

## INVASIVE SPECIES OF PEI

# Japanese Beetle

## *Popillia japonica*



### What are invasive species?

Invasive species are species that may be invasive when introduced to an area outside of their native range. They can be introduced intentionally or unintentionally.

### Why are invasive species a problem?

Invasive species can have a dramatic, negative impact on the environment, the social aspects of our lives and the economy.

When non-native species are introduced into an ecosystem their populations can increase rapidly. In a natural or native community, species evolve together in an ecosystem which has checks and balances such as: predators, herbivores, diseases, parasites, competition for resources and limiting environmental factors. An organism that is introduced into an ecosystem where it did not evolve naturally does not have those checks and balances, allowing it's population to become unnaturally large. This can cause loss of biodiversity, may alter habitats, impact industry and our living spaces, and affect human health among other important changes to our environment.

### INTRODUCTION

The invasive Japanese beetle feeds on the foliage, flowers, fruit and roots of more than 300 plant species, including elm, maple, grape, peach, apple, apricot, cherry, plum, roses, zinnia, corn, asparagus, soybean, blueberries, raspberries, blackberries and other plants. It is native to Japan and likely arrived in the United States around 1916 in a shipment of iris bulbs. It was first found on PEI in 2009 in a campground between Charlottetown and Cornwall. It is now found in some areas of Charlottetown and may have spread to other locations on PEI through natural dispersal or through the movement of infested plants and soil.

“The Japanese beetle is probably the most devastating pest of urban landscape plants in the eastern United States.” ~ M.F. Potter, D.A. Potter, and L.H. Townsend, Extension Entomologists, University of Kentucky College of Agriculture

### IDENTIFICATION

Japanese beetles complete one generation per year. The adult beetles emerge from the soil in late June to early July and into August. Adults are oval shaped and about 10mm long with a metallic green abdomen, thorax and head. They have coppery-brown wing coverings and 5 white tufts of hair along the side of the lower abdomen with two tufts at the end of the abdomen. In August, female beetles dig down 8cm in the soil to lay their eggs. The beetles are attracted to moist areas (i.e. well-watered turf or gardens) which increase the survival rate of their eggs and larvae. Adults continue to feed into late summer or until freeze up.

The eggs hatch after about two weeks and the larvae begin feeding on the roots of nearby plants and grasses, which is their preferred food. The C-shaped larva (grub) is a creamy-white colour with a yellowish-brown head.

Feeding continues until the weather turns cold and the larvae move down 5 to 30cm below the soil surface and become inactive. In the spring they resume feeding until they are mature (3rd instar/2.5cm long) and form a pupa about 8cm from the soil surface. After about two weeks, adult beetles emerge and begin feeding on plants above ground.



White tufts of hair



C-shaped larva



## SYMPTOMS

When adult beetles emerge, they first feed on low growing plants, then move to fruit and shade trees. Later in the season they move to flowering plants and field crops such as corn, clover and alfalfa.

Adult beetles feed actively on clear, warm summer days (little feeding occurs on cloudy/windy days and no feeding occurs on rainy days) and prefer to feed on plants that are in direct sunlight. They feed from the top of the plant, downward. The skeletonised leaves emit odours which appears to encourage beetle aggregation. This is when the most serious feeding damage occurs.

The larvae prefer to feed on turf/grass roots but they will feed on other vegetable and shrub roots as well. Larval feeding reduces the plants ability to take up water, causing large brown patches, especially where turf is plentiful such as yards, parks and cemeteries. Maintaining healthy turf can reduce the impact from larval feeding.

## MANAGEMENT AND REGULATION

It is important to recognize that both the adult beetle and the larvae (grubs) cause damage and that damage occurs above and below ground. This also means that moving plant material or soil to new locations can spread the Japanese beetle. Adult beetles are capable of flying and will travel a considerable distance to feed on preferred host plants so controlling their population in your yard does not prevent re-infestation.

Beetles attract more beetles so implementing control measures as soon as adult beetles emerge in the spring helps to lower the population in your yard or the surrounding area.

Manually controlling a population in a small area by hand picking beetles or shaking the beetles off the plants into a bucket of soapy water can be effective. Morning is a good time of day to do this as the beetles are sluggish because of the cooler temperatures.

For larger populations, a small hand held vacuum can be used to vacuum beetles off plants. Empty the vacuum into a bucket of soapy water to dispose of the beetles.

Maintaining drier soil conditions during egg laying/hatching/larval development, cultivating to deter egg laying and controlling weeds can help reduce beetle and larvae populations.

When replacing or adding new plants to your yard, select plants that the beetle tends to avoid (this does not mean that they will avoid them completely). A few plants that have some resistance are red maple, white ash, holly, butternut, red oak and common lilac. Lists of preferred host plants and “resistant” plants can be found online.

Neem oil products can deter adult beetle feeding for 3-4 days. Insecticidal soap, extracts of garlic, hot pepper, orange peels and companion planting have been found to be ineffective.

Soil applied products are available that control the larvae (entomogenous nematodes) or deter larval feeding. Product application may be problematic due to the wide distribution of the larvae in the soil.

PEI is deemed partially or generally infested. Visit the CFIA website for regulations about the movement of materials that may spread the Japanese beetle.

Photos credits: Dan Potter, University of Kentucky Entomology; David Cappaert, Michigan State University; <http://www.entomologicalillustration.com/portfolio11/JapaneseBeetleLifecycle.html>; Green Thumb Photography; Tony Northrup Photography <http://www.northrup.org/photos/japanese-beetle/2/>



## How can you help?

Here are a few things you can do to help stop the introduction and spread of alien invasive species:

- Learn more about invasive species on PEI, including how to identify species of concern
- Plant resistant species
- Increase biodiversity
- Monitor your trees, shrubs and herbaceous plants for signs of insect activity
- Don't move firewood. Buy locally and burn on site. Pests in firewood can destroy our forests.
- When disposing of materials infested with invasive species, research proper disposal methods to prevent further spread
- Report a sighting

## How to report:

If you think you have seen an invasive species on PEI, please report your sighting to the PEI Invasive Species Council at:

[www.peiinvasives.com](http://www.peiinvasives.com)  
or email  
[peiinvasives@gmail.com](mailto:peiinvasives@gmail.com)

Prince Edward Island  
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