

STRAFFORD CONSERVATION COMMISSION: INVASIVE PLANT CONTROL INITIATIVE: 2016

Over the last ten years, the Strafford Conservation Commission has become increasingly aware of and concerned about the spread of several species of non-native invasive plants in Strafford. Control efforts have been varied; as varied as the plants themselves. As of this year, the plants of primary concern consist of the following (information taken directly from http://www.vtinvasives.org/invaders/images/plant_common, for all but Poison Parsnip and Brown Knapweed):

Chervil: Wild chervil is a member of the Apiaceae, or carrot, family. It produces a thick taproot that can be up to 2 m long. Its hollow stems grow up to 1.5 m tall and are branched, ridged, and pubescent and often have a slightly purplish hue at the base. Leaves are often characterized as fern-like, 2-3 pinnately compound, often dentate, and pubescent on the underside. Each leaf clasps the stem with a somewhat inflated, slightly pubescent sheath. Wild chervil forms a compound umbel up to 6 cm in diameter with notched, creamy-white petals and tiny sepals. Seeds are small and shiny, dark brown or black. Although generally considered a monocarpic, rosette-forming, biennial, under certain conditions wild chervil can behave as a perennial. When individuals are mown or grazed prior to flowering, they will reproduce vegetatively, as side rosettes until they are able to flower. In Vermont, wild chervil begins to grow immediately following snow-melt. It flowers by late May and early June, with seeds maturing in late June and July. As the seeds mature, the flowering stems die, leaving brown stalks bearing seeds that gradually fall from the plants throughout the summer. The basal rosette of leaves grows throughout the season, until it is covered by the first snow of winter. Vegetative reproduction occurs throughout the growing season, with young plantlets budding from the root crown, to which they remain attached throughout the first year. Wild chervil reproduces mainly by seed and can briefly re-sprout from root buds. Large white umbels bloom in late May to June. Each flower of the umbel produces two joined seeds. **CAUTION: THIS PLANT CONTAINS TOXINS THAT CAUSE MINOR SKIN IRRITATION.** In Strafford, this plant is found along roadsides. It is abundant along Justin Morrill Highway, Rte. 132, and Miller Pond Road. It is found scattered in other locations. It is abundant at the Justin Morrill Homestead.

Japanese Knotweed: Japanese knotweed is an upright, shrub-like, herbaceous perennial that can grow to over 10 feet in height. As with all members of this family, the base of the stem above each joint is surrounded by a membranous sheath. Stems of Japanese knotweed are smooth, stout and swollen at joints where the leaf meets the stem. Although leaf size may vary, they are normally about 6 inches long by 3 to 4 inches wide, broadly oval to somewhat triangular and pointed at the tip. The minute greenish-white flowers occur in attractive, branched sprays in summer and are followed soon after by small winged fruits. Seeds are triangular, shiny, and very small, about 1/10 inches long. Plants reproduce primarily by vegetative growth but have also been found to reproduce by seed. Japanese knotweed produces a significant number of seeds (>100,000 seeds/stem if all flowers are pollinated and set seed) but very few seeds germinate and few seedlings survive. Rhizomes, or horizontal plant stems, produce shoots above ground and roots below that can reach 45-60 feet in length and 6 feet in depth. Extensive rhizomes contribute to the difficulty in controlling Japanese knotweed manually. Until large reservoirs of energy in the root system are depleted, Japanese knotweed will continue to send up new shoots can produce new plants from the nodes. It is classified in Vermont as a Class B noxious weed. In Strafford, this plant is commonly found along sections of the main valley stream banks, particularly near the upper village. Scattered patches are also found in yards and along roadways.

Glossy Buckthorn: A large shrub or small tree that can grow to heights of 30 ft. (9.1 m). The dark green leaves are shiny, alternate (sometimes opposite) and simple with prominent venation. The flowers are inconspicuous, pale yellow in color and occur in clusters in the leaf axils. Flowering occurs in the spring. The fleshy fruit ripens to a dark purple color. The bark is gray to brown with white lenticels. It invades moist woodlands and disturbed areas throughout the Northeast and Midwest. Its rapid growth and prolific seed production make this plant an aggressive invader that can form dense thickets which shade and displace native understory plants, shrubs, and tree seedlings. It is a native of Europe that was introduced to the United States in the 1800s as an ornamental. Buckthorns reproduce by seed but plants can root sprout or regenerate even after they are cut or burned. Plants mature at 5-6 years old. Seed production is prolific. Common buckthorn fruits ripen from August to September while glossy buckthorn fruits ripen earlier—July to August.

Seed germination rates are high and germinate well in the shade. Seeds remain viable for at least 2 years. It is classified in Vermont as a Class B noxious weed. In Strafford, this species is most common in the northern end of the main valley, and in Taylor Valley. It is common along road edges, in fields, in powerline right-of-ways, and in recently logged areas.

