Vermont Forest Health

Insect and Disease Observations—June 2015

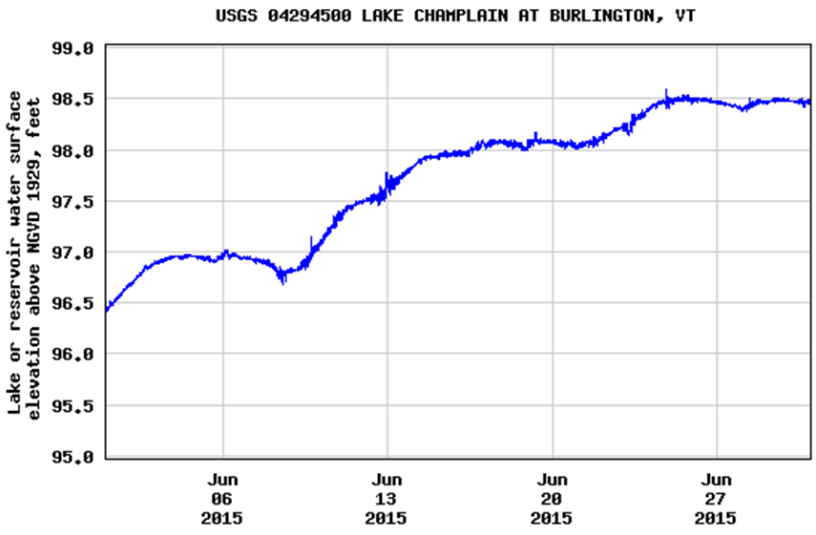
Department of Forests, Parks & Recreation
June 2015 vtforest.com

June: In a Word, Wet

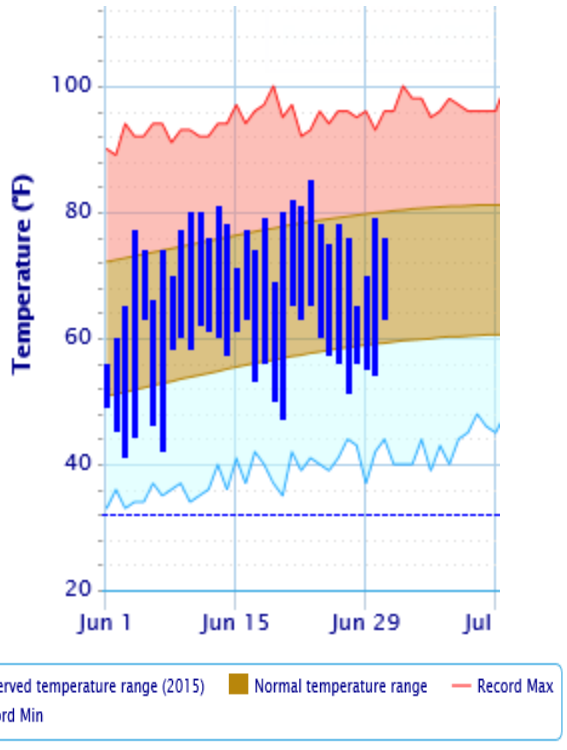
2015 featured the wettest June on record for Montpelier, VT. By June 30th, 10.96 inches had fallen in the capitol city, breaking the previous record of 8.36 inches set in 2013. June was also the wettest on record for Mt. Mansfield (3950 feet), with a total rainfall of 15.54 inches, breaking the previous 15.28 inch record set in 1998, and the third wettest on record at Burlington with 8.67 inches. During the last weekend of the month, strong winds of 30-40 mph combined with wet soil conditions and led to downed trees and power outages in some parts of the state.

Though the level has remained below flood stage of 100 feet, the wet month also resulted in early summer rises in the level of Lake Champlain. Dating back to 1907, the 98.46 foot lake level at the King Street Ferry Dock is the 5th highest ever observed for June 30.

It felt unseasonably cool for much of the month. In Burlington, 15 days out of 30 were below average, and 8 of those days were more than 5 degrees below average, ranging up to a 9.2 departure on June 2. The monthly temperatures ended up 0.9 degrees below average.



Daily Temperature Data—Burlington, VT
Period of record: Max:1883-present, Min:1884-present, Normal: 1981-2010



(Above) Lake Champlain June 2015 water level: USGS National Water Information System. (Right) Daily temperature data in Burlington, showing departure from normal. NWS, Burlington.

