ADAPTATION IN INSECTS

- **Insects have amazing adaptations that make each type unique and diverse.**
- **Insects are adapted for life in every environment imaginable. With the exception of deep in volcanoes, insects can be found everywhere.**
- **Insect adaptations include mouthparts, the ability to fly, leg types, and body shapes.**
- **Imagine if all insects looked exactly the same, ate exactly the same food, and lived in exactly the same habitats.**
- **It would be impossible because insects would compete too much and would not be able to survive.**

Insects adaptation to their environment:

- Insects are adapted their environment in many ways.
- An adaptation is an adjustment to the environment so that an animal can fit in better and have a better chance of living.
- Animals with heavy fur coats are adapted for cold environments. Animals that have webbed feet are adapted for living in the water.
- Insects can also be adapted to their environment.
- Insects can be camouflaged. Insects that look like their environment won't be seen by predators such as birds and lizards.
- Some insects look like sticks, leaves, and thorns.
- This type of adaptation helps insect survive by blending in with their surroundings so they aren't eaten or so that prey doesn't see them hiding.

Example: 1. Stink Bugs are the same color green as the leaves they like to eat and another Walking sticks look just like sticks or leaves.

- Insect antennae can be adapted to their environment.
- Insects with large eyes do not need extra help seeing and have short antennae.
- Insects with long antennae probably have very small eyes.
- Think about an insect that lives in dark places, what will their eyes and antennae look like? They will probably have small eyes because their world is dark and eyes aren't helpful.
- They will also probably have long antennae to help them get around in the dark. Example Dragonflies have very large eyes and very small antennae.
- Insects can have adapted feet and legs.
- There are many different types of insect legs such as jumping, digging, running, and swimming.
- These adaptations help them survive in the environment that they live in. Example Grasshoppers have long, strong hind legs that help them jump.
- This adaptation helps them get away from predators, and jump over tall grasses.

Insects mouth parts adaptation

- Insects have many different types of mouthparts. Their mouthparts are adapted to help them eat their favorite foods. If all insects had the same mouthparts they would all eat the same things.
- Different mouthparts make insects unique and diverse. Each type of mouthpart has the same parts; they are just adapted to do different things!
- The most basic type of mouthpart an insect can have is called chewing mouthpart. Chewing mouthparts are found on insects that eat plants and sometimes other animals. Insects chew their food opposite of us.
- We chew up and down, and insects chew side to side! Cockroaches, grasshoppers, crickets, beetles, and caterpillars all have chewing mouthparts. You can tell if you have a chewing insect on your plants because you will have holes eaten in the leaves!
- Other insects have piercing and sucking mouthparts. Piercing sucking mouthparts have the same parts as chewing mouthparts, they are just adapted for sucking the juices of plants or blood.
- Piercing sucking mouthparts are made like a sword or straw. Insects stick their mouth into a plant and suck all the juices. Other insects stick their mouthparts into animals or other insects and suck blood.
- Mosquitoes have sucking mouthparts. Stink bugs also have sucking mouthparts. Mosquitoes suck blood, and stink bugs suck plant juice.

- **Some insects have an adaptation of piercing and sucking mouthparts that lets them sponge their liquid food. Houseflies have sponging mouthparts.**
- **They have nothing to chew, so they have to spit up on their food to dissolve it before they can sponge it up. So when a fly lands on your sandwich, don't eat that piece – it has fly throw up!**
- **Insects that like to drink nectar from plants have lapping mouthparts, which are really just adaptations of chewing mouthparts.**
- **These mouthparts help them drink the sweet nectar from flowers. Lapping mouthparts have the same pieces that chewing mouthparts have, they are just put together differently.**
- **Lapping mouthparts are long, like a flexible straw, and can be stuck deep into flowers.**
- **Butterflies have lapping mouthparts. Butterfly mouthparts are so long that they keep them rolled up under their head until they are ready to eat.**

Insect Adaptations to Habitats

- **Insects live in many different habitats and environments. You can find insects living in nearly everywhere on Earth.**
- **Insects have six legs and they are adapted to help them move around their environment.**
- **There are many different types of legs that insects may have: running, walking, jumping, swimming, and digging.**
- **Insects that live in the water are called aquatic.**
- **Aquatic insects have legs adapted for swimming.**
- **Some aquatic insects have long legs that are used like oars to help the insect swim.**
- **Other insects have very short, fat legs that beat quickly for fast swimming.**
- **Some insects don't swim, they walk on top of the water.**
- **These insects are very skinny and small and have long, thin legs that keep them on top of the water instead of falling through the water.**

Giant Water Bugs have grasping front legs to catch prey. Their hind legs are long and strong for swimming. Their middle legs are small and help in swimming, but are not really needed because the hind legs do such a good job.

