

ESA 2023 Entomology Games

Q. This (pic) aggregation of gregarious larvae is comprised of insects in what order?

A. Hymenoptera

Q. Stoneflies are beneficial to their ecosystem for many reasons. They are food for predators, they mediate energy flow, they help with nutrient cycling, AND, due to their habitat sensitivity, they are especially useful in conjunction with what other ecosystem service?

A. Indicators of water pollution

Q. According to a 2023 review of phoretic behavior in mites, what subtype of phoresy is taking place when free-living mites occasionally appear on larger animals, but are not "obligated" to as part of their life cycle?

A. Facultative or Accidental phoresy

Q. Also called a spacing pheromone or a dispersal pheromone, what is the name for the type of pheromone produced by some female insects after oviposition, that discourages other females from using the same oviposition site?

A. Epideictic pheromones

Q. An ecological hypothesis, abbreviated JCH, was proposed in the early 1970s to explain the extraordinary tree diversity of many tropical forests. The 'C' in JCH refers to the last name of ecologist Joseph Connell. The 'J' refers to the last name of what entomologist, who independently developed the same hypothesis at the same time?

A. Dan Janzen

Q. When some flying insects exhibit anemotaxis and fly into the wind, they can control their ground speed by using visual feedback from stationary surroundings to track the progress of their movement. What specific type of anemotaxis is being described here?

A. Optomotor anemotaxis

Q. Most butterflies are herbivorous, but one notable exception is the tropical subfamily Miletinae, which does not contain any plant-feeding species. Most Miletinae larvae instead feed on ants or small Hemiptera. What butterfly family do these carnivorous caterpillars belong to?

A. Lycaenidae

Q. The louse species *Colpocephalum californici* is believed to be extinct. Its extinction was, ironically, caused by conservationists trying to save the species that the lice used as a host. What critically endangered bird species was the primary host of this extinct louse?

A. California condor (*Gymnogyps californianus*)

Q. What family of Hemiptera has some subsocial species, such as *Platycotis vittata*, in which immatures use substrate vibrations to communicate with their mother, in order to prompt maternal defense against predators and parasitoids?

A. Membracidae

Q. This threatened species of Cicindelidae lives on the sandy beaches and rocky cliffs of New England. It is, somewhat ironically, named after the Protestants who contributed to its habitat destruction by founding the Massachusetts Bay Colony in the 1600s. What is the scientific name, or unofficial common name, of this beetle?

A. *Ellipsiptera puritana*, Puritan Tiger Beetle

Q. The 2022 Ig Nobel Prize in Biology was awarded to a group of researchers for determining that, when a certain arthropod loses terminal parts of its abdomen, the resulting constipation does not severely impact its overall fitness. What arthropod group was the focus of this study?

A. scorpions (specifically, *Ananteris balzani*)

Q. Scientists Shinji Sugiura and Misaki Tsujii published a 2022 study based on their unusual experience with the painful stinging behavior of a mason wasp in the vespid subfamily Eumeninae. According to the title of the study, what was unusual about this defensive behavior, relative to the stinging behavior in other subfamilies of Vespidae?

A. The stinging behavior was exhibited by a male wasp, not a female (title of the paper is "Male wasp genitalia as an anti-predator defense")

Q. A group of 10 or more fire ant workers are able to form a raft and float on top of water, because, in fluid mechanics, small floating objects tend to naturally attract each other. This mechanical property is named after a popular brand created in 1945, currently owned by General Mills. What is the common name of this "effect"?

A. Cheerios Effect

Q. A 2023 study on monarch butterfly migration found a correlation between the monarchs' wing pattern and their success at reaching their destination. According to the title of the study, what wing pattern trait is correlated with greater migration success?

A. Presence of more and/or larger white spots

Q. What is the name of the theory that states that no two species with similar ecological niches can co-exist in a state of stable equilibrium, or that realized ecological niches do not intersect? This ecological theory is sometimes named after the 20th-century Russian biologist who popularized it.

A. Gause's law

Q. The answer to this question is a number; answers within 10% of the exact number will be considered correct. In degrees Celsius, what is the temperature of the bombardier beetle's defensive spray, at the time of ejection?

A. 100 degrees Celsius (accept answers from 90-110)

Q. Dev Shah won the 2023 Scripps National Spelling Bee by correctly spelling WHAT 11-LETTER NOUN? This noun is an ecological term that can describe bembicine wasps, northern dune tiger beetles, and other animals that prefer to live in sandy areas.

A. Psammophile

Q. In IRAC's Mode Of Action classification, the vast majority of sodium channel modulators are pyrethroids or pyrethrins. The only exceptions are two organochlorine insecticides that are currently banned in the US. Name either of these two insecticides.

A. DDT, Methoxychlor

Q. Poison frogs in the family Dendrobatidae sequester toxic alkaloids from a diet of mites, millipedes, and two insect orders. Name EITHER of those orders.

A. Hymenoptera, Coleoptera

Q. All insecticides sold in the U.S. have three names; what are those three types of names?

A. Trade, common, chemical

Q. LD50 is the lethal dose to kill 50% of a test population. What does LC50 mean?

A. Lethal concentration to kill 50% of a test population.

Q. What is the name of the norsesquiterpene compound that acts as an anti-predatory defense when secreted by whirligig beetles?

A. gyronidal

Q. Wings of a certain species of insect possess unique antibacterial properties. The wings have an array of extremely small spikes called nanopillars that destroy bacteria by physically rupturing the bacterial membranes. This species, which is native to Australia and is commonly called a 'clanger', belongs to what family?

A. Cicadid

Q. The roots of maredu kommulu, also known as swallowroot, are the source of an insecticide with a novel model of action. This insecticide is a trisaccharide toxic to numerous insect species by contact with their tarsal gustatory chemosensilla, but not through oral or topical application. Name this new class of natural insecticide.

A. Decaleside

Q. M-pede is an insecticidal soap that also functions as a miticide and fungicide. What is its active ingredient?

A. Potassium salts / potassium laurate

Q. Which amino acid is the principal excitatory neurotransmitter at the neuromuscular junction in insects?

A. Glutamate / Glutamic acid

Q. This enzyme has a name that is extremely similar to the name of the disaccharide it interacts with. In the insect hemolymph, this enzyme catalyzes the conversion of the disaccharide into two molecules of glucose, which is important for insect metabolism. What is the name of this enzyme? You will NOT get credit for naming the disaccharide.

A. Trehalase

Q. Leverage 360 is the name of an insecticide sold by Bayer that has two active ingredients with different modes of action. Name EITHER of the active ingredients.

A. Imidacloprid, Cyfluthrin

Q. In an interesting example of convergent evolution, the same bicyclic ketal found to play a role in the behaviour of Asian elephants during musth, a period of sexual activity and aggression, was already known as an aggregation pheromone in Scolytinae. What is the name of this pheromone, which was first isolated from a bark beetle in the genus *Dendroctonus*?

A. Frontalin (isolated from *Dendroctonus frontalis*)

Q. What order contains the pest species that are the primary targets of *Bacillus thuringiensis aizawai*?

A. Lepidoptera

Q. What receptor protein is a calcium-dependent cell adhesion protein that binds to Cry toxins and is important for the insecticidal function of Bt?

