

Cow parsnip soon to decorate Peninsula fields and scorch the uninitiated

by Ed Berg

The huge lush leaves of cow parsnip (pushki, *Heraclium lanatum*) are beginning to festoon Peninsula roadsides, especially south of Ninilchik and around Homer. In another few weeks the flat-topped heads of white flowers will be showing their faces, and unwary hikers and gardeners will be salving their rashes and blisters from too much pushki and sunshine.

I always have mixed feelings about this very showy plant. The smell of the foliage and the flowers certainly tell me that spring is well advanced, and I enjoy seeing the five-to-nine foot tall, white-crowned stems in thick swards along the Sterling Highway. In town, however, pushki is an aggressive competitor that loves disturbed soil of any kind. It is extremely hard to get rid of, once started in a garden. The thick roots need to be dug up in their entirety, because root fragments left behind will propagate new plants.

Then there are the skin burns. Some people are very sensitive to pushki and can experience serious burns, the effects of which can last for months. Pushki foliage contains chemicals called “furanocoumarins” which unite with the DNA in skin cells to make photosensitive compounds. When the skin is exposed to ultraviolet light (from sunshine), the skin “develops” just like photographic film, with effects ranging from red rashes to second-degree blisters several inches in diameter.

Pushki is a member of the carrot family (apiaceae or umbelliferae), and many members of this family can produce skin rashes or blisters. Celery pickers and grocery workers, for example, can experience photosensitized skin, and there are even reports of severe sunburn after eating celery soup, followed by sun exposure or a tanning session.

It is interesting to ask if this phototoxicity has any adaptive value for the members of the carrot family? Is this toxicity, for example, a chemical defense against some kind of plant-eating animal (herbivore)? First, we should note that bears and moose eat young pushki plants, apparently without suffering any kind of sunburn effects. Indeed, in the Lower-48 pushki is considered a valuable forage species for deer, elk, moose,

and livestock. A study in Glacier National Park found that pushki comprised 15% of grizzly bear diet, spring through fall. All this suggests that mammals, other than humans, are not bothered by any phototoxicity effects of pushki.

Nevertheless, you don’t see many insects eating pushki. A fascinating study of a close cousin, wild parsnip (*Pastinaca sativa*), found that the furanocoumarins were potent deterrents for most insects, but one insect has evolved the ability to break down the furanocoumarins and eat wild parsnip. This insect—a caterpillar called the “parsnip webworm” (*Depressaria pastinacella*)—also eats pushki. If we ever need a biocontrol agent for pushki, parsnip webworm would be a good place to start.

Both parsnip webworm and wild parsnip populations are locked in an evolutionary arms race, where different wild parsnip populations have evolved different mixtures of furanocoumarins to fight off the webworms. Only certain genetic lines of webworms can survive on particular genetic lines of wild parsnips. No doubt, future mutations will arise in the webworms, which will allow them to break down more furanocoumarins and eat a wider variety of wild parsnips. And of course mutations will arise in the wild parsnips that will counter-act the genetically-improved webworms, and the cycle will be repeated.

If we can generalize from wild parsnips, it appears that the defensive value of furanocoumarins is all about using ultraviolet light to poison bugs. Generally, insects are the main threat to plants, and the fact that many species in this plant family have furanocoumarin compounds strongly indicates that insect defense is the primary function of these compounds.

Human rashes and blisters thus appear to be an accidental by-product of the plant-insect arms race. Such philosophical conclusions will, however, provide scant consolation to folks sensitive to pushki rashes and burns. The first line of defense against pushki is keeping it off your skin. When hiking through fields of pushki, it is best to wear long sleeves and gloves, especially when the sun is shining and you would prefer

to be wearing shorts and a T-shirt. When you return home, take a shower with strong soap, and avoid further sun exposure.

My wife Sara has treated a number of patients with pushki burns over the years with various homeopathic remedies; often homeopathic Causticum is the remedy of choice, whose symptoms are those of potassium hydroxide or lye. Her favorite pushki burn story is about a Swiss youth working on a local homestead who spent a day cutting down pushki, wearing shorts and flip flops. The following day his legs were covered with huge blisters as much as an inch high. Treatment with Causticum and 24 hours reduced the blisters to normal size, with the blisters drying up completely in three days.

Despite its toxic properties, it is possible to eat pushki, with care. If you peel the outer stringy covering off the pushki stem (preferably with rubber gloves), you can eat the rather bland-tasting inner cylinder. The inner cylinder can also be stir fried or baked in casseroles, and generally used as a celery substitute. Jan Schofield in her book "Discovering Wild Plants" (Alaska Northwest, 1989) describes a variety of traditional medicinal uses by native peoples, including treatments for nausea, sore muscles, toothache, and the worming of dogs.

The common name "pushki" for cow parsnip seems to be a bit of Alaskan vernacular that reflects our Russian heritage. In Russian a "pushka" is a cannon, with the plural being "pushki." These words are pronounced with the accent on the first syllable, i.e., PUSH-key. Alaska folklore says that when the Russian explorers on ships viewed the dead cow parsnip stalks sticking out of the hills, they were reminded of

little canons and called them "pushki."

Skyview High School Russian teacher Gregory Weisenberg, however, has proposed an alternative explanation. The green stems of pushki are covered with fine hairs, which give them a slightly fuzzy or furry texture. When the accent of "pushki" is shifted to the second syllable (push-KEY), we have the Russian word for "fluff," so that the name "pushki" might refer to its fuzzy texture rather than its canon-like appearance. I am not convinced by this explanation, however, at least because the fine hairs fall off when the stem dies in the fall and becomes most noticeable.

A third explanation of "pushki" comes from Russell Tabbert in his *Dictionary of Alaskan English*, who notes that the Russian word "puchok" (pu-CHOK) means a bundle, with the plural being "puchki." The flowers of pushki are distinctly grouped into bundles or indeed bundles of bundles. On the dead stalk we see the radiating rays of the old flower head, so it's not too much of a stretch to see these rays as bundles.

Language, however, is like a flowing river, into which you can never step twice, so these explanations must remain scholarly conjectures. They do, however, provide some appreciation of our diverse linguistic origins in Alaska.

Ed Berg has been the ecologist at the Kenai National Wildlife Refuge since 1993. Information on wild parsnip and the parsnip webworm came from May Berenbohm's website <http://www.life.uiuc.edu/berenbaum> at the University of Illinois. Gregory Weisenberg advised on the Russian language history. Previous Refuge Notebook columns can be viewed on the Web at <http://www.fws.gov/refuge/kenai/>.