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NOTE

Occurrence of leek moth in Nova Scotia

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This note documents the first verifiable record of *Acrolepiopsis assectella* (Zeller) (Lepidoptera: Acrolepiidae), leek moth, in Nova Scotia. *Acrolepiopsis assectella* is a serious pest of cultivated *Allium* in Ontario including leek (*Allium porrum* (L.)), garlic (*Allium sativum* L.) and onion (*Allium cepa* L. (Amaryllidaceae)) (Mason et al. 2011). Since its introduction into the Ottawa valley region in 1993 (Handfield et al. 1997), its range has expanded throughout eastern Ontario and into southwestern Quebec in 2001 (Landry 2007), Prince Edward Island in 2008 (CFIA 2008), and New York and Vermont in 2009 (Seto et al. 2018). Surveys conducted by CFIA during 2006-2008 throughout the Atlantic provinces included 155 sites: 76 in Nova Scotia, 29 in Prince Edward Island, 13 in Newfoundland and 37 in New Brunswick (CFIA 2008). These surveys used Delta I traps baited with a commercially available pheromone lure. Only one specimen was captured in Prince Edward Island with no further surveys occurring in these provinces. Mason et al. (2013) report its presence in New Brunswick and Prince Edward Island. Pohl et al. (2018) report its (leek moth) presence in Nova Scotia based upon a Perennia report from 2017, as detailed in this blog post (http://www.novascotiavegetableblog.com/).

Larval specimens from Greenfield, Nova Scotia, were collected in July 2017 from garlic scapes in a home garden and submitted to the Kentville Research and Development Centre (KRDC). These were reared to the adult stage on a laboratory bench at ~22^{0}C, under natural daylight and at ambient humidity. The pupal (Figure 1) and adult stages were used to identify the species initially by visual comparison with picture keys (Allen et al. 2016), with voucher adult specimens verified by JF Landry, Curator of Lepidoptera, Canadian National Collection of Insects, Arachnids and Nematodes, Ottawa in October of 2018. Voucher specimens are housed with the Canadian National Collection of Insects in Ottawa and in the collection at KRDC. The initial discovery in 2017 prompted a note in the Perennia blog and a more thorough survey throughout Nova Scotia in 2018 with the objective to confirm the presence of *Acrolepiopsis assectella* in Nova Scotia and to document its distribution in *Allium* growing regions in Nova Scotia.

Ten commercial farms producing leek and garlic were selected as survey sites (Table 1, Figure 2). A single white delta I trap, baited with a commercially available leek moth pheromone lure (Solida, Montreal, Quebec), was installed at each site in May and monitored bi-weekly until 24 September. Lures were changed every 4 weeks. Adult *Acrolepiopsis assectella* were captured at four sites (Farms A, F, G and I, Table 1, Figure 2). All captures occurred between 3 July and 13 August. Only 1 or 2 moths were captured at Farms A, F and G. Farm I had trap captures with adequate numbers to show duration of the species' flight period (Figure 3). Three of the four sites were located in Kings County and the fourth located in Cumberland County (Figure 2).

Also during 2018, private submissions of pupal specimens were provided by three local gardeners from Kings County and from a public garden in Annapolis County. These were identified based on picture keys and damage and all were identified as *Acrolepiopsis assectella* (Table 1). Traps were again set up in April 2019 and leek moth was captured as early as 15 April. These would be the adults emerging from overwintering and completing the first full generation by mid-June. Based upon the pupal collections in mid-July of 2018 but no adult captures in either August or September of the same year, it is possible that there are two full generations where the adults overwinter and it is

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Figure 1: Garlic scape from Kings County, Nova Scotia showing characteristic pupal case of *Acrolepiopsis assectella*.

Table 1: Sites (Farms A – J) across Nova Scotia surveyed for leek moth (*Acrolepiopsis assectella*) in 2018 and specimens (Home 1-3 and Public site) submitted to the Kentville Research and Development Centre in 2018.

Site	Geo-coordinates	County	Survey date range	Leek moth caught/confirmed?
Farm A	45.65650, -64.37250	Cumberland	20 May-23 Aug	Yes, adults
Farm B	45.95638, -63.91490	Cumberland	20 May-23 Aug	No
Farm C	45.72319, -63.23380	Colchester	20 May-23 Aug	No
Farm D	45.32092, -63.52610	Hants	20 May-24 Aug	No
Farm E	45.44451, -62.81404	Pictou	20 May-15 Aug	No
Farm F	44.94707, -65.00160	Kings	12 May-11 Jul	Yes, adults
Farm G	45.11829, -64.48850	Kings	11 Jun-13 Sep	Yes, adults
Farm H	45.18311, -64.40450	Kings	29 May-24 Sep	No
Farm I	45.11313, -64.39419	Kings	12 May-9 Sep	Yes, adults
Farm J	44.60019, -64.67151	Lunenburg	18 Jun-11 Jul	No
Home 1	45.180874, -64.446711	Kings	12 July	Yes, pupal stage
Home 2	45.100220, -64.417450	Kings	12 July	Yes, pupal stage
Home 3	45.094481, -64.410111	Kings	25 June	Yes, larval stage
Public site	44.741035, -65.514103	Annapolis	15 June	Yes, larval stage

also possible that the second generation pupae overwinter until spring (partial second generation) as has been reported in Europe (Richter and Hommes 2003). It is unknown which life stage overwinters in Nova Scotia.

Acrolepiopsis assectella is now confirmed in Nova Scotia from Kings, Annapolis and Cumberland counties. Kings County is the main agricultural region in the Annapolis Valley and consistent captures suggest that the population is well established. The actual date and mechanism of introduction to Nova Scotia is unknown.

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Figure 2: Map of Nova Scotia showing survey locations for *Acrolepiopsis assectella* in 2018.

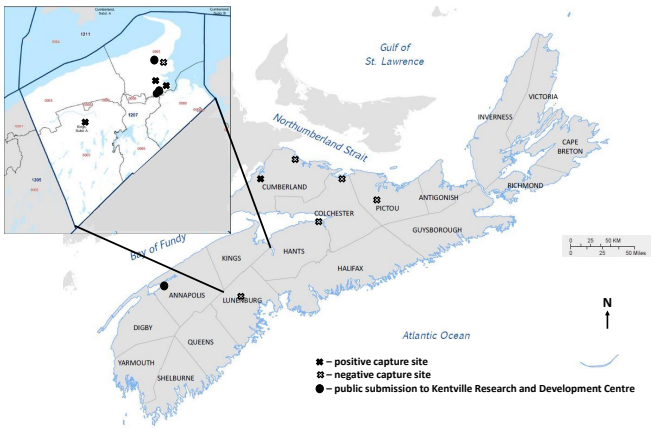
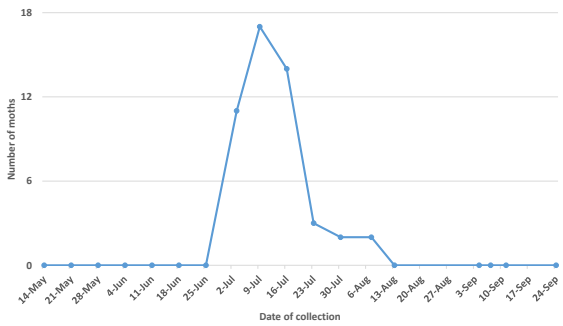


Figure 3: Phenogram showing the flight period of leek moth, *Acrolepsiopsis assectella*, captured at Farm I in Kings County, Nova Scotia in 2018.



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