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Reprinted from the official magazine of the New York State Conservation Department, *The New York State Conservationist*

4-H Members' Guide M-6-3

Some Beetles of New York

by John A. Wilcox,

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Lady Bug, Lady Bug,
Fly away home.
Your house is on fire,
Your children will roam.

Except little Nan
Who sits in a pan,
Weaving gold laces
As fast as she can.

SO goes one variant of the folk rhyme which has come down to us from ancestral Europe. The poem indicates an understanding of beetle life history--roaming larvae and the sedentary, yellow pupa, "Little Nan." The name, lady bug, was used long before biology became a science, but seems to show an awareness of the beneficial nature of these beetles.

Beetles make up the largest group of insects. M. D. Leonard, in 1926, in his *"List of Insects of New York,"* recorded 4,546 species and varieties of beetles which had been found in the State up to that time. We can be thankful, indeed, that only a few beetles are harmful and that many are definitely beneficial.

Life histories of the beetles are all quite similar. It all starts with an egg, usually but not always laid during the Spring or early Summer. The larva, called a grub in some families, hatches and starts its search for food. The predaceous larvae are usually very active and long-legged. Those feeding on plants are slower, many having no legs at all. There is a great deal of variation in the length of the larval period. A few species reach maturity in about a month, others, especially some of the wood borers, may remain in the larval stage for two or more years. When the larva completes its growth, it usually seeks a secluded spot or forms a cell, if living in soil or wood, and changes to a pupa. The insect may remain in the pupal stage over Winter or go ahead and emerge as an adult beetle in a few weeks. Most adult beetles have feeding habits similar to those of their larvae.

Many of the beetle species listed here can be named from the illustrations *(see centerspread)* but some of the others are representatives of groups of quite similar species and more complete descriptions are necessary. There are so many species of beetles that no complete book covering all of them could be published. Books by Lutz, Jaques, Comstock, Borer and De Long, listed in the February-March, 1956, issue of The Conservationist, are helpful in identifying beetles.

The forty-three beetles which H. Wayne Trimm has so well illustrated, were chosen because they are some of the larger, more showy species or because they represent common or interesting families. Many of the names used with the illustrations are not specific and may be used for many relatives or even for all other beetles in the family with equal propriety. For example, the name "rove beetle," is applied to any one of the 700 or 800 New York species, none of which are outstanding enough to have been given a specific common name. Consequently, we must use scientific names to designate many species.

TIGER BEETLES (Cicindelidae). These beetles are well named for their predaceous habits. The adults are very active, frequently seen running over bare ground, where they capture other insects for food. The larva waits at the entrance of its burrow in the ground and seizes passing insects. It has a strong hook-like spine on its back which serves as an anchor in preventing the larva from being pulled from its burrow. *Cicindela formosa,* illustrated here has a typical color pattern. The six-spotted tiger beetle *(Cicindela sexguttata)* is often seen in patches of sunlight in wooded areas.

GROUND BEETLES (Carabidae). This family is a very large one. Most ground beetles are predaceous, feeding on other insects. The caterpillar hunter *(Calosoma scrutator)* is one of the largest and most brightly colored members of the family. The bombardier beetle *(Brachynus fumans)* has the odd habit of emitting a cloud of irritating gas from the anus when disturbed. This seems to serve both as a means of offense and defense. A few of the ground beetles feed also on germinating seeds and may be destructive.

PREDACEOUS DIVING BEETLE *(Dytiscus harrisii).* This species represents the family Dytiscidae which contains a moderate number of species ranging in size from the inch and a half of *D. harrisii* down to about one-thirty second of an inch. There is little variation in form in the family and only slight variation in coloration. Members of this family may be separated from the whirligig beetles by their undivided eyes and from the water scavengers by their long, slender antennae. Both larvae, called water tigers, and adults feed on small living animals in the water, including small fish.