Frost Effects Now Obvious

In our May update, we reported that frost damage to sugar maple, beech, and ash was noted in several locations after temperatures in much of the state dove to the mid-20s on May 22. In June, we found that young maple buds and leaves had been damaged over a broad area, especially on western slopes. As these trees were rapidly refoliating, the effects became increasingly obvious. Brown margins had developed on old foliage, the refoliation hadn't greened up yet, and crowns were still thin. Most of the observed damage has been to sugar maple, with some on red maple at higher elevations. Areas with significant frost damage include the Northfield and Braintree ranges, the Vershire area, and the southern Green Mountains.

Western slopes of the Northfield and Braintree ranges have obvious frost damage to sugar maples (left). By late June, damaged trees were refoliating (right). Photos: J. Halman

Pine Issues

There have been several new reports of **Red Pine Mortality**, focused on two areas of the state where this syndrome has been observed previously: central Orange County and southeastern Rutland County.

Similar observations have been made in other New England states. Red pine scale has been associated with some mortality in other states, but we haven't detected red pine scale, so far, in Vermont. Shoot and needle blights have been found, but their importance is unclear.

In summary, the cause is unknown. A research project being led a doctoral student at UNH, and funded in part by the US Forest Service, is working to identify whether a primary pest or pathogen is responsible.

The cause of red pine mortality, occurring in a couple of "hot spots" in Vermont and elsewhere in New England, is under investigation. Photo: J. McGraw

The **White Pine Needle Damage** epidemic continues, for at least the 6th consecutive year. From ground observations, and an aerial survey conducted over the Green Mountain National Forest by the US Forest Service, the browning appears worse than 2014. Brown needles dropped very quickly this year, and most were cast by the end of June. Although several fungi are involved, the most important appears to be the brown spot needle blight, *Mycosphaerella dearnessii.* The major infection period for brown spot is June and July, so this year's wet conditions suggest damage will continue in 2016.

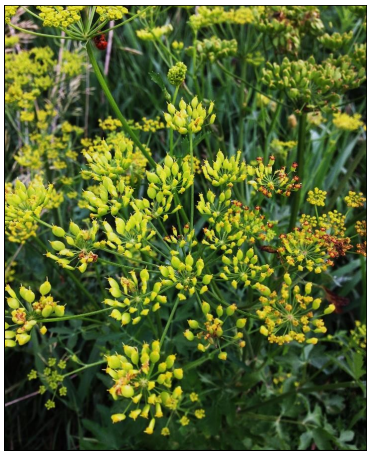
In addition to defoliation, repeated infection results in stunted current-year foliage. Research being conducted out of UNH has found annual increment growth reductions associated with needle loss. Growth has rebounded during years with less damage, except for trees with high severity infections, whose growth has continue to decline by 25-30% since 2009. For recommendations regarding this disease, see the Forest Health Update for June 2014.

White pine needle damage is widespread. Repeated infection results in stunted current-year foliage. Photo: J. Halman.

Blooming Biennial Blight: Broken Bolts & Blades Burn

This month's featured invasive plant is **Wild Parsnip** (*Pastinaca sativa*). This member of the carrot family has a two stage life cycle, leafing out for one or more years to gather energy stores, and sending up a tall bolt and flowering in the second stage. Wild Parsnip is easy to identify when flowering because of the distinctive tall, yellow lacy flowers, and leaves alternately arranged with 5-15 leaflets per leaf. The plant flowers from June into later summer, and the seeds are viable in soil for up to 4 years.

The history of this species' introduction to North America is unknown, though some herbarium samples are available from the mid 1800's. It is likely wild parsnip is a garden escape gone wild. It has a taproot like garden parsnip, but beware! When the plant is broken or crushed, and sap that comes in contact with skin is exposed to light, it causes a chemical burn. The VT Dept of Health has more information. A native look alike, Golden Alexander (*Zizia aurea*), is more diminutive, and flowers earlier in the season.



First year leaves of Wild Parsnip grow in a basal rosette (left). The following year, an aerial shoot, called a "bolt", produces a flat-topped umbel of clustered yellow flowers (center). Wild parsnip often becomes established on disturbed roadsides, and eventually invades meadows and fields (right). Photos: E. Spinney.

Moth-pocalypse

A report of "gazillions of dead moths" near the waterfront in downtown Burlington was an indication that the Satin Moth caterpillars (*Leucoma salicis*), seen there earlier this spring, had reached maturity, mated and were beginning to die, leaving their eggs behind. Satin moth defoliation was also observed elsewhere in Vermont, including on the I-89 median between Williamstown and Randolph.

