

**Intro music:** 8-10 seconds. Music is 'Ragtime Annie' as performed by George Ainley and the Stringfield Springers. It is used with permission.

**Elizabeth-** Welcome to Bud Buds, the podcast that takes you into the blossoming realm of invasive plants and their seasonal changes, and what you might be witnessing out your window or in the woods in Vermont. I'm Elizabeth, a scientist for the Vermont Department of Forests, Parks & Recreation. I'm joined today, as usual, by my co-host and bud, Lina ...

**Lina-** Hi, I'm Lina, a natural resource steward for the Vermont Department of Forests, Parks, and Recreation. What are we talking about today, Elizabeth?

**Elizabeth-** Well, Lina, it's the episode we've all been waiting for...

**Lina-** You mean the one where we get to announce the successful removal of all invasive plants from the state of Vermont?

**Elizabeth-** Well,...no. A more reasonable target for all of us is containment not eradication, but that's a topic for another time. This episode is about something that worries Vermonters all summer...

**Lina-** Is it goldenrod?

**Elizabeth-** Good guess... goldenrod are yellow, like the flower I'm thinking of, and some people think they're annoying, but they are actually an unsung hero in Vermont – a native plant that provides food for pollinators and may outcompete an invasive and....

**Lina-** And that's some serious foreshadowing, but we're getting a little off track.

**Elizabeth-** I'll give you a hint... today, we're not just going to talk about the plant. We're going to talk about the science and biology of a specific plant to demystify and deescalate the tensions and anxiety around it, and make it easier and less scary for everyone to focus on restoring our fields and forests.

**Lina-** Let's see. A scary invasive plant with bright yellow flowers that people confuse for goldenrod and that blooms in the summer... It can only be

**Together**

**Elizabeth** Wild parsnip!

**Lina** Poison parsnip!

**Elizabeth-** Wait, what did you call it?

**Lina-** Poison parsnip. Is that not right?

**Elizabeth-** Well, I prefer to call it wild parsnip because it's actually classified as the same plant as the parsnip we grow in our gardens, just an escaped wild variety; and it's thought that once it was out there in the wild, it evolved a supercharge of the chemicals that make it famous.

**Lina-** Yes – that chemical, called furanocoumarin is in the sap, and it makes skin more sensitive to sunlight.

So, if that sap gets on your skin and then your skin is exposed to sunlight, it can result in phytophotodermatitis

**Elizabeth-** Also known as a really painful chemical burn.

**Lina-** Have you ever gotten it, Elizabeth?

**Elizabeth-** In very small patches on my arms – no fun. How about you?

**Lina-** Same. I got small, painful and itchy blisters inside of my wrist. The rash itself only lasted for about a week, but that was several years ago, and you can still see the scars when my wrist gets tanned in the summer.

**Elizabeth-** Whoh!

**Lina-** Yeah, this stuff is no joke. Unfortunately, it's super hard to avoid because it grows readily all over the state – ironically, it thrives in sunny places like along roadsides and trails, and in disturbed areas, including farm fields.

**Elizabeth-** Parsnip tends to grow in these places because of the way it gets spread.

**Lina-** Exactly. Parsnip plants make a lot of seeds, averaging almost 1,000 seeds per plant, and those are easily dispersed by the wind or animals, or even by people who are trying to cut the parsnip down. For instance, if the plant already has seeds when it gets cut, those seeds can get stuck in tire treads, in the corners or edges of mowers, or even pant cuffs, socks, or boots, and then move along with the people or the equipment when they leave the site.

**Elizabeth-** So even as people's intentions lead them to action, without care and understanding of the biology of the plant, they may actually be helping it spread.

**Lina-** Totally! And that's frustrating for everyone involved: they're spreading the plant and not the word, which is the opposite of what we're all aiming for!

**Elizabeth-** Oh no! oof, ok, so it's all over the state, it can really hurt people, and it grows in areas where people often go. Parsnip is certainly a concerning invasive plant!

**Lina-** Definitely. Because of the risks associated with accidentally interacting with this plant, being able to successfully ID it and knowing how to stay safe around it seem particularly important. Elizabeth, do you have any hot tips for recognizing parsnip?

**Elizabeth-** Sure do! Parsnip is part of the carrot family, like the local plants Cow Parsnip and Golden Alexander. It's also what's called a Monocarpic perennial.

**Lina-** Sorry, a what?

**Elizabeth-** Yeah, that's a pretty fun term. Do you know want to try to figure out what it means?

**Lina-** Sure! Let's break it down..... Mono means one

**Elizabeth-** Yes

**Lina-** ...and carpic – and I had to look this up – means fruiting, so I'm guessing that monocarpic means that it only flowers and sets seed once and then it dies, right?

**Elizabeth-** You got it!

**Lina-** But perennial means it lives for a few years. So if it lives for a few years but only flowers once, it must live a few years before flowering and setting seed?

**Elizabeth-** Exactly! As a monocarpic plant, wild parsnip will go through several distinct phenophases. In its first year, it makes a rosette of broad, hairless, ovate, compound pinnate leaves, and those leaves are up to 6 inches in length. The leaves terminate with several pairs of leaflets with serrated margins (think the teeth on a saw); they can grow up to 16 inches (40 cm) long (that's about the average length of someone's forearm). Leaflets are arranged in pairs along the stalk.

**Lina-** Wow, that's not quite a thousand words, but a picture is still worthwhile. We'll have some in the show notes, but until you can get there and to help you establish your search image in the wild, parsnip basically looks like a large, bright green clump of celery leaves.