A. Cadherin

Q. A recent study in Nature Communications proposed a new method of mating disruption in *Anopheles* mosquitoes. Mating can be disrupted by inhibiting a certain octopamine receptor in male *Anopheles gambiae*, in order to partially block what sense of the male mosquito?

A. sense of hearing (so that they can't hear the sounds produced by females)

Q. In insect biochemistry, Malvolio is the name of a transporter of certain metallic elements important for an insect's diet. Name any one of these metals.

A. Iron, copper, manganese

Q. What heavy metal, located next to lead on the periodic table, was once commonly used as a household ant killer, but is now banned in many countries because of its toxicity to humans. This metallic element has the atomic number 81 and the atomic symbol TL.

A. Thallium

Q. Gentrol is an insect growth regulator, with the active ingredient hydroprene, that is commonly used against German cockroaches. Gentrol mainly causes molting disruption, but it also has WHAT OTHER NOTABLE EFFECT on cockroaches that makes it compatible with baits such as Combat baits?

A. It makes them HUNGRY, or, it INCREASES FORAGING activity

Q. Whereas all forms of biological control, by definition, involve an active human role, what other form of control involves pre-existing biotic and environmental factors, with no human input?

A. Natural Control

Q. In the context of biocontrol, any biological control agent of an animal or plant pest can usually be classified as a predator, parasitoid, or pathogen. In contrast, what other general term is most often used to refer to biological control agents of plant diseases?

A. Antagonists

Q. According to USDA regulations, when developing a plan for management of invasive plants or weeds, a PPQ 526 Permit is required in order to do what?

A. import, transport, and release BIOLOGICAL CONTROL ORGANISMS of plant pests and weeds.

Q. Entomologist Martin Hill is the current president of the IOBC. What does IOBC stand for?

A. International Organization for Biological Control

Q. In the 1990s, entomologists at a USDA research laboratory tried, and failed, to introduce an Asian moth species to the US in order to control waterlettuce. This potential biological control agent, commonly called the waterlettuce moth, is ironically in a genus known for its pest species that can damage a variety of important crops. What genus does this moth belong to?

A. *Spodoptera*

Q. In community ecology, some species that compete for resources may also be involved in predator-prey interactions, resulting in "potential competitors that eat each other." What is the term for this specific type of predation?

A. Intraguild predation

Q. For many years, this genus of soil fungus has been known as an effective biological control agent of plant pathogens, including verticillium wilt and a variety of molds and rots. Recently, one of its species, *T. afroharzianum*, has been shown to disrupt the gut microbiota of *Spodoptera* caterpillars, meaning the fungus could potentially be used for control of insect pests as well. What is this fungal genus?

A. *Trichoderma*

Q. What word, derived from the Greek words for "dead" and "food", can refer to a bacterial or fungal biological control agent that kills its host and then feeds on the dead matter?

A. Necrotroph / necrotrophic

Q. What specific form of inoculative biological control involves control of a NATIVE pest species (NOT an exotic pest) using biological control agents imported from outside the pest's native range?

A. Neoclassical biological control

Q. A tropical "eleven-lined" species of THIS GENUS is the native host insect of the parasitoid wasp *Edovum puttleri*. A better-known species in the same genus (with one less line) is a major pest that can potentially be controlled by releasing *Edovum puttleri*. What genus of Coleoptera is the host of this parasitoid?

A. *Leptinotarsa*

Q. Two species in the small dipteran family Chamaemyiidae have been released in some US forests, in the hopes that they will successfully control the invasive hemlock woolly adelgid. What is the colorful common name of these dipteran biological control agents?

A. Silver flies

Q. Although the vedalia beetle gets much of the credit for successful control of cottony cushion scale, a tiny parasitoid fly also played a very important role. What is the scientific name of this fly?

A. *Cryptochaetum iceryae*

Q. When entomopathogenic nematodes in the genera *Steinernema* and *Heterorhabditis* enter their insect hosts, they release symbiotic bacteria from their gut, which multiply rapidly and quickly kill the hosts. Name EITHER genus of symbiotic bacterium associated with these nematodes.

A. *Xenorhabdus*, *Photorhabdus*

Q. What family contains the subfamily Asopinae, a group of predatory insects often used as biological control agents, such as *Eocanthecona furcellata*, *Perillus bioculatus*, and *Podisus maculiventris*?

A. Pentatomidae

Q. What two-word term, coined by M. E. Solomon in 1949, is defined as a change in predator density as a function of a change in prey density?

A. Numerical response

Q. This predatory biological control agent, photographed next to a penny to give you a sense of scale, is one of the largest species in its family. Name EITHER the family that this insect belongs to, OR name the insect family that it most commonly preys on.

A. Culicidae

Q. Many biological control agents of aphids, such as *Lysiphlebus testaceipes*, aptly belong to the subfamily Aphidiinae, which is in what insect family?

A. Braconidae

Q. WHAT STRAIN of *Bacillus thuringiensis* is found in Mosquito Dunks?

A. Bt 'Israeliensis'

Q. Pesticides that must only be applied by certified personnel have WHAT WORDING on their labels?

A. restricted use

Q. As of 2023, spotted lanternfly has been detected in all but two ESA branches. Name BOTH of the branches without spotted lanternflies.

A. Southwestern branch, Pacific branch

Q. What is the scientific name of the species whose populations are depicted on this map from a recent newsletter of the Food and Agricultural Organization?

A. *Schistocerca gregaria*

Q. The monarch isn't the only butterfly that migrates between the US and Mexico. In addition to an annual US-to-Mexico migration in the fall, THIS BUTTERFLY also has annual migrations between Europe and North Africa, and is one of the most widespread butterfly species in the world. It is the

subject of an ESA teaching and outreach symposium called "Flights of Fancy." Give the common or scientific name of this butterfly.

A. Painted Lady, *Vanessa cardui*

Q. During the Clinton administration, Congress unanimously passed what amendment to the Federal Insecticide Fungicide and Rodenticide Act, resulting in fundamental changes to the EPA's regulation of pesticides?

A. Food Quality Protection Act (FQPA)

Q. According to a 2022 article in the Journal of IPM, the most economically important pest flies of cattle all belong to what family of Diptera? Some examples of pests in this brachyceran family include the buffalo fly, *Haematobia exigua*, and *Stomoxys sitionis*, an Asian species of stable fly.

A. Muscidae

Q. The latest edition of the textbook Entomology and Pest Management makes reference to economically important species in the genera *Lissorhoptrus* and *Sitophilus*, which is fitting when you consider who co-edited the textbook with Larry Pedigo. What food crop is a host plant for economically important species in both of those genera?

A. Rice

Q. We often hear about tropical insects becoming invasive species in temperate areas, but the reverse can also be true. Earlier this year, South American entomologists reported the first Argentinian record of what major Nearctic termite pest species, which is one of the most common termites in North America?

A. *Reticulitermes flavipes*, eastern subterranean termite

Q. The western leaf-footed bug *Leptoglossus clypealis* is a seed-feeding pest of high-value tree crops like almonds and pistachios, but it was recently found in Texas on WHAT CEREAL CROP, which is already known to be a host for the more common leaf-footed bug *Leptoglossus phyllopus*?

