspect that this plant is far from endangered in other parts of its range as well. Where the plant is locally rare it is well and good that people should not harvest it in those localities. However, I disagree that UPS should discourage its use as a botanical medicine on account of alleged rarity. I personally would be happy to supply medicine makers with this very valuable medicinal, by careful harvesting from the abundant stands I have access to. I encourage competent plant people in other parts of *Lomatium dissectum*'s range to report on the plant's status in their area to me and to UPS so we can get a clearer picture of its status. I believe that *Lomatium dissectum*'s jaundiced position in UPS circles derives from one particular company's alleged overharvesting of *Lomatium dissectum* from a particular small locality. This story, while perhaps true, has been blown out of proportion. For anyone not familiar with this *Lomatium*, I recommend you read what Michael Moore has to say in his *Medicinal Plants of the Pacific West*. I have been lobbying that *Lomatium dissectum* be moved from the UPS At Risk List to the To Watch List.

This was recognized in a letter from Richo Cech's on 6/22/98 regarding proposed changes to UPS 'At Risk' list that UPS was considering. "Downlistings from 'at risk' to 'to watch' list: *Lomatium* (*Lomatium dissectum*) many people arguing local abundance."

Excerpt from May 15, 1998 letter to UpS and Richo Cech

Lomatium dissectum. You ask whether I may be getting *Lomatium dissectum* confused with other *Apiaceae* species. Definitely not. I am positive about the identification. Since the last writing I have talked with Loring Jones, a botanical expert from northern/central Idaho and he has confirmed that *Lomatium dissectum* is abundant in Idaho in the expected habitats.

As to whether *Lomatium dissectum* is reproducing well in the different areas. I am working on a way of determining age of plants and of stands. Some stands are obviously older than others. I suspect that at least in some cases there are disturbance events that trigger off reproduction events. In some stands there do not seem to be the older age classes of plants. Some stands do not have many young plants, others have quite an age variation with young and middle-aged plants represented. I have seen some good recent regeneration on road cuts that I know cannot be more than a decade or two old. *Lomatium dissectum* prefers areas with little competition on dry, well-drained, rocky or with loose moving soil (such as scree slopes and cut banks). I have a hypothesis that the overgrazing of the late 1800's and early 1900's (in the Interior Pacific Northwest) actually may have increased suitable *Lomatium dissectum* habitat and that it may be more abundant now than it was pre-white settler intervention. At any rate I will continue to observe and converse with knowledgeable plantspeople about the status of *Lomatium dissectum*.

Report from Washington State on *Lomatium dissectum*

In the Vol 1, No. 2 (Fall, 1997) of the UPS Newsletter I wrote an article titled "Is Sustainable Wildcrafting an Oxymoron". The article outlined a list of eight categories to place plants in depending on how rare or abundant they were. I am going to be comparing my categories with a list of categories put together by Robyn Klein of the Sweetgrass School of Herbalism in Montana and increasing my categories. I urge UPS to work on a more fine-tuned system of categorization than the current two categories - UPS's At Risk List" and "To Watch List". Following are comments on two plants on the current UPS list which I am familiar with.

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Regarding the status of *Lomatium dissectum*. In general, I feel that it should be downscaled to the "To Watch" list. I base this from information from parts of the states of Washington, Idaho and Montana where *Lomatium dissectum* exists in abundance.

But once again, I do not know the situation on other parts of its range. No one person can know by first-hand observation. There is just too much area to cover. If you have a problem with overharvest in southern Oregon or Robyn Klein notes this in parts of Montana, how do we get this across to the public?

Ideally we would produce maps which shows the range of each species and using different colors or cross-hatching indicate which areas where the populations are "at Risk" or on the "Too Watch" list or in "natural abundance". A GIS specialist could produce such maps if supplied with comparable quality reporting from all parts of a plant's range. Making such maps is so much more difficult than making one designation per species, but it is much closer to reality. Why wait until a species is endangered throughout its range before we start trying to limit its harvest in the areas where it is threatened. Conversely - why try to limit harvesting throughout a plant's range because it is threatened in one locality.

How are we even sure that the people reporting are talking the same language? How do we establish some reputability of reporting? Linking up with state native plant societies and federal agency botanists and land managers can help UpS get a clearer view of the current status of particular species.

I prefer that people from every place should comment on the health of every species in their area. In practice, the humans should be in tune with and communicate with all plant species. Precious few people do so today. Native people who relied on their home territory for sustenance knew quite well what trends were happening with the plants in their area, particularly those of important utilization.

