Japanese Beetle

POPILLIA JAPONICA

Europe is currently facing the **spread of the Japanese beetle**, an invasive species that can cause massive damage to **agriculture**.

IPM Popillia
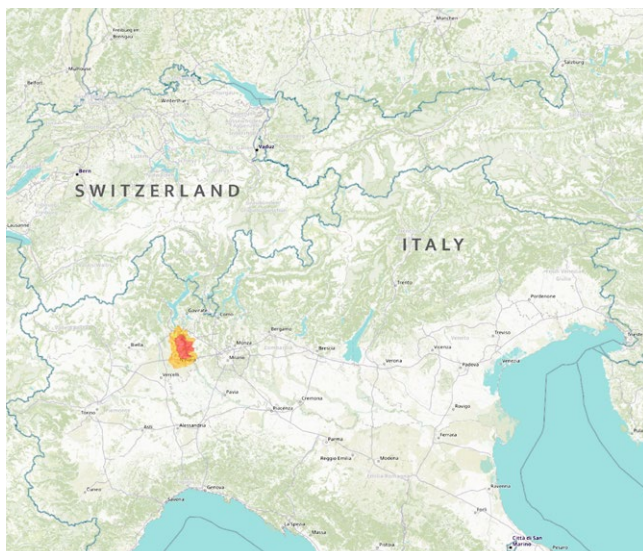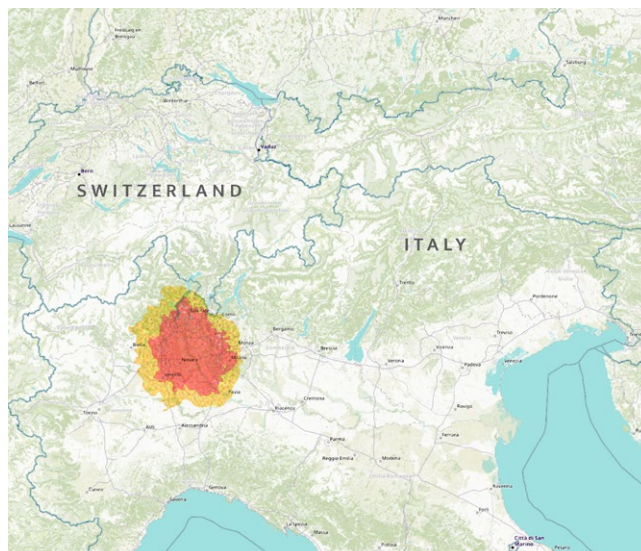Integrated Pest Management of Japanese Beetle

www.popillia.eu

The spread of the Japanese beetle in Europe

Since the Japanese beetle was first spotted in Northern Italy in 2014, it has progressively expanded its range, and population levels have increased. Three years later, it was detected for the first time at the southern border of Switzerland in 2017, and continued to spread northwards.

2015

2018

2022

Map Data from OpenStreetMap, Style: Humanitarean OpenStreetMap, License ODbL 1.0, openstreetmap.org/copyright

2023

In 2023, the Japanese beetle was found for the first time **north of the Alps** (near Zurich). The infested zone is rather small, and the low numbers of beetles caught indicate that the outbreak was detected at its very beginning. Another new outbreak, made official in 2023, was detected in Italy in the **Friuli Venezia Giulia region**. Both outbreaks are separate from the main infested zone.

A third outbreak was detected in the **southernmost region of the canton Valais** in Switzerland. Unlike the other two newly infested areas, this outbreak is linked to the Italian infested zone in the Ossola Valley. In addition, more than 1,500 beetles have been detected in the 2023 survey, indicating that *Popillia japonica* was already established there in the year(s) before detection of the outbreak.
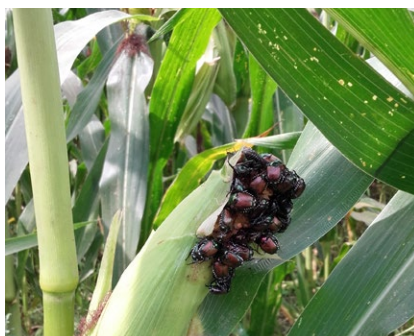
Infested
Buffer

2

Host plants of the Japanese beetle

The Japanese beetle has over 400 different host plants / crops, implying a wide variety of plants to feed on. Some of these host plants / crops, such as vines, small fruits, corn or soybean, are of major socio-economic importance. Other hosts are landscape trees, as linden and birch, or ornamental plants such as rose, wisteria, marshmallow.

