2026

Howdy everyone! I'm Rooni, a former Science Olympiad competitor and current alumni volunteer/testwriter. As a competitor and event supervisor, I mainly focused on identification based life science events, or bio ID events such as Ornithology and Forestry. During the 2025 season I was also the writer or co-writer for many Entomology tests: MIT, UT Invitational and Regionals, GGSO, Rickards C, GullSO, UMASO, TAMU Invitational, and Texas States. For the 2026 season, I will continue to write Entomology tests for various tournaments 👀.

So first of all, what is Entomology?
If you have previously done identification events, you know that Ornithology is the study of birds, Forestry is trees, Herpetology is amphibians and reptiles. Entomology is a similar format except with insects. It involves knowing how to identify insects to the order/family levels and answering questions about their anatomy, behaviour, ecological characteristics, human impacts, management, and so on.

Entomology is a binder event, meaning you are allowed to have a 2" binder filled with any information from any source, as well as a commercially published field guide. You can also have a copy of the official Entomology List and a hand lens or magnifying glass. Please take advantage of this fact and prepare early, whether it's making your notes or finding a guide that you are comfortable using.

Now for the insects list! The 2026 National Entomology List consists of **26 various orders, and 113 families selected from certain orders**, as well as other hexapods and one family of ticks. Just to clarify, these are not about individual species! Identification to species level or even genus level is extremely difficult even for the more experienced entomologists, so just focus on the families.

To prepare for this event, it is crucial to have a solid understanding of identification. Use flashcards to learn about each family's characteristics. Given an image or a specimen, know how to identify it. The internet is a great tool to find information for notes making, and don't ever be afraid to put yourself out there and ask questions online either.

Some of the resources I think are helpful for this event include, of course, the Science Olympiad Entomology page and the Scioly.org Wiki page. Both have valuable links and a solid introduction to the event, so definitely check them out. There is also the Science Olympiad ID Discord server for identification practice and a community of SciOly students also doing Entomology, with amazing tips and tricks. These resources were extremely helpful for me when I was competing (even in other ID events) and testwriting.

If you have any more questions feel free to contact me on Discord at @roonisaurus. Happy studying!

ENTOMOLOGY B/C: 2026 SEASON

Event Introduction

Entomology is defined as the scientific study of insects and anything related to them, whether it's behaviour, classification, evolution, anatomy, morphology, ecology, molecular genetics, etc. As long as it pertains to insects, it is classified as entomology.

In Science Olympiad, this event is offered to both Division B and Division C competitors and is part of the identification event rotation along with Invasive Species, Herpetology, Ornithology, and Forestry.

This event generally focuses on class Insecta, within superclass Hexapoda which is part of the Arthropoda phylum in the animal kingdom. These animals are invertebrates with segmented bodies, three major body sections, six jointed legs, and usually two antennae.

The Event Rules

Entomology is a two-person event and is run in test format (either a full-length sit down test or stations, though this will vary from tournament to tournament).

Each team is allowed to bring:

- one 2" or smaller three-ring binder containing information in any form from any source.
- one commercially produced field guide (which may be tabbed or annotated).
- a copy of the official insect list as well as a hand lens or a magnifying glass.

Generally, teams will be asked to identify insects to the order or family levels and answer corresponding questions. Identification will be based on either a specimen or an image with identifiable features visible. Questions asked may include anatomy, ecology (habitats, adaptations, behaviour, relationships, climate change), economic impacts on humans, and **management (for state- and national-level tournaments).** The rules also discuss dichotomous keys, either using or creating one to identify insects.

How to Prepare and Study

The main thing to focus on for this event is making the binder. Not only is it a source of notes during the competition, but creating the binder is a great way to study!

Identification is another important aspect of this event. ID events such as Entomology require fast identification so you have time to answer the rest of the questions in the station. Practise. Learn the ID by heart. There are a bunch of Quizlets online, as well as a Discord bot for practising identification. However, images are not the only method of learning ID! Going out into the real world and observing real insects helps a lot, especially since some tournaments do have live or preserved specimens.

