

Goal • Complete Think & Link Investigation 3-H Two Flying Organisms.

What to Do

With your group, choose two of the following flying or gliding organisms. Use the information on the organisms to complete Think & Link Investigation 3-H Two Flying Organisms. Your teacher may also assign you two organisms.

Reading

Insects

- Insects often have two sets of wings. These are made out of a thin membrane that is supported by stronger structures called veins.
- Many insects have a heavy body. They need to flap their wings very quickly in order to fly. For example, midges need to beat their wings 1000 times a second to remain airborne.
- Different insects often have different movements when they fly.
 - Beetles are often awkward when they fly because their front set of wings have been converted into hard shields.
 - Bees and wasps keep their pairs of wings together when they fly. This allows them to maneuver better and remain more stable during flight.
 - The hind wings of houseflies are converted into stumps. The stumps stabilize their flight. This is why you often see flies darting around and changing direction quickly.
 - Dragonflies can fly in any direction without turning their bodies round. However, their wings are very close together. The wings strike each other in a turn, making a clacking sound.

Bats

- A bat's wing is made up of a stretchy membrane. This membrane is pulled tightly over a claw-like skeleton.
- A bat's wing is much more flexible than a bird's wing. A bat can actually change the shape of its wings. This helps it maneuver in flight. It can dive and weave through the air and change direction quickly. Some bats can fly backwards.
- Bats flap their wings during flight. They turn their wing upside down when they move their wing upward during flight. This helps them generate more power.
- Bats have different types of wings, depending on their needs.
 - Some bats eat insects that live on the ground or spend a lot of time crawling over plants. These bats have short wings. These allow them to hover or fly slowly, as well as perform aerobatics.
 - Other bats catch flying insects or small animals in the air. They have longer, thin wings. These let them fly faster.

Birds

- Birds flap their wings to rise into the air and to fly. A bird increases its speed by flapping its wings.
- A bird's wing is covered with feathers. Birds turn and separate their feathers when they move their wing upward during flight. This allows air to pass through them easily. This means they use less energy moving their wings upward. Several of a bird's outer feathers can also be turned to act like small propellers.
- Birds have different types of wings depending on their needs.
 - Hummingbirds have wings that beat quickly, allowing them to hover over a flower to feed. These birds can also fly backward.
 - Some birds with board, long wings use air currents to soar. This enables them to conserve energy. They move through the air without having to frequently flap their wings. Gulls, hawks, ospreys, and eagles can often be seen soaring over Nova Scotia.
- Birds move their tails to keep their flight stable. They also use them to slow their air speed. The tail is lowered and the feathers spread open to act as a brake. Airplanes use control surfaces the same way to reduce lift when landing. Birds also turn their whole wing when they land. This slows their speed as well.

Gliding Animals

- Not all airborne animals fly. Many have adapted special means of gliding. They sail through the air without powering their flight with wing muscles. They use gravity to create thrust, rather than flapping wings.
- A few examples of gliders in motion:
 - A flying squirrel has two flaps of fur-covered skin on both sides of its body. They run from the squirrel's wrist to its ankle. When the squirrel wants to glide from one tree to another, it extends these flaps. Then it glides through the air in a spread eagle position.
 - Flying fish do not actually fly. Instead, they have enlarged fins that they extend to glide through the air. Flying fish can glide for hundreds of metres using drafts of air that pass over waves. They become airborne by flicking their tail to generate thrust.
 - Gliding frogs jump from trees and spread out their toes to glide through the air. They can also make turns as they glide.
 - A flying dragon is a small lizard with especially long ribs. These can be extended away from the body. The ribs are covered in a flat membrane. The lizard spreads this membrane to glide.

Compare their differences and similarities in how they move.
Describe any unique structures & traits.

_____ + _____ Differences

_____ + _____ Similarities

Structures & traits