

## THE FLY THAT ATTACKS JAPANESE BEETLES



The Japanese beetle is universally detested by gardeners ... but a small fly is now helping to control its population. Source: Judy Gallagher, Wikimedia Commons

Ever since the Japanese beetle (*Popillia japonica*) first showed up in New Jersey in 1912, apparently brought over from Japan in a shipment of bulbs, farmers and gardeners have been desperately seeking an easy way to control it. And it's now made it to Europe as well, with outbreaks in Italy, Russia and, since 2017, Switzerland.

When you have Japanese beetles, you know it. The adults seem to make little effort to hide. The metallic green beetles with coppery wing cases gather by the thousands and munch their way through foliage and flowers alike, leaving devastation in their wake. The worst hit plants have no untouched leaves at all, just browning ones with intact veins. And this pest attacks a wide range of plants (read [Japanese Beetle Host Plants](#)). To make matters worse, Japanese beetles attack in mid-summer, just when your garden should be at its finest!

And it's not just leaves and flowers! Underground, their larvae chomp away on grass roots: yes, they're among the various scarabs whose larvae we call white grubs, so hated by lawn owners everywhere.

In other words, Japanese beetles piss pretty much everybody off!

### **An Attempt That Fails... Then Succeeds!**

Back in Japan, the Japanese beetle has several predators to contend with and, as a result, the population generally remains low and damage is minor.

American researchers tried to capitalize on this by introducing, starting in 1927, a series of insects that feed on Japanese beetles in its native habitat. However, the first trials seemed unsuccessful. But it turns out at least one insect, a tachinid fly called the winsome fly (*Istocheta aldrichi*), has adapted better than was thought at the time. (Another Japanese beetle predator, a parasitoid wasp known as *Tiphia vernalis*, is doing fairly well too, although its range today is less extensive.)

The winsome fly hadn't done well in New Jersey tests, because in that climate, the life cycles of the two insects barely overlapped. The adult fly—the egg-laying phase—tended to emerge too early and was near the end of its cycle by the time the Japanese beetles emerged in their turn in July. Thus, few JBs were parasitized and it was thought the experiment had failed. However, several decades later, the winsome fly was found again. It had made it further north on its own, to New England, where the cooler springs delayed its emergence enough so the two life cycles overlapped much more effectively. In some areas, in some years, up to 80% of all Japanese beetles that emerge have been found parasitized.

Winsome flies are still on the move! Even as Japanese beetles continue to expand their range in North America (they're now present in most US states and Canadian provinces), so do winsome flies. They're now found in most of the Northeastern US states and recently reached Canada where they're thriving and spreading in Ontario and Quebec.

### **The Life Cycle of a Beetle Predator**

The winsome fly is a parasitoid: it doesn't just live on its host, it kills it!