WHIRLIGIG BEETLES. *Dineutes nigrior* is a common representative of the family Gyrinidae. Both the common name and the scientific family name for these beetles are derived from their habit of swimming in circles on the surface of the water. Their form is admirably suited to survival on the surface of the water. The eyes are divided so that one-half of each is below water and the other half above. Their vision is thus not impaired by the surface film. The middle and hind legs are flattened and paddlelike. These insects are predaceous, feeding on other insects.

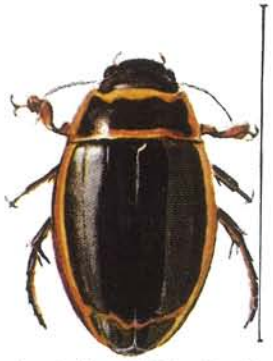
WATER SCAVENGER BEETLES. The family Hydrophilidae contains a moderate number of species. *Hydrous triangularis,* which is illustrated, is one of the largest. Most species are uniform in color but some have brownish markings. They may be identified by the antennae which are shorter than the palps and which have the last few segments enlarged. The larvae feed on other aquatic insects and sometimes small fish. The adults, however, are scavengers, feeding on dead organic matter.

BURYING BEETLE (Silphidae). *Necrophorus americanus* is the largest species of a small family noted for its habit of feeding on carrion. Several of the species may dig the soil out from under a small carcass, such as that of a mouse or bird. As the carcass settles it may be covered with dirt, hence the name burying or sexton beetle.

ROVE BEETLES. The Staphylinidae is a rather large family of small or insignificant beetles. *Staphylinus maculosus* is one of the largest. It is often seen on cow manure. Most species appear to be predaceous on other insects. They have very short wing covers which leave the last five or six abdominal segments exposed.

FIREFLIES. Most of the family Lampyridae are able to produce light. Because of this characteristic they have been given such names as fireflies, lightning-bugs or glow-worms. The species illustrated, *Photuris pennsylvanicus,* is one of the larger and more easily recognized. The light, produced by a sudden oxidation of a substance called *luciferin,* is remarkable in that very little heat is produced in the reaction. Flashes of light are apparently used by the insects as love calls enabling the flying male to find a female who usually remains in the grass. Each species has its own distinctive flash pattern so a male is attracted only to a female of the same species. In some species, females never develop wings. These females and larvae which give light are called glow-worms.

