The Multi-Species City

A WORKSHOP BY

CENTER FOR LIVSKRAFT OG REGENERATION

PROCEDURE

1. FIND A HUMAN PARTNER TO BUILD WITH
2. FIND A BEING THAT MATCHES YOU INTUITIVELY
3. BUILD A HOME
4. MOVE INTO THE CITY

Field Cricket

GRYLINNAE

(Insect)

HOME Digs small burrows or tunnels into loose soil, creating a chamber where they can take shelter, escape predators, and protect themselves from harsh weather. May use natural crevices or cracks in the ground.

ADVANTAGE Protects from predators, temperature extremes, and dehydration. Safe space for mating and laying eggs. Sound amplifier when calling out.

RISK Vulnerability to flooding or being invaded by predators. Soil disturbed by humans or large animals,

TEMPER/BEHAVIOUR active, cautious, territorial, vocal, resilient. Widespread and adaptable to various environments. High reproductive rate helps them maintain their populations. Broad diet, opportunistic feeders.

FOOD Omnivorous scavengers. Primarily plant matter (leaves, seeds, and decaying plant material), occasionally fungi, dead insects, and small live prey.

ENEMIES Birds, small mammals, amphibians, reptiles, and other insects. Parasites, also attack crickets, laying eggs inside them.

ECOSYSTEMS AND CLIMATE CHANGE Decomposing plant and animal material, which enriches the soil. Prey for many species, thus supporting the food chain. By aerating the soil through their burrowing, they contribute to soil health. Sensitive to changes in temperature and moisture levels. As climates warm, they may shift their range northward or to higher elevations. Extreme temperatures may limit food resources, make habitats unsuitable, disrupt rhythms.

Weaver Bird

OROPENDULUM

(bird)

HOME Famous for their intricate nests. Weave nests using grass, twigs, and other plant materials. Use beaks to weave strands together to form a sturdy structure, hanging from tree branches. Some build large communal nests with multiple chambers.

ADVANTAGE Protection. Nests are often difficult for predators to access due to complex design and positioning. Hard for ground-based predators (like snakes) to reach. Some nests are built in colonies, providing additional safety through numbers.

RISK Exposure to bad weather conditions. Avoid areas with strong winds or poor protection. Consider predator destruction.

TEMPER/BEHAVIOUR industrious, social, meticulous, defensive, cooperative. Have adapted to savannas, forests, and urban areas. Complex nesting behavior and large colonies give edge in surviving predation and environmental changes. Thrive in human-altered landscapes, including farmland and cities.

FOOD Versatile, omnivorous, mostly plant-based: seeds, grains, fruit. Insects or caterpillars during breeding season for protein.

ENEMIES Predation from snakes, larger birds, mammals, reptiles. Parasitic birds like cuckoos lay eggs in their nests.

ECOSYSTEMS AND CLIMATE CHANGE Important role in seed dispersal due to their diet, which includes fruits and seeds. Help control insect populations. Nesting behavior provides shelter for other species using abandoned nests. Climate change can influence their food sources, nesting materials, and breeding cycles. However, their versatility and colonial behavior may offer some resilience, adjusting better than specialized species.

European Harvest Mouse

MICROMYS MINUTUS

(rodent)

HOME Builds spherical nests made of tightly woven grasses and plant fibers. Nests in tall grasses, reeds, or crops like wheat and barley, typically above the ground and attached to stems.

ADVANTAGE Protection. Safe space for sleeping and youngsters. Suspension above ground helps avoid predators like ground-dwelling animals. Tightly woven structure offers insulation and shelter from weather. Well camouflaged in dense vegetation.

RISK Exposure to elements, storms, heavy rain. Vulnerable to birds of prey and snakes, spotting nests or mice moving.

TEMPER/BEHAVIOUR timid, agile, curious, cautious, social. Relatively versatile, but success depends on availability of habitats like grasslands, reed beds, and crop fields. Need dense, tall vegetation for nesting and foraging.

FOOD Omnivores, primarily feed on seeds, grains,fruits. Small insects in summer for protein. Fall foraging in agricultural fields.

