Insects and Spiders

Introduction

What is an Insect?

An insect is an invertebrate animal. It belongs to a large group known as the Phylum Arthropoda along with spiders, horseshoe crabs, sea spiders, crustaceans, millipedes, and centipedes. The Phylum Arthropoda is divided into classes, with insects forming the Class Insecta. All arthropods have in common segmented bodies with paired, many-jointed legs. Members of the Class Insecta are further distinguished from the others in having 3 major body sections and, as everyone can easily recognize, 6 legs and 2 antennae.

Within their class, insects are subdivided into different orders. These orders are, in turn, divided into families; for example, ladybug beetles are grouped in the Family Coccinellidae. Families are divided into genera, and finally genera into species. When people speak of a specific kind of insect, what they usually have in mind is a species, such as the Five-spotted Ladybug or the Monarch Butterfly. Members of each species have common characteristics and are capable of interbreeding.

What is a Spider?

A spider is not an insect. But like an insect, it is an invertebrate animal and member of the Phylum Arthropoda. Spiders belong to the Class Arachnida, along with ticks, mites, scorpions, and their kin. Within the Class Arachnida, spiders comprise the Order Araneae. Unlike insects, arachnida have only 2 major body sections and do not bear antennae. A spider can be instantly recognized by its 8 legs. The order is subdivided into different families. For example, one of the largest spider groups, the orb weavers, constitutes the Family Araneidae. Then, in accordance with scientific classification, each family is divided into genera, and genera into species.

Insect Anatomy

An insect's body is composed of many segments, grouped in three major parts: the head, thorax, and abdomen. The head bears the antennae, eyes, and mouthparts; the thorax bears legs and often wings; the abdomen may have a pair of sensory appendages, called cerci, at the tip. All parts are protected by a hard outer covering, called the exoskeleton.

Head

Insects have one pair of segmented antennae, usually located between or in front of the compound eyes. Their shape varies greatly among insects. Antennae are used mostly for smell and touch, but some insects also use these appendages for hearing. In addition to antennae, most insects also have two kinds of eyes; simple eyes, called ocelli, which are merely sensitive to light, and compound eyes made up of many minute facets or lenses which record multiple images. A house fly, for example, has about 4,000 facets in each compound eye, and a dragonfly has more than 50,000 facets.

Mouthparts

Mouth parts usually consist of the upper lip (labrum) and lower lip (labium), the jaws (mandibles), and two smaller jaw-like appendages (maxillae). Some insects also have appendages, called plaps, on the labium and maxillae. The mouthparts are generally used for either biting or sucking.

Insects with biting mouthparts, such as beetles and dragonflies, work their mandibles from side to side. Those with sucking mouthparts generally possess a beak or beak-like tongue for sucking liquids. Mosquitoes, biting flies, true bugs, and some homopterans, such as leafhoppers, have piercing-sucking mouthparts with dagger-like structures, called stylests. Most flies have sponging mouthparts for lapping up liquids. Butterflies and moths have a coiled, tongue-like proboscis for sipping. Bees and wasps have biting and lapping mouthparts.

Thorax

The thorax is composed of three segments: the prothorax, mesothorax, and metathorax. Each segment bears a pair of legs. In winged insects the mesothorax and usually the metathorax bear wings. In many insects, such as cockroaches, grasshoppers, and mantids, the upper surface of the prothorax, the pronotum, is large, extending from the head to the base of the wings. Bugs and many beetles have a distinct, triangular shield, called the scutellum, located immediately behind the pronotum. Some flies, such as tachnids, have a large, conspicuous swelling underneath the scutellum, called the postscutellum.

Legs

Insects have three pairs of legs. Each leg is composed of five parts: coxa, trochanter, femur, tibia, and tarsus. The tarsus contains 2-5 segments and often bears a pair of claws at the tip and one or more pads. Leg size and shape differ greatly among insects. Mantids and mantidflies have enlarged forelegs for grasping prey; grasshoppers and crickets have swollen hind femora for leaping. Most female bees have pollen baskets or brushes on the hind legs.

Wings

Most winged insects have two pairs of membranous wings, but flies have only one pair of flying wings and a pair of club-like halteres. In beetles the fore wings, or elytra, are hard and armor-like; they cover the membranous hind wings used for flying. The fore wings, or he- melytra, of true bugs are leathery and have membranous tips. The arrangement of veins on the wings, known as wing venation, is useful in identifying many insects. (Check your insect book for a better description of how to do this.)

