

# NEW PEST ADVISORY GROUP (NPAG)

# Plant Epidemiology and Risk Analysis Laboratory Center for Plant Health Science & Technology

### **NPAG Report**

# Archips xylosteanus Linnaeus (Zhang 1994): Variegated Golden Tortrix

Lepidoptera/Tortricidae

NPAG Chair Approval Date: April 14, 2006



Figure 1. Adult and larvae of Archips xylosteanus.

**Initiating Event, Notifier and Affiliation, Notification Date, and First Reported Date:** On October 19, 2005, the NPAG was first notified of the presence of *Archips xylosteanus* (Figure 1) on various ornamental trees and shrubs on Memorial University Campus, St. John's, Newfoundland, when mentioned in an email from Robert W. Carlson, Agricultural Research Service, Systematic Entomology Laboratory, concerning another pest, *Hypogeococcus pungens* (Carlson 2005). The Palearctic pest was collected and identified by E. Richard Hoebeke, Department of Entomology, Cornell University, Ithaca, New York, in early August 2005 as part of an exotic pest detection program in which he was engaged (Hoebeke 2005).

Data Sheet(s): Schall 2006, CABI 2005 (incomplete).

**Current PPQ Policy:** The genus, *Archips*, is listed as reportable/actionable in the PIN 309 database, but the species *A. xylosteanus* is not. Three other *Archips* species are listed in PIN 309; *A. podana*, is reportable/actionable and *A. argyrospilus* and *A. rosanus* are non-reportable/non-actionable (PIN 309 database query 03/07/06). No *Archips* species are on the APHIS Regulated Plant Pest List (query 03/07/06).

#### **Pest Situation Overview:**

**Exotic status:** *A. xylosteanus* is an imminent threat to the United States. It is distributed in Europe, Asia Minor, Turkmenistan, Kazakhstan, Eastern Russia, China, Korea, and Japan (Meijerman and Ulenberg 2006). It was discovered in St. John's, Newfoundland in August 2005 (Hoebeke 2005). *A. xylosteanus* is not reported in the United States (Schall 2006). St John's proximity to Maine is depicted in Figure 2.

**Biology:** Females lay eggs on tree trunks or branches in batches coated with a brownish secretion. Newly hatched larvae feed on the underside of leaves, but later feed inside a tightly rolled leaf edge, usually on fully expanded foliage at the shoot tips. They pupate in a transversely rolled leaf or between two spun leaves. Adults emerge and fly from late May till mid August, depending on latitude. *A. xylosteanus* disfigures host plants, but feeding is mostly confined to expanded leaves and is of little significance. (Meijerman and Ulenberg 2006). There is one generation per year (Dickler 1991).

Brian M. Spears, Chair <u>brian.m.spears@aphis.usda.gov</u> (919) 855-7527	USDA/APHIS/PPQ 1730 Varsity Drive, Ste. 300 Raleigh, NC 27606-5202	Keith E. Colpetzer, Executive Secretary <u>keith.colpetzer@aphis.usda.gov</u> (919) 855-7640
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**Prevalence and global distribution:** Africa: Algeria (Leraut and Luquet 1995); Asia: Iran, Kazakhstan, Turkmenia, China, Japan, Russia and Korea (Kuznetsov 1987, Zhang 1994, Shiraki 1952); Asia Minor: Turkey (Zhang 1994); **Europe:** Bulgaria, British Isles, France, Germany, Lithuania, Poland, Portugal, Romania, Spain, Sweden, and Ukraine (Carter 1984, Leraut and Luquet 1995, Zhang 1994); and most recently, **Newfoundland** (Hoebeke 2005).

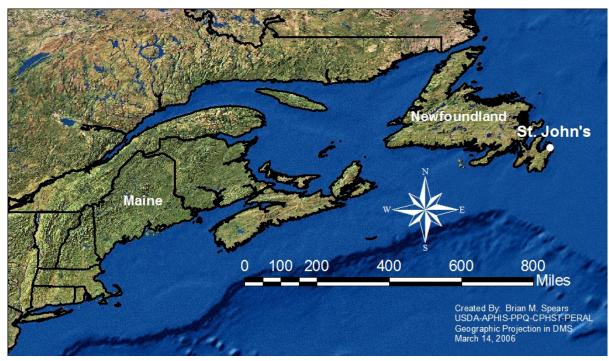


Figure 2. The proximity of St. John's Newfoundland, where *Archips Xylosteanus* was found, to Maine, the closest point in the United States.

