

**NOTE*****Coleomegilla maculata lengi* Timberlake, 1943 (Coleoptera: Coccinellidae), a native North American lady beetle new to Maritime Canada**

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The Coccinellidae, which includes the lady beetles, is one of the better known groups of Coleoptera in Atlantic Canada. Colourful, attractive, and of interest to the public, larvae and adults are predators of herbivorous insect pests and are, therefore, of importance to agriculture and forestry. Majka and McCorquodale (2010) produced the most recent review of the coccinellids of Maritime Canada, reporting 48 species for the region. Subsequently, an additional three coccinellid species were added to the Maritime Provinces faunal list by Bousquet et al. (2013), and Webster et al. (2012, 2016), of which 45 species are established in New Brunswick (Webster 2016). Although most of the coccinellid species recorded from New Brunswick are native, five are adventive and another is adventive or Holarctic (Webster 2016). Although it has proven difficult to determine the true impact of non-native lady beetle species, a growing literature now suggests that adventive coccinellids may be responsible for declines in native species (Cormier et al. 2000, Harmon et al. 2007, Losey et al. 2014). Among the three Maritime Provinces, Majka and McCorquodale (2006) note that New Brunswick, in particular, is in need of further field effort directed at the Coccinellidae. Here we confirm the occurrence of *Coleomegilla maculata lengi* Timberlake, 1943 (Coleoptera: Coccinellidae) also known as the Twelve Spotted or Pink Spotted Lady Beetle, in New Brunswick. This native North American coccinellid was previously unreported in the literature for the Maritimes.

Gordon (1985) recognized three subspecies among North American populations of *Coleomegilla maculata*; *Coleomegilla maculata lengi* is present throughout the eastern United States north to eastern Canada and west through the Great Plains, *Coleomegilla maculata fuscilabris* (Mulsant, 1866) occurs in Florida and along the coasts, west to Louisiana, and north to South Carolina, and *Coleomegilla maculata strenua* (Casey, 1899) is distributed along the Mexican border from Texas to California. The two specimens reported here, geographically and morphologically, agree with descriptions of *Coleomegilla maculata lengi*. More recently, Krafur and Obrycki (2000), in demonstrating that *Coleomegilla maculata* is a species complex, have questioned the validity of these subspecific designations. Supporting this position, Perez and Hoy (2002) have shown considerable reproductive isolation between *Coleomegilla maculata lengi* and *Coleomegilla maculata strenua*. The lady beetle *Naemia seriata seriata* (Melsheimer, 1847), first recorded from New Brunswick and Nova Scotia by Majka and McCorquodale (2006) and Webster et al. (2012), is sometimes confused with *Coleomegilla maculata lengi*. However, *Naemia seriata seriata* is a salt-marsh specialist feeding on the pollen of *Spartina* sp. (Poaceae) and lacks the toothed tarsal claw present on *Coleomegilla maculata lengi*.

The earliest report of *Coleomegilla maculata lengi* for New Brunswick consists of two images of the same beetle posted December 2014 to the BugGuide website (<https://bugguide.net/node/view/1028008/bgimage>) by Richard Migneault and collected by RM during net sweeping in old field habitat at Edmundston, Madawaska County, on 16 June 2014 (47.3712°, -68.2915°, WGS84; Figure 1). The specimen on which this photo is based is now deposited in the New

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Received 19 November 2017. Accepted for publication 20 February 2018. Published on the Acadian Entomological Society website at [www.acadianes.ca/journal.php](http://www.acadianes.ca/journal.php) 22 February 2018.

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Brunswick Museum (NBM 065076). A single specimen of *Coleomegilla maculata lengi* was also collected by DFM while net sweeping on 12 August 2017 in sedge-dominated (*Carex* sp.) habitat along Diggity Stream, York County, New Brunswick in the Spednic Lake Protected Natural Area (45.61998°, -67.43027°; Figure 2) during general insect surveys. This specimen is also now deposited in the insect collection of the New Brunswick Museum (NBM 065077). This brings the total number of coccinellid species recorded in New Brunswick and the Maritime Provinces of Canada to 46 and 52, respectively.

**Figure 1.** First Maritime specimen of *Coleomegilla maculata lengi* collected at Edmundston, Madawaska County, New Brunswick, 16 June 2014 (Photo Credit: R. Migneault).



Majka and McCorquodale (2006) examined coccinellid diversity by broad ecological regions in the Maritimes, with the Saint John River Valley region (Queens, Sunbury, York, Carleton, and Victoria Counties) reporting the highest coccinellid diversity in New Brunswick. While in large measure their results were influenced by previous uneven collecting effort, it is perhaps not surprising that we should report *Coleomegilla maculata lengi* from the western border region of the province. In the northeast *Coleomegilla maculata lengi* has been reported from Maine, New Hampshire, New York, Vermont, Ontario and Quebec (Majka et al. 2011). Gordon (1985) maps the northeastern range limit for *Coleomegilla maculata lengi* as southern Ontario, central Vermont, and southern New Hampshire, but the more recent reports cited in Majka et al. (2011) and postings to BugGuide suggest this is an underestimate of current range, and/or there has been some northward range expansion over the past three decades.

**Figure 2.** Reginald Webster net sweeping in sedge-dominated (*Carex* sp.) habitat along Diggity Stream, York County, New Brunswick, on 12 August 2017 where *Coleomegilla maculata lengi* was collected.



Data collected from New York over the past 90 years shows that *Coleomegilla maculata lengi*, unlike other native coccinellids, has increased in relative density (Losey et al. 2014). The authors suggest that perhaps this is because *Coleomegilla maculata* is facultatively pollenivorous, rather than an obligate predator like other coccinellids, and that it may, therefore, have been less impacted by competition for food resources with adventive coccinellid species. Records for *Coleomegilla maculata lengi* for southern Maine cited in Dearborn and Donahue (1993) date from 1949. Maine records for *Coleomegilla maculata lengi* in the Maine State Museum collection date from 1907 (location unknown), 1941 (Gray, southern Maine, 43.8873°, -70.3320°) and 1973 (Orono, south-central Maine, 44.8832°, -68.6772°). While Gordon (1985) clearly overlooked the presence of *Coleomegilla maculata lengi* in southern and central Maine in the 20<sup>th</sup> century, specimens from northern Maine were not collected until 2004 (Dearborn and Donahue (1993); C. Donahue, Maine Forest Service (MFS), personal communication). Although the lack of *Coleomegilla maculata lengi* until recently from northern Maine and New Brunswick may reflect a dearth of entomological activities in these regions, it is also possible that *Coleomegilla maculata lengi* has expanded its range northward over the past three decades. Further collecting of coccinellids in Maritime Canada may allow discrimination between these two hypotheses.

## ACKNOWLEDGEMENTS

Funding in support of biodiversity surveys in the Spednic Lake Protected Natural Area was provided to the New Brunswick Museum BiotaNB program by the New Brunswick Environmental Trust Fund, New Brunswick Wildlife Trust Fund, and the Protected Natural Areas program of the New Brunswick Department of Energy and Resource Development. Charlene Donahue graciously provided data from the records of the Insect and Disease Laboratory, Maine Forest Service, Augusta, Maine and was also kind enough to check collection records for *Coleomegilla maculata* in the Maine State Museum on our behalf.

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