A. Sorghum

Q. Faith Kuehn described what journal as being a "a glimpse into mid-19th-century life and the nascent science of insect pest management in America"? This short-lived journal was founded in 1865, was edited by BD Walsh, and is considered the first U.S. journal entirely devoted to applied & economic entomology.

A. The Practical Entomologist

Q. In August of 2023, this insect made headlines when it was spotted for the first time in North America near Savannah, Georgia. Its presence is a major threat to beekeepers, as it preys on honeybees and other important pollinators. What is the common or scientific name of this invasive hornet?

A. Yellow-legged hornet, *Vespa velutina*

Q. What is the current scientific name of the economically important fungus that was transferred out of the genus *Raffaelea* in 2022? This fungus is vectored by the ambrosia beetle *Xyleborus glabratus* and has devastated populations of redbay and other plants in the family Lauraceae.

A. *Harringtonia lauricola*

Q. Management of black cutworms can be difficult because populations of larvae are relatively hard to evaluate. What aspect of the black cutworm's life cycle is considered the main reason for this difficulty?

A. Larvae are under the soil surface during the day, and thus not visible.

Q. In Medieval Arabia, certain growers seasonally transported cultures of predatory ants from nearby mountains to control phytophagous ants on what plant? This food plant in the family Arecaceae is also threatened by the weevil species *Rhynchophorus ferrugineus* and by scale insects in the genus *Palmaspis*.

A. Date palm

Q. A mixture of glucose, acetic acid, ethanol, and water has been widely used for monitoring and trapping of the Rosaceae pest *Grapholita molesta*. What is the common name of this economically important tortricid moth?

A. Oriental fruit moth

Q. This pale yellowish or brownish member of the order Thripidae is widely distributed and attacks onions, beans, and many other plants. It also vectors the tospovirus that causes tomato spotted wilt disease. What is the common or scientific name of this insect?

A. Onion thrips or *Thrips tabaci*

Q. In pesticide formulations, what does the acronym WDG mean?

A. water-dispersable granule(s)

Q. In 2023, scientists reported the first case of an established colony of the red fire ant (*Solenopsis invicta*) in Europe. In which European country was this invasive insect found?

A. Italy (Sicily, Italy)

Q. In an IPM plan, weed removal and crop rotation would be considered what type of management?

A. Cultural control or Sanitation

Q. What is the term for the cultural control strategy that takes factors such as crop yield, quality, pest resistance, and adaptability to local growing conditions into consideration as part of an IPM plan?

A. Variety/cultivar selection

Q. "spun-bonded" and "floating" are examples of WHAT STRUCTURE that is often used as a mechanical control to protect plants from insect pests?

A. Row covers

Q. Rosalind Franklin is best known for her work with DNA, but she was also a virologist that discovered the full structure of an important plant pathogen vectored by aphids and leafhoppers. Name this pathogen, which infects many solanaceous plants, especially those in the genus *Nicotiana*

A. Tobacco Mosaic Virus (TMV)

Q. What hypothesis, first proposed by Richard Root in 1973, predicts that specialist herbivorous insects should be more abundant in large patches of host plants, because the insects are more likely to find and stay longer in those patches?

A. resource concentration hypothesis

Q. By definition, what behavior is exhibited by anthophilous insects?

A. Visiting flowers

Q. This pathogen in the genus *Machlomovirus* is vectored by the cereal leaf beetle, the southern corn rootworm, and other chrysomelid beetles that feed on corn. When corn plants are co-infected with this pathogen and maize dwarf mosaic virus, they can develop a severe case of corn lethal necrosis disease. Give the name or the four-letter initialism of this plant pathogen.

A. Maize chlorotic mottle virus (MCMV)

Q. *Aproceros leucopoda* is an invasive hymenopteran first detected in the Eastern United States in 2021. Its common name references both the tree that it commonly feeds on, and the characteristic pattern of leaf damage that it leaves behind after feeding. What is the common name of this invasive sawfly?

A. Elm Zigzag Sawfly

Q. Kieselguhr is a naturally-occurring insecticide composed of amorphous silica from the shells of what unicellular aquatic algae?

A. Diatoms

Q. A red sphere trap is a plastic red ball with a species-specific bait that is used to monitor pests in apple orchards. WHAT OTHER COMPONENT, sometimes sold under the trade name TangleTrap, must be added to the outside of a red sphere trap to ensure success?

A. Adhesive / sticky coating

Q. This word was first used by Carl Djerassi in the 1970s to describe insect hormones and other compounds with low toxicity to non-target species. Today, this word is more commonly used in the context of IPM, referring to pesticides and other pest control materials that are relatively non-toxic to people, and have few environmental side effects. What is this 11-letter word?

A. Biorational

Q. In Europe, *Curculio nucum* is commonly called the hazelnut weevil, the nut weevil, or the hazel devil, because of the damage it causes in hazelnut orchards. But this is not the only tree it can damage. In the US, *Curculio nucum* is instead known by a different common name that is also applied to the related species *Curculio glandium*. WHAT IS THIS OTHER COMMON NAME, which is a reference to the weevil's association with oaks?

A. Acorn weevil

Q. What tree is in the official ESA common names of both the sawfly *Craesus latitarsus* and the buprestid beetle *Agrilus anxius*? This tree is also one of the host plants of the peppered moth, and its genus name appears within the peppered moth's scientific name. Name the tree.

A. Birch

Q. What is the TWO-WORD NAME of the sugar-secreting organs on plants, that are NOT part of the flower, and that serve mainly to attract predatory arthropods as protection against herbivory?

A. Extrafloral nectaries

Q. What species of Coccinellidae, first described by Mulsant in 1850, does NOT feed on other insects, and is instead a pest on legumes?

A. Mexican bean beetle, *Epilachna varivestis*

Q. In a recent review of the insects that live in, and feed on, decaying cacti, two orders represented 85% of the recorded insect species. Name BOTH ORDERS of these cacti-associated insects.

A. Coleoptera and diptera

Q. Regional IPM Centers are funded by the USDA and serve as hubs for multi-state partnerships on IPM programs. Sometimes the facilities of a single center are spread across multiple cities. But officially, there are exactly how many Regional IPM Centers in the US?

A. Four

Q. Colorado entomologist Adrianna Zepaniec recently reported that US production of what food crop is severely hindered by new infestations of the stem-boring fly *Amauromyza karli*? This climate-resilient crop in the genus *Chenopodium* was first cultivated in the US in the 1980s, though it has been cultivated in high-elevation regions of South America for thousands of years.

A. Quinoa

Q. According to a 2023 UF extension publication, prescribed fires can effectively control populations of what medically relevant pests? This treatment affects all life-stages of these pests, which is unsurprising because it is already known that eggs, adults, larvae and nymphs will die if you set them on fire.

A. ticks

Q. This infographic is on the website of what biotechnology company that specializes in control of medically and agriculturally important arthropod pests via the use of genetically modified males?

A. Oxitec

Q. Earlier this year, a bedbug infestation resulted in temporary closure of Honolulu's Daniel K. Inouye International Airport. In addition to chemical applications and removing sections of carpet, what other bedbug pest management tactic was used to eradicate this infestation?