Water Striders walk on water. Their legs are long and skinny. Their legs help balance out their weight so that they don't break through the water and drown.

- Whirligigs have long front legs that help them catch food.
- Their middle and hind legs are very short and fat, and beat very fast to help them swim quickly.
- Insects that need to run very fast usually have long, thin legs.
- Cockroaches have adapted long and thin legs to help them run away from predators quickly.
- If a cockroach is born with short legs, it will not be able to run fast, and you would have an easier time stepping on it!
- Insects that need to jump high have long, strong hind legs.
- Grasshoppers and crickets live in fields with high grass.
- They need jumping legs to help them jump over the grass to get to food, shelter and water.
- Fleas also have very strong hind legs. If a flea was as big as you are, it would be able to jump up as high as one and a half football fields! Fleas are blood suckers and need a host for blood. Fleas are also very tiny and need strong hind legs so they can jump high to get on your dog for food!
- Some insects live underground. These insects have adapted legs for digging. Mole crickets live underground all the time and eat the roots of grasses.
- Mole crickets have adapted front legs for digging. Their front legs are shorter and are made like a shovel to help them make tunnels to travel in the soil.

Parasitic adaptation in insects

- **Fleas are small insects that suck blood for food. Fleas have many adaptations to help them survive on other animals.**
- **An animal's body is a flea's habitat. Fleas have to be able to get onto an animal, so they have adapted long, strong hind legs to help them jump very high. Fleas also need ways to stay hidden once they are on the animal.**
- **They have adapted a body shape that is small and flattened from side to side, just like a knife. This helps them run in between the hairs without getting caught. Fleas also have long, thin, front and middle legs for running quickly.**
- **To keep from getting stuck on hairs and fur, fleas do not have any wings and have very short antennae. They are very streamlined, just like an airplane! Fleas also have short sucking mouthparts to help drink blood.. List of flea adaptation:**

- **Very short antennae**
- **Short, sucking mouthparts**
- **Long, thin front and middle legs for running**
- **Body flattened side to side**
- **No wings**
- **Long, strong hind legs for jumping**

Flying adaptation in insects

Here is a list of insect adaptations for flight such as Double wings, Light-weight bodies, Light-weight wings and Wing muscles

ADAPTATION TO DRAGONFLY

- Dragonflies are insects that live near water. They are predators and eat other insects. Dragonflies have adaptations as juveniles and adults.
- Dragonflies have to live near water because they lay their eggs in the water and the immature stages live in the water until they are ready to be adults.
- Dragonfly immature stages are called naiads (nyads), which is a special term for nymphs that live in water. Naiads have adapted gills to help them live underwater. Dragonfly adults do not have gills because they do not need them in the air.
- Dragonfly adults have long, strong wings that beat fast to help them fly to catch food.
- They also have specially adapted legs that can catch food and hold it like a basket.
- Their legs are not needed for anything other than catching food because they use their wings to get around.
- Dragonflies have very large eyes and very small antennae. They need large eyes find their food!

Adaptations of a Dragonfly

Large eyes and short antennae

rasping legs the make a
asket for scooping prey

Strong, long wings

Gills for breathing underwater

ADAPTATION TO BUTTERFLY

- Butterflies are adapted for a life in the air and drinking nectar. Many butterflies are brightly colored to warn predators that they taste bad.
- Some butterflies mimic the colors of the bad tasting butterflies to trick predators.
- The Texas State Butterfly, the Monarch, tastes bad to birds and lizards.
- Another butterfly called the Viceroy is adapted to mimic the Monarch so predators won't eat it!
- Butterfly wings are adapted for flying long distances.
- Their wings are very large, but they are not meant for flying very fast.
- Some butterflies have adapted spots on their wings to scare predators.
- When a predator sees the spots, they look like large eyes and make the predator think the butterfly is actually larger than it is!

Monarch Butterfly

Viceroy Butterfly

- Butterflies eat nectar from plants.
- They have adapted long mouthparts that can reach deep into flowers to drink nectar.
- Their mouthparts act like straws.
- Butterflies do not need large eyes to look for moving food, but they do need help to see predators.
- Instead of big eyes, butterflies have adapted long antennae and hairs on their body to feel for predators.
- Butterfly adults and larvae eat different types of foods.
- This adaptation helps parents and children from fighting with each other for the same food! Butterfly adults eat nectar, and butterfly larvae chew on plants.
- They both have different mouthparts.