

Dichotomous Key to the Orders of Hexapods

1. a) Insect has wings? Go to 2
b) Insect wingless or with poorly developed (vestigial) wings. Go to 29
2. a) One pair of wings. Go to 3
b) Two pairs of wings. Go to 7
3. a) Body grasshopper-like, with enlarged hind legs and pronotum extending back over abdomen = **Orthoptera**
b) Insects not like this. Go to 4
4. a) Abdomen with 'tails'. Go to 5
b) Abdomen without 'tails'. Go to 6
5. a) Insects <5mm long, with relatively long antennae: wing with only one forked vein = **Hemiptera**
b) Larger insects with short antennae and many wing veins: tails long = **Ephemeroptera**
6. a) Fore wings forming club-shaped halteres = **Strepsiptera**
b) Hind wings forming halteres (may be hidden) = **Diptera**
7. a) Fore wings hard or leathery. Go to 8
b) All wings membranous. Go to 13
8. a) Fore wings tough apart from membranous tip = **Hemiptera**
b) Fore wings of uniform texture throughout. Go to 9
9. a) Fore wings (elytra) hard and veinless, meeting in center line. Go to 10
b) Fore wings with many veins, overlapping at least a little and often held roofwise over the body. Go to 11
10. a) Abdomen ending in a pair of pincer-like cerci: elytra always short= **Dermaptera**
b) Abdomen without forceps: elytra commonly cover whole abdomen= **Coleoptera**
11. a) Insects with piercing and sucking beaks = **Hemiptera**
b) Insects with chewing mouthparts: cerci ('tails') usually present. Go to 12
12. a) Hind legs modified for jumping = **Orthoptera**
b) Hind legs not modified for jumping. Go to 49
13. a) Tiny insects covered with white powder. Go to 14
b) Insects not like this. Go to 15
14. a) Wings held flat at rest: mouth-parts adapted for piercing and sucking = **Hemiptera**
b) Wings held roofwise over body at rest: biting mouthparts = **Neuroptera**

15. a) Small, slender insects with narrow, hair-fringed wings: often found in flowers = **Thysanoptera**
b) Insects not like this. Go to 16

16. a) Head extending downwards into a beak= **Mecoptera**
b) No such beak. Go to 17

17. a) Wings more or less covered with scales: coiled proboscis (tongue) usually present = **Lepidoptera**
b) Wings usually transparent although often hairy. Go to 18

18. a) Wings with a network of veins, including many cross veins. Go to 19
b) Wings with relatively few cross veins. Go to 23

19. a) Abdomen with long terminal threads. Go to 20
b) Terminal appendages short or absent. Go to 21

20. a) Fore wings much larger than hind wings: wings held vertically over body at rest: 2 or 3 terminal threads = **Ephemeroptera**
b) Wings more or less equal in size or hind wings larger: wings folded close to body at rest: 2 terminal appendages = **Plecoptera**

21. a) Antennae very short: body at least 25mm long = **Odonata**
b) Antennae longer: greater than width of head. Go to 22

22. a) Tarsi 3-segmented = **Plecoptera**
b) Tarsi 5-segmented = **Neuroptera**

23. a) Wings noticeably hairy. Go to 24
b) Wings not noticeably hairy. Go to 25

24. a) All wings more or less alike: front tarsi swollen = **Embiidina**
b) Hind wings usually broader than fore wings: front tarsi not swollen = **Trichoptera**

25. a) Tarsi with 4 or 5 segments. Go to 26
b) Tarsi with 1 - 3 segments. Go to 27

26. a) All wings alike = **Blattodea, epifamily Termitidae**
b) Hind wings much smaller than fore wings = **Hymenoptera**

27. a) Hind wings similar to or larger than fore wings: abdomen with cerci = **Plecoptera**
b) Hindwings smaller than fore wings: no cerci. Go to 28

28. a) Tiny insects with at least 12 antennal segments = **Psocoptera**
b) Never more than 10 antennal segments: piercing and sucking beak present = **Hemiptera**

29. a) Insects with slender, twig like body = **Phasmatodea**
b) Insects not like this. Go to 30

30. a} Insects with grasshopper-like body and long back legs = **Orthoptera**
b) Insects not like this. Go to 31

31. a) Small, soft-bodied insects living on plants, often under protective shield or scale = **Hemiptera**
b) Insects not like this. Go to 32

32. a) Minute soil-living insects, <2mm long without antennae = **Protura**
b) Insects not like this. Go to 33

33. a) Insects with cerci or other abdominal appendages. Go to 34
b) Insects with other appendages. Go to 41

34. a) Abdominal appendages long and conspicuous. Go to 35
b) Abdominal appendages short or hidden under body. Go to 38

35. a) Abdominal appendages forming pincers. Go to 36
b} Abdominal appendages not forming pincers. Go to 37

36. a) Tarsi 3-segmented, visible mouthparts, 5-25 mm in length = **Dermoptera**
b) Tarsi 1-segmented, internal mouthparts, \leq 5 mm in length = **Diplura**

37. a) Abdomen with 3 long terminal appendages = **Thysanura**
b) Abdomen with only 2 terminal appendages= **Diplura**

38. a) Tiny jumping insects, head points downwards forming a beak = **Mecoptera**
b) No sign of beak. Go to 39

39. a) Small or minute insects with a forked springing organ (furcula) under rear of abdomen: generally, found in soil or decaying vegetation = **Collembola**
b) Insects not like this. Go to 40

40. a) Tarsi usually 4-segmented = **Blattodea, epifamily Termitoidae**
b) Tarsi 3-segmented: front tarsi swollen = **Embiidina**
c)

41. a) Parasites in fur or feathers: insects generally flattened side-to-side or dorso-ventrally. Go to 42
b) Insects not parasitic and not usually flattened. Go to 46

42. a) Jumping insects flattened from side-to-side = **Siphonaptera**
b) Insects not flattened from side-to-side. Go to 43

43. a) Insects of moderate size: head partly withdrawn into thorax. Go to 44
b) Small minute insects: head not withdrawn into thorax. Go to 45

44. a) Antennae very short: very 'leggy' insects with strong claws well suited to clinging to a host mammal= **Diptera**
b) Antennae long: body somewhat circular, with less prominent legs and claws = **Hemiptera**

45. a) Prothorax distinct: biting mouthparts = **Mallophaga**
b) Thoracic segments fused into one unit: sucking mouthparts = **Anoplura**

46. a) Abdomen with pronounced 'waist': antennae often elbowed = **Hymenoptera**
b) No such features. Go to 47

47. a) Body >5mm long, clothed with flattened hairs and scales: vestigial wings present = **Lepidoptera**
b) Body usually <5mm long, bald or occasionally scaly: vestigial wings rarely present. Go to 48

48. a) Head as wide or nearly as wide as body: biting mouthparts: insects often found among dried materials = **Psocoptera**
b) Head narrower than body: sucking mouthparts: abdomen often with a pair of tubular outgrowths (cornicles) near hind end: insects found on growing plants = **Hemiptera**

49. a) First pair of legs raptorial (used to grasp prey) and held close to the body at rest = **Mantodea**
b) Front legs not like this and body flattened = **Blattodea**