ENEMIES Many predators: birds of prey, snakes, small carnivores. Larger birds like crows or magpies find and attack their nests.

ECOSYSTEMS AND CLIMATE CHANGE Important food source for many predators, contributing to balance of local food chains. Play a role in seed dispersal, aiding in plant regeneration. Burrowing and nesting activities aerate the soil and affect the structure of vegetation. Warmer temperatures might shift range of suitable habitats, extreme weather could impact food/ nesting. Agricultural expansion reduces availability of natural grasslands.

Leaf-weaving weevil

ATTELABIDAE
(beetle)

HOME Leaf-weaver beetle lives in the dense forest and the femaleuses her mandibles to cut and roll a section of leaf into a cone/tube, creating a protective "nest" for the eggs by rolling it like a burrito and using the leaf's hardening process.

ADVANTAGE Protects the eggs and larvae from predators and environmental stress (direct sunlight or rain). Leaf provides food for the larvae, feeding on the rolled leaf as soon as they hatch.

RISK Leaf rolls can be discovered by predators or parasites, such as parasitic wasps laying their eggs inside the beetle larvae. Leaf roll can dry out or be damaged by weather or other animals.

TEMPER/BEHAVIOUR meticulous, defensive, diligent, cautious, solitary Specialized leaf-rolling behavior helps ensure the survival of offspring, the ecological niche reduces competition. Spreads across various habitats, but rely on specific host plants.

FOOD Plant material, primarily leaves, and flowers. Specialized in food and link to plants. Larvae feed on the leaf when hatched.

ENEMIES Variety of predators: birds, lizards, spiders, parasitic wasps. Larvae vulnerable to parasitic insects.

ECOSYSTEMS AND CLIMATE CHANGE Play role in shaping plant communities by feeding on leaves and flowers. Influence plant growth and leaf availability for other herbivores. Part of the food web, many predators. Larvae break down plant material. Climate change can impact availability and health of their host plants, forcing the weevils to shift ranges or meet population decline. Might benefit from warming in certain regions.

Diving Bell Spider

ARGYRONETA AQUATICA

HOME Constructs an underwater silk web, a "diving bell." Traps air bubbles at the surface and transports them underwater, releasing them into its bell-shaped silk web, anchored to submerged plants. Bell acts as air chamber to breathe and rest.

ADVANTAGE Allows the spider to live and hunt underwater. Gives access to an underwater habitat with less competition. Diving bell provides safe place for storing prey and laying eggs.

RISK Predation from fish and amphibians; breakdown of air bubble inside the diving bell, requiring regular maintenance. Strong currents or water pollution reduce spider's ability to build and maintain its home.

TEMPER/BEHAVIOUR solitary, patient, stealthy, adaptable, reclusive. Occupies a specialized habitat. Widely distributed, inhabiting calm freshwaters like ponds, marshes, and slow streams. Only known spider that lives underwater.

FOOD Carnivorous, feeds on small aquatic invertebrates: water fleas, insects, small fish or tadpoles. Captures prey and bite, then take it back to their air bubble to consume.

ENEMIES Larger aquatic animals like fish, frogs, and predatory water insects attack them if they venture out of diving bell or if web is disturbed. Birds when the spider surfaces for air supply.

ECOSYSTEM AND CLIMATE CHANGE Predator in freshwater ecosystems, control populations of aquatic insects and other small invertebrates. Adds to biodiversity, and part of food web in its home environments. Depends on its ability to construct and maintain an air-filled web for survival. Requires calm, clean oxygen-rich water and abundance of submerged vegetation.

North American beaver

CASTOR CANADENSIS

(rodent)

HOME Famous for building dams and lodges. They construct dams across streams and rivers using branches, logs, mud, and stones to create ponds. Live in dome-shaped structures with underwater entrances with a dry chamber.

ADVANTAGE Lodges in the middle of the water make it hard for predators to reach them. Allows to transport materials, provides access to food supply, and consistent environment year-round, even in winter when the pond may freeze over.