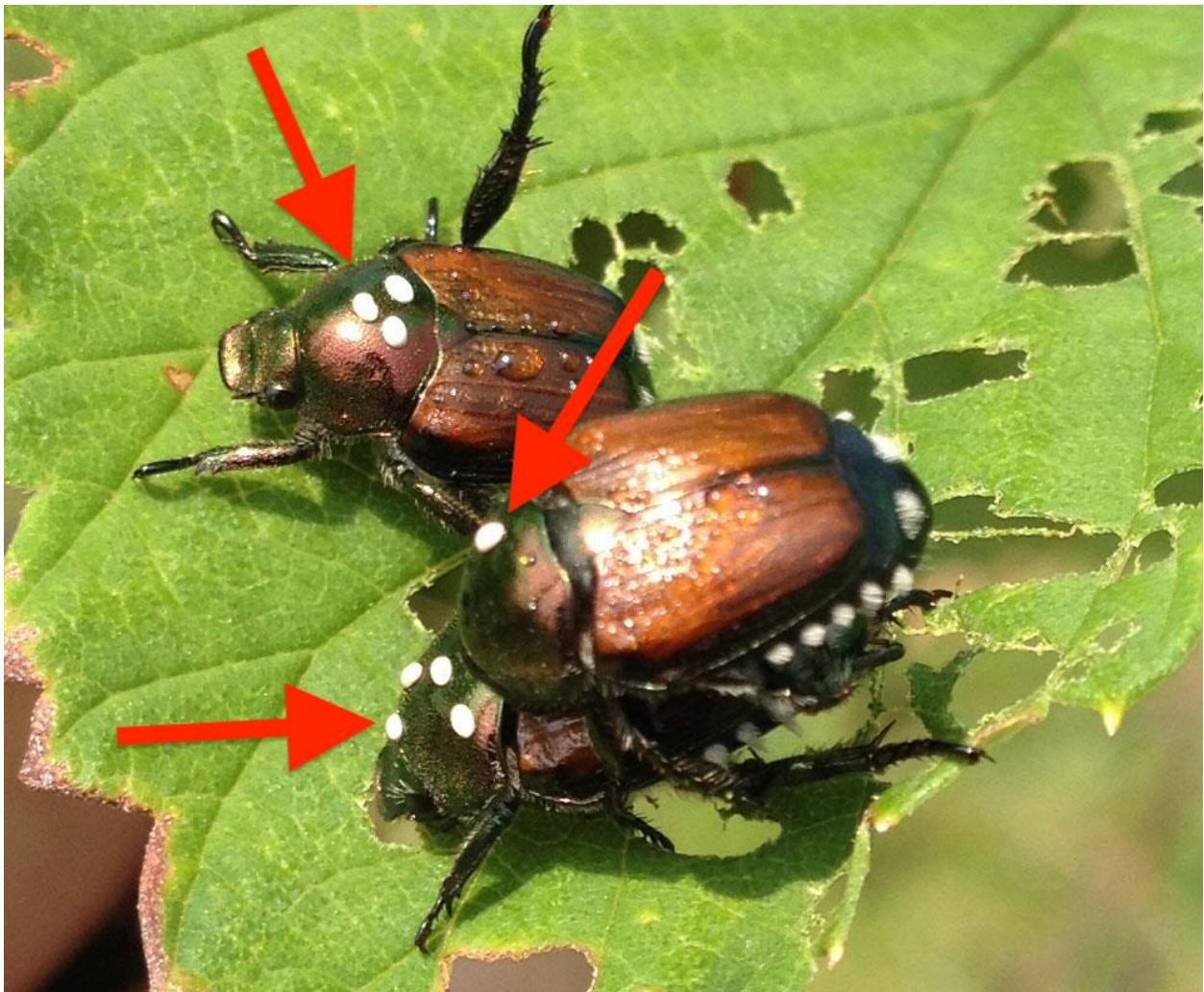




Winsome fly (*Istocheta aldrichi*). Source: National Collection of Insects, Arachnids and Nematodes

It's a small grayish fly about 5 mm long, looking much like any other small true fly. It emerges just a short time before the Japanese beetles do and builds up its energy by feeding on flower nectar. When the Japanese beetles appear, the female fly starts laying white eggs on her host's thorax, just behind its head. They are easily visible, at least if you have your glasses on.

The fly will lay a hundred eggs over the second two weeks of its 4-week emergent cycle. It tends to mostly parasitize female beetles, because they spend much of their time pinned under male beetles trying to mate with them and thus can't readily escape the fly. Japanese beetles not mating react rapidly when winsome flies are around, quickly dropping to the ground.



Eggs on the thorax of a few Japanese beetles. Source: [blog.uvm.edu](http://blog.uvm.edu)

The eggs hatch in about 24 hours. Even if the beetle carries several eggs, only one larva will actually penetrate the body of its victim where it will begin to digest it from the inside. First

to go are its flight muscles, leaving the beetle unable to fly. The beetle then goes into protective mode, falls to the ground and buries itself.

The infested beetle dies only 5 to 6 days later, but the fly larva remains in the dead body of its host all winter as a pupa, then the cycle begins again the following summer. There is only one generation per year.

Note that this predation occurs as adult beetles are emerging, *before* they lay eggs. Since the female JB would have normally laid 40 to 60 eggs, that many fewer beetles will be born the following year!

Winsome flies will also attack, to a lesser extent, other white grub-producing scarabs, like European chafers.

### **Encouraging Winsome Flies**

The winsome fly is not commercially available. You have to wait for it to show up in your area on its own.



Umbellifers with their small, clustered flowers, are favorites of winsome flies. The blooms above are those of coriander (*Coriandrum sativum*). Source: H. Zell, Wikimedia Commons



Once they have reached your neighborhood, anything you do to attract a horde of winsome flies to your garden will help. For example, plant many small, shallow-flowered plants, such as umbellifers (coriander, dill, lovage, etc.), crucifers (sweet alyssum, mustard, etc.) and Asteraceae (chamomile, daisies, yarrows, etc.) to attract and feed the flies.

Also, avoid spraying insecticides. They usually affect the fly (our friend) more than the unwanted beetle... plus once you start seeing eggs on Japanese beetles, you need a new strategy: killing them all is no longer that useful.

Less squeamish gardeners—or those that most hate Japanese beetles!—can hand trap them and sort them, letting parasitized beetles go free (remember, they'll be underground and out of sight in just a few days) and dropping unparasitized ones into a pot of soapy water. I don't know how you'll explain this to your neighbors, though!

### **The Result?**

Winsome flies will never completely eradicate Japanese beetles. No wise parasite ever totally eliminates its host: that would be suicidal!



With winsome flies in the area, you should no longer see such complete defoliation of your plants. Source: [www.ontariohopgrowersassociation.ca](http://www.ontariohopgrowersassociation.ca)

Where Japanese beetles occur, you're unlikely ever to get rid of them entirely, so should choose plants accordingly (see [Plants That Japanese Beetles Tend to Avoid](#)). However, by eliminating the most beetle-susceptible plants from your garden, replacing them with ones they dislike and encouraging winsome flies and other predators by supplying nectar-rich flowers, you'll find the number of beetles can drop significantly in just a few years. Many gardeners in areas where the winsome fly is well established say they can now garden much like they used to before JBs appeared, since the few remaining ones do little damage.

The expansion of the winsome fly is therefore very good news for many gardeners and farmers! If combining a choice of JB-resistant plants with a small parasitoid fly can make gardening easy again, who's likely to complain?

<https://laidbackgardener.blog/2018/07/07/the-fly-that-controls-japanese-beetles/?fbclid=IwAR1xsEibt5POgdKH02qlzbSHkmgKOLJ3f083RNkEVtA9k7UbgtXz8p0pfSg>