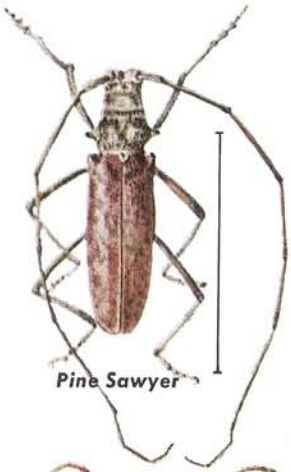
Some Beetles



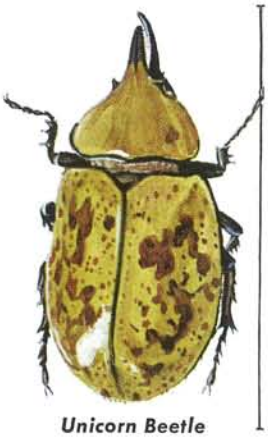
Predacious Diving Beetle

Whirligig Beetle

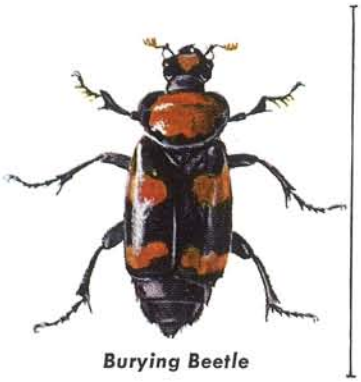
Water-Scavenger Beetle



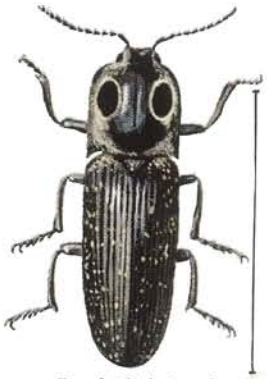
Pine Sawyer



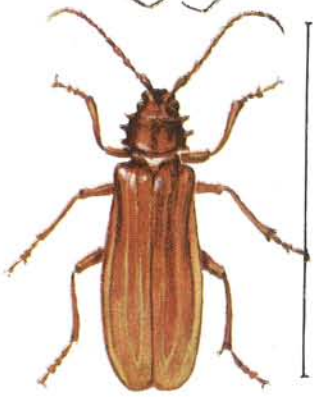
Unicorn Beetle



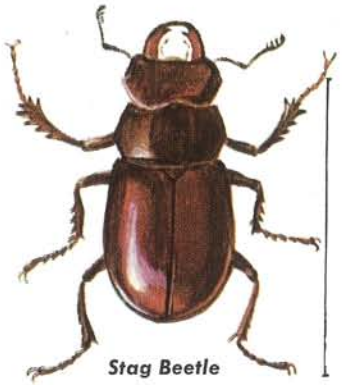
Burying Beetle



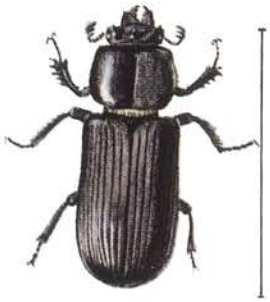
Eyed Click Beetle



Brown Prionid

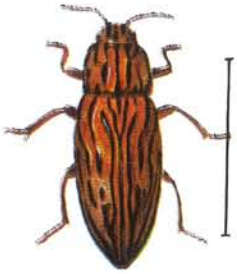


Stag Beetle

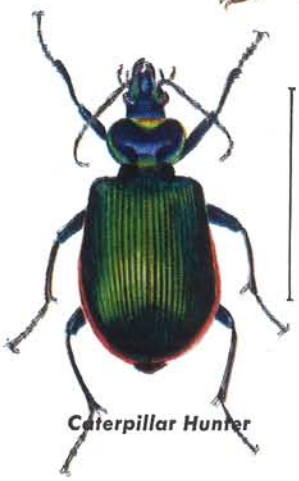


Horned Passalus

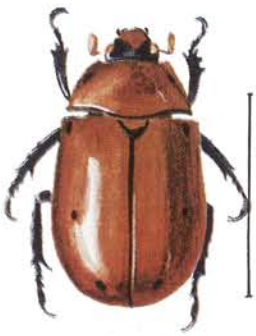
Dung Beetle



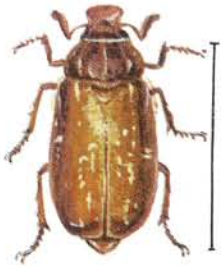