**Elizabeth-** Haha, totally! Oooo.....Do you know how it survives the cold Vermont winter?

**Lina-** A really good coat? Just kidding. It's the large taproot, right? Wild parsnip, like its garden-variety cousin, has a long thick root called a taproot where it stores the sugars it photosynthesizes throughout the season. Come winter, many of the first-year leaves will die off, but the plant lives on underground.

**Elizabeth-** ...and then in its second year...

**Lina-** ...in its second year, it uses those sugars to jumpstart its growth and generate new leaves to photosynthesize for another season until...

**Elizabeth-** ...until the environmental cues tell the plant it's time to flower, and it bolts!

**Lina-** It bolts? Like it runs away?

**Elizabeth-** No, it sends up a stem -- about 4-5 feet tall – and a flower

**Lina-** And the flower is pretty cool.

**Elizabeth-** Yep! It's an umbel – meaning it looks like an umbrella – inflorescence – meaning it's actually made up of a hundreds to thousands of tiny flowers clustered together.

**Lina-** Kind of like Queen Anne's Lace.

**Elizabeth-** Yes, except wild parsnip flowers are bigger, and yellow.

**Lina-** That sounds pretty

**Elizabeth-** It is! It's pretty, and recognizable

**Lina-** Ok, but what about when it's not flowering. Any tips for recognizing parsnip then?

**Elizabeth-** Of course! The stalk is hairy, and grooved, and hollow and usually sparsely branched with leaves around the base and not many elsewhere.

**Lina-** If it sounds like there are a lot of plants that could match that description, it's because there are number of other plants related to parsnip that are invasive or on Vermont's Noxious Weed list or the unofficial watch list, including goutweed, wild chervil, and giant hogweed. For more information on how to differentiate between parsnip and those other plants, check out the show notes, or [vtinvasives.org](http://vtinvasives.org)

**Elizabeth-** Another interesting thing about parsnip is that there may be a local plant that can stand up to it...

**Lina-** That's right! once parsnip is introduced to an area, it usually completely overgrows the place and outcompetes everything else, but in the course of our work we've seen some instances where it looks like goldenrod is holding its own and even outcompeting parsnip! The meadow facing the parking lot at Mt Philo state park is a really good example of this phenomenon.

**Elizabeth-** That is pretty cool. I think it's also interesting to consider that goldenrod is one of our locally evolved plants that's invasive in other places, so it must have some pretty formidable adaptations that make it a tough competitor – possibly even tough enough to outcompete parsnip.

**Lina-** That's rad. ok, so now that we can spot parsnip a mile away, what should people do about it? Freak out and avoid it at all costs so they don't get burned?

**Elizabeth-** Caution is certainly advised (remember the phytophotodermatitis thing), but parsnip can be easy to remove – you just have to get up the root.

**Lina-** This actually gets a lot easier once the plant has flowered, because as the plant moves nutrients from the taproot to the flower, the taproot actually physically gets smaller.

**Elizabeth-** Yeah! It's a minute change, but it's enough to loosen the plant in the soil and make pulling it out easier. And if you are removing plants that have flowered, make sure to do so after it's flowered but before it's set seed. And if you don't get to it until after it's already set seed, it may still be worth it to cut off the seed heads and bag them up to prevent the seeds from spreading

**Lina-** Obviously, pulling up the plant by the root is not always possible, and for that there are tools called parsnip predators that look like modified shovels! they are great at helping pop out the taproot.

**Elizabeth-** Speaking of taproots Lina, a tangent for you - I really like root veggies, and garden parsnip is one of my favs – have you tried eating wild parsnip?

**Lina-** Truthfully, Elizabeth, I haven't. I didn't love parsnip to begin with and after spending many long hot field seasons pulling it out of state lands, the smell of any kind of parsnip -- wild or otherwise – makes me kind of queasy. However, knowing what I now know about the science and biology of parsnip, I can anticipate that a parsnip at the end of its first year will have the highest concentration of sugar in its taproot, and so will taste the best. You know, if you're into that sort of thing.

**Elizabeth-** (laughs) Where were we? Pulling up plants?

**Lina-** Right, so as with all our invasive removals, once you've removed the plants, your best bet is to leave them to rot on-site – ideally encased in plastic – to denature any reproductive ability before returning the decomposed material to the ecosystem

**Elizabeth-** And regardless of when you pull the parsnip, your best strategy definitely includes long pants and sleeves, and gloves, and maybe even a bandana around your face and neck

**Lina-** Good thing wearing masks for the fifteen months has prepared us for parsnip season!

**Elizabeth-** That's one way to look on the bright side.

**Lina-** One way to avoid the bright side – that I've never actually tried, but it makes sense to me – would be to pull parsnip at night. That way, you dramatically reduce the chance of phytophotodermatitis, because there's no sun to react with the sap on your skin. Especially if you shower afterwards.

**Elizabeth-** Which, to be honest, you should probably do after working with parsnip no matter what time of day you do it.

**Lina-** Personal hygiene aside, if you find wild parsnip in your neighborhood, let us know! We want to hear all about where you found it and what you did with it.

**Elizabeth-** And if you see any other invasive plants, or have a topic you'd like us to address, please let us know about that too.

**Lina-** Until then, we'd like to acknowledge the financial and technical support provided by the USDA Forest Service, Northeastern Area State and Private Forestry that enables us to run projects and provide outreach such as this,

**Elizabeth-** And our major project partner, the National Phenology Network, bringing together community members, scientists, managers, and educators, to advance the science of phenology.

**Lina-** And most importantly, thanks to you, our listeners, for being interested in the science of phenology and being willing to

**Together** "Learn. Get Involved. And Make a Difference."

**Outro music** - 8-10 seconds of 'Ragtime Annie' as performed by George Ainley and the Stringfield Springers, picking up where it left off at the beginning of the podcast