Abdomen

The abdomen usually consists of 11 segments, but some insects have fewer. Female genitalia are located between the 7th and 8th segments. In many insects these organs are associated with the ovipositor, which protrudes from the tip of the abdomen. The ovipositor enables a female to insert eggs into otherwise inaccessible places; the soil, plants, or bodies of other insects. Male reproductive organs are located on the 9th segment, and in some insects there is also a pair of claspers for grasping mates. By noting small differences in genitalia, entomologists can distinguish closely related species. Often the last segment bears a pair of tail-like or pincer-like

sensory appendages, called cerci. All insects have pairs of breathing pores, or spiracles, along the sides of the abdomen in addition to 1 or 2 pairs of spiracles on the thorax.

How Insects and Spiders Grow

Like all arthropods, insects and spiders have a hard outer covering, the exoskeleton. Because this covering cannot stretch, insects and spiders can grow only by shedding or molting the exoskeleton several times. Many insects pass through four distinct growing stages: the egg, larva, pupa, and adult. The larva is the active feeding stage, while the pupa is an inactive resting stage during which the larva transforms into an adult.

This type of development, termed complete metamorphosis, occurs in such insects as butterflies, moths, flies, beetles, wasps, and bees. In other insects, the pupal stage is omitted, and the young often resemble small versions of adults, except for the absence of sexual organs and, in some orders, wings. This is called simple metamorphosis and is found in grasshoppers, true bugs, dragonflies, and in certain other orders. The young are called nymphs, except for the aquatic offspring of dragonflies, damselflies, mayflies, and stoneflies, which are termed naiads. Spiders also have simple metamorphosis with a series of stages and molts. The spiderlings resemble adults in form but are not sexually mature.

Behavior

The great differences between insect and human behavior may not always be obvious. For example, the bee's sting is not an aggressive act in the human sense but, rather, the result of a series of triggering stimuli causing a fixed pattern of response. It is thus possible to apply what we know about insect behavior so that it may appear that we have trained them. The beekeeper is well aware of these principles and is thus able to avoid painful stings.

Innate behavior (sometimes referred to as *instinct)* is defined as a fixed response or series of responses to a particular stimulus or series of stimuli. The stance and movement patterns of all insect species are characteristic of the species. We recognize the flight pattern of the house fly, as distinguished from that of the honey bee or wasp, and our reactions vary accordingly. Some true flies look almost exactly like bees and mimic their behavior. Although they are completely without stingers, the human response is the same toward the harmless fly as it is toward the honey bee.

Much more complicated behavioral patterns occur among ants, bees, certain wasps, and to a lesser extent in other insect groups. Fixed action patterns, a more descriptive term than instinct, are unlearned reactions to life situations. The insect's nervous system is programmed genetically to react in a particular way to releaser stimulus or series of releaser stimuli.

The famous nineteenth-century French naturalist, Jean Henri Fabre, recorded his observations of and experiments with the complex behavior patterns among insects. Fabre experimented with sexton beetles, whose normal activity is to bury dead mice, frogs, or other small cadavers for food for their larvae by digging below the carcass until it is lowered into the ground and then covering it with soil. The beetles must dig quickly in order to prevent flies from getting to the food source first. Fabre tied a dead shrew to sticks in a way that prevented its being buried, but this stopped the beetles only temporarily. They scurried around, found the string holding the shrew, and quickly chewed it in two. An act of reasoning? Not at all. The beetles often encounter

small roots as they dig. To them the string was only a form of root, another in a series of releaser stimuli.

Similar experiments have been performed with the potter wasp, which constructs a small clay pot on a branch or on the side of a building. As soon as the pot has been completed, the wasp stocks it with paralyzed caterpillars to which she attaches her eggs. Having filled the pot, the wasp caps it with a mud cover and flies away, never to return.

