# ENTOMOLOGY B

**See General Rules, Eye Protection & other Policies on www.soinc.org as they apply to every event.**

1. **DESCRIPTION:** Students will be asked to identify insects and selected immature insects by order and family, answer questions about insects, and use or construct a dichotomous key.

   **A TEAM OF UP TO:** 2 **APPROXIMATE TIME:** 50 minutes

2. **EVENT PARAMETERS:**
   a. **Each team may bring one 2" or smaller three-ring binder, as measured by the interior diameter of the rings, containing information in any form and from any source, attached using the available rings. Sheet protectors, lamination, tabs, and labels are permitted. If the event features a rotation through a series of laboratory stations where the participants interact with samples, specimens, or displays, no material may be removed from the binder throughout the event.**
   b. **Each team may also have one commercially produced field guide which may be tabbed or annotated.**
   c. **In addition to their resource binder and field guide, each team may bring one (1) copy of either the 2025 National Entomology List or a state or regional insect list if issued.**
   d. **Each team may bring a hand lens or magnifying glass.**
   e. **The Supervisor will provide an answer sheet and if needed, dissecting microscopes.**
3. **THE COMPETITION:**
   a. Teams will be asked to identify an insect's Order, Family or common name and answer a related question(s). Questions are **limited** to topics below and insects are **limited** to those listed on the 2025 National Entomology List
   b. Insect specimens or images (nymph or larva for selected orders and families) will be exhibited so that students will be able to see pertinent features with the unaided eye or a hand lens.
   c. For each specimen, students **will be** asked correlated questions that pertain to the insect's **internal and external anatomy**, ecology, economic characteristics, or management. Ecological characteristics may include habitats, adaptations to the environment, **behavior**, relationships (e.g., symbiosis and competition) with **animals, plants, and public health**, as well as **climate change impacts**.
   d. Economic characteristics may include beneficial or detrimental aspects of insects such as sources of food, medicine, chemicals, or nutrients, and insects as nuisance species.
   e. Management questions may pertain to pest/disease/invasive species concerns, Integrated Pest Management (IPM), conservation, and urban entomology.
   f. One of the **parts of the exam** may involve students using or formulating a simple dichotomous key to identify insects.
4. **SCORING:** The team with the highest score will determine the winner. Selected questions may be used as tiebreakers.

**Recommended Resources:** The Science Olympiad Store (store.soinc.org) carries a variety of resources to purchase; other resources are on the Event Pages at soinc.org.

# 2025 NATIONAL ENTOMOLOGY LIST

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Specimens will be limited to those on the Official list of 29 orders and 100 families. Orders or Families marked by an "*" require that the contestant be able to recognize larvae or nymph forms. The taxonomic scheme is based upon the Insects of North America Princeton Field Guide (2023).

Class Entognatha
- Order Protura - telsontails, proturans
- Order Collembola - springtails, snow fleas
- Order Diplura - diplurans

Class Insecta
- Order Archaeognatha - bristletails
- Order Zygentoma - silverfish, firebrats
- Order Ephemeroptera - mayflies
- Order Odonata - dragon/damselflies *
  - Family Aeshnidae - darners
  - Family Gomphidae - clubtails
  - Family Libellulidae - skimmers
  - Family Lestidae - spread-wing
  - Family Coenagrionidae - narrow-winged
- Order Blattodea - cockroaches/termites
- Order Mantodea - mantids
- Order Notoptera - ice crawlers
- Order Dermaptera - earwigs
- Order Plecoptera - stoneflies
- Order Orthoptera - grasshoppers & crickets
  - Family Tetrigidae - pygmy grasshopper
  - Family Acrididae - short-horned grasshoppers
  - Family Tettigoniidae - katydids
  - Family Gryllacrididae - camel crickets
  - Family Gryllidae - crickets/tree crickets
  - Family Gryllotalpidae - mole crickets
- Order Phasmatodea - walkingsticks
- Order Psocodea - Book/Bark Lice
- Order Hemiptera - true bugs
  - Family Corixidae - water boatmen
  - Family Notonectidae - backswimmers
  - Family Belostomatidae - giant water bugs
  - Family Nepidae - waterscorpions
  - Family Gelastocoridae - toad bugs
  - Family Gerridae - water striders
  - Family Cimicidae - bed bugs
  - Family Miridae - plant bugs
  - Family Reduviidae - assassin bugs
  - Family Phymatidae - ambush bugs
  - Family Tingidae - lace bugs
  - Family Lygaeidae - seed bugs
  - Family Coreidae - leaf-footed bugs
  - Family Pentatomidae - Stink bugs
  - Family Cicadidae - cicadas
  - Family Membracidae - treehoppers
  - Family Cercopidae - froghoppers, spittlebugs
  - Family Cicadellidae - leafhoppers
  - Family Fulgoridae - fulgorid planthoppers
  - Family Aphididae - aphids
  - Family Dactylopiidae - scale(twig or leaf)
- Order Thysanoptera - thrips
- Order Megaloptera - dobsonflies
- Order Neuroptera - lacewings, antlions
  - FamilyChrysopidae - green lacewings
  - Family Myrmeleontidae - antlions *

