GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Hyphantria cunea***

Hyphantria cunea **System:** Terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Insecta	Lepidoptera	Arctiidae

Common name noctuelle d'automne (French, France), chenille blanche (French, France), Spinner, Weisser Baeren (German, Germany), Amerika-siro-hitori (Japanese, Japan), chenille à tente estivale (French, France), écaille fileuse (French, France), hvit bjørnespinner (Norwegian, Norway), vid bjøernspinnare (Swedish, Sweden), Webebär, Amerikanischer (German, Germany), weiser Bärenspinner (German, Germany), weisser Bär (German, Germany), fall budworm (English), hvit bjoernespinner (Norwegian, Norway), hvid bjoernespinder (Danish, Denmark), American white moth (English), fall webworm moth (English), fall webworm (English), gusano de la bolsa (Spanish, Spain), black-headed webworm (English), falena tessitrice (Italian, Italy), ifantria americana (Italian, Italy), hvid bjørnespinder (Danish, Denmark), weisser amerikanischer Bärenspinner (German, Germany), mulberry moth (English), redheaded webworm (English), Amerikanischer weisser Bärenspinner (German, Germany), Amerikanischer Webebär (German, Germany)

Synonym *Hyphantria textor* , (Harris)

Similar species

Summary Biological invasions of insects, plants and fungal pest species often cause substantial disturbance to forest ecosystems as well as severe socio-economic impacts. Posing an agricultural and economic threat, Hyphantria cunea is significant due to its high polyphagy, which puts a wide variety of plant species at potential risk. Hyphantria cunea is commonly known as the fall webworm and can be a pest in both natural and planted forests.

view this species on IUCN Red List

Species Description
The adult fall web worm (*Hyphantria cunea*) has a wingspan of 25-31mm and is snowy white, usually with dark spots on the wings (Virginia State University 1996). Larvae are brownish-grey, 25 - 30/40mm long, and have 12 small warts surmounted by characteristic tufts of hair (Virginia State University 1996; Wittenberg, R. (ed.) 2005). Their silk nests enclosing a number of leaves are characteristic (Wittenberg, R. (ed.) 2005). Eggs are small, yellow or light green, and usually located in hair-covered masses on the underside of leaves. Mature larvae are 25-31mm long and covered with silky hairs. Colour varies from pale yellow to green, with a black stripe on the back and a yellow stripe on each side. Head colour varies from red to black. Pupation occurs in thin cocoons usually spun in the duff or just beneath the surface of the soil (Virginia State University 1996).

Lifecycle Stages
In Central Europe there are usually 2 generations per year. Pupae overwinter in the bark cracks or in the soil. Adults fly in April-May and lay eggs in groups, usually on the underside of leaves. Larvae usually have 7 instars, but up to 11 can be observed. Early instars are gregarious and build colonial silk nests enclosing leaves, in which they live to the fifth to sixth instars when they become solitary and disperse. Then, they pupate in refuges and emerge for a second generation, which flies in July-August (Wittenberg, R. (ed.) 2005). In North America from May to July, adult moths lay their eggs. Eggs hatch within two weeks and the larvae immediately begin feeding and constructing webs. Larvae feed and webs continue to enlarge for four to eight weeks. There are at least two generations per year in the South (Virginia State University 1996).

Habitat Description
Because of its polyphagy the adult fall web worm (*Hyphantria cunea*) can invade most types of habitats (with respect to European habitats) (Wittenberg, R. (ed.) 2005). However it seems to be unable to establish itself in the northern half of Europe, probably because of climatic constraints (Wittenberg, R. (ed.) 2005).

Reproduction
According to Biosecurity New Zealand and the FAO (2007) a female fall webworm (*Hyphantria cunea*) may lay up to 500/600 eggs at a time and there can be up to four generations of the moth in a single year.

Nutrition
The fall web worm (*Hyphantria cunea*) is a highly polyphagous Lepidoptera and eats a wide range of forest and fruit trees, shrubs and herbaceous plants. Some of 600 host plant species have been recorded as food. In Romania, it was demonstrated that, although *H. cunea* is polyphagous, normal development will occur only on the few preferred food plants: mulberries, maples, apples, cherries, pears and plums (rather than grapes, strawberries, roses, hops or *Ailanthus altissima*) (Iamandei *et al*. 2004; Smith *et al*. 1992). The most favourable for development are *Morus* spp., maple (*Acer* spp.), cottonwood (*Populus* spp.), *Platanus* spp., *Malus* spp. and *Prunus* spp. (Wittenberg, R. (ed.) 2005). Host plants also include willow (*Salix* spp.), *Fraxinus* spp., *Betula* spp., alder (*Alnus* spp.), pecan and hickory (*Carya* spp.), walnut (*Juglans* spp.), elm (*Ulmus* spp.), persimmon (*Diospyros* spp.) and sweetgum (*Liquidambar*) spp. (FAO 2007). Other cultivated plants such as grapevine, maize or soyabean can be attacked (Wittenberg, R. (ed.) 2005).