What happens when a hole is broken through the bottom of the pot so that the paralyzed caterpillars fall through, and the pot is never filled? Fabre and others found that the reaction to this depended on the species of potter wasp and the stage in the construction of the pot. In some cases, if the pot had not been completed, the female would simply repair the damage caused by the experimenter. Obviously, pots are damaged during construction by birds or other hazards and need to be repaired. Once the pot has been completed, however, the damage is ignored, and a new response is initiated. The pot must now be filled with caterpillars, and it can no longer be repaired. One experimenter observed a remarkable phenomenon: Some wasps appeared to be able to count! A fixed number of caterpillars were placed in the pot, although they fell through the bottom and none remained inside. As soon as the pot was "full" (a specific number of caterpillars had been dropped in), the pot was capped and away flew the female wasp, blissfully unaware of the futility of her efforts. Other species that could not "count" went on trying to fill the pot until they died of exhaustion, ran out of eggs, or lost interest because the initial stimulus wore off.

These are only brief examples of fascinating observations that can be made by anyone who takes the time to look at what is going on in a woods, field, stream, or even on the back porch. Behavior also involves the acts that lead to mate location, courtship, and mating processes. Some insects stake out territories, other brood their young, and a few (some ants and bees) feed their young or tend the young of other insects. Escape and defense tactics behavior of only a few insects is known, leaving a vast frontier of study open to any curious person.

Social Insects

The majority of insect species are solitary, living out their lives alone, only intermittently in contact with a mate. They compete with one another for food and, occasionally, for shelter and mates. Two orders of insects, however, the termites (Isoptera) and certain ants, wasps, and bees (Hymenopters) have complex societies whose members carry on sustained interaction. These eusocia, or true social, insects are characterized by cooperation among family members, caring for the immature and usually dividing the labor according to their caste. The generations overlap, enabling the offspring to aid the parents in the colony's work. Termites, ants, honey bees, yellow-jackets, hornets, and some wasps are eusocial.

Social behavior is classified in a way that perhaps represents stages in the development of advanced social life, as follows:

- **Subsocial:** Adult insects display maternal care for or protection of their offspring (some earwigs, crickets, beetles, cockroaches, and true bugs).
- **Communal:** Adults of the same generation share the nest or hive but do not cooperate in the care of the offspring (some bees and wasps).

- **Quasisocial:** Adults use the same nests and cooperate in the care of the offspring (some bees and wasps).
- **Semisocial:** A worker cast of the same generation as the reproductive caste cares for the young (honey bees).
- **Eusocial:** As discussed earlier, and in contrast to the previous four, they have overlapping generations. Their offspring include worker and reproductive castes which cooperate in the care of the young, division of labor, and assistance to the parents. Further details about eusocial life among insects is given in the following examples and in some of the entries.

Termites

All species of termites are eusocial. It is likely that termites evolved from the subsocial cockroaches. The *caste* system of termites includes: primary reproductives, secondary reproductives, workers, soldiers, and sometimes naustes. The latter are members of a special caste of soldiers that secrete chemicals for defense. Their heads are funnel-shaped, and they are thus able to squirt the defensive chemicals which they secrete. The primary reproductives are the queen and the males. The secondary reproductives are nymph-like workers who can develop into primary reproductives should something happen to the queen or the males. Soldiers are nonreproductives, modified by large jaws on enlarged heads and capable of defending the nest. Termites are best known for their damage to wood and wood products. They usually make their nest in soils but use chewed wood as food for themselves and their young. They cannot actually digest wood, but their digestive tracts contain bacteria or protozoa that secrete wood-digesting enzymes. The product of this digestion is the food of both the termites and bacteria or protozoa.

Ants

Ants, family Formicidae, are good examples of eusocial Hymenoptera. The caste system of ants includes males, queens, and several types of workers. The workers care for the larvae and pupae. Many ants are predaceous on other arthropods; others are plant feeders or scavengers. Ants are often confused with termites, especially when the adult reproductives swarm. The great variety of ant colonies have attracted the attention of naturalists and philosophers alike. Some colonies of ants “farm” fungus gardens; some make slaves of other ants; and some, aptly called “army” ants, go on bivouacs, massive raiding parties involving all the members of the colony, including even the larvae and pupae.

Honey bees

Many species of wasps, hornets, and bees show some degree of eusocial life, but few are organized to the extent of the honey bee hive. The castes of bees are: drones (sexually active males), a single queen (the egg-laying female), and workers (sexless females). The queen and workers are capable of stinging, the stinger being a modified ovipositor.

Metamorphosis, as in all Hymenoptera, is complete, and the larval and pupal stages depend upon the workers for their feeding and care. The bee mouthparts are greatly modified into a combination of chewing and lapping, effective for feeding on plant nectar and pollen and for making the hive out of plant material and wax. Some social Hymenoptera feed upon other insects and provision their nests with caterpillars, spiders, and other arthropods, but although honey bees may kill other insects, they never feed on them.