RISK Flooding and drought can destroy or damage dams. Human development like farming and construction destroy or fragment beaver habitats. Wolves or bears sometimes access lodges, hunters want their fur and castoreum.

TEMPER/BEHAVIOUR industrious, resourceful, social, territorial, determined. Thrive when access to water and trees. Relatively versatile habitat selection. Prefer forested areas near freshwater, but can adapt to many environments. Can modify landscapes, yet highly specialized in dam-building.

FOOD Herbivores: bark, leaves, twigs, and buds of trees. In warm months, feed on aquatic plants, grasses, and shrubs. Create caches in their ponds to have winter food supply.

ENEMIES Wolves, coyotes, bears, eagles, Juvenile beavers are vulnerable to predators.Humans significant threat due to trapping and habitat destruction.

ECOSYSTEM AND CLIMATE CHANGE Ecosystem engineers. Dam-building creates wetlands, increasing biodiversity, by providing habitat for many species. Wetlands also improve water quality and help regulate water flow, reducing erosion and controlling flooding. Warming and changing precipitation could disrupt the ecosystems they rely on. Creating and maintain wetlands may help buffer some of the effects.

Leaf-cutter Ant

ATTA CEPHALOTES

HOME Build large, complex underground nests. These can cover vast areas and contain numerous chambers, each with specific purposes (nurseries for larvae, storage for leaves, and rooms for cultivating fungal gardens). Nests have ventilation shafts to regulate temperature and humidity.

ADVANTAGE Protection from predators and extreme weather. Elaborate chamber system organizes colony's activities.

RISK Flooding from e.g. heavy rain. Human development can destroy habitat. Armadillos or anteaters, can dig into nests.

TEMPER/BEHAVIOUR Industrious, organized, cooperative, relentless, focused. Incredibly successful; dominant herbivores in tropical ecosystems. Complex social structure, division of labor, and agricultural capabilities maintain large, thriving colonies. Highly specialized in their relationship with the fungi they cultivate, yet versatile in the types of leaves they can harvest and the environments they can live in.

FOOD The ants collect fresh leaves, chew them into a mulch, and use this mulch to grow the fungus in the nest. Fungus provides nutrients for the entire colony.

ENEMIES Anteaters, armadillos, some birds, lizards, spiders. Parasitic flies lay eggs on the ants while they are foraging. When the eggs hatch, the larvae consume the ants.

ECOSYSTEM AND CLIMATE CHANGE Leaf-harvesting activities can influence plant growth and distribution; underground nests aerate the soil. Fungal cultivation breaks down organic matter for the ecosystem. Ants serve as a food source. Changes in precipitation are the most important climate threat.

Wolf Lichen

LETHARIA VULPINA

(lichen)

HOME Like all lichens, it is a symbiotic organism composed of a fungus and a photosynthetic partner (algae/cyanobacteria). It grows on tree bark, particularly on conifers, sometimes on rocks. Fungus provides structure and absorbs nutrients; the photosynthetic partner produces food.

ADVANTAGE Symbiosis allows wolf lichen to thrive in harsh environments where many other organisms can't survive: harsh or nutrient-poor. Tolerate extreme weather conditions, eg frosts.

RISK Air pollution, particularly sulfur dioxide and heavy metals. Logging or deforestation.

TEMPER/BEHAVIOUR resilient, opportunistic, adaptable, symbiotic, enduring. Adaptability to extreme cold and its long lifespan make it a resilient organism. Success is directly tied to environmental health such as air quality and habitat loss. Prefers cool, dry, high-altitude environments, coniferous trees and rocks. Relationship with specific types of algae is critical for its survival.

FOOD The photosynthetic algae or cyanobacteria within the lichen generate carbohydrates from sunlight; the fungal part absorbs. The fungus absorbs water and nutrients from rain, air, and bark).

ENEMIES Few natural predators. Certain animals and insects may occasionally graze on it. Insect larvae or fungal diseases can affect lichens. Contains vulpinic (wolf poison) acid, that deters predators.

ECOSYSTEM AND CLIMATE CHANGE Helps in soil formation by breaking down rocks and tree bark. Provides habitat and shelter for small invertebrates; serves as a nesting material. Bio-indicator species for environmental health. Warming may send it upwards. Threatened by changes in forest and precipitation, and air quality.