General Impacts
The fall web worm (*Hyphantria cunea*) can impact a wide variety of crop and cultivated broadleaf plant species. In Europe it is a serious pest in Bulgaria, Romania, Hungary, former Yugoslavia, Russia and northern Italy.

According to Biosecurity New Zealand heavy feeding by the caterpillars over time, can lead to defoliation (leaf loss) and limb and branch dieback. Trees/plants are often totally defoliated by the late-instar larvae, particularly in the second generation (Wittenberg, R. (ed.) 2005). Environmental impacts are likely given the high polyphagy and impact on individual plants. *H. cunea* is a threat to orchards, ornamentals and forest trees in some regions in Central and eastern Europe, as well as in eastern Asia. It is particularly damaging to ornamentals (Wittenberg, R. (ed.) 2005).
Newly emerged larvae immediately begin to spin a silken web over foliage on the terminal portions of the branches. The larvae feed on the leaves within the webs. As the larvae grow, webs enlarge and enclose more foliage. Large portions of tree branches are commonly enclosed by such webs, and are most apparent from mid- to late-summer. Early stage larvae feed on the upper surfaces of the leaves, and late instar larvae eat entire leaves except for larger veins and midribs. The insect is considered an ornamental pest due to the unsightliness of the webs; however, it is ordinarily of no great importance as a forest pest (Virginia State University 1996).
Experiments showed that sixth-instar larvae of *H. cunea* can consume a daily average of 435mm² of fresh ash foliage while seventh-instar larvae brought it to an average of 814mm² (Jarfas and Miklos 1986, in Smith *et al*. 1992).

Management Info
Preventative measures: Regulatory controls are in place in some countries to ensure that the adult fall web worm (*Hyphantria cunea*) is not spread incidentally in wood products. In Switzerland *Hyphantria cunea* is listed as a quarantine pest \"whose introduction into Switzerland is prohibited without reference to any specific plants or plant products\" (OEPP/EPPO 1999). There are also phytosanitary regulations in place which have provisions to restrict importations of wood into Switzerland and make sure that certain wood products are free of *H. cunea* (OEPP/EPPO 1999). Phytosanitary measures include the thorough inspection of plants, plant products, accompanying packing materials and vehicles from countries where *H. cunea* occurs for the presence of larvae and other stages, since all may be present at any time of year. Fumigation with HCN or methyl bromide will destroy adults, larvae or pupae, even if hidden in cracks. Vehicles may also be treated (OEPP/EPPO 1990, in Smith *et al*. 1992).
Please follow this link for detailed management information including chemical and biological control options, compiled by the ISSG.

Pathway
International trade can facilitate movement to new areas (Smith *et al*. 1992).*Hyphantria cunea* is liable to be carried on vegetative host-plant material as well as on packing materials and in vehicles (Smith *et al*. 1992).Transportation of the pest also occurs relatively often in wood logs where it inhabits cracks or holes in the bark (Shu and Yu 1984, in Smith *et al*. 1992).The facility of the larvae to withstand starvation for up to 2 weeks means that they can easily be transported on vehicles to different areas and survive to initiate new infestations (Smith *et al*. 1992).*Hyphantria cunea* can spread with vehicles, packing material, host plant material, *etc*. (CABI Bioscience 2005).

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ALIEN RANGE

[1] AUSTRIA
[7] CHINA
[1] CZECH REPUBLIC
[1] FRANCE
[1] HUNGARY
[1] JAPAN
[1] KOREA, DEMOCRATIC PEOPLE'S REPUBLIC OF
[1] KYRGYZSTAN
[1] NEW ZEALAND
[1] ROMANIA
[1] SLOVAKIA
[1] UKRAINE
[1] BULGARIA
[1] CROATIA
[1] DENMARK
[2] GERMANY
[1] ITALY
[1] KAZAKHSTAN
[1] KOREA, REPUBLIC OF
[1] MOLDOVA, REPUBLIC OF
[1] POLAND
[1] RUSSIAN FEDERATION
[1] TURKEY

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