A. Heat treatment / steam treatment

Q. The most common ectoparasite of cat also transmits dog tapeworm. What is the scientific name of this ectoparasitic insect?

A. *Ctenocephalides felis*

Q. *Plasmodium relictum* is a mosquito-vectored pathogen that causes malaria, but not in humans. It instead primarily infects what type of non-mammalian animal?

A. Birds

Q. The insect-vectored pathogens responsible for the diseases leishmaniasis, chagas, and sleeping sickness, all belong to what taxonomic FAMILY of protozoans?

A. Trypanosomatidae

Q. The African swine fever virus can be transmitted via direct contact between infected pigs and uninfected pigs, but it can also be transmitted by an arthropod vector. What family is this vector in?

A. Argasidae (soft ticks)

Q. In the context of termite control, what is the main difference between an IG bait station and an AG bait station?

A. in-ground vs. above-ground

Q. A tropical mosquito species in the SUBGENUS *Phenacomyia* was discovered in the US for the first time by Florida entomologists in 2018. This subgenus is part of a medically relevant mosquito genus that contains the vectors of filariasis and St. Louis encephalitis. WHAT GENUS does *Phenacomyia* belong to?

A. *Culex*

Q. Though from a distance it resembles a tick, this livestock pest is actually an insect in what family?

A. Hippoboscidae (*Melophagus ovinus*, the sheep ked)

Q. In addition to many bacterial diseases, the CDC lists three viral diseases that the Asian tick species *Haemaphysalis longicornis* can vector to humans or other animals. Name any one of those viral diseases.

A. Hemorrhagic fever, Heartland, Powassan

Q. Jamora Hamilton's research on German cockroach management refers to the cockroaches as "Trojan Horses" because of their horizontal transfer of gel baits. As a result of this horizontal transfer, the cockroaches that did not interact with the gel baits are still exposed to the toxicants, resulting in death. What is the term for this type of mortality caused by horizontal transfer of insecticides?

A. Secondary mortality

Q. The black queen cell virus typically infects honey bees, but in 2020, Canadian entomologists discovered it in a different group of insects. To what non-Hymenopteran family do these insects belong?

A. Culicidae

Q. Moxidectin, a modern derivative of ivermectin, has recently shown promise at controlling what arthropod parasite of white-tailed deer?

A. *Amblyomma americanum*, Lone star tick

Q. Although bed bugs are not known to vector any diseases to humans, the redacted study seen here demonstrates that they may still pose a health risk because they produce large amounts of what compound?

A. histamine

Q. The German scientist that won a 1908 Nobel Prize for his contributions to immunology also had a genus of bacteria named after him. These bacteria can be vectored by ticks, causing a disease that is named after the same German scientist. Give the name of EITHER the scientist, the bacteria genus, or the disease.

A. Paul Ehrlich, *Ehrlichia*, Ehrlichiosis

Q. What genus of nematode can be transmitted to humans by female blackflies and is the causative agent of river blindness?

A. *Onchocerca*

Q. Malaria was considered to have been eliminated from the US by 1951. However, in 2023, three US states reported new occurrences of local transmission of malaria. One of those states is the one we're in right now: Maryland. Name both of the other two.

A. Texas, Florida

Q. Psychodid larvae are an example of amphipneustic insects, which means they have exactly HOW MANY PAIRS of spiracles?

A. Two

Q. What is the name of the specialized vein in the wing used for identification of Syrphidae?

A. Spurious vein

Q. Springtails are able to 'spring' by using what forked appendage located at the tip of their abdomen?

A. Furcula

Q. Insects in the clade Schizophora possess WHAT EVERSIABLE BALLOON-LIKE STRUCTURE that enables emerging adult flies to break open their pupal cases?

A. Ptilinum

Q. "Cuckoo spit" may sound like an ornithological term, but in the context of entomology it instead refers to a certain secretion made by insects in what family?

A. Cercopidae

Q. Glenn and Patricia Richards' 1979 review of "the cuticular protuberances of insects", classifies the various bristles and hair-like structures into four general types. The first two types are 'spines' and 'setae'. Name EITHER of the other two types.

A. Acanthae, Microtrichia

Q. Relatively little is known about the sex-determining pathway in Lepidoptera, but some genes associated with this pathway have been discovered in *Bombyx mori*. Which gene in the sex-determining pathway is responsible for initiating male development?

A. Masculinizer (Masc) gene

Q. In insect electrophysiology, what does the acronym "SSR" stand for?

A. Single Sensillum Recording

Q. If you raise stem-nesting bees, seeing evidence of the "first poop" on nesting materials is a great sign that adults have finally emerged. What is the technical term for the bee's "first poop"?

A. Meconium

Q. The South American cerambycid beetle *Onychocerus albitarsis* is the only insect known to inject venom through a unique structure on what body part?

A. Antennae

Q. A central sclerite called the stipes and a basal sclerite called the cardo are key components of what insect morphological structure?

A. Maxilla

Q. Both male and female scorpions are capable of injecting venom from what stinging structure at the end of their five metasomal segments, which is made up of a vesicle and a pointy aculeus?

A. Telson

Q. Male beetles in the tenebrionid genus *Bolitotherus* use two pairs of horns to compete for mates; a large pair of thoracic horns, and a smaller pair of horns on the head. These smaller horns extend from what sclerite, which can be found near the labrum and the frons on an insect head?

A. Clypeus / Clypeal horns

Q. *Phloeodes diabolicus* has an exoskeleton with interlocking sutures and laminated microstructures that give it both toughness and flexibility under pressure. Researchers are working to replicate the toughening mechanisms of the exoskeleton in order to synthesize more resilient construction materials. WHAT FAMILY does this durable insect belong to?

A. Zopheridae

Q. Gram-negative bacteria and fungi can activate the immune response of insects through WHICH PATHWAY?

A. The immune deficiency (IMD) pathway

Q. Kenyon cells are found in WHAT STRUCTURE of the insect brain, which is sometimes called the "seat of intelligence" due to its function in learning and memory?

A. Mushroom bodies / corpora pedunculata

Q. chaetica, placodea, trichodea, coeloconica, and basiconica, are all terms that refer to WHAT TYPE OF STRUCTURE found on insect antennae?

A. (olfactory) Sensilla

Q. WHAT MEDICALLY RELEVANT INSECT SPECIES is also known for being the first model organism that Wigglesworth used to demonstrate that juvenile hormone regulates metamorphosis?

A. *Rhodnius prolixus*

Q. Carminic acid contains a natural dye used to give foods like red licorice and red velvet cake their deep red hue, and is derived from insects in what suborder?

A. Sternorrhyncha

Q. This species has the official ESA common name "drone fly", but because its larvae obtain oxygen using very long breathing tubes, it is often referred to by the unofficial common "rat-tailed maggot". WHAT IS THE SCIENTIFIC NAME of this fly?

A. *Eristalis tenax*

Q. In Hemiptera, WHAT WEDGE-SHAPED STRUCTURE is separated from the rest of the corium by a costal fracture, and is often used as a diagnostic character to distinguish Miridae from other common families of Heteroptera?