Creating designations that match the true situation of each species is complex. I have raised more questions than I answered. I hope to continue these conversations.

All species are sacred,
Michael Pilarski

Plant observations on June 6-7, 1998 & a few thoughts on *Lomatium dissectum*

On June 6-7, 1998, my son, Ashley, my sister, her husband & I traveled through the upper Kittitas Valley, the Wenatchee Ridge, and Blewett Pass areas in the Cascades of central Washington. Snow patches were encountered around 6,000' elevation. Many wildflowers were in bloom at all elevations. *Lomatium* species are in evidence at every elevation from the driest to the highest.

Noticeable in the higher meadows is a diminutive, white-flowered *Lomatium* with plump, tasty roots. *Lomatium dissectum* is a conspicuous element at lower elevations

On June 6, 1998 I had the pleasure to drive through extensive stands of *Lomatium dissectum* in the Kittitas Valley in central Washington. It grows in two main habitats: 1) Rocky, boulder-strewn hillsides. 2) Outwash plains and dry hillsides with coarse soil. 2,000-3,000' elevation was the optimum elevation range and bitterbrush (*Purshia tridentata*) is a common associate. At these lower elevations the *L. dissectum* seeds were plump and filled but still green. In two or three weeks the seeds will be ripe. I can find smaller amounts of *L. dissectum* all the way up to 6,000' on dry sites. At high elevations it is especially fond of rubbly, cut-banks along roads. Indeed it could be used in revegetation mixtures for dry cutbanks in all the areas it is native to.

If this drive was representative of the area, there are substantial amounts in the area. Digging in the rocky habitats is very difficult and it is near impossible to extract the roots without damaging them. The danger to *Lomatium dissectum* lies in those areas which have diggable soil, gentle slopes and large plants.

I have been familiar with and good friends of *Lomatium*s for several decades now, but have been paying increasing attention to them the past several years. I have tasted many species but can only identify a few with certainty. *Lomatium dissectum* var. *dissectum* is the *Lomatium* I know best.

Could *Lomatium dissectum* in 10 years time become overharvested similar to wild *Echinacea* species?

It would be incorrect to say that *Lomatium dissectum* is currently overharvested or that it is currently endangered except perhaps at the fringes of its range.

There are over 60 species in the *Lomatium* genus. Many, but not all, are edible. The *Lomatium* genus provided one of the leading food sources of the Northwestern Indians. The most favored species combine size of tuber, palatability and ease of digging. The *Lomatium* genus was once known as *Cogswellia*.

Lomatium dissectum was classified as *Leptotaenia*. Today there are three sub-varieties, *Lomatium dissectum* var. *dissectum*, *L. dissectum* var. *multifida*, and *L. dissectum* var. *eatonii*. There will undoubtedly be volumes written about *Lomatium dissectum* in the future. Most likely it will become a much more widely used medicinal than currently. From what I know, current amounts in the world market are probably not more than 5,000 pounds annually. A tiny amount in contrast to the over \$49 million in sales of *Echinacea* and goldenseal products sold in 1997 (*Herbalgram* No. 42,p. 65).

For all the hue and cry over endangered goldenseal almost all the tincture and herb companies still sell goldenseal tinctures/products, including the companies which support UpS. Only a few offer *Lomatium dissectum* at this time.

As *L. dissectum* enters the marketplace, it would be great if small-scale ethical wildcrafters and co-operatives could fill the demand by sustainable wildcrafting.

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There are many age-classes of roots. The largest roots are often 30 to 50 years of age. 3- to 5-lb. roots are common, with exceptional roots over 10 pounds.

It is certainly possible for unscrupulous and/or unthinking people to decimate stands of *L. dissectum* if they attempted to take out all the larger roots. Impatient or inept digging will damage roots and most of the deeper and longer roots will be lost in the digging process. Leaving lots of root fragments in the soil is desirable for increasing stands of species which re-propagate from root fragments e.g. comfrey, elecampane. Unfortunately *Lomatium dissectum* does not propagate from root fragments unless they have crown buds.

This year I observed *Lomatium dissectum* yearlings with a single stem about the size of a toothpick. In 3 or 4 years their annual single stem will be the size of a pencil. Eventually there will appear two, then three leaf stalks. At age 6-10 they produce their first seed stalk (usually single). As they grow older they grow increasing numbers of leaf and seed stems. I have counted over 100 stems on very large specimens including over 20 seed stems. 20 to 50 stems is common for plants in the older age classes. You can gauge the size of the root by the number of stems.