Host range: Aceraceae: Acer spp., maple; Betulaceae: Betula spp., birch, Corylus avellana, hazel, hazelnut; Caprifoliaceae: Lonicera spp., honeysuckle; Cornaceae: Cornus spp., dogwood, Thelycrania spp., dogwood; Ericaceae: Rhododendron sp. rhododendron; Fagaceae: Castanea japonica, Japanese chestnut, Quercus spp., Oak; Grossulariaceae: Ribes spp. currant, Hypericaceae: Hypericum spp., St. John's wort; Myricaceae: Myrica spp., myrtle; Oleaceae: Fraxinus excelsior, Fraxinus spp., Ash; Pineaceae: Abies spp., fir; Rosaceae: Malus spp., Apple, Prunus spp. cherries, plum; P. apetala, a Japanese cherry, P. verecunda, a Japanese cherry, Pyrus spp., pear, Rubus spp., raspberry, Rubus fructicosus, European blackberry; Rutaceae: Citrus spp., citrus; Salicaceae: Populus spp., poplar, Salix spp., willow; Tiliaceae: Tilia spp., basswood, lime, linden; Ulmaceae: Ulmus spp., Elm (Alford 1991, Carter 1984, Kuznetsov 1987, Meijerman and Ulenberg 2006, Shiraki 1952, Zhang 1994). Kuznetsov (1978) states that the larvae damage orchard, ornamental, and forest crops, especially oak, maple, ash, elm, linden, dogwood, and fruit plants in the family Rosaceae. Carter (1984) and Zhang (1994) state that hosts include many other deciduous trees and shrubs.

**Potential pathways and spread:** Moths in the family Tortricidae are strong fliers, and Hill (1987) states that for some tortricid species, the first-instar larvae are transported on silken threads by air currents and wind. However, since Newfoundland is an Island, the risk of *A. xylosteanus* flying or being carried by wind to New England States is currently low or non existent. When the pest becomes established on the Canadian mainland, it would at some point reach the United States by natural means. Four pest risk assessments list *A. xylosteanus* as low or no risk for transport with fruit from plants in the family Rosaceae (Cave and Lightfield 1997, Hickey 1998a, Hickey 1998b, Hickey 1999). Since the pest is a leaf roller, it does have a high risk of being transported with nursery stock either commercially or with individuals traveling from Newfoundland to Maine. This would

Brian M. Spears, Chair <u>brian.m.spears@aphis.usda.gov</u> (919) 855-7527	USDA/APHIS/PPQ 1730 Varsity Drive, Ste. 300 Raleigh, NC 27606-5202	Keith E. Colpetzer, Executive Secretary <u>keith.colpetzer@aphis.usda.gov</u> (919) 855-7640
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be the most likely pathway for introduction into the United States if the pest is restricted only to Newfoundland. If it is present on the Canadian mainland, it will move into the United States by natural means.

**Potential economic and environmental impacts and trade implications:** *A. xylosteanus* is highly polyphagous, feeding on numerous plant genera in numerous families. Both wild and commercial species in these genera and families occur throughout the United States. *A. xylosteanus* is discussed as a minor or occasional pest in its native range (Alford 1991, Bovey 1966, Carter 1984, Hwang 1974, Koslinska 1973, Miczulski and Koslinska 1972). There are at least 24 species of *Archips* in North America (Kruse and Sperling 2001, 2002). Two species are introduced (Kruse and Sperling 2002). Meijerman and Ulenberg (2006) list 17 parasitoids for *A. xylosteanus*. It is probable that parasitoids either native or introduced with other species of *Archips* would limit populations of and damage by *A. xylosteanus*. LaGasa *et al.* (1999) reared 15 species of parasitoids each from two exotic species of *Archips*, *A. fuscocupreanus*, and *A. rosana* in Western Washington State. However, minor pests often become major pests in the absence of their enemies, so one should not assume that *A. xylosteanus* will be controlled by parasitoids if introduced into the United States.