Virginia Flatheaded Borer



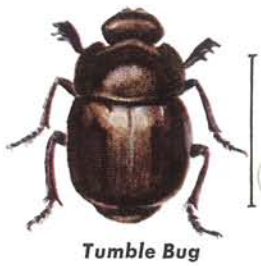
Caterpillar Hunter



Spotted Pelidnota



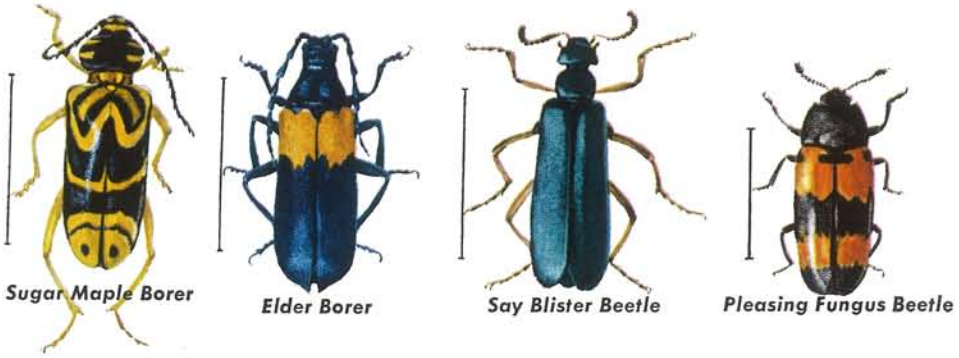
June Beetle

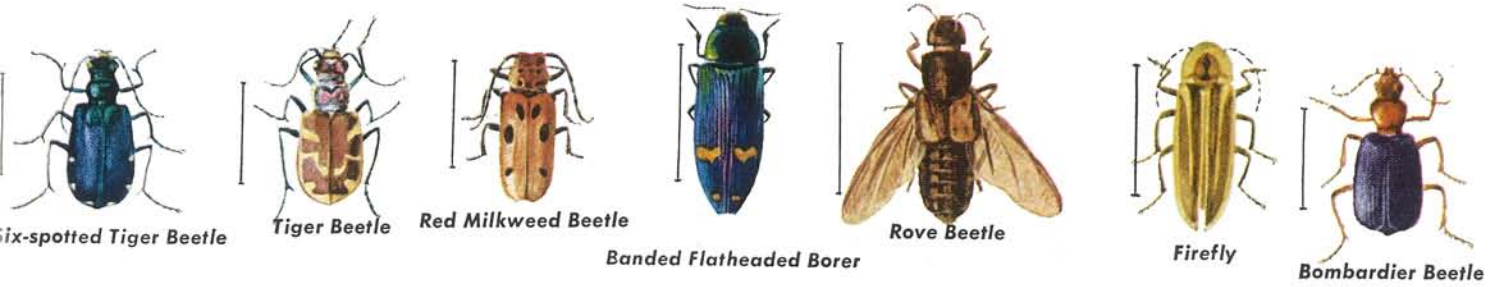


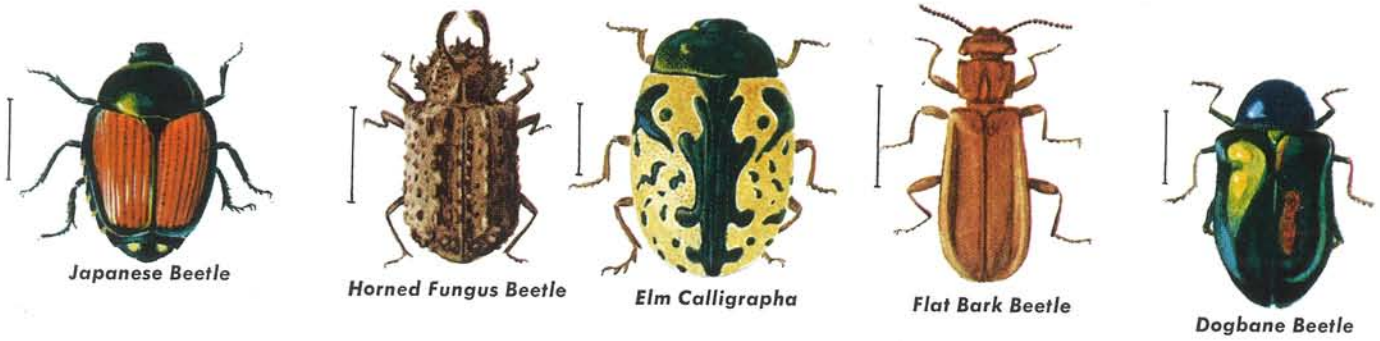
Tumble Bug

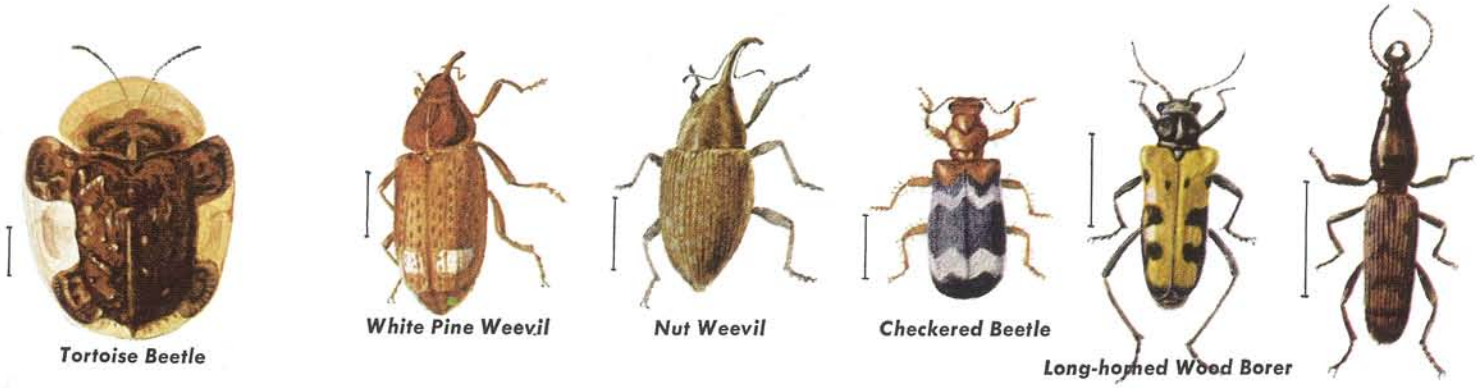
Wayne Trimm

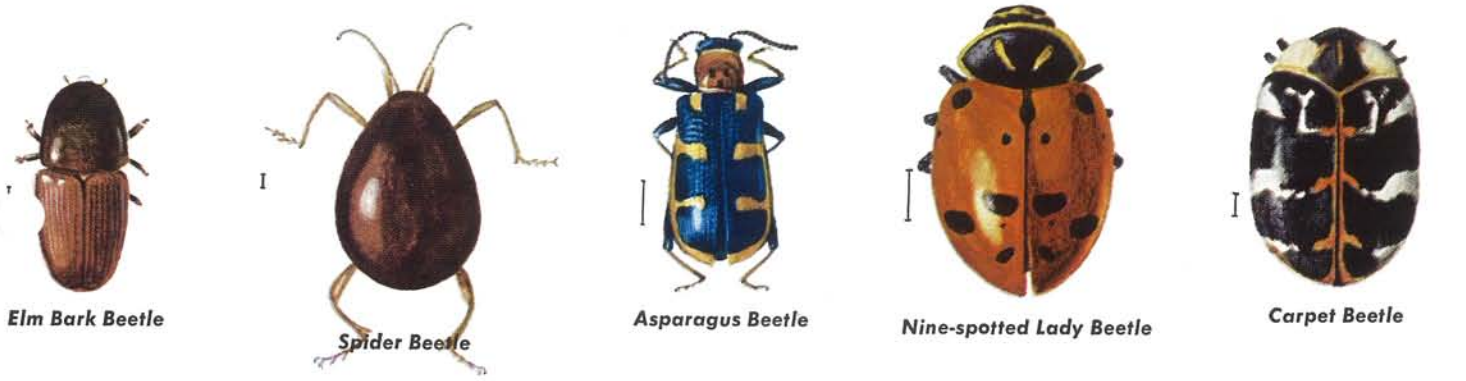
# of New York


Sugar Maple Borer
Elder Borer
Say Blister Beetle
Pleasing Fungus Beetle


ix-spotted Tiger Beetle
Tiger Beetle
Red Milkweed Beetle
Banded Flatheaded Borer
Rove Beetle
Firefly
Bombardier Beetle


Japanese Beetle
Horned Fungus Beetle
Elm Calligrapha
Flat Bark Beetle
Dogbane Beetle


Tortoise Beetle
White Pine Weevil
Nut Weevil
Checkered Beetle
Long-horned Wood Borer
Oak Timber Worm


Elm Bark Beetle
Spider Beetle
Asparagus Beetle
Nine-spotted Lady Beetle
Carpet Beetle

CARPET BEETLES (Dermestidae). Members of this small family are serious pests wherever animal or plant products are stored. The larvae are apt to damage furs and woolen products if measures are not taken to keep them out. Indeed, much of the "moth damage" found in homes is actually done by these beetles. *Anthrenus scrophulariae* illustrated here is the most brightly colored species in the family. Others may be mottled brown and white or all black.