The Insect List

- The **2026 National Entomology List** requires competitors to know **26 orders and 113 families** of insects. Specimens tested will be limited to those present on the list. Most only require knowledge of adult forms, but select taxa will require knowledge of immature insects as well (these are denoted with an asterisk *).
- **For this season, there are many specimens that are to be tested only at the state and national level. This means that most invitational and regional tournaments will not test certain specimens – these are denoted in *italics* on the official insect list.**
- The taxonomic scheme of the list is based on the Insects of North America Princeton Field Guide (2023). Insect classifications are still an ongoing debate, but generally refer to what is listed.
- ~~Some "families" on the list have been reclassified as subfamilies of another; for example Danaidae has been renamed Danainae and is now a subfamily under Nymphalidae. During competition, when presented with an image of a milkweed butterfly, graders are usually looking for the most specific classification, in this case "Danaidae" (how it is written on the list).~~ **(These issues have been resolved on the 2026 list.)**
- Most entomologists classify insects into approximately 30 orders. Within those orders are several hundred families. Thankfully this event only requires knowledge of **113** of them (though the other families are just as fascinating!). Additionally, not all orders are tested either.
- Note that the lists for Division B and Division C are the same. Print it out. Memorise it. Know at least the orders by heart.
- **Additionally, if your state or regionals uses a different list, be sure to familiarise yourself with those as well.**

The Binder

The binder is the most useful resource you get during competition! Therefore it is critical to be familiar with your binder and actually spend time creating it.

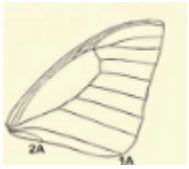
<u>SAMPLE Notes Template:</u>

It's up to your team to find the best template to use for your notes, but generally the template should be consistent for all orders, all families, etc. Good things to include on your template include but are not limited to:

- Family/Order, Etymology
- Physical Description
    - Anatomy/morphology
    - Identifiable features
    - Egg, nymph/larvae, instars, pupa (if applicable), adult/imago forms
    - Sexual dimorphism (if exhibited)
- Distribution/Habitat
    - Which habitats do species of this family/order live in?
    - Where on earth can you find them?
- Behaviour
    - Diet/feeding
    - Reproduction/lifecycle
    - Movement
- Ecology
    - Predator/prey relationships
    - Parasitism and other other symbiosis
    - Adaptations to the environment
    - Climate change impacts/population trends
- Significance to Humans
    - Economic importance
    - Management
- Other Facts (if deemed significant enough to include)
    - Depictions in human culture
    - Evolution
- Images/Diagrams
    - Images of insects through various stages of their lifecycle
    - Closeup images of special anatomy

Example (SUUUUUPER BASIC):

- Family: Papilionidae (swallowtails) Order: Lepidoptera. Etymology: “papilio” = Latin for butterflies
- Physical Description
    - Adults/imago
        - Frequently have a tail on their hindwings (extension of termen at vein 4)
        - Second anal vein (2A) extends up to wing margin, does not link with 1A
        - Sclerites of cervix are fused beneath the neck
    - Larvae
        - Possess osmeterium (forked, fleshy eversible organ) on prothoracic segment
    - Egg
        - Dome shaped, opaque
    - Pupae
        - Curved backwards, angulate
        - Attached by tail, secured by silken girth
- Distribution/Habitat
    - ~552 species worldwide, concentrated within 20° of latitude of equator
    - Found in open areas like fields, pastures, woodland edges, roadsides, marshes, gardens
- Behaviour
    - Are diurnal
    - Territorial: will defend territories
    - Diet/feeding
        - Adults sip nectar, may also go for mud/manure
        - Caterpillars are folivores, can eat toxic plants which render some larvae toxic
    - Reproduction/lifecycle
        - Lay individual eggs on underside of host plant’s leaves
        - No parental investment after eggs are laid
    - Movement: Crawling larvae, flying adults
- Ecology
    - Predator/prey relationships
        - Larvae feed on host plants, adults feed on nectar
        - Eaten by insectivorous birds, predatory insects, lizards, spiders, skunks
        - Defence: mimicry, can taste unpleasant/toxic, osmeterium + foul smell repels predators
    - Adaptations to the environment
        - Proboscis in adults to sip nectar
    - Climate change impacts/population trends
        - Declining: climate change, habitat loss, pesticides, loss of foodplants, international trade
        - Mitigations: plant host plants, provide nectar sources, reduce pesticide use
- Significance to Humans
    - Economic importance
        - Larvae may be pests to crops/orchards
- Other Facts (if deemed significant enough to include)
    - Depictions in human culture
        - Often collected for their beauty
        - Oregon swallowtail is state insect of OR
        - Eastern tiger swallowtail is state insect of VA, state butterfly of GA/DE/SC
        - Black swallowtail is state butterfly of OK
- Images/Diagrams (*courtesy of Wikipedia*)


Entomology tests will also usually ask general information, such as insect anatomy/physiology, evolution/classification/phylogeny, entomological terms, collection/observation, pest management, urban entomology, etc. There may also be sections asking students to use or create a dichotomous key.