Common Buckthorn: Common buckthorn is a deciduous shrub or small tree that can grow to 25 ft. (7.6 m) in height. The bark is dark gray and the inner bark is orange (easily seen when the tree is cut). Twigs are usually tipped with a sharp spine. The leaf arrangement is usually sub-opposite, but examples of opposite and/or alternate arrangements are commonly found. Leaves are dark green, oval, 1.5 to 3 in. (3.8-7.6 cm) long, slightly serrate with 3 to 4 pairs of curving veins and a somewhat folded tip. Flowering occurs in the spring, when yellow-green, 4-petaled flowers develop in clusters of 2 to 6 near the base of the petioles. Plants are dioecious (male and female flowers occur on separate plants). Fruits are small, black berries that are 0.25 in. (0.6 cm) in diameter. Common buckthorn invades forests, prairies and savannas in the Midwestern United States and can form dense thickets crowding out native shrubs and understory plants. Once established, it is difficult to remove. Common buckthorn is a native of Europe and was introduced into the United States as an ornamental shrub. Buckthorns reproduce by seed but plants can root sprout or regenerate even after they are cut or burned. Plants mature at 5-6 years old. Seed production is prolific. Common buckthorn fruits ripen from August to September while glossy buckthorn fruits ripen earlier—July to August. Seed germination rates are high and germinate well in the shade. Seeds remain viable for at least 2 years. It is classified in Vermont as a Class B noxious weed. This species is found everywhere in Strafford, although it is only scattered in some areas, and extremely abundant in other areas. It is common along road edges, in fields, in powerline right-of-ways, and in recently logged areas.

Purple Loosestrife: This plant is found primarily in wetland areas, including road ditches. It has individual flowers with five or six pink-purple petals surrounding small, yellow centers. Each flower spike is made up of many individual flowers. Leaves are downy, with smooth edges. They are usually arranged opposite each other in pairs which alternate down the stalk at 90 degree angles; however, they may appear in groups of three. Stalks are square, five or six-sided, woody, as tall as 2 meters (over 6 feet) with several stalks on mature plants. The plant was introduced as an ornamental. Mature purple loosestrife plants can produce up to 1 million seeds, most of which are viable. This plant is classified in Vermont as a Class B Noxious Weed. In Strafford, this plant is commonly seen in the ditches of the main valley, and also occurs in some wetland areas.

Autumn Olive: Autumn olive is a sun-loving shrub that invades Vermont's open woodlands and fields. Autumn olive was originally planted as a wildlife food. Establishment and reproduction of autumn and Russian olive is primarily by seed but vegetative propagation can also occur. Plants mature begin to flower and produce fruit between 3-5 years of age. Each plant produces abundant fruits and approximately 20,000-54,000 seeds per year. Seeds require cold stratification to germinate and have very high rates of germination (70-90%). Seeds can remain viable for up to 3 years. This species is on the Vermont Watch list. In Strafford, this species is found most abundantly in the section of town where Rte. 132 leaves the South Strafford village and climbs the hill towards Sharon. It is common found along edges, in fields, in powerline right-of-ways, and in recently logged areas.

Poison Parsnip : (from <http://www.dnr.state.mn.us/invasives/terrestrialplants/herbaceous/wildparsnip>) this perennial herbaceous plant (plant spends one or more years in rosette stage, blooms under favorable conditions, and then dies), is approximately 6" high in the rosette stage and 4' high on stout, grooved stems in the flowering stage. The alternate, leaf is made up of 5 -15 egg shaped leaflets along both sides of a common stalk; leaflets sharply-toothed or lobed at the margins; upper leaves smaller. Flat-topped broad flower clusters are 2 - 6" wide, with numerous five-pealed yellow flowers; bloom from June to late summer. Seeds are small, flat, round, slightly ribbed; straw-colored, abundant take 3 weeks to ripen before they can reseed; viable in the soil for 4 years. The root is long, thick, and edible. This plant readily moves into disturbed habitats, along edges, and or in disturbed patches. It invades slowly, but once population builds it spreads rapidly and can severely modify open dry, moist, and wet-moist habitats. A native of Europe and Asia, this plant has escaped from cultivation. It is grown as a root vegetable and is common throughout the U.S. Although the plant is not listed in Vermont, it is a "Prohibited Noxious Weed" in Minnesota. **CAUTION: The juice of wild parsnip in contact with skin in the presence of sunlight can cause a rash and blistering and discoloration of the skin (phytophotodermatitis).** This plant is fairly widespread along the main central valley from South Strafford to Taylor Valley Road. It is also common along other primary roads such as Rte. 132, Miller Pond Road, etc.