Red Squirrel

SCIURUS VULGARIS

(rodent)

HOME Build nests in trees, typically high in the branches, made of twigs, leaves, moss, and grass, forming a round structure. Inside is lined with softer materials like moss or grass for warmth. May also use tree cavities or abandoned bird nests for shelter.

ADVANTAGE Protection from predators and harsh weather. Nest provides insulation and a safe place to raise young. Easy access to food sources such as nuts, seeds, and fruits.

RISK Depend on trees. Hence, risk of habitat loss due to deforestation, urbanization, or changes in land use.

TEMPER/BEHAVIOUR energetic, territorial, alert, curious, agile. Generally succesful, but declining in certain areas due to habitat loss, competition with grey squirrels, and squirrelpox. Versatile in terms of habitat, but less adaptable to urban environments than grey squirrels, which gives the latter a competitive advantage.

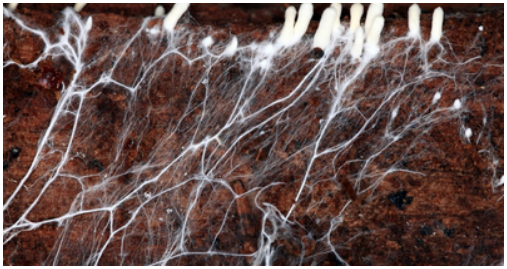
FOOD Primarily seeds and nuts from trees such as pine, hazel, and oak. Also consume fruits, berries, fungi, bark, and insects. Hoard food in the fall to prepare for winter scarcity of food.

ENEMIES Predation from birds of prey, foxes, pine martens, cats. Competition and disease threats from grey squirrels.

ECOSYSTEM AND CLIMATE CHANGE Contribute to seed dispersal. As they gather and store nuts and seeds, they often forget some of their caches, they help to regenerate forests. Help control insect populations. Changes in temperature and precipitation affect tree growth, potentially reducing food sources. Extreme weather events may also impact their nests or disrupt breeding seasons.

Panther Mushroom

AMANITA PANTHERINA



HOME It doesn't build a home but lives in the soil. It forms a mycorrhizal relationship with the roots of trees. The fungal mycelium, a network of underground threads, attaches to the tree roots, forming a symbiosis - the mushroom helps the tree absorb nutrients and water; the fungus gets sugars produced by the tree.

ADVANTAGE Nutrient exchange. Helps trees absorb e.g. nitrogen and phosphorus, essential for the tree's growth. The fungus benefits by receiving a reliable energy source.

RISK Deforestation and habitat destruction removing the trees. Fungal parasites, adverse weather conditions, and competition from other fungi.

TEMPER/BEHAVIOUR toxic, deceptive, mysterious, solitary, elusive. Success is closely tied to the availability of compatible trees. Somewhat versatile in their range, but specialized in their need to form mycorrhizal relationships with specific tree species.

FOOD Absorbs nutrients through its mycelium, which spreads out in the soil and connects with tree roots.

ENEMIES Fungal parasites - molds and bacteria - can infect its mycelium. Insects and small animals feed on the fruiting bodies. Its toxicity deters most predators.

ECOSYSTEMS AND CLIMATE CHANGE Contribute strongly to forest ecosystems through the mutualism of the mycorrhizae. Panther mushrooms play a critical role in forest nutrient cycling. Warming, changes in precipitation, and increased forest fires can disrupt the forests. Changing soil conditions may alter the availability of nutrients,

Australian termite

COPTOTERMES ACINACIFORMIS

(insect)

HOME Build complex colonies with nests in the ground, in tree stumps, or in the trunks of living trees. Nests are made from chewed wood mixed with saliva, creating a hardened, protective structure. Tall, thin mounds aligned north to south help regulate the temperature.

ADVANTAGE Protection from predators and environmental conditions. Stable internal environment with regulated humidity and temperature, allowing to raise offspring and cultivate the fungi they rely on for digesting cellulose.