Soy
Soybean field with leaf erosions

Corn
Feeding on corn cob

Grapevine
Infested vineyard

Stone fruit
Plums erosions

Small fruit
Feeding on cultivated blueberries

Turf / Grassland
Lawn damaged by wild boars looking for larvae

and many others ...

Photos: Giovanni Bosio, Phytosanitary Service – Piedmont Region (Italy), CC BY-ND 4.0

List of all host plants of the Japanese beetle

For a full list of Japanese beetle host plants including classifications into main or secondary host, please follow this QR Code or use the URL to see Tayeh et al. 2023:

www.popillia.eu/hostplants

How to recognize the
Japanese beetle
POPILLIA JAPONICA

metallic green shimmering
head and prothorax

2 copper colored
front wings

5 white hairy
tufts on each side

2 larger white hairy
tufts on the back

Size of 8 - 12 mm
(small beetle)

Check the presence of the Japanese beetle

Who should check and where?

Everyone

- on the plants in your garden

- in the vegetable garden

- on walks and hikes

- public green

- swimming pool filter

People involved in the production and distribution of fruit and vegetables, gardeners, and greenkeepers

- on plants in gardens and agriculture

- in the harvest

- in the soil

- on the tools or material used like clothing or machinery

- inspect food during quality control

- inspect food during the packaging

- inspect food during the export of goods to points of sale

People travelling before leaving or returning

- in the car

- on clothes

- in the luggage

What should you do in case you find a Japanese beetle?

- **Report your observation in the *IPM App***
  Get the IPM App at your App Store for Android & IOS:
  www.popillia.eu/android   www.popillia.eu/ios

- **Capture the insect, keep it in a closed jar, and take more photos**
  Ensuring that it no longer poses a risk of spreading. Freezing the jar is recommended!

- **Follow the instructions for the invasive species by your national Plant Health Service**
  Find the link for your country on www.popillia.eu/planthealthservices

How to recognize the
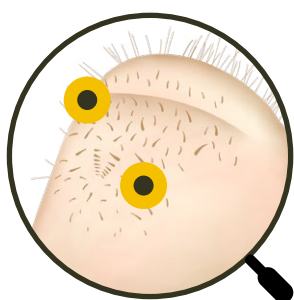# Japanese beetle larvae

POPILLIA JAPONICA

Unfortunately, it is **difficult to distinguish between native grubs** and the **invasive ones** of the Japanese beetle. **Differentiation** is possible only with a **magnifying glass** to see the **spines in 2)**. The **straight, transversal anal slit in 1)** therefore could be an easier way to recognize the larvae of the Japanese beetle.

However, to the naked eye, adult beetles are much easier to monitor than larvae. We strongly suggest avoiding removing larvae without correct identification.