CHECKERED BEETLES. Members of the small family Cleridae are small in size but are frequently bright colored. Most, like *Thanasimus dubius*, feed on other insects and are considered to be beneficial.

EYED CLICK BEETLE *(Alaus oculatus).* The largest member of the family Elateridae, this insect always arouses interest when seen. The large eye-like spots are merely a part of the color pattern and have no connection with the true eyes. Click beetles receive their name from their unique habit of clicking which is done by snapping the head and prothorax downward. An audible click results and, if the beetle is on its back, it is flipped several inches into the air. At other times the action may serve as a defense from birds or small mammals. Larvae of the eyed click beetle apparently feed on other insects in decaying logs. Some other members of the family feed on roots and may become serious pests of grain crops.

FLATHEADED BORERS. The head and thorax of larvae of beetles in the family Buprestidae are much broader than the rest of the body and quite flat. Most species live between the bark and wood of trees where they sometimes do enough feeding to kill the tree. The Virginia flatheaded borer *(Chalcophora virginiensis)* is one of our largest. The banded flatheaded borer *(Buprestis fasciata)* is one of the more brightly colored species. Since many species have a very distinctive metallic luster, members of the family are called metallic wood-boring beetles.

PLEASING FUNGUS BEETLE (Erotylidae). Members of several small beetle families feed exclusively on fungi and common names for them may seem strange or awkward. This family, Erotylidae, contains some rather brightly colored, graceful species. *Megalodacne heros* is the largest and one of the commonest.

FLAT BARK BEETLES (Cucujidae). The few members of the family Cucujidae are mostly very small and dull brown or spotted in color. *Cucujus clavipes,* however, is medium sized and a rather startling dull red. They are usually found under loose bark of dead trees. Two or three small species of the family are pests in stored grain.

NINE-SPOTTED LADY BEETLE *(Hippodamia convergens).* Members of the family Coccinellidae can be included with our most beneficial insects. Both adult lady beetles and their active larvae are predaceous, feeding on such soft-bodied insects as aphids.

SAY BLISTER BEETLE *(Pompho-poea sayi).* This beetle, fairly typical of the family Meloidae, was named for the early American naturalist, Thomas Say. In the adult stage most of the blister beetles are leaf feeders. The larval history is very complex, usually including phases in which the larva is predatory or parasitic, some species feeding on grasshopper eggs. The bodies of a number of species in this family contain an oil which produces blisters when applied to human skin. The notorious "Spanish fly" from Europe belongs in this family.

HORNED FUNGUS BEETLE *(Boletotherus bifurcatus).* This is a member of the large family Tenebrionidae. It is not a typical representative but is one which is frequently found on or in bracket fungi. As in many scarabs, only the male has horns on the thorax. The flour beetles and mealworms are members of this family.

SPIDER BEETLES (Ptinidae). Most of the species of this family feed on all sorts of dried plant materials. However, *Gibbium psylliodes,* illustrated here, usually breeds in rat droppings and its presence indicates that rats or mice are living in the vicinity. The wing covers are fused in this species and the head and thorax are small. In general appearance they look more like mites or ticks.

STAG BEETLE. There are only a few species in the family Lucanidae. *Pseudolucanus capreolus* is one of the largest and most common. The very large mandibles, which give it the common name stag beetle or pinching bug, are found only in the male. Adult beetles are often found around lights. Grubs live in decaying wood.

