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Spruce Spider Mite

Fig. 1. An adult spruce spider mite on a conifer needle. (USDA Forest Service Archive, USDA Forest Service, www.Bugwood.org)

Fig. 2. Yellow stippling on hemlock giving the needles a “bleached out appearance.” (HGIC, University of Maryland)

Introduction: The spruce spider mite (SSM), *Oligonychus ununguis* (Jacobi) (**Fig. 1.**), is a frequently encountered pest on various conifers in landscapes on Long Island. It is listed as being one of the most destructive conifer-feeding spider mites in Canada and the United States. The SSM reproduces actively in cool, moist weather during the spring/early summer and then again during the late summer/fall. Unlike many of the other spider mites commonly encountered in landscapes the activity of the SSM will begin to decline as the weather during the summer months becomes hot and dry. On Long Island SSM commonly attacks spruce (*Picea* spp.), arborvitae (*Thuja* spp.), juniper (*Juniperus* spp.), hemlock (*Tsuga* spp.), Douglas-fir (*Pseudotsuga menziesii*) and pine (*Pinus* spp.). It is not unusual to see trees or shrubs in landscapes with serious injury from this pest.

Symptoms: As the SSM feeds it destroys the chlorophyll bearing cells located on the surface of the needle or leaf scale of its host. This injury shows up as yellowish or whitish stippling or flecking. Sometimes the injured foliage can take on a "bleached out" appearance (**Fig. 2 & Fig. 3.**) With time this injured foliage will progress to a bronze and/or brown color. Where injury is severe loss of foliage can occur.

As with other mites fine webbing may be noticed on the needles or scales and at times on the twig itself (**Fig. 4.**) This webbing acts as a collector of dust and debris and is responsible for sometimes giving the foliage a dusty or grayish appearance. Hatched eggs and "cast skins" may be seen in this webbing and/or on the needle or scales of the host plant.

The SSM prefers feeding on older needles or scales. Symptoms from injury inflicted during the spring/early summer sometimes intensify during the summer months. Since feeding injury did not occur on the current year’s needles or scales symptoms would only be seen on the previous year’s foliage at that time.

During the early spring is not uncommon to see the beginning of severe browning of needles or scales which were injured by the feeding of the SSM the previous late summer/fall. This could easily be misdiagnosed as "winter injury" from sources other than the SSM.

Fig. 3. Yellow stippling on pine needles. (J. Davidson, University of Maryland)

Fig. 4. A conifer infested with spruce spider mite. *Note the fine webbing between the needles as well as the mites on the webbing*. (USDA Forest Service - Northeastern Area Archive, USDA Forest Service, www.Bugwood.org)

Life Cycle: The SSM over winters as an egg, which was deposited the previous fall under bud scales, at the in base of petioles (hemlock), in needle axils, or under webbing on the stem or branches. The reddish-brown eggs (**Fig. 5.**), which are spherical in shape, hatch in the spring (April through early June). Adults are approximately 0.5 mm in length and their color can range from dark green to dark brown. Three or more generations will develop in a season, each successive generation being produced at 2-3 week intervals. Usually reproduction declines during hot, dry summer weather (usually late June/early July through early- to mid August). Activity increases again as cooler weather later in the summer (mid- to late September) starts to prevail. This late summer activity can last through September to early November depending on temperatures. The SSM can easily be carried to another host plant by winds as well as by animals such as birds.

Management: Frequent monitoring for spider mites early in the season is suggested to determine if controls should be started. The easiest method available to check if SSM are present is to hold a white object, such as a piece of paper or paper plate, under a branch. Tap the branch with a pencil or similar object to get a consistent force, which will dislodge the mites. If mites are present, they will look like small specks of soil or pepper moving around the paper. Spruce spider mites will leave a red mark when squished. Their presence should be verified by using a small hand-lens. Sample 3-5 branches per plant suspected to be infested and check each suspected plant in the landscape. Also look for the white, fast moving Phytoseiid predatory mites. If the predaceous mites are in abundance, they will effectively suppress pest mite populations. However, if you see more than 10 spruce mites per tap and no predators, treatment may be required. Use a lower per tap threshold on Alberta spruce.

Control on arborvitae, hemlock, & juniper: Apply after new growth begins mid- to late May (192–363 GDD), and in late August through mid-September (2375–2806 GDD). Treat undersides of leaves as well as upper sides. Please contact your local Cooperative Extension for specific pesticide recommendations.

Control on spruce: Horticultural oil may be used as a dormant spray in April (7–121 GDD) before new growth begins. After new growth begins in mid- to late May (192–363 GDD) and in late August through mid-September (2375–2806 GDD). Treat undersides of leaves as well as upper sides. Please contact your local Cooperative Extension for specific pesticide recommendations.

Note: Several grades of horticultural oil are available. Some are strictly limited to dormant use; others can be applied to actively growing plants in spring and summer. Most trees can be treated in the summer, but check the label to be sure. Under adverse spraying conditions such as high heat and relative humidity, sensitive species may suffer from phytotoxicity. Spruce and Douglas fir (dormant sprays); junipers (summer sprays); show a tendency toward sensitivity: Glaucous evergreens (those with a bluish bloom) may temporarily lose their blue color if oil is applied, and the natural bloom may not return for one to two years. Never spray when trees are under stress or temperatures are expected to be 90° F or above.

For information on utilizing GDD contact Cornell Cooperative Extension – Suffolk County or visit the CCE web site Using Growing Degree Days for Pest Management.

Fig. 5. Spruce spider mite eggs present on the bark of a twig and near the base of a needle. (USDA Forest Service - Region 4 Archive, USDA Forest Service, www.Bugwood.org)

Reference: *Insects That Feed On Trees and Shrubs*, 2nd Edition, by Warren T. Johnson and Howard H. Lyon and *Branching Out*, Volume 14 No. 3 May 4, 2007.

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Pesticide and management recommendations obtained from*: Cornell Pesticide Guidelines for Managing Pests Around the Home, Cornell University, 2014*

The New York State Department of Environmental Conservation (NYSDEC) Bureau of Pest Management maintains a web site with a searchable database for pesticide products currently registered in New York State. Individuals who have Internet access can locate currently registered products at http://www.dec.ny.gov/nyspad/products?0.

This publication contains pesticide recommendations. Changes in pesticide regulations occur constantly and human errors are still possible. Some materials mentioned may no longer be available, and some uses may no longer be legal. All pesticides distributed, sold or applied in New York State must be registered with the New York State Department of Environmental Conservation (DEC). Questions concerning the legality and/or registration status for pesticide use in New York State should be directed to the appropriate Cornell Cooperative Extension specialist or your regional DEC office. Read the label before applying any pesticide.

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