A. Cuneus

Q. WHAT INSECT ORDER has a Latin-derived name that literally translates to "skin wing"?

A. Dermaptera

Q. These marine arthropods are NOT insects, but they are named after an insect. WHAT INSECT ORDER is referenced in both their common name and in the scientific name of their genus?

A. Psocodea / Phthiraptera

Q. This North American insect is one of only three living species in its family. The adult is recognizable by the large, forcep-like structures on its abdomen, but the larva has never been observed. WHAT IS THE SCIENTIFIC name of this rare mecopteran species with the informal common name "earwigfly"?

A. *Merope tuber*

Q. According to the ESA common names database, there is a wasp called the "clover aphid parasite" in the family Encyrtidae. This is not correct, because the clover aphid parasite is in the type genus of a different family. WHAT FAMILY of parasitic Hymenoptera does the clover aphid parasite actually belong to?

A. Aphelinidae

Q. Although most taxonomists tend to use the word "Binomial" when referring to a two-part Latin name, this is not the official term used in The International Code of Zoological Nomenclature. WHAT SIMILAR, BUT SLIGHTLY DIFFERENT, WORD does the ICZN use instead of "binomial"?

A. Binominal

Q. WHAT ORDER contains the extinct family Dasyleptidae, and the two extant families Meinertellidae and Machilidae?

A. Archaeognatha

Q. Most species in THIS FAMILY have adults that look like terrestrial Hemerobiidae, but their larvae are much more distinct because they are aquatic and feed on freshwater sponges. Name THIS FAMILY of Neuroptera, commonly called spongillaflies.

A. Sisyridae

Q. Despite being called the Asian citrus psyllid, *Diaphorina citri* is currently NOT placed in the family Psyllidae. It instead belongs to WHAT OTHER FAMILY within the superfamily Psylloidea?

A. Liviidae

Q. The official ESA common name of *Epitrix cucumeris* contains the names of two insects. One of them is 'beetle', which makes sense because *Epitrix cucumeris* is a chrysomelid beetle. WHAT OTHER INSECT is in its common name?

A. Flea

Q. Using old museum specimens collected in California in the early 1900s, a group of evolutionary biologists recently sequenced the entire genome of an extinct insect. WHAT IS THE NAME of this extinct lycaenid butterfly?

A. Xerces blue (*Glaucopsyche xerces*)

Q. In a rare instance of an entomologist writing a paper about an insect named after them, Cristina Sandoval published a study on polymorphism in the species *Timema cristinae*. This species, which is roughly 2-3 cm long, is one of the smallest species in WHAT ORDER?

A. Phasmatodea

Q. Linyphiidae and Araneidae are in the top three, but according to the World Spider Catalog, WHAT OTHER FAMILY OF SPIDERS has the greatest species richness, with over 6500 described species as of November 2023?

A. Salticidae

Q. According to the International Code of Zoological Nomenclature, WHAT IS THE ONLY PUNCTUATION MARK that is ever allowed to be used in the scientific name of a species?

A. Hyphen

Q. *Saurona*, named after the villain Sauron from Lord of the Rings, is a newly described genus of Lepidoptera. The ventral hindwings have orange scales and black eyespots, reminiscent of the eye of Sauron, though the rest of the wings are largely brown, which is more typical of other genera in its subfamily. WHAT SUBFAMILY of Nymphalidae does this butterfly genus belong to?

A. Satyrinae

Q. Insect common names are sometimes derived from their alleged resemblance to non-insects. These three insects belong to three clades (at different taxonomic levels) that have common names inspired by well-known vertebrate animals. NAME ALL THREE of those vertebrates.

A. Snake, rhinoceros, giraffe

Q. Apshai, an Egyptian god of insects, was one of the villains in an animated tv show based on a 1984 movie. The title characters used their proton packs (without crossing the streams) to defeat Apshai and his horde of giant bugs. Name either the tv show, or the original movie it was based on.

A. Ghostbusters or The Real Ghostbusters

Q. During his time in Barcelona, what soccer player got the nickname 'La Pulga Atomica' ("the atomic flea") because he had explosive talent despite his short stature? In 2023, he turned down an offer from Saudi Arabia in order to play for the Major League Soccer team in Miami.

A. Lionel Messi

Q. Hellfire wasps are one of the many species inhabiting a fictional biodiverse location in the Alpha Centauri system. This place is known as "Eywa'eveng" [AY-WAH-ev-eng] by its native inhabitants, but the humans attempting to colonize it in the 22nd Century refer to this place by what other name?

A. Pandora

Q. Multibillionaire Gail Miller, the richest person in Utah, owns a minor league baseball team named after what insect, which is also the state insect of Utah?

A. Bee

Q. The common names of what two spiders are mentioned in Nikki Giovanni's short poem Allowables? Both of these spiders can be found in her home state of Tennessee.

A. Brown recluse, black widow

Q. May Berenbaum wrote an article about professional boxing for the Summer 2023 issue of American Entomologist. According to the article, what boxing term with an entomological name piqued her curiosity in the sport?

A. Flyweight

Q. Deathwatch beetles have long been associated with death, especially in southern England, because of the sounds they make in order to communicate to find mates. WHAT METHOD do they use to create sound?

A. Tapping behavior (they tap their head on a substrate to create noise)

Q. "Be Afraid. Be Very Afraid" is a classic tagline from many scary movies, but it was first used for WHAT 1986 HORROR FILM starring Jeff Goldblum and Geena Davis?

A. The Fly

Q. On a season 2 episode of THIS TV SHOW, Piper is hospitalized after contracting Oroya Fever from a sand fly bite, and Prue and Phoebe use their magical abilities to try and cure her. NAME THIS SUPERNATURAL DRAMA about the Halliwell sisters that aired on the WB from 1998-2006.

A. Charmed

Q. One of the columns of the American Entomologist journal highlights diversity, equity, and inclusion topics that impact the entomology community. What is the name of this column?

A. Entomology for All

Q. The Japanese novel Maria Beetle was adapted into what 2022 action film? This film is set in Japan and stars Brad Pitt as an assassin with the codename Ladybug.

A. Bullet Train

Q. Giulia Rossi described a new genus of spider and named it Venomius, not because of its toxicity, but because it looked like the Spider-Man villain Venom. The type species of Venomius is fittingly named in honor of what actor that has portrayed Venom in multiple movies?

A. Tom Hardy

Q. Entomologist George Hudson is credited with inventing the modern version of what concept? He first proposed it in 1895, because he wanted more opportunities to collect diurnal insects after work, before sunset. This concept is now implemented in most US states, including Maryland, and is something you should all be especially familiar with today.

A. Daylight Saving Time (DST)

Q. One of the oldest written references to insects is on a clay tablet from a royal library in Mesopotamia. The tablet says that, when these insects are seen on the north wall of a house, there will be discord between the husband and wife that live there. What insect family is being referred to?

A. Ants / Formicidae

Q. The praying mantis was worshipped by the indigenous Koisian people that live on the land that is now part of what country? For most of the 20th century, this country was a colony called German South West Africa, until it became independent in 1990

A. Namibia

Q. In the 2023 superhero movie Blue Beetle, what is the name of the alien biotechnology that gives Jaime [HAI-may] Reyes superpowers by covering his body in a powerful exoskeleton?