RISK Flooding, fire, land clearing or construction can destroy their nests. Predation from ants, echidnas, birds. If the queen is killed, the colony can collapse.

TEMPER/BEHAVIOUR organized, industrious, social, defensive, persistent**.** Cultivate fungi inside their nests to help decompose the plant material they gather, which then becomes their food source. Highly adaptable. Humans considered them pests, feeding on wooden structures.

FOOD Primarily eat cellulose from wood, leaves, end grass. Rely on symbiotic protozoa or bacteria in their gut to break down the cellulose into digestible sugars.

ENEMIES Ants are fierce competitors and often raid termite nests. Echidnas, numbats, birds, lizards, and mammals. Humans are also a significant threat due to pest control.

ECOSYSTEMS AND CLIMATE CHANGE Play a critical role in breaking down dead plant material and recycling nutrients back into the soil, benefiting plant growth. Create micro-habitats for other organisms and help aerate the soil. Key decomposers. Warming may extend their range, but precipitation change may pose serious threat.

European Housemartin

DELICHON URBICUM

(bird)

HOME Build cup-shaped mud nests under eaves of buildings, cliffs, or other sheltered surfaces. Collect mud and mix it with their saliva to create small pellets, which they use to construct their nests. Typically feature a small entrance hole.

ADVANTAGE Protection from predators and elements. The small entrance hole and the height of the nests make it difficult for predators to reach them. Nesting near human settlements gives some protection from natural predators.

RISK Heavy rain or storms can wash away the mud. Other bird species might take over their nests. Renovations/destruction of old structures. Predators like cats, snakes, and birds.

TEMPER/BEHAVIOUR social, agile, diligent, migratory, cooperative. Widespread across the world through migration. Adapt well to urban human settlements, though they still rely on more natural habitats for breeding and feeding. Require access to mud for nest-building.

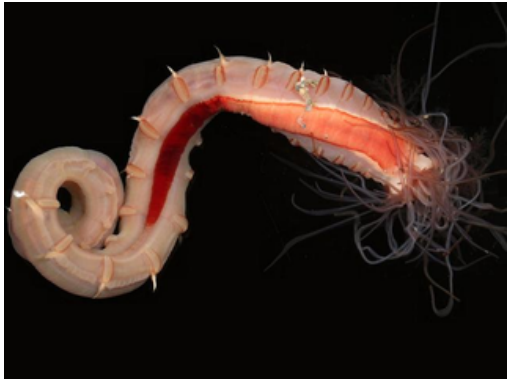
FOOD European house martins feed almost exclusively on flying insects, such as flies, mosquitoes, beetles, and aphids. Agile and skilled aerial hunters, often feeding in large flocks.

ENEMIES Hawks and falcons target them during flight. House sparrows, cats and other small predators. Humans.

ECOSYSTEM AND CLIMATE CHANGE Important role in control of insect populations, as they consume large numbers of flying insects e.g. mosquitoes.Help reduce the spread of insect-borne diseases and maintain a balance in local ecosystems. Warming may affect their habitats. Habitat changes due to human activity may further impact their nesting and feeding sites.

Sand-mason worm

LANICE CONCHILEGA



HOME build tubes in the sediment, composed of sand grains, shell fragments, small pieces of debris. They secrete mucus, binding materials together, forming long, flexible tubes several centimeters above the sea floor. The worm lives inside the tube.

ADVANTAGE Protection from predators and harsh conditions. The structure helps the worm avoid being washed away by currents or disturbed by sediment movement. Allows the worm to safely extend its tentacles to filter food from the water.

RISK Sediment disturbances, such as storms, strong currents, or human activities like dredging and trawling, destroy the tubes.

TEMPER/BEHAVIOUR sedentary, meticulous, cautious, adaptive, solitary. Live in coastal areas and on continental shelves around the world. Thrive in sandy or muddy substrates, adaptable to different depths and salinity levels. Can tolerate shallow tidal zones and deeper offshore waters.

FOOD Opportunistic feeders, consuming a variety of organic matter, Use their long, feather-like tentacles to capture tiny particles of food such as plankton and organic debris. Also feed on decaying plant and animal matter that settles on the seafloor.

