CMG GardenNotes #314

Key 1 – Key to Insects Associated with Gardening

Notes:
- This key covers insect orders commonly associated with gardening and landscape maintenance. Key 2 includes additional orders.
- This simplified key covers insects showing common characteristics for the order. Species with atypical appearances will not work with this simplified key.

1a. Wings present. — go to 2
1b. Wings absent. — go to 8

(1a) 2a. One pair of membranous wings. The insect may look like a fly or bee. (Look carefully for a second pair of wings hidden beneath the front pair.) — Diptera (flies) [details page 313-4]
2b. Two pair of wings present. — go to 3

(2b) 3a. Front and hind wings not similar in texture. Front wings parchment-like, shell-like or leathery or thickened. Hind wings more delicate or membranous. — go to 4
3b. Front and hind wings similar in texture. Either membranous, transparent or covered with powdery-like scales. — go to 6

(3a) 4a. Chewing mouthparts. — go to 5
4b. Piercing-sucking mouthparts. Beak-like mouthparts usually easily visible and appear to arise from front of head, ahead of eyes. Front wings thickened at base but membranous and overlapping at tips, so that the wings form a triangle pattern on the back. — Hemiptera (true bugs) [details page 313-7]
5a. Leathery front wings, without veins, lay over body in a shell-like fashion, making a straight line between wings. Hind wings membranous. No cerci (tail-like appendages). —– *Coleoptera* (beetles) [details page 313-2]

5b. Front wings more or less parchment like with a network of veins. Hind wings membranous and folded fan-like when at rest. Hind leg enlarged for jumping. —– *Orthoptera* (grasshoppers, crickets, katydids) [details page 313-15]

5c. Front wings more or less parchment like with a network of veins. Flattened bodies, thread-like antennae — *Blattaria* (cockroach) [details page 313-2]

5d. Front leg enlarged for capturing prey. —– *Mantodea* (mantids) [details page 313-14]

5e. Front wings short and leathery. Hind wings membranous. Elongated flattened body with distinct forceps-like pinchers (cerci). —– *Dermaptera* (earwigs) [details page 313-4]

6a. Wings membranous. — go to 7

6b. Wings usually covered with powdery-like scales. Mouthparts coiled sucking tube beneath the head. —– *Lepidoptera* (butterflies, moths) [details page 313-12]

6c. Wings very narrow and fringed with hair. Tiny insect (less than 1/8 inch). Foot ending in balloon-like swelling. —– *Thysanoptera* (thrips) [details page 313-17]
7a. Piercing-sucking mouthparts. Jointed beak-like mouthparts not very visible and appear to arise from the area between the front legs. Wings generally held roof-like over body when at rest. — *Homoptera* (aphids, cicadas, leafhoppers, psyllids, treehoppers, and whiteflies) [details page 313-8]

7b. Front wing usually larger than hind wing. Wings may be connected. Chewing or chewing sucking mouthparts. Bee, wasp, or ant like with narrow waist. — *Hymenoptera* (bees, wasps, ants) [details page 313-9]

7c. Large membranous wings, usually with many veins and cross veins; similar in size and texture; held roof-like over body when at rest. Antennae longer, not extremely short or bristle-like. Tarsus (foot) with five segments. No cerci (tail-like appendage). — *Neuroptera* (lacewing) [details page 313-14]

8a. Piercing-sucking, jointed beak-like mouthparts. — go to 9

8b. Chewing mouthparts. — go to 10

8c. Rasping-sucking mouthparts. Tiny (less than 1/8 inch), slender insects. Balloon-like swelling on end of foot. Often noticed by scarring and deformation of leaves and flowers where it feeds. — *Thysanoptera* (thrips) [details page 313-17]

9a. Bug-like with jointed beak. Mouthparts usually easily visible and appear to arise from front of head, in front of eyes. — *Hemiptera* (true bugs) [details page 313-7]

9b. Bug-like with jointed beak. Mouthparts not highly visible and appear to arise from the area between the front pair of legs. — *Homoptera* (aphids, cicadas, leafhoppers, mealybugs, psyllids, scale) [details page 313-8]
(8b) 10a. Larva-like (i.e., caterpillar-like, grub-like, maggot-like). — go to 11

10b. Bug-like with tail-like features (cerci, filaments). — go to 14

10c. Ant-like. — go to 15

10d. Dragon-like with lots of appendages and decorations. — go to 16

(10a) 11a. Caterpillar-like: soft bodied, three pair of legs on thorax, fleshy leg-like prolegs on abdomen. — go to 12

11b. Grub-like: head capsule, three pair of legs on thorax, and no legs on abdomen.
— typical of Coleoptera (beetle grubs) [details page 313-2]

11c. Maggot-like, headless, legless. — go to 13

(11a) 12a. Up to five pair of prolegs on abdomen. — Lepidoptera (butterfly and moth caterpillars) [details page 313-12]

12b. Six or more pair of rolegs on abdomen. — Hymenoptera (sawfly larva) [details page 313-9]

(11c) 13a. Maggot-like: no legs, no head capsule, mouth-hooks. — typical of Diptera (fly maggots) [details page 313-5]
13b. Legless, no head capsule, head area may be enlarged. Insect internal wood or bark borer. —— some *Coleoptera (borer larva)* [details page 313-2]

13c. Slug like; foliage feeding. —— *Hymenoptera (typical of some sawfly larva)* [details page 313-9]

13d. Maggot-like; larva found in nests. —— *Hymenoptera (larva of bees, wasps and ants found in nest)* [details page 313-9]

(10b) 14a. Elongated flattened body with distinct forceps-like pinchers (ceri), and short leathery front wings. —— *Dermaptera (earwigs)* [details page 313-5]

14b. Hind legs designed for jumping. Antennae tread-like. —— *Orthoptera (grasshoppers, crickets, katydids)* [details page 313-15]

14c. Flattened body, thread-like antennae, thick semi-transparent wings with major venation. Household pest. —— *Blattaria (cockroaches)* [details page 313-2]

14d. Front legs designed for grasping and holding prey. Body elongated. Long, thread-like antennae. —— *Mantodea (mantids)* [details page 313-14]

(10c) 15a. Three distinct body segments. Narrow waist. Elbowed antennae. —— *Hymenoptera (ants)* [details page 313-9]

15b. Looks like a fat ant without a narrow waist. Creamy white. Straight beaded antennae. —— *Isoptera (worker termites)* [details page 313-11]
16a. Generally dark colored with bright markings and spines. —— **Coleoptera** (beetle grubs) [details page 313-2]

16b. Forward-projecting, curved pointed jaws designed to grasp prey, which they crush and suck the insides of prey. —— **Neuroptera** (antlion) [details page 313-14]