I recommend having images for each family/order: egg, larva/nymph (for certain groups), pupa, imago (male and female), etc.

Some bindering tips:

- use multiple sources. Make sure information is consistent (fact check if needed!)
- do not merely use ChatGPT or whatever, please try to at least do your own research as well.
- summarise your sources. Don't just copy and paste; typing it yourself helps you study!
- add pictures if they help you understand a concept.
- there are **26 orders and 113 families**, so pace yourself when creating the binder.
- keep adding information to your binder if you realise something is missing. It's good to write extra notes after competitions and practice tests.

Recommended Resources/Tips

- Read the rules. A complete understanding of the event is CRITICAL to doing well.
- MEMORISE THE LIST. I absolutely cannot stress this enough.
- The Science Olympiad website has some pretty helpful links for students to get started.
- The Scioly.org wiki page also gives a good introduction to the event as well as basic content. There is also a page on various orders and families.
- There is an available Discord bot/server to practise identification!
- There is an abundance of databases and websites for you to draw information from.
- It's always good to have a field guide as well.
    - Personally I recommend the Princeton Field Guide (2023) (what the official list is based on), but there are other commercially available guides too, such as Audubon or National Wildlife Federation. Use whatever you're most comfortable with.
- To become even better, go outside and observe insects yourself! It helps with ID and you can observe their behaviour and environment. Firsthand experience is a great learning method.
- **2026 is the second-year for Entomology for this set of rotations (meaning it was already run in 2025). Thus, your competitors will already be seasoned with the event: how it is run, important information/content on notes, how to study, etc. DO NOT BE DISCOURAGED! As long as you are willing to put in the effort to learn Entomology and are passionate about the event, you will be able to do at least decently.**
    - **Believe me, I started competing in Ornithology during its second-year and managed to do okay.**
- **There is a pretty significant overlap between the Water Quality and Entomology specimen lists for this season ;)**
- **I've compiled a list of changes from the 2025 list. See page 7.**
- **I've also put together a list of invitational/regional-level specimens, removing all the state/national-level only specimens. Please note that unfortunately not all invitational/regional tournaments may follow this list, so be prepared. See page 8.**
- **If you see any issues with the above two lists I've made, please let me know ASAP! I may not have caught all the changes or what's tested at different tournament levels.**
- **Additionally, if your state or regionals uses a different list, be sure to familiarise yourself with those as well.**

SUMMARY OF CHANGES FROM 2025 T0 2026 SEASON INSECT LIST

Order Protura (telsontails, proturans)
~~Order~~ **Subclass** Collembola (springtails, snow fleas)
*Order Ephemeroptera (mayflies)
*Order Odonata (dragon/damselflies)
- *Family Aeshnidae (darners)
- **Family Gomphidae (clubtails)*
- *Family Libellulidae (skimmers)
- *Family Lestidae (spreadwings)
- *Family Coenagrionidae (narrowwings)

Order Blattodea (cockroaches/termites)
- **Family Termitidae (termites)**
- **Family Blattidae (household roaches)**
- ***Family Cryptocercidae (brown-hood roach)***

~~Order Notopera (ice crawlers)~~
Order Embioptera (webspinners)
*Order Plecoptera (stoneflies)
Order Orthoptera (grasshoppers & crickets)
- *Family Tetrigidae (pygmy grasshopper)*
- ~~Family Gryllacrididae (leafroller crickets)~~
- **Family Rhaphidophoridae (camel crickets)**

Order Phasmatodea (walkingsticks)
- **Family Diapheromeridae (com. walkingstick)**

Order Hemiptera (true bugs)
- *Family Nepidae (waterscorpions)*
- *Family Gelastocoridae (toadbugs)*
- *Family Miridae (plant bugs)*
- ~~Family Phymatidae (ambush bugs)~~
- **Family Scutelleridae (metallic shield bugs)**
- *Family Tingidae (lace bugs)*
- *Family Lygaeidae (seed bugs)*
- *Family Cicadidae (cicadas)
- ***Family Pseudococcidae (mealybug)**
- ***Family Coccidae (soft scale insects)**
- ~~Family Dactylopiidae (leaf/twig scales)~~

