



J. Ghent; Bugwood.org

INVASIVE INSECT

Spongy moth

Lymantria dispar

MARCH 2024



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ABOUT

Spongy moth (*Lymantria dispar*) is a voracious invasive defoliating moth whose caterpillars feed on over 300 species of hardwood and conifer trees. *L. dispar* is comprised of two recognized subspecies: European spongy moth (*L. dispar dispar*), which is native to Europe and North Africa and the flighted spongy moth complex (FSMC) (*Lymantria dispar asiatica*, *L. dispar japonica*, *L. albescens*, *L. postalba*, and *L. umbrosa*), which is native to Russia, South Korea, and China. The European subspecies was introduced to North America in 1869 and while populations of spongy moth are found each year in BC, they have not become permanently established in our ecosystems.



DISTRIBUTION

European spongy moth is not established in BC but is found widespread in the Eastern United States and Canada, including the provinces of Ontario, Quebec, New Brunswick, Nova Scotia, and Prince Edward Island. The FSMC is not currently established anywhere in North America. A spongy moth egg mass was first detected in BC in 1911 on an imported ornamental tree seedling from Japan. During the 1970s and 1980s, moths and egg masses originating from the East coast of North America were intercepted. In 1991, adult FSMC were found around the Port of Vancouver. New FSMC detections still occasionally occur but prevention programs in place appear to have been successful in preventing its establishment in Canada. In addition, yearly treatments, informed by trapping surveys, occur across BC to prevent newly transported populations from establishing a permanent foothold.

LEGAL STATUS

Spongy moths are federally regulated pests and are listed as a “Provincial EDRR” species on the Government of BC’s Priority Invasive Species list, meaning it is considered high risk to BC and has a management objective to eradicate.

IDENTIFICATION

Female moths are larger, with a 5.0 cm wingspan, white wings that feature a dark zig-zag pattern across the midsection, and yellow-white hair on their head and thorax. Males are significantly smaller with a 2.5 cm wingspan, brown wings, brown hair on their head and thorax, and feathery antennae. Both male and female spongy moth are characterized by a chevron (a V-shape), pointing to a dot pattern on their wings. Females of European subspecies are unable to fly, however, females of the FSMC subspecies can.



Spongy moth male



Spongy moth female

Eggs are laid on a flat surface, such as a tree trunk or the side of a building, in a beige “spongy” mass measuring 3-8 cm in diameter. Egg masses appear fuzzy with tiny hairs.

The caterpillars have six larval instars (stages). When first hatched, caterpillars appear hairy, black, and brown and approximately 3-5 mm long. Mature caterpillars appear hairy and are up to 6 cm long with five pairs of blue and six pairs of red spots going down their back. The caterpillars are voracious feeders and each one can consume up to 100 cm² of foliage.



Spongy moth larvae *Spongy moth Late instar larvae under bark piece*



Spongy moth female with egg mass

ECOLOGICAL CHARACTERISTICS

Habitat: Spongy moths live mainly in forests and prefer healthy trees. Forest stands containing preferred host species are favoured, such as oaks (*Quercus* spp.), maples (*Acer* spp.), alder (*Alnus* spp.), birch (*Betula* spp.), hawthorn (*Crataegus* spp.), beech (*Fagus* spp.), apple (*Malus* spp.), cottonwood (*Populus* spp.), cherry, plum, apricot (*Prunus* spp.), willow (*Salix* spp.), and linden (*Tilia* spp.). Caterpillars feed on foliage from within the crown but can be found on all parts of the tree. Spongy moth can survive in a wide variety of temperatures, with egg masses able to survive covered in snow at temperatures as low as -38°C .

Reproduction: Spongy moth has a 1-year lifecycle. Egg masses overwinter, then in the spring, when temperatures become sufficiently warm, the eggs hatch and juvenile caterpillars ascend the trees to feed on foliage. Feeding occurs initially during the day and then at night as the caterpillars mature. Mature caterpillars pupate and emerge in mid-summer, around late July. Females usually lay their egg masses near the area in which they pupated. Each egg mass may contain 100-1,000 eggs.



USDA APHIS PPQ, Bugwood.org

Pupae stage

Dispersal: Long-distance spread is largely attributed to the movement of firewood, outdoor recreational and household items such as camping equipment, RVs and trailers, recreational gear, and outdoor furniture. They have frequently been found in birdhouses. Spongy moth egg masses may be attached to shipping containers or vehicles, which can spread them to new areas. Newly hatched caterpillars can also disperse up to a kilometre with wind (ballooning), aided by the silk thread from which they dangle from trees. FSMC females can fly large distances.

