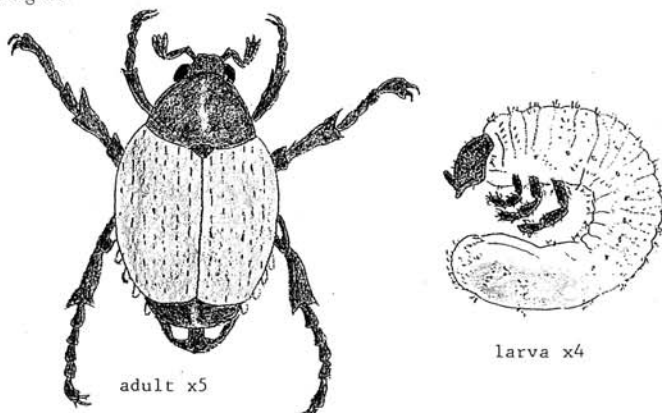


JAPANESE BEETLE
Popillia japonica (Newman)

DISTRIBUTION - The Japanese beetle was imported into New Jersey from Japan on the roots of nursery stock about 1916, and has now spread to all states east of the Mississippi River except Florida and Wisconsin. The Japanese beetle has been in Maine since at least the 1950's. Although expansion in numbers and distribution began increasing fairly rapidly since the early 1980's, the beetle is not yet established in far northern or eastern Maine.

DESCRIPTION - The adult Japanese beetle is broadly oval and about 1/2 inch in length. The body and legs are a shiny-metallic green and the wing covers are coppery-brown. Two small tufts of white are found behind the wing covers on the abdomen and five smaller patches on the side of the abdomen. The larvae are small (up to one inch) creamy white grubs which when found in the soil are usually curled into a "C" shape. Hairs on the raster (tip of abdomen) form a distinct " " shape, which helps distinguish the Japanese beetle larvae from other species of white grub.



HOSTS - Together, the adults and larvae feed on more than 300 different plants. Ornamental trees, shrubs, flowers and sod make up the largest portion of host plants, but a variety of weeds and some fruits and vegetables (including corn silk) are also fed upon. Some favored hosts include grape, raspberry, rose, linden, mountain ash, crabapple, evening primrose and smartweeds.

DAMAGE - Japanese beetle grubs feed on the roots and underground stems of plants, particularly grasses. Often this feeding goes unnoticed until the plants fail to make proper growth or die. When grubs are numerous, they can cause serious injury to turf. Adult beetles often congregate and feed on flowers, foliage and fruit of plants and trees exposed to bright sunlight. Beetles feeding on leaves usually chew out the tissue between the veins, leaving a lacy skeleton.

LIFE CYCLE - Japanese beetles have a one year life cycle with most of the year spent in the ground in the form of white grubs. In Maine, adult beetles usually appear during the first week of July. They are very active on warm sunny days and fly readily from plant to plant. The period of greatest beetle activity lasts from 4 to 6 weeks, but in New England, some are present until frost. Mating beetles are often found on plants. From time to time, the female beetles leave plants on which they are feeding and burrow about 3 inches into the ground, usually turf, where they lay a few eggs. When the eggs hatch, the tiny grubs begin feeding on roots until fall. As the temperature decreases, the grubs move deeper into the soil where they overwinter. As the soil temperature rises in the spring, the grubs move back to the root zone to feed until they pupate around mid-June. The pupal stage lasts about 2 weeks and adults emerge to begin the cycle anew.

CONTROL - Natural Control Weather, disease, parasites and other natural enemies help control Japanese beetle populations. Weather has probably been the single most important controlling factor in the past. Cold winters may have been instrumental in holding back the spread of this pest in Maine. Extremely dry weather during the summer also destroys many of the eggs and newly hatched grubs. Wet summers, however, are favorable to the development of eggs and grubs and are usually followed by seasons of increased numbers of beetles.

Chemical Control Unfortunately, Japanese beetle infestations often become so serious, even with natural control factors, that additional control measures may be required. No method of control used so far will give complete control because beetles continually fly in from surrounding areas. Insecticides which may be applied for the adult beetles include methoxychlor, carbaryl (toxic to bees), malathion, permethrin or acephate. Apply to foliage as directed, avoiding flowers and fruit. Grub control measures with insecticides should be applied mid-August to mid-September and include materials such as imidacloprid (Merit), halofenozide (Mach2), trichlorfon or diazinon. These insecticides must get through grass and thatch into the soil to control grubs. It is important that the ground has been moist which allows grubs to be feeding near the surface when applications are made. Watering where rainfall is absent will help increase the effectiveness of applications.

Biological Control Milky spore disease is a bacterial disease which kills beetle grubs after causing their normally clear blood to become milky in appearance. The disease spores live in the soil for long periods ready to infect and kill successive broods of Japanese beetle grubs as they move about in the soil. Commercial preparations of Milky Spore Disease can be applied to turf badly infested with Japanese beetle grubs. Do not use with chemical insecticides because grubs infected with milky spore should remain alive long enough to increase and spread the bacteria. Milky spore disease works best where soils are warmer, so in Maine the disease is probably most effective in southern areas where soils stay warmer for longer periods. Treatments are most effective when they are made on a community-wide basis. A number of parasites of the Japanese beetle have been brought in from Asia and released in infested areas of the U.S. over the years. Many beetle populations in Maine show a high degree of parasitism by the parasitic fly *Isocheta aldrichi*; look for a striking white egg (or two) on the adult beetle just behind the head. This parasite may be responsible for a significant reduction in beetle populations in some areas of Maine. Japanese beetles and grubs are also fed upon by birds, moles and skunks.

Mechanical Control - Commercially available Japanese beetle traps are widely used by homeowners in attempting to control this pest. If traps are used, they should be placed on the margins of your property away from valued ornamentals as all the beetles attracted by the traps do not end up in the bags. If yours are the only traps put out in a neighborhood, you may be drawing in more beetles from surrounding areas than if no traps were used. Covering of valued shrubs or plants with netting or regular hand picking of beetles may prevent heavy plant damage.

Before applying any pesticide, **READ THE LABEL**. Pesticides must be applied only as directed on the label to be in compliance with the law. 5/07