The queen, with a small staff of workers, spends the winter in the hive and starts a new colony in the spring. Depending on the supply of the food store, there may be considerable activity in the hive during the winter, and workers will leave the hive on warm days on the chance they may find early blooming flowers. Drones are most numerous during the summer, but as food becomes scarce, the workers kill the drones and remove them from the hive. New colonies are formed when young queens are permitted to live and to fly from the old hive with some of the workers and a few drones. This swarming process usually takes place when an established colony becomes too large. Many of the social Hymenoptera are beneficial as pollinators and sometimes as predators upon insect pests. This is discussed in several of the entries of Hymenoptera.

Common Insects and Spiders of the San Mateo Coast

Differential Grasshopper

Habitat: Common, non-migrating, and very destructive grasshopper found feeding on grass and forage crops.

Oddities: A few species of grasshoppers are major pests of grasslands and grass crops, feeding on all parts of the plant that extends above ground. The nymphs as well as adults are capable of eating sixteen times their weight each day. When the populations increase to the point of being noticed, control measures, usually chemical, must be instituted. Although this may be effective, it generally results in little profit for the grower and causes considerable environmental pollution.

European Earwig

Habitat: Seen throughout the drier areas of the coast, usually under objects keeping cool and moist, such as old boards, lumber, rubbish, rotting vegetation.

Oddities: These insects are nocturnal, usually scavengers, but become pesky due to their appetite for roses and other garden flowers, sometimes on fruit and vegetable crops. They have never been known to invade the external ear of humans. The abdominal forceps may pinch slightly but are too weak to inflict injury.

Subterranean Termite

Habitat: This is a subterranean termite which needs ground contact from which to build tunnels into wood; often observed in late summer or early fall coming out of the ground during warm days to form new nests. After a rain the insects will emerge, fly a short way, drop to the ground, shed their wings, and dig into the ground forming a new colony.

Oddities: Faulty construction practices account for most of the termite damage in this country. Wood buried at a building site can form the nucleus for a colony. Workers will construct runways across concrete foundations to get to the wood of buildings. Unless barriers are placed on top of foundations and all wood in contact with the soil is chemically treated, termites may cause severe structural damage.

Spittle Bug

Habitat: Common in the area during the warmer months; seen along most all of the trails in grass.

Oddities: Also called froghoppers, these insects deposit their eggs on plants. The nymphs suck plant juices and produce a "spittle" that is voided from the anus. Nymphs surround themselves in spittle as a means of protection, but this material is troublesome to growers. It can clot farm machinery by wetting down the plants and entangling the stems in machines.

Convergent Ladybird Beetle

Habitat: Seen sporadically or in great numbers during spring and summer, especially on warm days. Favorite hangouts include stems and foliage of weeds and cultivated plants, where both larvae and adults feed on aphids and other plant bugs.

Oddities: The adults congregate in the fall to hibernate. They sometimes form great masses on plants. When the temperature drops to freezing, they crawl under boards, leaves, and into cracks and crevices, and overwinter in the adult stage. When it becomes warmer in the spring they emerge, breed, and lay eggs. In the summer both adults and larvae can be seen feeding on other insects, living together on the same host plant. Attempts have been made to rear this species and others as a means of controlling garden pests. Although they are beneficial, the expense of handling them is far greater than the crops that are saved.

Monarch Butterfly

Habitat: Seen throughout the area singularly and in great numbers. They do not seem to nest in the area due to the lack of milkweed for their larval stage.

Oddities: The adults and larva are poisonous from the toxins contained in their diet of milkweed. Birds have learned to distinguish the poisonous monarch from other species and will avoid the toxic monarch. The migratory habits of the monarch have attracted much attention and have been widely studied. For many years individual butterflies have been marked, released, and recovered in various parts of the continent. In this manner much has been learned about their flight patterns. When they migrate, they have the habit of congregating in large numbers on trees to "sleep." These congregations are called "clusters." Monarchs will return to some of the same trees year after year. Only recently entomologists have been able to discover the location of the final winter resting grounds in Mexico. The monarchs have an approximate 3,000-mile migration.