ENEMIES Fish, crabs, and other animals feed on marine worms. Birds may also prey on them when the tide is out. Predators target the exposed portions of the worm or its tentacles.

ECOSYSTEM AND CLIMATE CHANGE Important role in ecosystems by contributing to bioturbation: mixing of sediment layers. Tube-building activities help stabilize sediments and provide habitat for other marine organisms. Enhance biodiversity of the seabed. Help recycle organic matter and nutrients. Changes in ocean temperature, sea level rise, and ocean acidification could alter their habitats, particularly in coastal and intertidal areas.

Hermit Crab

COENOBITA CLYPEATUS

(crustaceum)

HOME Occupy empty snail shells. As they grow, they must continually search for larger shells to accommodate their increasing size. They may modify the interior of the shell slightly by smoothing or creating a more secure grip.

ADVANTAGE Protection from predators and the environment. The shell acts as a mobile fortress, allowing the hermit crab to retreat inside. Conserves moisture, essential for land hermit crabs that need to keep their gills moist to breathe.

RISK If shells are in short supply or competition is high, a hermit crab may be forced to occupy a sub-optimal shell. At risk from predators when outside their shell or switching.

TEMPER/BEHAVIOUR cautious, resourceful, solitary, adaptable, defensive. Highly adaptive to a wide variety of habitats. Have evolved a unique strategy of using shells for protection. Human activities, such as the collection of shells for souvenirs, pose a growing threat. Their success is tied to the shells.

FOOD Omnivorous scavengers. Feed on dead animals, plant matter, fruit, leaves, and small invertebrates. May eat decaying fish, algae, and detritus.

ENEMIES Birds, larger crabs, and octopuses. Hermit crabs are most vulnerable when they leave their shell to find a new one

ECOSYSTEM AND CLIMATE CHANGE Vital role as scavengers, helping to break down dead organic matter and recycle nutrients within coastal ecosystems. Help clean up and reduce the spread of disease. Contribute to the health of coral reefs and intertidal zones by consuming algae and other detritus. Rising sea levels and increased storm intensity erode coastal habitats, reducing the availability of suitable living spaces. Ocean acidification reduce the population of marine snails.

Honey Bee

APIS MELLIFERA

(insect)

HOME Build their homes in the form of a hive, constructed out of wax secreted from glands on their abdomen. The bees create a series of hexagonal cells, known as honeycombs, inside the hive. These are used to store honey, pollen, and to rear bee larvae. Honey bees typically build their hives in hollow trees, rock crevices, or man-made beehives provided by beekeepers.

ADVANTAGE Protected, stable environment for colony: store food, raise young. The hexagonal cells maximize space and strength and minimize amount of wax needed. Collective living allows temperature control and defends the hive against predators.

RISK Loss of habitat and lack of foraging resources due to urbanization and agricultural practices.

TEMPER/BEHAVIOUR industrious, cooperative, defensive, organized, diligent. Extremely successful global distribution and ecological impact. Adapted to forests and agricultural landscapes, including commercial honey production and pollination services. Highly versatile pollinator. ‘Waggle dance’ allows to locate and share info about food sources.

FOOD Primarily consume nectar and pollen from flowering plants. Nectar is converted into honey, pollen provides proteins/nutrients.

ENEMIES Wasps, hornets, and birds. Varroa mite weakens bee colonies by feeding on bee larvae and adults. Honey-craving bears.

ECOSYSTEM AND CLIMATE CHANGE Critical pollinators, major role in reproduction of flowering plants. Contribute to the health of ecosystems through plant fertilization. Honey bees are vital to global food production. in recent years, honey bee populations have faced significant challenges from disease, pesticides, and habitat loss. Keystone species in ecosystems.

Bower Bird

PTILONORHYNCHIDAE

(bird)

HOME Construct elaborate structures - ‘bowers’ - not nests for raising young but rather displays to attract females. Males build them using sticks, grasses, and other materials, decorating with brightly colored objects like flowers, berries, shells, and man-made items like plastic or glass. Items can be arranged according to colors; some even ‘paint’ the walls.