Brown Knapweed: (from http://na.fs.fed.us/fhp/invasive_plants/weeds/brown_knapweed.pdf) Description: Brown knapweed is a perennial plant with a woody root crown that grows 20 to 48 inches tall, branching near the top. The branches have egg-shaped or lance-shaped undivided leaves that become progressively smaller up the stem. The stem is ridged and sometimes purple-striped. The 3/4-to-one inch, light to dark brown heads are found at the ends of the branches. The somewhat hairy bracts are wider at the tips with broad, thin, papery margins. The center of the bracts is dark brown. The bract tips overlap the base of nearby bracts. The flowers, which bloom from July to October, are rose to purple but rarely white. Brown knapweed reproduces from seeds and from the woody root crown. Geographical Distribution: Brown knapweed is native to Eurasia and found in the US in the states shaded green on the map. Habitat: Brown knapweed grows in grasslands, open woods, meadows, pastures, woodland clearings, and in cutover areas of forest. The species can tolerate partial shade. Control: Brown knapweed is an aggressive and invasive perennial. In Strafford, this plant is spreading along the north side of Rte. 132, as it leaves the village of South Strafford and climbs the hill towards Sharon.

A few other plant species are present in the town but have received less attention, possibly because they have had more stable populations over a longer period of time, or because they are less widespread. These include: *Japanese Barberry*, *Morrow's Honeysuckle* (and a few other non-native honeysuckles), *Asian Bittersweet*, and *Phragmites*. Several more plant species are in our general area but have not been spotted in Strafford. They include: *Black Swallowwort* and *Garlic Mustard*.

The State Health report just issued information about a plant not previously on our radar:

False Spirea: Steeplebush look-a-like is an early detection invasive A member of the rose family (Rosaceae), *False spiraea* (alt. *false spiraea*) (*Sorbaria sorbifolia*) has a native range in the more northerly climes of Asia (northern China, Korea, Japan, Siberia). It is a shrub, and can be found in forest edges, meadows, fields, and disturbed areas. The presence of this species tends to be related to human settlement and landscaping, but local populations become very dense and impact the ability of native species to grow or regenerate. *False spiraea* is spread throughout the northeastern US and eastern Canadian provinces, and in places along the West Coast and Alaska. Cornell University's Woody Plants Database considers this plant to be hardy to zone 3a. It has been mapped across New England, into Pennsylvania and points west. In Vermont, populations are isolated but expanding locally, with well-developed populations in numerous counties, and in sensitive areas like the Green Mountain National Forest and the Northeast Kingdom. *False spiraea* is currently considered moderately invasive in Southern Ontario, and is identified as having invasive tendencies by the Adirondack Park in New York. It is soon to be added to the watch list in Vermont, meaning the plant has invasive tendencies, but is not yet prohibited. This plant is considered an early detection invasive species in Vermont, as there are several accounts of the spread of this plant in the state, but it is not yet well established. The best time to identify this plant is during the late summer, when it is flowering. The flowers are tall panicles, similar in appearance to the native white or rosy meadowsweets (*Spiraea alba*, *Spiraea tomentosa*), and is where it gets its common name of "false spiraea". To learn more, check out the USDA NRCS Plants Database, Cornell University's Woody Plants Database, Wisconsin DNR, Southern Ontario Urban Forests Associates, Urban Forest Associates Inc., Credit Valley Conservation, Ontario, Invasive Plant Council of New York State, NY Non-native Plant Invasiveness Ranking Form, New Jersey Conservation Foundation), and the Invasive Plant Atlas of New England.

STRAFFORD'S INVASIVE CONTROL EFFORTS:

The Strafford Conservation Commission, along with the help of many Strafford Citizens, has been working to develop a plan for addressing invasive plant concerns. In 2014 an open meeting was held to discuss these concerns and strategies to address them. The Conservation Commission has continued to keep the subject on the agenda during the spring, summer, and fall months.

Volunteer efforts have taken place at the Justin Morrill Homestead (Chervil), at the soccer field/tennis court area, and along rural roads edges (Parsnip and Chervil). These efforts have

involved pulling, cutting, and/or pulling plants. The effort has been scattered and irregular, and in areas of denser populations, less than successful. At least one successful rural roadside effort has been made on Alger Brook Road, which 5 years ago had several sizeable patches of parsnip. These areas have almost disappeared, and with a few more years of diligence, will hopefully have totally disappeared. This work was carried out by only a handful of volunteers; a testament to the value of organizing rural road groups to keep the road-side invasives from spreading out of the central valley. It is likely that this level of volunteer work is taking place on other rural roads and on private lands and has just not been reported.