I harvest in the medium and large size classes, but do not harvest the very largest "grandmother" roots. Nor do I harvest small roots. I would rather harvest one large root than a dozen small roots. Since the oldest plants are the biggest seed producers, only a very small percentage of a stand's large roots can be harvested in any one year. Certainly less than 5%, if even that much.

I will continue to observe and report on this fascinating and lovely genus.

Report on a *Lomatium dissectum* harvesting expedition on October 24, 1998.

Three of us harvested 3 burlap bags of roots between us. They were not full bags, but they were heavy since we had to haul them half a mile down a mountainside. It is late fall and the last day of hunting season. With so many hunters around we opt out for open slopes and avoid trees where eager hunters might misinterpret our movements.

The *lomatium* stand covers most of this mountain slope. Some areas thicker, some thinner. We avoid the steep ground with 50% bare soil where every plant has its pedestal. Here the *Lomatiums* are part of the plants that are holding this slope up. Active sheet erosion is gradually eroding the slope. Instead we go to the ridgelines and gentler slopes. This is an area where much of the landscape is dominated by shrub steppe or bunchgrass steppe. The occasional ponderosa pine adds its tall touch of green. The *lomatium* is thickest in amongst the bitterbrush (*Purshia tridentata*), which is the dominant shrub. Bitterbrush is the only Rosaceae family plant I know that is nitrogen-fixing. Balsalmroot is a constant companion. On some microsites there is more *Lomatium* and less balsalmroot and some microsites the reverse. Native bunchgrasses are here and some non-native weeds, notably

diffuse knapweed (*Centaurea diffusa*). Other natives I note are *Lithospermum ruderale*, *Eriogonum* species, scarlet gilia, (*Gilia aggregata*), and a small *Rumex*. In the draws with more moisture are chokecherry, serviceberry, scouler's willow, and even some Oregon-grape (*Mahonia aquifolium*). *Lomatium* and balsalmroot are the two herbaceous plants with the greatest canopy coverage. *Lomatium* are very common. 1 per 20 square foot area average would mean 2,150 plants per acre. With an average weight of 3 pounds that would mean about 6,500 pounds per acre.

We dug 30 roots, which is certainly way less than 1% of the plants on this particular slope. Back at the processing shed we weigh and make notes about the plants. 105 pounds gross weight. This means our 30 roots weigh an average of 3.5# each. The largest root is 12 pounds, the smallest are 1 pound. After the roots are chuffed, cut up and dried we end up with 25 pounds dry root. About 20% of the gross fresh weight is lost during the processing, mainly from the crown.

Estimating ages of *Lomatium dissectum* plants.

I have been working on a system to age plants. There are no annual rings to count, like trees. This is a somewhat difficult endeavor, since the individual plants are not uniform. They were not made in a factory. We measure the height of the crown buds and their number for each plant. It is a general rule that the heavier plants have taller and more crown buds. The number of crown buds per plant is a more reliable indicator of age than crown bud height. Some plants are in more favored locations than others and so plants of the same age will vary in size and crown bud characteristics from microsite to microsite.

Crown bud numbers. In general, the older the root, the greater number of crown buds. The 12 pound root had 90 crown buds. The two 1-lb. roots had 7 and 10 crown buds. As a general pattern I would estimate that a plant gains on average 2 crown buds per year. Thus the 12-pound root with 90 buds would be 45 years old. The 6-pound roots would have been 30 and 32 years old. The 2-lb roots would have been about 10 years old with 20-25 buds being average. The plants are slow growing for the first few years. I have found slopes with every age class from tiny little yearlings with one single leaf-stem to several-year old plants with two or three leaf-stems. The plants don't bear seed until they are 10 years old or so.

Length of crown buds as a method of aging. As a general rule, the larger roots have longer crown buds and the smaller roots have shorter crown buds. The largest root from this collection (12 pounds) had 6-inch long crown-buds. Which I estimate works out to about 7 years of age for each inch of height of the crown buds. Crown bud length I consider less of a reliable aging method compared to bud crown numbers per plant. For instance of the three 6-pound roots two had 3-inch long crown buds while one had 5 to 6 inch long crown buds. Of the plants in the 2 to 3 pound range, most had crown buds 1.5 to 2 inches in length, but a few had crown buds up to 5 inches long. Still,

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while there are exceptions there is a general trend. As a rule of thumb I would estimate that every inch of crown bud height equals about 7 years of age.

