



Image: Daniel Adam, Office National des Forêts, Bugwood.org

Nun moth caterpillar. Note the distinctive pattern of blue and orange spots. Fully-grown caterpillars may be up to 4 cm in length.

Nun moth, or black arches

Nun moth *Lymantria monacha* (Linnaeus) is a large conifer-feeding moth (Lepidoptera: Erebidæ: Lymantriinae). This pest is not present in New Zealand. Help us keep nun moth from establishing here by learning what to look for.

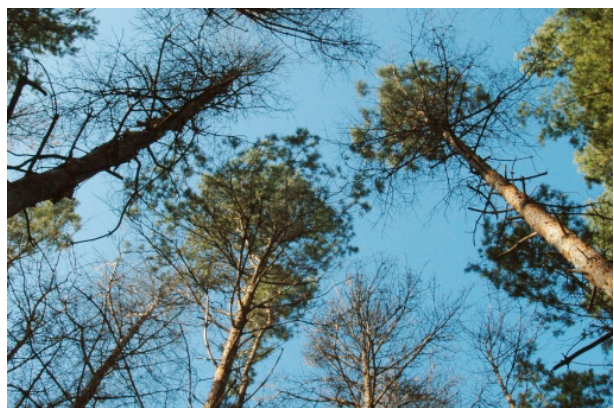


Image: Hannes Lemme, Bavarian State Research Center for Agriculture, Bugwood.org

Pinus sylvestris (Scots pine) trees following nun moth defoliation two years previously. Some of the trees are in severe decline, others have died.

Nun moth is a threat to New Zealand's forestry industry as it is a significant pest of forest tree species, including pines, in its native range. While there are no known records of nun moth damage to *Pinus radiata* in the field, nun moth feeding trials conducted in the laboratory have shown that *Pinus radiata* would be a suitable host for this pest, should the two ever meet.

Nun moth occurs naturally throughout Europe and Asia. In central Europe, periodic outbreaks occur in stands of *Pinus sylvestris* (Scots pine) and *Picea abies* (Norway spruce), sometimes as often as once every several years, causing severe tree damage. Trees may be completely defoliated during these outbreaks, leaving them vulnerable to attack by other pest or disease agents which can lead to tree mortality.

Symptoms to look for

- Hairy brown patterned caterpillars feeding on conifer foliage, with masses of half-eaten needles and caterpillar excrement collecting on the ground beneath infested trees.
- Adult moths with wings marked with a black or dark brown "zig-zag" pattern on a pale background, on or near potential conifer hosts. Note that the appearance of the wings is variable, often with less obvious patterning.

Hosts

Nun moth feeds on many species of conifer, including pine (*Pinus*), spruce (*Picea*), larch (*Larix*), fir (*Abies*) and Douglas fir (*Pseudotsuga*), as well as some broad-leaved hosts including oak (*Quercus*), ash (*Fraxinus*), birch (*Betula*), apple (*Malus*) and other fruit trees.

Moth life cycle

Nun moth has one generation per year. Overwintered egg masses hatch mid to late spring, with the caterpillars feeding intensively, pupating, and emerging as adults mid-summer to early autumn. The adults only live about a week. Each mated adult female can produce up to a maximum of approximately 300 eggs. These are deposited in small masses within bark crevices, under bark scales, or beneath lichens attached to the bark of potential conifer hosts, as well as in crevices of shipping containers, pallets and the like.

Nun moth can naturally disperse short distances as newly-hatched caterpillars by spinning silken threads and "ballooning" on the wind, or as adults by flying. Long-distance dispersal of nun moth is most likely via unintentional transport of materials infested with egg masses (and possibly, other life stages).

Identification and testing

Identification of adult specimens can be confirmed by microscopic examination of certain characters by a person skilled in the morphological identification of insects. All life stages can be identified using molecular sequencing techniques.

As required by the Biosecurity Act (1993), if you encounter any insects or tree damage which you suspect could be nun moth, call the Biosecurity New Zealand Pest and Disease hotline – 0800 80 99 66. The Ministry for Primary Industries will coordinate how best to proceed with sampling and identification.



Top: Adult male nun moth. Bottom: Adult female nun moth.

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