Maine is the closest state in the United States to St. John's Newfoundland, and Maine is the top apple producing state in New England (Univ. of Maine 2006). In 2004, Maine produced 1.2 million bushels of apples worth \$16.4 million (Univ. of Maine 2006). Comparing locations of *A. xylosteanus* to zonobiomes (Breckle 2002) leads one to interpret that it occurs in zonobiomes V through VIII. If *A. xylosteanus* actually is found on citrus in Japan (Shiraki 1952) and Spain (Alfaro 1950), and occurs in Algeria (subspecies *sabrinae*) (Leraut and Luquet 1995), then it also occurs in zonobiome IV and possibly zonobiome III. Thus, *A. xylosteanus* potentially could occupy most of the conterminous United States. Even if the pest can't occupy zonobiomes III and IV, only small areas in the southern United States would be immune. Zonobiomes V and VI in the United States contain important temperate fruit-growing areas that in 2004 produced nearly 900,000 tons (NASS 2006) of fruit in the family Rosaceae. If *A. xylosteanus* were introduced into these areas without natural enemies, the economic impact could be significant.

By definition (FAO 2004), *A. xylosteanus* is a quarantine pest in the United States. Hickey (1998a, 1998b, 1999) lists it as a quarantine pest in Australia. Since it is a quarantine pest in areas where it does not yet occur, export of nursery stock from the United States to these areas would be impacted. Since it is of low or no risk of being transported with fruit, export of commodities for consumption probably wouldn't be greatly impacted.

**NPAG teleconferences:** None held.

Current response and activities, and technology and knowledge gaps and needs: Since A. xylosteanus is not yet in the United States, there is currently no response to the species. However, there are at least 28 states that are surveying for the Genus including many New England States and the state of Washington (O'Hern 2006a, 2006b, 2006c). Adequate technology is available for control of the pest. A number of insecticides are effective against tortricid pests (Hill 1987, Lo 2003). A pheromone exists for A. xylosteanus (Frerot et al. 1983). It is possible to reduce populations by mass trapping or mating disruption (Madsen and Madsen 1982, Stelinski et al. 2004). Meijerman and Ulenberg (2006) list 17 parasitoids for A. xylosteanus.

In New England, leafrollers are detected by scouting and pheromone traps. However, they are usually controlled by insecticides directed at other pests and so are usually not major pests. Leafroller problems may increase with reduced summer spraying or with development of pesticide resistance. (Univ. of Massachusetts 2005).

**NPAG Approved Recommended Regulatory Status** (May 05, 2006): The NPAG recommends a change in PPQ policy regarding *Archips xylosteanus* to list the species as reportable/actionable. **Action Leader: Joe Cavey, PPQ-NIS.** 

Brian M. Spears, Chair	USDA/APHIS/PPQ	Keith E. Colpetzer, Executive Secretary
brian.m.spears@aphis.usda.gov	1730 Varsity Drive, Ste. 300	keith.colpetzer@aphis.usda.gov
(919) 855-7527	Raleigh, NC 27606-5202	(919) 855-7640
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### Approved Recommendations (May 05, 2006):

- 1.) PPQ policy for Archips xylosteanus will be reportable/actionable. Action Leader: Joe Cavey (NIS).
- 2.) PPQ will write a SPRO letter to inform the states that *Archips xylosteanus* is present in Newfoundland & could be introduced into the U.S. on nursery stock from Canada. **Action Leader: Brian Spears (CPHST).**
- 3.) PPQ CPHST will include *Archips xylosteanus* in the Commodity Survey Manual/Guide for fruit pests. **Action Leader: Coanne O'Hern (EDP) & Laura Duffié (CPHST).**
- 4.) Archips xylosteanus will be assessed for inclusion on the OPIS pest list. Action Leader: Parul Patel (EDP).
- 5.) The CAPS community will be alerted via email that *Archips xylosteanus* occurs in North America. **Action Leader: Coanne O'Hern (EDP).**
- 6.) CPHST will determine the availability of diagnostic tools for *Archips xylosteanus* and investigate if better pheromone lures are available, or can be developed, that are more specific to this pest. Otherwise surveyors will be overwhelmed with many non-target Tortricids in traps. **Action Leader: Coanne O'Hern (EDP) & Laura Duffié (CPHST).**
- 7.) PPQ will put *Archips xylosteanus* on the agenda for talks with Canada. **Action Leader: Fred Thomas** (PIM).

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Brian M. Spears, Chair	USDA/APHIS/PPQ	Keith E. Colpetzer, Executive Secretary
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Brian M. Spears, Chair brian.m.spears@aphis.usda.gov (919) 855-7527	USDA/APHIS/PPQ 1730 Varsity Drive, Ste. 300 Raleigh, NC 27606-5202	Keith E. Colpetzer, Executive Secretary <u>keith.colpetzer@aphis.usda.gov</u> (919) 855-7640
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Author: Brian M. Spears.

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