This age classing is a rough estimate. Further dialogue on *Lomatium dissectum* is welcomed.

After dissecting over 100 *Lomatium dissectum* roots I have learned a bit about them. Depending on the site, somewhere between 25% and 33% of the plants have been injured somewhere along their life cycle; as indicated by various scars and/or parts of roots missing. Gophers are a likely culprit in most cases and soil disturbances are another.

Another phenomenon is that of small "balls" of dark reddish brown material embedded in the roots. Some roots have none at all. Most have at least a few and some are riddled with them, perhaps hundreds of these little balls. The largest of these balls are as large as a marble, but most are between the sizes of small to large tapioca pearls. Sometimes they are clearly associated with infoldings of the outer skin and I believe they are made of similar material. I do not know what these "balls" are, nor their cause. It causes extra processing work in that I remove at least the larger of them. Occasionally I discard a whole root when they are full of them.

Lomatium dissectum Report August 27, 1999

Michael Pilarski

On August 16, I dug 140 pounds (before cleaning) of fresh *Lomatium dissectum* roots. Most of this harvest was sold as fresh root to several herb companies. This is my largest single harvest thus far and I learned some new tricks. I tried out a new harvesting method which reduces soil disturbance and ecosystem impact. It involves digging medium-size roots. Heretofore I had been harvesting from larger individuals of the population. Not the very largest specimens, which I call "grandmothers", but the medium-large to large roots.

This change in harvesting age stems from a conversation with Robyn Klein at the United Plant Savers Conference held on July 23-25, 1999 in conjunction with the 2nd Montana Herb Gathering. Robyn Klein is one of the best defenders of Montana's native medicinal plants. *Lomatium dissectum* is one of the species she is concerned about. She suggested that I might consider harvesting smaller plants rather than the "old growth" plants. Upon trying her suggestion I found I did not need to dig the big holes like I made unearthing the large roots. Even though I make more "incisions" in the earth I am having a smaller total impact.

I select my plants for harvest thoughtfully, not randomly. In general I tend to choose to dig 1 or 2 plants from "clumps" of plants. Thus just thinning them. I also harvest plants from under large shrubs or trees where they are getting shaded out. I am always looking for places to harvest where the plants are on the way out of the succession anyway. Thirdly, I select plants that are on pathways (deer, cattle, people) where they are likely to be impacted. I am only taking one to three percent of a stand at most in any one year and I only harvest in healthy robust populations, so my harvesting rate should not make stands go downhill. With my new harvesting guidelines, I should not reduce the larger age classes either.

Here are the results from assessing the 34 roots which I processed for drying from this harvest. They weighed a total of 53.5 pounds. An average of 1.57 pound each. (After processing and drying we ended up with 17 pounds dry root). The leaf/stem crowns averaged 18 per plant. I estimate that the 1-pound roots were in the 7 to 10 year old age range and the 2-pound roots were in the 12 to 17 year old age range. The oldest roots can be 50 years old. With my new method I will harvest from the 10 to 20 year old plants and not harvest from the 20 to 50 year old plants. Nor from the 1 to 10 year old part of the population, since they are small and juvenile. Individual plants probably do not begin seed production till they are 7 to 10 years old. A majority of the overall seed production is by the older age-classes of plants.

Lomatium dissectum Report October 28, 2002

Assessing root quantities on a per acre basis.

All the *Lomatium* in three separate 10' x 10' plots were dug up.
The 1st plot had 30 plants totaling 48# rough fresh weight.
The 2nd had 34 plants totaling 45# rough fresh weight.
The 3rd had 16 plants totaling 27# rough fresh weight.
If averaged out at 30# per 100 sq. ft plot, an acre (43,000 sq ft) would contain 1,290# of fresh roots.

Lomatium dissectum is the dominant plant on the site with canopy coverage of well over 50% on most of the site. This is a semi-arid shrub steppe ecosystem with no trees. The main shrubs are bitterbrush (*Purshia tridentata*), serviceberry (*Amelanchier alnifolia*) and snowberry (*Symphoricarpos alba*). Some balsamroot (*Balsamorhiza sagitta*) and *Lithospermum ruderale* are present, a bunchgrass species and smaller ephemeral annual forbs.