*Order Megaloptera (dobsonflies)
Order Coleoptera (beetles)
- ~~Family Cicindelidae (tiger beetles)~~
- ***Family Psephenidae (water penny beetles)**
- ***Family Elmidae (riffle beetles)**
- *Family Histeridae (hister beetles)*
- *Family Silphidae (carrion beetles)*
- **Family Elateridae (click beetles)*
- **Family Lampyridae (fireflies)*
- *Family Lycidae (net-winged beetles)*
- *Family Cleridae (checkered beetles)*
- *Family Coccinellidae (ladybird beetles)
- ***Family Zopheridae (ironclad beetles)***
- ***Family Cucujidae (flat bark beetles)**

~~Order Strepsiptera (twisted wing parasites)~~
Order Mecoptera
- *Family Boreidae (snow scorpionflies)*
- *Family Panorpidae (common scorpionflies)*

Order Diptera (true flies)
- *Family Tipulidae (crane flies)
- *Family Chironomidae (midges)
- **Family Simuliidae (black flies)*
- *Family Syrphidae (hover/flower flies)
- *Family Tephritidae (fruit/husk flies)*
- ~~Family Hippoboscidae (louse flies)~~
- *Family Tachinidae (tachinid flies)*
- ***Family Oestridae (botflies)***

Order Lepidoptera (moths, butterflies)
- *Family Tortricidae (tortrix moths)*
- *Family Nymphalidae (brushfoot butterflies)
- ~~Family Danaidae (milkweed butterflies)~~
- **Family Geometridae (geometer moths)**
- ***Family Lasiocampidae (tent caterpillars)***
- *Family Pyralidae (snout moths)*
- ~~*~~Family Saturniidae (giant silkworm moths)
- *Family Erebidae (tiger/tussock moths)
- **Family Noctuidae (owlet moths)**

Order Hymenoptera (bees/ants/wasps)
- *Family Siricidae (horntails)*
- *Family Cynipidae (gall wasps)*
- ***Family Braconidae (braconid wasps)***
- ~~Family Colletidae (plaster bees)~~

KEY
Yellow highlight + Italics = state/nats level only
*asterisk = larval/nymph forms expected
Blue highlight + bolded = newly added
Green highlight + bolded italics = added state/nats only
~~Red highlight + strikethrough= removed from 2025~~
~~Strikethrough = taxonomic change/spelling~~

INVITATIONAL/REGIONALS ENTO LIST

*asterisk = larval/nymph forms expected

CLASS ENTOGNATHA
Subclass Collembola
Order Diplura

CLASS INSECTA
Order Archaeognatha
Order Zygentoma
*Order Ephemeroptera
*Order Odonata
- *Family Aeshnidae
- *Family Libellulidae
- *Family Lestidae
- *Family Coenagrionidae

Order Blattodea
- Family Termitidae
- Family Blattidae

Order Mantodea
Order Embioptera
Order Dermaptera
*Order Plecoptera
Order Orthoptera
- Family Acrididae
- Family Tettigoniidae
- Family Rhaphidophoridae
- Family Gryllidae
- Family Gryllotalpidae

Order Phasmatodea
- Family Diaphneromeridae

Order Psocodea
Order Hemiptera
- Family Corixidae
- Family Notonectidae
- Family Belostomatidae
- Family Gerridae
- Family Cimidae
- Family Reduviidae
- Family Scutelleridae
- Family Coreidae
- Family Pentatomidae
- *Family Cicadidae
- Family Membracidae
- Family Cercopidae
- Family Cicadellidae
- Family Fulgoridae
- Family Aphididae
- *Family Pseudococcidae
- *Family Coccidae

Order Thysanoptera
*Order Megaloptera
Order Neuroptera
- Family Chrysopidae
- *Family Myrmeleontidae

Order Coleoptera
- Family Carabidae
- Family Dytiscidae
- Family Gyrinidae
- Family Hydrophilidae
- *Family Psephenidae
- *Family Elmidae
- Family Staphylinidae
- Family Lucanidae
- Family Passalidae
- Family Scarabaeidae
- Family Buprestidae
- Family Cantharidae
- *Family Coccinellidae
- *Family Tenebrionidae
- Family Meloidae
- Family Cerambycidae
- Family Chrysomelidae
- Family Curculionidae
- *Family Cucujidae

Order Raphidioptera
- Family Raphidiidae

Order Siphonaptera
Order Diptera
- *Family Tipulidae
- *Family Culicidae
- *Family Chironomidae
- Family Stratiomyidae
- Family Tabanidae
- Family Asilidae
- Family Bombyliidae
- *Family Syrphidae
- Family Drosophilidae
- Family Muscidae
- *Family Calliphoridae

