



Nine-spotted Lady Beetle



Photo: © John Acorn

Scientific name

Coccinella novemnotata

Taxon

Arthropods

COSEWIC Status

Endangered

Canadian range

British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec

Reason for Designation

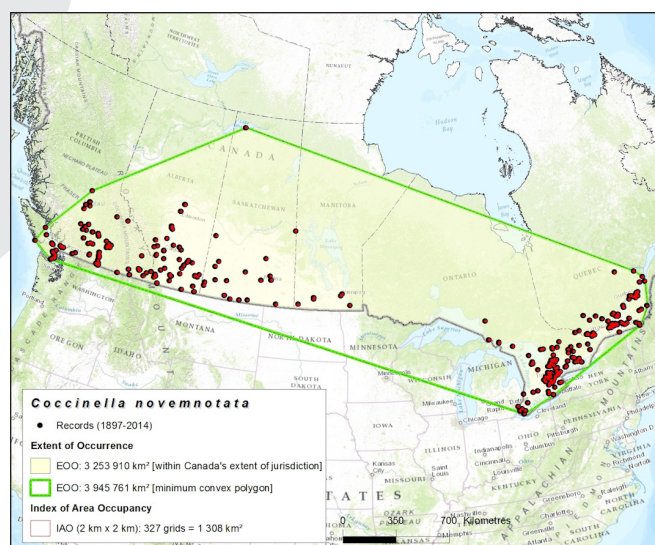
This species was once common and broadly distributed through southern Canada, from Vancouver Island through the prairies to southern Québec. It has since declined significantly and is now rarely seen. Despite targeted search efforts over the last decade, the species has decreased in abundance relative to other lady beetle species. Specific causes of the decline are unknown. Possible threats include introduction of non-native lady beetles, which could affect this native species through competition, intraguild predation, or introduction of pathogens. Other possible threats include decline in habitat quality through indirect effects of pesticide/chemical use associated with agriculture to control their prey species, urban expansion, and, abandonment and subsequent natural succession of farmland.

Wildlife Species Description and Significance

The Nine-spotted Lady Beetle (*Coccinella novemnotata* Herbst) is a small beetle (4.7 – 7.0 mm) that is native to North America. Adults are readily identifiable by external morphological features: their wing covers are pale orange to red, with a dark line where the two wing covers meet. They generally have nine black spots on their wing covers, but the size and number of these spots can vary. Furthermore, the head and pronotum are black with white markings. This charismatic species was once one of the more common and widespread lady beetles in North America, playing an important role as a biological control agent of aphids and other insect pests.

Distribution

The Nine-spotted Lady Beetle is a wide-ranging species occurring throughout most of southern Canada with a range that extends along the international border from Vancouver Island to southern Quebec; with northern range limits near: Quesnel, British Columbia; Edmonton, Alberta; Lake Athabasca, Saskatchewan and Roberval, Quebec. The Nine-spotted Lady Beetle also ranges across the continental United States southwards almost to the Mexican border.



The Canadian distribution map of the Nine-spotted Lady Beetle (*Coccinella novemnotata*), based on museum collections and recent surveys (1897 – 2014).

Habitat

Nine-spotted Lady Beetles are habitat generalists, known to consume a wide variety of prey across a wide range of habitats. They occur within agricultural areas, suburban gardens, parks, coniferous forests, deciduous forests, prairie grasslands, meadows, riparian areas and isolated natural areas. This broad habitat range reflects their ability to exploit seasonal changes in prey availability across different vegetation types.

Biology

Nine-spotted Lady Beetles have four life stages: egg, larva, pupa and adult, and can have two generations per year. Adults of the spring generation can undergo aestivation to avoid high summer temperatures and lay eggs in early autumn. Adults of the autumn generation congregate over winter and undergo diapause; becoming active and reproducing when temperatures warm in the early spring. This species occupies a wide ecological niche across a wide variety of habitats and temperature regimes in Canada. Little is known on the natural dispersal rates for the Nine-spotted Lady Beetle. In general, lady beetles are very mobile, display low site fidelity, and readily engage in short- and long-distance dispersal. Drivers of dispersal are a combination of prey density and environmental variables such as temperature, wind speed and rainfall. This species does not migrate. Both adult and larval stages are predatory and prey primarily on aphids. In turn, this species is also subject to predation by introduced lady beetles, other invertebrates and vertebrates, and susceptible to parasitoids and pathogens.

Population Sizes and Trends

The historically broad geographic range and prominence of the Nine-spotted Lady Beetle stands in stark contrast to its current distribution. Prior to 1975, this species was widely distributed across North America and was one of the more common lady beetles collected. This species has since declined and is rarely collected despite targeted searches. Over the last decade the Nine-spotted Lady Beetle has continued to decrease in relative abundance when compared to other lady beetles.

Threats and Limiting Factors

The specific causes of decline in the Nine-spotted Lady Beetle are unknown. Possible threats to this species include negative interactions with recently arrived non-native species, such as the Seven-spotted Lady Beetle and the Multi-coloured Asian Lady Beetle, through competition, intraguild predation or indirect effects through the introduction of pathogens. Other possible threats include direct and indirect effects of pesticide/chemical use associated with agriculture to control their main prey species aphids, and habitat loss through urban expansion, abandonment of farmland, and other human disturbances.

Protection, Status and Ranks

There are no laws in Canada that protect the Nine-spotted Lady Beetle, its residence or habitat. The NatureServe global conservation status rank is G2 (imperilled). The species has not been assigned a conservation status rank in Canadian provinces or territories. However, while this species is not currently listed in Québec, it is likely to be designated Threatened or Vulnerable in that province.

Source: COSEWIC. 2016. COSEWIC assessment and status report on the Nine-spotted Lady Beetle *Coccinella novemnotata* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 57 pp.

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