- Order Coleoptera-beetles
  - Family Cicindelidae-tiger beetles[1]
  - Family Carabidae-ground beetles
  - Family Dytiscidae-predaceous diving beetles
  - Family Gyrinidae-whirligig beetles
  - Family Hydrophilidae-water scavenger beetles
  - Family Histeridae-hister beetles
  - Family Staphylinidae-rove beetles
  - Family Silphidae-carrion beetles
  - Family Lucanidae-stag beetles
  - Family Passalidae-bess beetles
  - Family Scarabaeidae-dung beetles
  - Family Buprestidae-metallic wood-boring/ jewel beetles
  - Family Elateridae-click beetles
  - Family Lampyridae-fireflies
  - Family Cantharidae-soldier beetles
  - Family Lycidae-net-winged beetles
  - Family Cleridae-checkered beetles
  - Family Coccinellidae-lady-bird beetles (ladybugs)
  - Family Tenebrionidae–darkling beetles *
  - Family Meloidae-blister beetles
  - Family Cerambycidae-long-horned beetles *
  - Family Chrysomelidae-leaf beetles
  - Family Curculionidae-weevils
- Order Strepsiptera - Twisted-Wing Parasite
- Order Mecoptera-scorpionflies
  - Family Boreidae- snow scorpionflies
  - Family Panorpidae- common scorpionflies
- Order Raphidioptera - Snakeflies
  - Family Raphidiidae - Raphidiid Snakeflies
- Order Siphonaptera-fleas
- Order Diptera-true flies
  - Family Tipulidae-crane flies
  - Family Culicidae-mosquitoes*
  - Family Chironomidae-midges
  - Family Simuliidae- black flies
  - Family Stratiomyidae-soldier flies
  - Family Tabanidae-horse flies
  - Family Asilidae-robber flies
  - Family Bombyliidae-bee flies
  - Family Syrphidae-hover/flower flies
  - Family Tephritidae-fruit flies, huskfly
  - Family Drosophilidae-pomace flies, fruit/ vinegar flies
  - Family Muscidae-house flies
  - Family Hippoboscidae-louse flies
  - Family Calliphoridae- blow flies*
  - Family Tachinidae-tachinid flies
- Order Trichoptera-caddisflies*
- Order Lepidoptera-moths and butterflies
  - Family Sesiidae-clear winged moths
  - Family Tortricidae- Tortrix moths
  - Family Hesperiidae-skippers
  - Family Papilionidae-swallowtails*
  - Family Pieridae-whites, sulfurs
  - Family Lycaenidae- hairstreaks/blues
  - Family Nymphalidae-brush-footed butterflies
  - Family Danaidae-milkweed butterflies
  - Family Pyralidae- snout moths
  - Family Saturniidae-Giant Silkworm moths*
  - Family Sphingidae-sphinx/hawk moths, hornworms*
  - Family Erebidae - tiger/tussock moths
- Order Hymenoptera-bees/ants/wasps.
  - Family Tenthredinidae- common sawflies
  - Family Siricidae-horntails
  - Family Ichneumonidae-ichneumons
  - Family Cynipidae- gall wasps
  - Family Mutillidae- velvet-ants
  - Family Formicidae-ants
  - Family Vespidae-paper wasps, hornets, yellowjackets
  - Family Sphecidae - thread- waisted wasps
  - Family Colletidae- Plaster bees
  - Family Halictidae- Sweat bees
  - Family Megachilidae- leaf cutter bees
  - Family Apidae-bees

- Subclass Acari - Mites and Ticks
  - Order Ixodida - Ticks
    - Family Ixodidae - Hardbacked ticks

1 Depending on the resource, Cicindelidae-tiger beetles may be classified as part of Carabidae-ground beetles. For the purposes of this list, they are considered separate families