End of Abdomen

1) End of Abdomen Detail

Transversal anal slit
and V-Raster

2) V-Raster Detail

Raster with 2 rows
of 5-7 pairs of spines
arranged in a V-shape
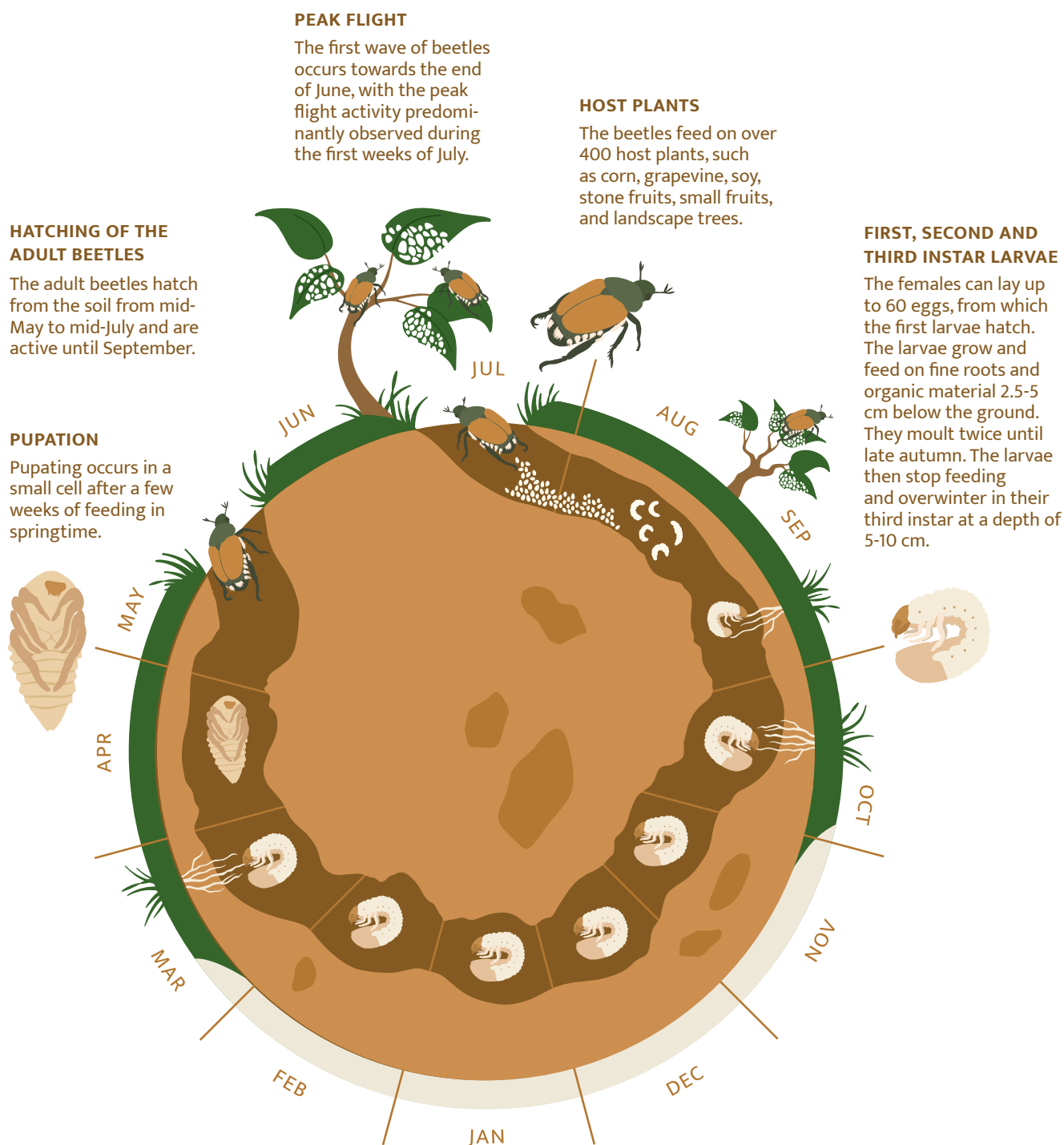(visible only with a
magnifying glass)

Size of 2 - 30 mm

Life Cycle of the Japanese beetle

Usually, there is one generation of Japanese beetles per year. The larvae hibernate in the soil.
As soil temperatures rise in early spring, they move closer to the surface and start feeding on roots.
The adult beetles emerge from Mid-May to Mid-July and are active until September.

PEAK FLIGHT
The first wave of beetles occurs towards the end of June, with the peak flight activity predominantly observed during the first weeks of July.