IMPACTS

Ecological: In Ontario, spongy moth was responsible for the destruction of 58,031 hectares in 2022 and 1.8 million hectares in 2021. Caterpillars feed on deciduous and coniferous trees by stripping away foliage in large numbers, reducing regeneration resulting from diminished seed production and root sprouting, increased susceptibility to secondary pests and adverse growing conditions rapidly causing mortality. Damage to trees reduces food and habitat for forest-dwelling wildlife including other insects. As spongy moth prefers certain host trees, damage to these species may affect forest composition. Understory shrubs and plants may also be affected.

Economic: Due to their ability to damage trees in large numbers, spongy moth could significantly impact the forestry and nursery industries in BC. Spongy moth can decrease the attractiveness of private property, reducing market values. Defoliated trees in urban areas impose high costs for tree removal and replacement, and the reduced attractiveness of public areas. In Ontario, spongy moth outbreaks threaten tree fruit and blueberry production resulting in increased crop protection costs.

Social: Hairs on caterpillars can cause skin irritation in some people. Damage to forest ecosystems may impact recreation. These species defoliate trees and thin canopies which degrades the aesthetic value and ecosystem function of trees.

INTEGRATED PEST MANAGEMENT

Integrated Pest Management is a decision-making process that includes the identification and inventory of invasive plant populations, assessment of the risks that they pose, development of well-informed control options that may include several methods, site treatment, and monitoring.

Prevention: If you are travelling or moving from areas with spongy moth detections, thoroughly examine outdoor items such as firewood, camping equipment, vehicles, trailers, and RVs for egg masses. Outdoor household goods such as patio furniture, picnic tables, bird and dog houses, lawn ornaments, potted plants, etc. may also be concealing egg masses.



Never move firewood—make sure to Buy Local Burn Local.

When spongy moth is detected in BC, the BC Plant Protection Advisory Council (BCPPAC) spongy moth technical advisory committee evaluates and provides recommendations on how to follow up with the new incursions. Further surveillance or eradication, if there is evidence of successful local establishment, are typical courses of action.

Treatment: CFIA undertakes surveillance annually to monitor for spongy moth across the province using pheromone traps. The surveillance data gathered is evaluated by the BCPPAC spongy moth technical advisory committee which informs where treatments should occur. The most common treatment option used worldwide is *Bacillus thuringiensis* (Bt). It is a naturally occurring bacteria that is found in soil and on plants. Treatment using the Bt subspecies, *B. thuringiensis* “kurstaki” variety (Btk), is most appropriate in areas with confirmed spongy moth infestation applied by trained and certified applicators. Btk can be applied both aerially and from the ground level with hydraulic sprayers to the vegetation consumed by the caterpillars. Btk products pose low risk to humans, other mammals, plants, birds, fish, honeybees or other beneficial insects, and target only the caterpillars of other moth and butterfly species. It can be applied over waterbodies and urban areas. For detailed treatment information please see the [BC Ministry of Forests webpage](#).

Note—Application of pesticides on Crown land must be carried out following a confirmed Pest Management Plan (Integrated Pest Management Act) and under the supervision of a certified pesticide applicator. Treatment of private land is authorized by a special regulation under the provincial Plant Protection Act. Aerial spraying over all lands requires a Pesticide Use Permit issued by the BC Ministry of Environment and Climate Change Strategy. Ground spraying of Btk does not require a pesticide use permit only that the operator has a Pest Control Service License and employs certified pesticide applicators.

REPORT

If you find spongy moth egg masses, caterpillars, or adults, ensure you wear gloves while handling them. Take several photos of the specimen and report any suspected spongy moth immediately by using the mobile Report-Invasives-BC app for Apple and Android platforms, available for [download](#).

You can report any invasive species through the ISCBC [website](#), emailing info@bcinvasives.ca or 1-888-933-3722.



D. Holden; CFIA 2018

REFERENCES/LINKS

[Canadian Food Inspection Agency Lymantria dispar dispar \(LDD moth\) – Fact sheets.](#)

[Invasive Species Centre – Spongy moth information.](#)

[Divergent behavioural responses of *Lymantria dispar* caterpillars from three different subspecies to potential host trees \(2019\) Scientific Reports.](#)

[Province of BC – Spongy Moth.](#)

[Ontario Ministry of Natural Resources and Forestry - Spongy Moth.](#)

[Gypsy moth in Canada: Behaviour and Control. Canadian Forest Service.](#)

Developed with support from the Province of British Columbia.

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ADDITIONAL CONTACT INFO