Aerial Yellowjacket

Habitat: Builds nests of excreted paper in trees, bushes, and bridges.

Oddities: Yellowjackets and hornets are aggressive. Their sting is painful; some individuals may be allergic. These insects have occasionally been cause for concern in the marsh by building nests near trails and inflicting stings on hikers. While they are an important part of our natural environment and should not be needlessly killed, sometimes due to their close proximity to humans, their nests must be removed.

Bumblebees

Habitat: These bees are not found in great numbers locally, but are frequent enough to mention. They can be spotted flying low, and heavily like an overladen aircraft looking for nectar.

Oddities: Bumblebees are common throughout the temperate regions of the world and may even be found at high elevations and near the Arctic Circle. These insects are closely related to honey bees, but their life cycle resembles more that of the yellowjackets in that only the young queen overwinters. In the fall the female will mate with a male, and this young queen will overwinter

alone, the male dying shortly after mating. As spring approaches, the queen starts a new colony. She will use a hollow nest of some other bee or find a similar cavity in the ground. Plant material is used to line the nest. Once completed, an egg cell is prepared, and eggs are laid in the nest. A supply of pollen is placed nearby as food for the developing larvae. Next, she constructs a waxen honey pot, which she uses for food as she guards the nest, and waits for the larvae to mature. The larvae feed on the honey and pollen mixture, supplemented with special food supplied by the queen. Once they reach full size, which takes about ten days, they pupate. Soon adult females emerge but take over the duties of the workers. These females do not mate. After awhile, males are produced and mate with the queen. Later in the season, sexually active females are produced who will start new colonies in the following spring. Bumblebees are very beneficial as pollinators. Unfortunately, chemical spray kills these insects along with the pests.

Honey Bee

Habitat: Honey bees are completely domesticated and live in hives provided by humans; however, they will leave these hives and form "wild" colonies in hollow trees. There are no wild native bees known; they are seen sporadically as escaped domesticated bees.

Oddities: Honey bees visit flowers to obtain nectar and pollen. The worker bees do this after spending the early part of their lives with chores in the hive. Workers are sterile females and the most numerous of the individuals of the hive. In addition to gathering food, they construct the waxy combs made from secretions of the wax glands. They tend the eggs and larvae, as well as feed the queen, and carry away the eggs produced by the queen. These workers are able to sting but only once, because the stinger is left in the victim's body, and the worker dies shortly thereafter. By the time the workers are ready to leave the hive and take up their new duties as foragers, their life is nearly expended. They can last at this final task for only a few days.

New colonies are formed when a swarm, led by a young queen accompanied by a group of workers, takes place. If the bee keeper anticipates this procedure, they are able to capture the young queen, place her in a new hive along with her following, and establish a new hive of bees. Queens are produced under three circumstances: when the reigning queen dies; when the colony is too large and must swarm; or when the queen is too old to produce the necessary quantity of eggs. In a sense this group of individuals acts as a single organism. The new hive is a form of reproduction.

Bees are the only insects that are able to maintain themselves continuously with such a store of food and in such large numbers throughout several seasons. Other social insects tend to die out during the winter months and build up their colonies again in the following season.

The workers have various bodily modifications for the tasks they must perform. For example, their legs are used for cleaning the antennae; hind legs have pollen baskets, and pollen scrapers, and so on. Pollen is removed from the pollen combs by a row of stiff hairs at the end of the tibia and then is pushed upward into the pollen baskets by means of the projection which is just below the tibia comb at the basal tarsal segment.

Pheromones, or ectohormones play a very important role in the life of the honey bees. The queen produces the only sex attracting pheromone. Scent glands are found on workers only and are used by scout bees when marking a food source. Alarm odors, produced when a bee stings, attracts other bees for a common defense. The African bee, which has apparently developed a strong alarm odor, is particularly aggressive. This varies considerably from strain to strain.

Honey bees are capable of passing on detailed information by means of their language. Karl von Frisch devoted much of his life studying this phenomenon. His experiments showed that worker bees communicate various bits of information by means of a dance, consisting of a series of circular movements in a particular direction, according to the position of the sun. The extent and direction of the dance then tells other workers the direction and distance to the honey flow, making it possible for them to go directly to the flowers and gather honey and pollen.

