There are a few steps you can take to aid the spread and establishment of the lily leaf beetle parasitoids.

1) Reduce pesticide use
Prevent exposure of parasitic wasps to toxic pesticides by using alternative methods, such as removing adults and egg masses by hand.

2) Minimize mulching lily beds
Overwintering parasitoids are less protected from predators and winter conditions in mulch than in the soil.

3) Avoid digging up lily bulbs
Digging up bulbs in the fall and replanting them in the spring can harm overwintering parasitoids.

If you have any questions, please feel free to call us at the URI Biocontrol Lab: 401-874-2750.
Identification and Life Cycle
Identification of the lily leaf beetle is relatively simple. Their entire life cycle, from egg to adult, takes roughly one month. Adult beetles can be identified by their bright scarlet coloration, though they do have a black head, antennae, legs, and undersurface. Also unique to this stage is the tendency to squeak in defense if squeezed gently. When you see adults present, turn over a leaf and you may find rows of oblong orange/red eggs that females lay on the underside of leaves in late spring.

After hatching, larvae feed for a couple of weeks, causing the most damage to lilies during this stage. Younger larvae usually feed in groups on the underside of leaves while older larvae and adults feed on leaves, stems, buds, and flowers. Larvae are distinctive for their main defense mechanism, which is to carry their own excrement on their backs (a fecal shield), making them less desirable to predators. The result is a plant infested with dark slimy blobs.

Larvae pupate in the soil beneath their host plants and emerge a few weeks later as adults, which will then feed for about two weeks. At this point, the adults head to the ground to overwinter in the soil or plant debris, until they emerge to mate and lay eggs the following spring.

Background and Importance
The lily leaf beetle (Lilioceris lilii), native to Asia and Europe, has become an important garden pest in North America. First discovered near Montreal, Canada in 1943, the lily leaf beetle eventually arrived in the United States in 1992 in Cambridge, Massachusetts. Since then, it has spread to all the New England states, New York, Pennsylvania, Washington, and much of southern Canada. Based on its native range in Europe, it is capable of spreading much farther. In addition to being strong fliers, transportation and relocation of lily leaf beetles is aided by the shipment of lily bulbs and plants to new areas. Much to the dismay of gardeners and lily cultivators, this introduced pest is capable of causing extensive damage to leaves, buds, and flowers. Of much concern is not only damage to imported lilies, but to native lily species as well, some of which are considered rare or endangered.

Host Plants
Host plants of the lily leaf beetle are those on which they can successfully lay eggs and develop, which include species of the genera Lilium and Fritillaria. Lilium is the genus encompassing true lilies, such as Turk's cap lilies, tiger lilies, Easter lilies, Asiatic lilies, and Oriental lilies. It is important to note that daylilies, which are not true lilies, are spared from attack by the lily leaf beetle. Adult beetles may occasionally be found resting or feeding on other plants, but damage to other plants is minimal.

Biological Control
The University of Rhode Island has been conducting research into the biological control of the lily leaf beetle. The intent is to introduce parasitoids from the beetle's native range to single out lily leaf beetle larvae as their host and reduce the population of the pest. After multiple larval collections in Europe and extensive host range testing, three promising parasitic wasps were introduced into North America to control the lily leaf beetle. These parasitoids, Tetrastichus setifer, Diaparsis jucunda, and Lemophagus errabundus, lay their eggs in the larvae of the lily leaf beetle, which eventually die as the parasitoid offspring mature. Beginning in 1999, these parasitoids have been released throughout parts of New England and Canada. So far, L. errabundus has been established in Massachusetts; T. setifer and D. jucunda are both established in Massachusetts, Rhode Island, New Hampshire, and Maine; and in addition, T. setifer is also established in Connecticut and Ontario, Canada.