A. The Scarab

Q. In 1944, American soldiers played a football game nicknamed "the mosquito bowl" while stationed on what is now what Pacific island nation? This nation was the site of lots of naval combat during World War II, and the USS Hornet was sunk off the coast of one of this nation's islands during the Guadalcanal campaign.

A. Solomon Islands

Q. In 2022, what R&B singer won the 7th season of The Masked Singer, competing as 'The Firefly'?

A. Teyana Taylor

Q. In Greek myth, Prince Tithonus [tih-THO-nuss] was given eternal life, but was also transformed into an insect that the Greeks called 'tettix'. Although some translations of the myth describe tettix as a tettigoniid or a grasshopper, most translations state that Tithonus became a different insect in what non-Orthopteran order?

A. Hemiptera (specifically, a cicada)

Q. the chiltepin [CHEEL-tep-in] is the only species of chili pepper native to the United States. Due to its small size, it was given a name that literally translates to 'flea chile' in what indigenous language traditionally spoken by the Aztecs?

A. Nahuatl

Q. In what month is World Edible Insects Day celebrated?

A. October (Oct 23rd)

Q. In a popular manga and anime, the Insect Hashira is one of nine Hashira in an organization dedicated to hunting and killing monstrous, man-eating creatures. This anime was adapted into a 2020 film that became the highest-grossing Japanese film of all time. What is the English name of this anime?

A. Demon Slayer

Q. Lewis J. Bartlett wrote an article for American Entomologist titled "Understanding the Mutualism Between Drag Artistry and Entomology Communication." The article includes an illustration of Lewis' drag character, wearing an outfit clearly inspired by honeybees. What is the punny stage name Lewis uses when performing?

A. Polly Nation

Q. THIS ENTOMOLOGICAL TERM is the name of a folk-rock band fronted by biologist James "Spider" Barbour that only released one album in 1968 before breaking up. Coincidentally, in that same year, a British record label with the same name and a lepidopteran logo was founded by Chris Wright and Terry Ellis. WHAT IS THE SHARED NAME of the band and the record label?

A. Chrysalis

Q. Monarch wings and mantis claws are items that give you extra abilities in what 2017 video game? The title character of this video game is a silent insectoid warrior that fights hostile bugs infected with a supernatural disease.

A. Hollow Knight

Q. In Zuni mythology, she helped defeat the Cloud Swallower Monster. In Hopi mythology, she was the creator of all living things. In Cherokee mythology, she is a wise protector who brought fire to mankind. This goddess has many different names in different indigenous languages, but in English she is known as what?

A. Grandmother Spider

Q. What is the state insect of Maryland?

A. Baltimore Checkerspot Butterfly, *Euphydryas phaeton*

Q. Beetles were not the only sacred insects in Egyptian culture. Another insect symbolized impudence and courage, and was admired for its tenacity. An image of this insect was used as a military decoration for bravery in early Egypt. What order did this insect belong to?

A. Diptera

Q. Owamni [oh-WAHM-nee] is an award-winning Minnesota restaurant co-founded by Sean Sherman that serves cricket garden salads, a crispy cricket seed mix, and other recipes that only use ingredients indigenous to North America. Sean Sherman is sometimes known by what nickname, which references both his Lakota heritage and the French term for a certain restaurant employee?
A. The Sioux Chef [pronounced the same as Sous Chef]

Q. The music video for the 1996 Jamiroquai song Virtual Insanity illustrates the singer's Kafkaesque descent into madness by depicting moving walls, a moving floor, and what order of insect crawling on both the walls and the floor?
A. Blattodea (cockroaches)

Q. King Louis XI was nicknamed "the Universal Spider" because his enemies accused him of spinning webs of plots and conspiracies. He is also known for signing the treaty that officially ended the Hundred Years War. The Universal Spider's 22-year reign as King of France took place entirely in what century?
A. 1400s / 15th century

Q. Blow Fly is the 12th book in a popular series of crime novels by Patricia Cornwell. What fictional medical examiner is the main character of this long-running series?
A. Dr. Kay Scarpetta

Q. The villainous Superfly in the 2023 movie "Teenage Mutant Ninja Turtles: Mutant Mayhem" is voiced by what rapper, whose real name is O'Shea Jackson?
A. Ice Cube

Q. Christina Ricci, Juliette Lewis, and Melanie Lynskey are the stars of what Showtime drama series about the members of a girls' soccer team that survive a 1996 plane crash? The name of the show is the same as the entomological name of the soccer team.
A. Yellowjackets

Q. These images are from a recent American Entomologist article about the intersection of insects and fashion. Name EITHER the Italian fashionista OR the British couturier whose insect-themed designs are shown here.
A. Elsa Schiaparelli, Alexander McQueen

Q. In Kenya, many farmers install "beehive fences" in a perimeter around their crops. There are many different benefits to maintaining these unusual bee habitats, but the Kenyan farmers primarily do this in order to protect their crops against WHAT?
A. Elephants

Q. "The Insect Collection" is a new Lego set released earlier this year. GIVE THE GENUS NAMES for ANY TWO of the insects in this Lego set.
A. *Morpho*, *Dynastes*, *Tenodera*, *Apis*, *Coccinella*

Q. In fly fishing, the Parks' Salmonfly is a traditional dry fly imitating adults of WHAT INSECT FAMILY?

A. Pteronarcyidae

Q. Austėja, a goddess of honey and bees, is part of the lore of WHAT BALTIC COUNTRY?

A. Lithuania

Q. Erinn Fagan-Jeffries described a species of parasitoid wasp in the genus Dolichogenidea that exhibits behaviors reminiscent of the chestbursters in the Alien film franchise. She paid homage to this by giving the wasp WHAT SPECIFIC EPITHET?

A. Xenomorph

Q. Aesop wrote multiple fables with insect characters. WHICH OF THOSE FABLES is associated with the moral "There's a time for work and a time for play"?

A. The Ant and the Grasshopper

Q. Satoshi Tajiri is best known for WHAT WORLD-FAMOUS CREATION based on his childhood love of collecting insects?

A. Pokemon

Q. The name of the runway theme on a 2023 episode of RuPaul's Drag Race inspired contestants Mrs. Kasha Davis and Jessica Wild to wear these entomological outfits. It was also a pun of a well known fashion get together that occurs annually on the first Monday in May. What was the name of the runway theme?

A. Net gala

Q. A black widow is prominently featured on the promo poster for the fall 2023 of what TV show?

A. American Horror Story

Q. In the "Lord of the Rings" films, Gandalf uses a moth to send a message to the giant eagles that later come to his rescue. The filmmakers collected a real moth to put on camera, although the moth they chose probably can't fly fast enough to be a good messenger. WHAT MOTH FAMILY was used to film this scene?

A. Saturniidae

Q. The fear of insects or related arthropods is widely common among US adults. What is the specific term for fear of ants?

A. Myrmecophobia

Q. On the TV show Outlander, which is mostly set in the 18th Century, WHAT ENTOMOLOGICAL METHOD does Claire use to debride her husband's infected wounds so that he doesn't develop sepsis?