ADVANTAGE Reproductive success. Females choose mates based on the quality and attractiveness of the bower. Males with better bowers and more attractive displays tend to have higher mating success.

RISK Predation. The bower can attract attention of predators. Construction and maintenance require a lot of energy and time, exposing the male or reducing feeding and self-care.

TEMPER/BEHAVIOUR Creative, meticulous, competitive, resourceful, solitary. Their behavior during display makes them vulnerable to predation. Mating strategies and versatile diet allow them to thrive in a variety of habitats. Good at adapting as long as ‘flashy’ resources are available.

FOOD Omnivorous, including fruits and berries, insects and other small invertebrates, lizards; seeds, leaves, and nectar.

ENEMIES Birds of prey like hawks and eagles. Cats, especially domestic or feral. Monitor lizards.

ECOSYSTEM AND CLIMATE CHANGE Important for ecosystems, particularly in seed dispersal, contributing to plant diversity and forest regeneration. At risk from habitat changes caused by climate change. Loss of resources and long-term effects of climate change could threaten them.

Acorn weevil

CURCULIO GLANDIUM

(beetle)

HOME Female acorn weevil uses her long snout (rostrum) to drill a hole into an acorn. Lays her eggs inside the acorn, where the larvae will live. The acorn becomes the home for the larvae. Once the larvae mature, they bore out of the acorn and burrow into the ground to pupate, emerging as adult weevils the following year.

ADVANTAGE Acorn provides a safe, nutrient-rich environment for the developing larvae. Larvae are protected from predators and harsh conditions. Acorn provides food supply so larvae can grow.

RISK Predation. If an acorn containing weevil larvae is eaten, the larvae may be consumed as well. Competition for acorns when these are scarce, limiting reproduction and survival rates.

TEMPER/BEHAVIOUR focused, resourceful, solitary, patient, specialized. Co-evolved with oak trees; rely on annual production of acorns for their reproductive cycle. Long snouts are specialized for drilling into acorns. Success can fluctuate based on acorn availability, which varies annually due to oak trees' masting.

FOOD Larvae feed on the inside of acorns. Adults feed on leaves, bark, or other plant matter; main needs met during larval stage.

ENEMIES Squirrels and rodents, inadvertently consuming larvae. Certain birds, like woodpeckers and jays, eat acorns with larvae. Parasitic wasps detect the larvae inside and lay their eggs on them. Fungi or mold can kill the larvae inside the acorn.

ECOSYSTEM AND CLIMATE CHANGE Dispersal and recycling of nutrients in oak forest ecosystems. Can affect the regeneration of oak trees. Part of the food web, providing a food source for predators like birds and parasitic insects. Climate change could alter the timing or quantity of acorn production, or mismatch in weevil cycles. Oak trees and their associated species may shift to cooler regions, causing acorn weevils to shift their range as well.

Tarantula hawk wasp

PEPSIS

(insect)

HOME Digs a burrow or locates a preexisting one in soft soil. After paralyzing a tarantula, she drags it into the burrow, lays a single egg on its body, and seals the burrow. This burrow becomes the larva's home while it consumes the paralyzed tarantula and grows.

ADVANTAGE Ensures fresh, live food for the developing wasp larva. Paralyzing prevents prey from decaying. Burrow safe from predators.

RISK Vulnerable to predators like birds or other animals that attack while digging. Locating, subduing, and dragging a tarantula to a burrow may cost reproductive opportunities.

TEMPER/BEHAVIOUR fearless, solitary, determined, strategic, relentless. Large size and painful sting deters many predators. Specialized hunting strategy allows them to reproduce efficiently. Widespread where tarantulas are abundant. Unique evolutionary adaptation of paralyzing rather than killing prey. Rely on tarantulas.