The caterpillar stage of the satin moth feeds primarily on the leaves of poplar, cottonwood, aspen and willow. Even after the caterpillar is done feeding, its damage can be identified by remnants of loosely woven silk cocoons on twigs, leaves, and other objects. Repeated attacks can cause branch dieback.

The distinctive Satin Moth caterpillar has white spots and paired, red setal warts along its length (top center and right). Moths (bottom center) are attracted to light, but are also day fliers and can cover nearby surfaces when they are in flight. After the caterpillar is done feeding, remnants of the silk cocoons can be seen on twigs (left). Photos: J. Forand, A. Alfieri, N. Siegert, and Natural Resources Canada, Canadian Forest Service.

Balsam Woolly Adelgid

We have received scattered reports of dying balsam fir in landscape situations. Although there seem to be multiple causes, at least some are infested with Balsam Woolly Adelgid. This insect is closely related to hemlock woolly adelgid, but was introduced to the region about 100 years ago. The woolly masses can be found on any bark surface. Infested twigs can become swollen, or "gouty". Heavy populations on the mainstem can kill the tree. Like hemlock woolly adelgid, cold winters help keep it in check.

Balsam woolly adelgid can be found on the mainstem, branches or twigs. Photo: J. Hartland.

Yellowheaded Spruce Sawfly

The Yellowheaded Spruce Sawfly (*Pikonema alaskensis*) is most often associated with isolated spruce trees in landscape settings. That was true in this case, where the gregarious sawfly larvae quickly stripped the foliage from a treasured blue spruce in Brownington. While the larvae preferentially feed on new needles, previous years' foliage will be eaten when populations are high.

When yellowheaded spruce sawfly larvae are disturbed, they will rear up their heads in a threatening posture. Photo: J. Furbush

Wolf's Milk Slime Mold

Ever wondered about those pretty pink fruiting bodies clustered on rotting wood? They are commonly referred to as Wolf's Milk Slime Mold (*Lycogala epidendrum*), one of the most widely distributed and best-known slime molds.

Slime molds are in the phylum Myxomycophyta. Once grouped with fungi, but now classed as protozoa, they have complex life cycles. Their "plasmodial stage" might be referred to as their "creepy stage". They move as masses of protoplasm, and "engulf bacteria, spores of fungi and plants, protozoa in an amoeboid manner." Eventually, they develop into spore-boring structures, covered with an outer wall.

The fruiting bodies of wolf's milk slime mold are often bright pink when they form (left) but turn brownish as they mature (right). Photos: B. DeRoy and N. Campbell.

European Skippers

European skippers (*Thymelicus lineola*) are having a banner year. Adults feed on the nectar of many of our low-growing wildflowers. The larvae prefer timothy and other grasses.

European skippers are found in open meadows. Peak adult flight is in late June/early July. Photo: W.H. Amos

You Have Some Gall

Plant abnormalities that are caused by gall-forming mites and midges can look alarming to some, but most often they are of little consequence for the health of the tree. Two foliar galls have been observed recently. **Spindle Gall** on cherry is caused by eriophyid mites. Their feeding results in densely packed or distorted growth. **Gouty Vein Gall** on sugar maple is caused by a midge. Maggots of this tiny Cecidomyid fly (*Dasineura communis*) cause leaf tissues along upper surface veins to swell. The pouch gall that envelops them dries and cracks open when they complete feeding .

Spindle galls are caused by eriophyid mites (left). The gouty vein gall midge creates a pouch gall along major leaf veins. Photos: L. Claffee (left) and K. Michaud (right).

Crown Gall is caused by a bacterium, *Agrobacterium tumefaciens*. These galls often occur on roots and root collars, as well as the mainstem. The crown gall bacteria are generalists (non host-specific) and widely spread in the environment. The gall is rarely lethal.

Pictured here on bittersweet, crown gall isn't likely to provide much control of the invasive plant. Photo: M. Rabinowitz

In Other News: Protecting New England Forests from Hemlock Woolly Adelgid involves regional collaboration. You can read more about the work that has been accomplished at http://www.stateforesters.org/news-events/blog/partnership-protecting-new-england-forests-hemlock-woolly-adelgid.

For more information, contact the Forest Biology Laboratory at 802-879-5687 or:		
	Windsor & Windham Counties.....	Springfield (802) 885-8845
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	Lamoille, Orange & Washington Counties.....	Barre (802) 476-0170
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