HOST PLANTS
The beetles feed on over 400 host plants, such as corn, grapevine, soy, stone fruits, small fruits, and landscape trees.

HATCHING OF THE ADULT BEETLES
The adult beetles hatch from the soil from mid-May to mid-July and are active until September.

FIRST, SECOND AND THIRD INSTAR LARVAE
The females can lay up to 60 eggs, from which the first larvae hatch. The larvae grow and feed on fine roots and organic material 2.5-5 cm below the ground. They moult twice until late autumn. The larvae then stop feeding and overwinter in their third instar at a depth of 5-10 cm.

PUPATION
Pupating occurs in a small cell after a few weeks of feeding in springtime.

JUL
JUN
AUG
MAY
SEP
APR
OCT
MAR
NOV
FEB
DEC
JAN

About IPM-Popillia

INTEGRATED PEST MANAGEMENT OF THE JAPANESE BEETLE

The IPM-Popillia initiative creates sustainable ways to control the spread of the Japanese beetle and prevent high population concentrations that harm crops in Continental Europe.

IPM-Popillia provides tools and advice on how to manage the pest on a larger, European continental scale, and on how to be better prepared for similar pest invasions in the future.

How can you help to prevent the spread of the Japanese beetle in your region?

With the **IPM App,** you can report your invasive species sightings directly on your smartphone. Your photos of beetles and the provided information will help to understand how the Japanese beetle spreads and find new ways to stop or contain it.

Download the App today, join the user community, and share your observations with the IPM-Popillia project!
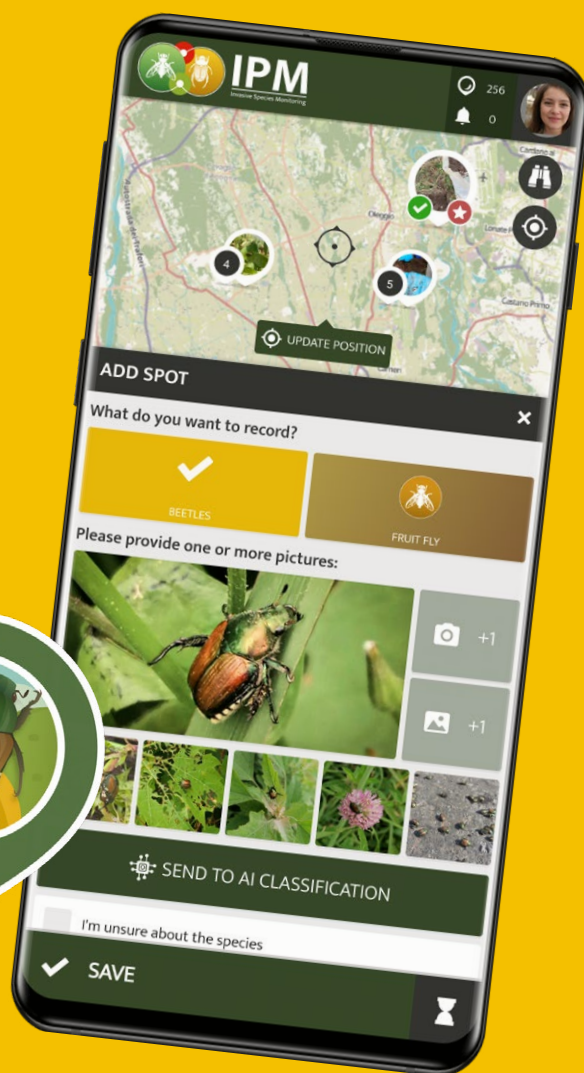
Android   **iPhone**

Android: www.popillia.eu/android
iPhone: www.popillia.eu/ios

Or upload your photos directly on our website at **www.popillia.eu/map**

SP⊘TTERON

The IPM App is running on the SPOTTERON Citizen Science App Platform at www.spotteron.net

IPM **Popillia**
Integrated Pest Management of Japanese Beetle

MORE INFORMATION ON OUR WEBSITE

www.popillia.eu

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