A. Maggot therapy (with calliphorid larvae)

Q. The latest nonfiction book by entrepreneur Seth Godin is called "The song of significance: A manifesto for teams," although, based on the cover art, a better title might be "the dance of significance." What insect is on the cover of this book?

A. Bee

Q. Celebrity hairstylist Sunnie Brook gave what entomological name to the style of layered haircut seen here?

A. Butterfly haircut

Q. WHAT NICKNAME is shared by both the Honey Nut Cheerios Bee and Georgia Tech's yellowjacket mascot?

A. Buzz

Q. "Honey Bee" was a 1984 song by WHAT TEXAS BLUES GUITARIST, who was posthumously inducted into the Rock and Roll Hall of Fame after dying in a helicopter crash at age 35?

A. Stevie Ray Vaughan

Q. There are three species of insects that were introduced from Europe and are not native to the US, but are ironically official state insects. One of them is the European honeybee, *Apis mellifera*. Name EITHER of the other two species.

A. European mantis (*Mantis religiosa*) and sevenspotted lady beetle (*Coccinella septempunctata*)

Q. In 1892, what entomologist published a summary of his undergraduate thesis in the journal *Science*, thus becoming the first African American to ever have an article published in that journal?

A. Charles Henry Turner

Q. Ainsley Seago is the current president of what entomological organization, whose logo includes a picture of an insect pin? This organization just concluded its annual meeting earlier today in a different part of the conference center.

A. ECN (Entomological Collections Network)

Q. This year's Founders Memorial Lecture on Ronald Prokopy was presented by what USDA entomologist, who was advised by Dr. Prokopy while doing her PhD at the University of Massachusetts?

A. Dr. Tracy Leskey

Q. An American Entomologist article titled "Bees and Peas" is about how the study of bees influenced the research of what 19th-century European biologist?

A. Gregor Mendel

Q. In June 2023, swarms of THIS SPECIES made headlines for their large migration through Nevada and Idaho. It is a tettigoniid, but due to an inaccurate common name, many people mistakenly think it is a gryllid. Give the common OR scientific name of this insect.

A. Mormon cricket, *Anabrus simplex*

Q. The 11th annual installment of what ESA member symposium is being held this Tuesday, with Ana Cabrera as the lead organizer? This symposium will be immediately followed by the SomosENTO mixer.

A. Latin/Hispanic Symposium

Q. ESA created a new AI chatbot to help answer your questions about the 2023 meeting. Give either the name of the chatbot, or the insect family that it presumably belongs to.

A. Clicky the click beetle, Elateridae

Q. Melissa Willrich Siebert, the next ESA vice-president elect, is development leader for insecticides at what company?

A. Corteva (Agriscience)

Q. Over the course of human civilization, people have found a variety of uses for what insect-derived product that comes from secretions of female scale insects in the genus *Kerria*? Once refined, this product can be used as a wax, a dye, and a surface glazing agent.

A. Lac or Shellac

Q. According to the 2023 book "How to Create A Butterfly Garden", what Englishman was the world's most famous butterfly gardener? He was a two-time Prime Minister, and a Nobel Prize winner, but surely his time spent with butterflies was his finest hour.

A. Winston Churchill

Q. Six individuals have been selected for the 2023 ESA Fellows Award. One of the new fellows is a USDA-ARS scientist who served as ESA president in 2020. What is the name of this award recipient?

A. Dr. Alvin Simmons

Q. Clara Southmayd Ludlow and Patrick Manson are often considered the metaphorical mother and father, respectively, of WHAT FIELD OF ENTOMOLOGY?

A. Medical entomology

Q. THIS MAN was the editor of the Bulletin of the Brooklyn Entomological Society for over three decades, until his death in 1948. During his time as editor, he spent years revising an old paper from the bulletin, called "An Explanation of Terms used in Entomology." NAME THIS AMATEUR ENTOMOLOGIST.

A. José Rollin de la Torre-Bueno

Q. In 1850, this entomologist became one of the first two women to join the American Association for the Advancement of Science (AAAS). However, before she joined, she was not allowed to directly present her research to the AAAS, as they considered it improper for women to speak in front of an audience of men. Consequently, her research on the 17-year cicada was presented by a male colleague on her behalf, and she went on to publish her findings in a journal unaffiliated with the AAAS. Name this entomologist.

A. Margaretta Morris

Q. Each year, a panel of judges selects outstanding graduate students to share their thesis research at ESA's Rising Stars of Entomology Award symposium. Name any ONE of the five students chosen to present at this year's Rising Stars symposium.

A. Jessica Awad, Carla-Cristina (CeeCee) Melo Edwards, Heidi Pullmann-Lindsley, Berenice Romero, Morgan Thompson

Q. Two different agricultural-themed board games were recently developed as educational tools that illustrate basic principles of IPM. One was created by entomologists at Michigan State, the other was created by entomologists at the University of Idaho. Name EITHER of these IPM-themed games.

A. Pest Quest, Pest Friends

Q. After attending the Pasteur Institute, this medical entomologist returned to his home country of Trinidad and Tobago, where he studied the histology of medically important mosquitoes and the transmission of mosquito-vectored encephalitis. In the 1930s, he became internationally famous for his non-entomological work, especially his discovery that the rabies virus can be transmitted by vampire bats. Name this Caribbean scientist.

A. Joseph Pawan

Q. Many markets in Cameroon sell an alleged aphrodisiac called "Ant Viagra" (which, to be clear, is NOT viagra for ants, it's for humans but made with ants). What ant genus, which can be found in Africa, Asia, and Australia, is the primary ingredient in "Ant Viagra"?

A. Weaver ants (*Oecophylla*)

Q. One of the most notorious examples of a failed biological control program focused on releases of cane toads in Australia. The target pests were two species of cane beetle. Give the scientific name OR unofficial common name of EITHER of these cane beetles.

A. greyback cane beetle (*Dermolepida albohirtum*), French's cane beetle (*Lepidiota frenchi*)

Q. "I was stunned by the perfection of the insects" is a quote from WHAT CHILEAN POET who won the 1971 Nobel Prize in Literature?

A. Pablo Neruda (1904-1973)

Q. Erma Vanderzant is famous for proving the usefulness of wheat germ in artificial insect diets, though she did not usually work with insects that are pests on grains. In 1959 and 1960, she published influential papers about feeding wheat germ to insect pests of WHAT NON-CEREAL CROP?

A. Cotton

Q. The first two women to deliver a Founders' Memorial lecture did so in 1992 and 1994. Name either of them.

A. Marjorie Hoy, May Berenbaum

Q. THIS CHEMICAL ECOLOGIST and IPM specialist served as the pioneer President of the International Association of Black Entomologists between 2004-2008. He also served as the IPM Coordinator for the state of Alabama, and as Associate Director of the Southern Region IPM Center. WHO is this entomologist?

A. Henry Fadamiro

Q. After many American soldiers died of yellow fever during the Spanish American War, the Yellow Fever Commission was formed to investigate the cause of the disease. The commission was also called the Reed Commission because Walter Reed was on the commission's medical research board. Name ANY ONE of the other physicians appointed to this board alongside Walter Reed.