*Order Trichoptera
Order Lepidoptera
- Family Sesiidae
- Family Hesperiidae
- *Family Papilionidae
- Family Pieridae
- Family Lycaenidae
- *Family Nymphalidae
- Family Geometridae
- Family Saturniidae
- *Family Sphingidae
- *Family Erebidae
- Family Noctuidae

Order Hymenoptera
- Family Tenthredinidae
- Family Ichneumonidae
- Family Mutilidae
- Family Formicidae
- Family Vespidae
- Family Sphecidae
- Family Halictidae
- Family Megachilidae
- Family Apidae

NON INSECT ARTHROPODS
Subclass Acari
- Family Ixodidae

STATE/NATIONAL ENTO LIST

*asterisk = larval/nymph forms expected

CLASS ENTOGNATHA
Order Protura
Subclass Collembola
Order Diplura

CLASS INSECTA
Order Archaeognatha
Order Zygentoma
*Order Ephemeroptera
*Order Odonata
- *Family Aeshnidae
- **Family Gomphidae*
- *Family Libellulidae
- *Family Lestidae
- *Family Coenagrionidae

Order Blattodea
- Family Termitidae
- Family Blattidae
- *Family Cryptocercidae*

Order Mantodea
Order Embioptera
Order Dermaptera
*Order Plecoptera
Order Orthoptera
- *Family Tetrigidae*
- Family Acrididae
- Family Tettigoniidae
- Family Rhaphidophoridae
- Family Gryllidae
- Family Gryllotalpidae

Order Phasmatodea
- Family Diaphneromeridae

Order Psocodea
Order Hemiptera
- Family Corixidae
- Family Notonectidae
- Family Belostomatidae
- *Family Nepidae*
- *Family Gelastocoridae*
- Family Gerridae
- Family Cimidae
- *Family Miridae*
- Family Reduviidae
- Family Scutelleridae
- *Family Tingidae*
- *Family Lygaeidae*
- Family Coreidae
- Family Pentatomidae
- *Family Cicadidae
- Family Membracidae
- Family Cercopidae
- Family Cicadellidae
- Family Fulgoridae
- Family Aphididae
- *Family Pseudococcidae
- *Family Coccidae

Order Thysanoptera
*Order Megaloptera
Order Neuroptera
- Family Chrysopidae
- *Family Myrmeleontidae

Order Coleoptera
- Family Carabidae
- Family Dytiscidae
- Family Gyrinidae
- Family Hydrophilidae
- *Family Psephenidae
- *Family Elmidae
- *Family Histeridae*
- Family Staphylinidae
- *Family Silphidae*
- Family Lucanidae
- Family Passalidae
- Family Scarabaeidae
- Family Buprestidae
- *Family Elateridae*
- *Family Lampyridae*
- Family Cantharidae
- *Family Lycidae*
- *Family Cleridae*
- *Family Coccinellidae
- *Family Tenebrionidae
- Family Meloidae
- Family Cerambycidae
- Family Chrysomelidae
- Family Curculionidae
- *Family Zopheridae*
- *Family Cucujidae

Order Mecoptera
- *Family Boreidae*
- *Family Panorpidae*

Order Raphidioptera
- Family Raphidiidae

Order Siphonaptera

Order Diptera
- *Family Tipulidae
- *Family Culicidae
- *Family Chironomidae
- **Family Simuliidae*
- Family Stratiomyidae
- Family Tabanidae
- Family Asilidae
- Family Bombyliidae
- *Family Syrphidae
- *Family Tephritidae*
- Family Drosophilidae
- Family Muscidae
- *Family Calliphoridae
- *Family Tachinidae*
- **Family Oestridae*

*Order Trichoptera
Order Lepidoptera
- Family Sesiidae
- *Family Tortricidae*
- Family Hesperiidae
- *Family Papilionidae
- Family Pieridae
- Family Lycaenidae
- *Family Nymphalidae
- Family Geometridae
- *Family Lasiocampidae*
- *Family Pyralidae*
- Family Saturniidae
- *Family Sphingidae
- *Family Erebidae
- Family Noctuidae

Order Hymenoptera
- Family Tenthredinidae
- *Family Siricidae*
- Family Ichneumonidae
- *Family Cynipidae*
- Family Mutilidae
- Family Formicidae
- Family Vespidae
- Family Sphecidae
- *Family Braconidae*
- Family Halictidae
- Family Megachilidae
- Family Apidae

NON INSECT ARTHROPODS
Subclass Acari
- Family Ixodidae