HORNED PASSALUS *(Passulus cornutus).* Only one species of the family Passalidae occurs in the eastern United States. It is frequently found with its larvae in decaying logs.

BARK BEETLES (Scolytidae). Most of these small cylindrical beetles live in or under the bark of trees where they may do considerable damage. The smaller European elm bark beetle *(Scolytus multistriatus)* is a very serious pest because it carries spores of the Dutch elm disease fungus to healthy trees, thus being one of the most important factors in spreading the disease.

SCARABS. Members of the very large family Scarabaeidae are extremely diversified in form and habits, so much so that some entomologists consider it to be a group of several families. The male dung beetle *Phanaeus carnifex,* one of the more brightly colored species, has a long slender horn on its head but females are not so provided. The tumble bugs, *Canthon laevis,* also live in dung. They form a bit of manure into a ball a little larger than themselves. They roll the ball some distance and then bury it in the ground. The eggs are laid in the ball and it becomes the food supply for the young grubs. The sacred scarab of ancient Egypt is closely related to our tumble bug. There are quite a few different June beetles. Their larvae, white grubs, live in the soil, frequently feeding on roots to the extent that they become serious pests. The species illustrated, *Polyphylla variolosa,* is one of the largest and most distinctively marked. The spotted pelidnota, *Pelidnota punctata,* is frequently attracted to lights. Its grub feeds in rotting roots of elm stumps while the adult is frequently found feeding on grape leaves. The Japanese beetle, *Popilia japonica,* is an introduced scarab which has become all too familiar. Although the unicorn beetle, *Dynastes tityrus,* is our largest beetle it is not of any economic importance. It may be found in the southern counties of New York State where its grubs live in decaying logs or stumps.

LONG-HORNED WOOD BORERS. The larvae of the large family, Cerambycidae, are most borers in trees and other woody plants. Many of these beetles are large and brightly colored and many do serious damage in our forests and woodlots. *Evodinus monticola,* yellow with black spots, is fairly typical of the family. The larvae bore under bark of hemlock, but the adults are frequently found on flowers. The brown prionid *(Orthosoma brunneum),* frequently comes to lights; its larvae may be found is decayed hardwood logs. The pine sawyer *(Monochamus notatus)* attacks dying or recently killed pines; consequently it may be a serious pest in reducing the value of pine logs for lumber. Larvae of the sugar maple borer *(Glyobius speciosus)* work just under the bark of hard maples. Their tunnels are frequently extensive enough to girdle and kill branches or small trees. The red milkweed beetle *(Tetraopes tetraophthalmus)* is very common on milkweed, while the elder borer *(Desmocerus palliatus)* is quite common on elderberry bushes.

LEAF BEETLES (Chrysomelidae). This is a large family of small to medium sized insects which feed on leaves or roots of various plants. Many species are serious pests. The asparagus beetle *(Crioceris asparagi),* introduced from Europe, has become common wherever asparagus grows. The dogbane beetle *(Chrysochus auratus),* whose larva is a rootworm on dogbane, is one of our most brilliantly colored insects. The elm calligrapha *(Calligrapha scalaris)* which sometimes defoliates elm trees, is a close relative of the Colorado potato beetle. Tortoise beetles, represented here by *Deloyala clavata,* are leaf feeders on morning glories or solanaceous plants.

OAK TIMBER WORM *(Arrhenodes minutus).* This is the only species of the family Brentidae found in the northeastern United States. The female is smaller and has a straight, slender snout. The larvae are borers in recently felled or dying hardwoods.

WHITE PINE WEEVIL *(Pissodes strobi).* This is the most serious pest attacking white pine. The larvae work under the bark of the pine leader, girdling and killing it. Weeviled trees are apt to be forked or crooked and unsuitable for lumber. The family Curculionidae is a large one containing weevils which may also feed on roots, leaves, or seeds of various plants. They may be recognized by the long snout with small mouth parts on the end. In the nut weevil, *Curculio nasicus,* the snout is nearly as long as the rest of the body.