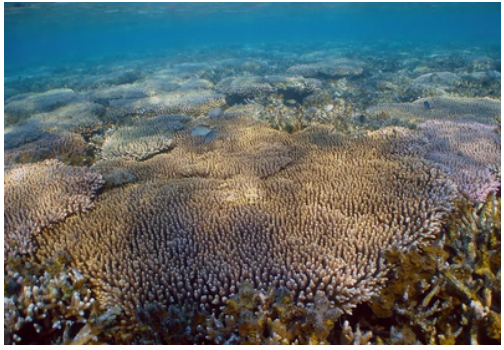
FOOD Larva feeds exclusively on the paralyzed tarantula. Adult wasps feed on nectar from flowers and ripe fruit.

ENEMIES Some birds may prey on adult wasps, Reptiles/amphibians. Insects and other scavengers raid the burrow, eating tarantula & larva.

ECOSYSTEM AND CLIMATE CHANGE Control tarantula populations. Contribute to pollination. Provide sustenance for birds, reptiles, and other predators. Somewhat resilient to climate change due to their adaptation to arid and desert environments. Changes in temperature and habitat could affect tarantula populations. If desert habitats expand, tarantula hawk wasps might expand their range & vice versa. Long-term changes in climate and ecosystems could pose challenges if their prey or nectar sources decline.

Staghorn Coral

ACROPORA
MILLEPORA
(coral)



HOME Build homes by secreting calcium carbonate to form a hard skeleton. Individual coral polyps work together to build the branching structure of colonies. Create complex, tree-like formations stretching over large areas of a reef. Polyps expand the coral structure, allowing the colony to grow and thrive.

ADVANTAGE Branching structure allows it to grow quickly and spread out over large areas, capturing sunlight for its symbiotic algae and gaining space. Offer protection to small fish.

RISK Particularly vulnerable to coral bleaching, caused by elevated sea temperatures, and ocean acidification, which weakens their calcium carbonate skeletons. Susceptible to storm damage because of their fragile structure,

TEMPER/BEHAVIOUR resilient, passive, collaborative, sensitive, enduring. Require clear, warm, and shallow waters with adequate sunlight. Abundant where wave action brings nutrients. Successful due to their fast growth rate.

FOOD Rely on symbiotic algae within their tissues for most of their energy, providing the coral with nutrients. Can catch plankton and small particles from the water.

ENEMIES Predation from crown-of-thorns starfish, which feeds on coral polyps. Parrotfish nibble at the coral. Diseases.

ECOSYSTEM AND CLIMATE CHANGE Vital to the health of coral reef ecosystems. Provide essential habitat for numerous fish and invertebrates. Protect coastlines by buffering wave energy. Populations have significantly declined in recent decades due to climate change and predation. When stressed by heat, they expel their algae, losing their primary energy source, Storms and rising sea levels also threaten fragile structures.

Veined Octopus

AMPHIOCTOPUS MARGINATUS

HOME Veined octopuses build homes by gathering shells, coconut husks, and other debris from the seafloor to create shelters. They strategically arrange these materials to form a temporary but protective dwelling, sometimes using them as shields against predators. These shelters can be relocated as the octopus moves, showing their resourcefulness.

ADVANTAGE The ability to gather and construct movable homes offers the veined octopus flexibility and safety. This behavior allows them to hide from predators, ambush prey, and relocate as needed, adapting to various environments and threats.

RISK Their shelters, while protective, are temporary and may be insufficient against larger or more determined predators. Additionally, their reliance on available materials makes them vulnerable in environments where debris is scarce.

TEMPER/BEHAVIOUR Curious, intelligent, resourceful, adaptive, solitary. The veined octopus is known for its innovative use of tools and exhibits complex behaviors, particularly in hiding and hunting.

FOOD The veined octopus feeds on a variety of prey, including crabs, small fish, and mollusks. It hunts primarily by ambush, using its tentacles and beak to capture and break open its prey.

ENEMIES Natural predators of the veined octopus include large fish, eels, and sharks. Their main defense is camouflage and quick escapes, hiding within their shelters or using ink to confuse predators.

ECOSYSTEM AND CLIMATE CHANGE Play an important role in their ecosystems, controlling populations of smaller marine creatures. Ocean warming and acidification could impact their prey availability and their ability to find suitable materials for shelter. Additionally, rising sea levels and pollution may threaten their habitats.