A. James Carroll, Aristides Agramonte, Jesse W. Lazear

Q. "Food Plant Catalogue of the Aphids of the World" was a three-volume series published in 1938 by what University of Maine entomologist?

A. Edith Patch

Q. It's often reported that the average person inadvertently eats 1-2 pounds of insects per year. Though this is likely an exaggeration, it has a factual basis in an official FDA handbook. This handbook details the amount of insects and insect fragments that can legally be included in edible products, without presenting any health hazards for humans. What is the name of this FDA handbook?

A. Food Defect Levels Handbook

Q. The first meeting of the International Congress of Entomology was in Brussels in 1910. The first ICE meeting in the US was in 1928, when it was held at what university?

A. Cornell

Q. THIS MAN spent years as both a lawyer and a preacher before becoming a professional entomologist. He was the state entomologist of Illinois from 1875-1882, and was one of the first members of the US Entomological Commission, alongside his colleagues C.V. Riley and A.S. Packard. WHO WAS this 19th-century entomologist?

A. Cyrus Thomas

Q. An entomologist couple spent 60 years amassing a collection of 1.25 million insects, valued at \$10 Million, that they donated to Arizona State University in 2017. He was an expert in weevils, and she in planthoppers. The short documentary about them, called "The Love Bugs" was screened at the 2019 ESA National Meeting. WHAT IS THE LAST NAME of these husband-and-wife entomologists?

A. (Charles and Lois) O'Brien.

Q. On October 1, 1927, after almost 50 years of service, he retired as Chief of the Bureau of Entomology. The retirement dinner in his honor was so well attended that there was no room for the women. Not to be outdone, the ladies "gave him another dinner at which he was the only man". Who was he?

A. L.O. Howard

Q. The first specialized insectary facility in the US to support biological control work was established in 1903 in what Pacific Branch city?

A. San Francisco

Q. In 1919, the USDA created a laboratory in WHAT COUNTRY to serve as a base of operations for rearing natural enemies of the European corn borer? This was the first time a USDA lab was operated outside of US-controlled territory, and the main facilities of the lab are still active in THIS EUROPEAN COUNTRY today.

A. France

Q. "Hints for the Promotion of Economic Entomology in the United States", published in 1873, is one of the few non-taxonomic works written by WHAT PROLIFIC AMERICAN COLEOPTERIST?

A. Dr. John L. LeConte

Q. The "Boatload of Knowledge" was an 1825 journey comprised of many accomplished educators, artists, and scientists traveling mainly by boat. The voyage started in Pittsburgh and ended in New Harmony, Indiana. WHAT FAMOUS 19TH-CENTURY ENTOMOLOGIST was elected captain of the boat?

A. Thomas Say

Q. This fall, ESA has started a new pilot section for formal educators (in colleges and K-12 schools), and for informal educators (such as Extension workers and museum personnel). What is the acronym for this new pilot section that supports the educators and science communicators in ESA?

A. FIT (Formal & Informal Teaching)

Q. Elizabeth B. Bryant worked at the same university for over half a century, where she made significant contributions to the field of arachnology, and curated the spider collection in the Museum of Comparative Zoology. What Eastern Branch university was she primarily affiliated with?

A. Harvard

Q. This entomologist began working at the USDA in Hawaii in 1962, where he developed a namesake strain of parasitoid wasps to use for fruit fly eradication. He received numerous commendations for his work, including a Congressional gold medal and the NAACP Lifetime Achievement Award. A couple of years after his death, he was the subject of the Founders' Memorial Lecture at the 2020 Virtual ESA meeting. Name this entomologist.

A. Ernest J. Harris

Q. This photo was taken in July 2022 by an entomologist visiting the Natural History Museum of what European capital city?

A. Helsinki, Finland (photo was taken during the 2022 ICE congress)

Q. What line of text, reflecting one of ESA's mission statements, has been redacted from this screenshot of the ESA website? This four-word phrase also appears in the profile of ESA's official Instagram account.

A. Sharing insect science globally

Q. Is it possible to develop land for solar farms and solar energy production, in ways that maintain pollinator-friendly habitats for Apidae? THAT is the question being asked at a science policy symposium held later this afternoon at ESA 2023. What is the Shakespeare-inspired name of this symposium?

A. To Bee or Not to Bee

Q. What insect-vectored flavivirus is the subject of this sculpture by Kenyan artist Wangechi Mutu? The common name of this virus is thought to be derived from Swahili, the official language of Kenya.

A. Dengue

Q. This entomologist has worked as a professor and curator of Lepidoptera at the University of Florida for over 40 years, specializing in Caribbean butterfly taxonomy and biogeography. She was interviewed for a 'Legends' article subtitled "Butterfly Hunter" in the Fall 2023 issue of American Entomologist. Name this ESA Fellow.

A. Jackie Miller

Q. The late Justin Schmidt published his complete Pain Index in what 2016 book, written for general audiences? The book's title is an homage to a classic adventure novel by Jack London.

A. The Sting of the Wild

Q. What entomologist was the first African-American woman to serve as president of an ESA branch?

A. Michelle Samuel-Foo (SEB president, 2021-2022)

Q. This 19th-century entomologist was largely self-educated. He wrote *Souvenirs Entomologiques* and influenced the writings of Charles Darwin, even though, as a Christian, he was skeptical of Darwin's evolutionary theories. Name this French entomologist, who was the subject of last year's Founders' Memorial lecture.

A. Jean-Henri Fabre

Q. Which entomologist and his lab were the first to show that social information causes mass changes in brain gene expression? The research was published in *Science* in 2003 and has had a profound effect on understanding the roots of behavior.

A. Gene E. Robinson

Q. In the 1960s, this man was one of the few entomologists to argue in favor of Rachel Carson's findings, and to openly campaign against the use of DDT. He co-authored many important IPM papers and wrote the 1973 textbook *Biological Control*. His book *The Pesticide Conspiracy* was published in 1978, the same year he died of a heart attack at age 55. Name this California entomologist.

A. Dr. Robert van den Bosch

Q. The first successful importation of an organism for biological control occurred in 1762 in India to control locusts. What was the organism?

A. Mynah bird

Q. What entomologist worked at the University of Maryland in the 1860s, but is arguably better known for his work in the 1850s, when he was the first person given the title "Entomologist for the United States"?

A. Townend Glover

Q. Zeno was a taxonomist who wrote *General Catalogue of the Homoptera of the World*. Clell was an economic entomologist who wrote the classic text *"Destructive and Useful Insects"*. Robert was a prominent insect ecologist and environmental toxicologist. These three entomologists are all ESA past presidents, and all share what last name?

A. Metcalf

Q. "Jeurel Singleton, Willie W. Bryan, Touré G. Thompson, and Leslie E. Casher are some of the entomologists who contributed to what 2015 ESA publication that can be freely downloaded on the ESA website? This publication was subtitled "Reflections on Childhood, University, and Career Experiences."

A. Memoirs of Black Entomologists

Q. Theodora Petanidou and George Dimopoulos were two of the plenary speakers at this year's European Congress of Entomology, which was held in the city of Heraklion on what large island in the Mediterranean Sea?

A. Crete