The drones' sole function is to mate with the queen, and this is done only once. Drones cluster to one side of the hive out of the way of the workers, only flying on warm sunny afternoons. Otherwise, their life is one of complete subjugation. Once they have the opportunity to mate, the explosive shock, which everts the male genitalia out of their abdomen, kills the male almost immediately upon connection with the queen. Males that never have the opportunity to mate are stung, killed, and dumped out of the hive as winter approaches.

Salt Marsh Mosquito

Habitat: Coastal regions of North America. Commonly being pesky in the spring and summer; sometimes in large enough numbers to curtail outdoor activities.

Oddities: The larvae and pupae of all 2500 species of mosquitoes are aquatic. Most larvae feed on plant material such as algae, bacteria, fungi, and decaying vegetation. Some larvae are predaceous, particularly those that live in tree holes or in water that collects in leaf bases. The pupae, although active, do not feed. Both the larvae and the pupae are dependent on free oxygen for respiration. The larvae have an abdominal breathing tube which pierces the water surface for a supply of air. The pupae have "ear trumpets" on the thorax for the same purpose.

The habitats of mosquitoes vary from species to species. Some live in still ponds, others in woodland, pools, and others in flowing streams. A few of our species live in pitcher plants, while a great many tropical species are found in flower and leaf bracts containing water. Although many species of mosquitoes are pests because of their bloodsucking habits, by far the greatest problem is that they are vectors of many of the worlds most serious diseases: malaria, yellow fever, dengue, and others. Mosquitoes are difficult to control without using chemicals that pollute the environment. DDT is still used in many parts of the world on the inside of houses simply because it is the only way the population can be saved from death by malaria and yellow fever, although most mosquito populations are now immune to this chemical. Some fish eat mosquito larvae, making it possible to control at least some of the pest species by culturing these fish and releasing them in ponds, streams, and lakes to eat the larvae. Recent progress has been made in larval control through the use of nematode parasites.

House Fly

Habitat: Anywhere annoying to humans.

Oddities: These flies breed in decaying food materials (check your garbage cans between dumpings after a particularly warm spell to see evidence of the house fly). The female deposits approximately 150 eggs at one time, laying them in the larval food material which includes manure, both human and animal. It takes about two weeks for the larvae to mature, pupate, and for the adults to emerge. This accounts for their great abundance.

House flies are not only just a nuisance but are also mechanical transmitters of many diseases, particularly typhoid fever. Although most of the control measures involve chemicals, it is rather easy to control them by screening homes, barns, manure, and decaying vegetation (also by having a large fly swatter). If manure is used on fields for fertilizer, it should be plowed under to prevent fly breeding.

Black Widow Spider

Habitat: Among fallen branches and under objects of many kinds, including furniture, outhouse seats, trash, wood piles, benches, and handrails. Not normally seen in the Pescadero Marsh due to their secretive nature; however, they are routinely seen in and around the DPR office in Pescadero.

Oddities: The female rarely leaves her web, preferring to stay close to her egg mass for purposes of defense. The female can store sperm and produce more egg sacs without mating (this comes in handy in case the female has eaten all her suitors). Some females will live up to three years.

Of all spiders, the black widow is the most feared; the female's venom is especially poisonous to humans. Bites can be life threatening for the elderly, young, or those in poor health. Most individuals suffer extremely bad flu-like symptoms before recovering. Despite its reputation, this spider often attempts to escape rather than bite, unless it is guarding an egg mass. Males do not bite. After mating, the female often eats the males, earning the name "widow."

Marbled Orb Weaver

Habitat: Seen in the tall grassy areas.

Oddities: The orb weaver rests in its orb in a retreat made of leaves or, if the web is on a tree, under the bark. A signal strand extends from the center of the orb to the retreat, carrying warning vibrations to the spider if an insect gets caught in the web. In autumn many orange eggs are laid in a flattened cocoon-like egg sac of loose white silk, which is attached to a leaf near the retreat. Eggs may overwinter or hatch in a few days and the spiderlings overwinter, depending on latitude and weather. This spider tends to be inconspicuous, hiding in its retreat, but dropping to the ground if approached.

Jumping Lynx Spider

Habitat: Fields in tall grasses and among herbaceous vegetation; frequents chaparral areas.

Oddities: The female attaches a spherical egg sac to a plant, tying several leaves together with silk. The female will stand guard over the egg sac until the spiderlings disperse, each soon hunting on its own. In the North, egg sac, embryos, or spiderlings overwinter.