Roadside Mowing: The Conservation Commission has been working with the Selectboard and Road Crew in an effort to time mowings so that they provide some partial control for invasive populations and avoid spreading ripe seed to un-infested areas. It is very difficult to get the timing of this right, as both Chervil and Parsnip, in an ideal world, would be mowed twice. Generally the first mowing has been moved up to coincide with Chervil flowering times and that has been helpful. Purple Loosestrife is another plant that can be controlled, at least partially, through mowing. One of the drawbacks of relying on mowing is that the town generally only manages two mowings per year, at the most, and it is difficult to hit all the flowers with just two mowings.

At this point in time, it seems that the most ideal mowing times are:

Chervil: late may

Parsnip: late June

Loosestrife: late July.

TAYLOR VALLEY INVASIVE REMOVAL PROJECT

This project began August 20th, and ended September 29th, 2016, and was aimed at the removal of invasive plants from the Strafford portion of Taylor Valley. The following paragraphs are taken from the final report for the project.

Taylor Valley is considered by the Town of Strafford to be a unique town resource and is also ecologically important in many ways. It contains one of the largest undeveloped forest blocks in the region: 13,125 acres in size. In local and state-wide prioritized mapping projects it is ranked #1 locally, and #3 State-wide (scale of 1-10 with 1 being the highest importance ranking), for ecological importance. The area has many important features including calcareous wetlands and uplands, high elevation spruce-fir forest, pristine streams, and several rare plant populations. The area is also highly valued by towns-people for remote recreational activities such as hunting, hiking, snowmobiling, and back country skiing.

Glossy buckthorn was the primary target for control, but common buckthorn, non-native honeysuckle, and a small amount of Japanese Knotweed were also treated. Scoping efforts took place throughout the area, wherever populations were known or the likelihood of plants was high (openings, wetlands, and logged areas). Within the treatment area, small isolated populations in the northern and middle part of the valley were found and eliminated. Further south in the valley,

where populations are much more extensive and some previous treatment had also been done, treatment was much more extensive. Approximately 75% of the project work took place on the Hemenway property in the southern part of the valley. The entire target area, except for inside the Robinson pasture land (see map) was treated using the “water-safe” chemical Glyphosate (Rodeo). A combination of cut-stump and foliar spraying was used, depending on the location and size of plants. These more heavily infested areas will need follow-up treatment over the next five years and the Strafford Conservation Commission is discussing how best to make sure this happens. Most of the area treated was on properties abutting Taylor Valley Road, but several properties up Mundel Road and Hemenway Road were also treated. It is acknowledged that chemical treatment, generally speaking, is undesirable, but in this case it was decided that the population was treatable in scope, and in an important enough location to make the effort. The alternative of allowing the populations to continue to spread into one of Strafford’s most pristine and wild areas seemed unacceptable. The hope is that with this first chemical treatment, follow-up work can be largely hand-pulling, with only very scattered and occasional chemical treatment.

Twenty volunteers gave 78.5 hours of time pulling smaller seedlings and flagging areas for chemical treatment. In the process they were trained to recognize several invasive species as well as native look-alikes (including a native buckthorn and a native honeysuckle). They were also given basic safety training. Quite a few of these volunteers came from neighboring towns. Many volunteers have committed to returning in following years to continue follow up work. Ten landowners volunteered to have their properties inspected and treated, if necessary. Only one of these properties appeared completely free of the target invasive plants. During the scoping process, these landowners were alerted to the hazards of these plants, taught to recognize them, and encouraged to monitor their properties into the future. Foresters for the Hemenway and Hayden properties donated their time for scoping out population hot-spots. The Project Administrator gave a partial donation of time for the oversight of the project and for scoping and mapping areas for chemical treatment. Approximately 225 hours went into the treatment of plants, with almost 300 acres being scoped and treated as needed (38 of these acres were classified as moderate to heavy infestation). The total amount spent on chemical treatment was \$14,000.

From the perspective of the Strafford Conservation Commission, this project has been extremely successful. Given the density of infestation in the southern part of the valley, it was not a given that the entire target area would get treated. The work went faster than anticipated and result was that the entire area was scoped and treated and additional adjacent properties were identified and also treated. The involvement of volunteers and landowners in the process added a positive community-feel to the project. The Town of Strafford would like to thank the following donors:

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We would also like to thank the foresters, landowners, and volunteers for their enthusiastic involvement in and support for the project. We would like to thank Coverts; a Vermont organization that promotes sustainable management for wildlife habitat, for holding a half-day workshop in the Taylor Valley and donating that time towards invasive plant removal there. And finally, thanks go to the Strafford Conservation Commission, and the Selectboard for supporting the project and the Town of Strafford for providing not-for-profit status for the funding.

For all the above listed efforts there are many volunteers who have been involved.
Volunteers included:

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Dori Wolfe
Susan Tiholitz
Lydia Flanagan
Judith Falk
Barbara Smith
Wally Smith
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