

DESCRIPTION



How do different species interact with one another?

Friend or

by Suzanne Sherman

How does a warthog get its fur cleaned? It invites some friends over! At least that's what the warthogs do in Queen Elizabeth National Park in Uganda. The warthogs there have formed an unusual partnership.



A large warthog is the central focus, with its head and back visible. Several banded mongooses are on its back, and many more are on the ground around its legs. The background is a soft-focus savanna landscape.

Foe?

Warthogs, wild members of the pig family, live in the African savanna. They graze on grasses and use their snouts and tusks to dig up tasty roots. Banded mongooses are small, catlike carnivores that eat mainly insects. They live in large social packs.

Most mammals don't form close relationships with other kinds of mammals. But the warthogs and mongooses in the Ugandan park have found a way to cooperate. When a warthog sees a pack of mongooses, the warthog stands still or lies down and lets the mongooses swarm over its body. The mongooses gobble up ticks and other blood-sucking insects that live in the warthog's fur. The warthog gets relief from the biting insects, and the mongooses get a meal.

Symbiosis The interaction between warthogs and banded mongooses is an example of symbiosis. In **symbiosis**, two different kinds of organisms have a close relationship. The organisms may be animals, plants, fungi, or bacteria. Some symbiotic relationships help both organisms survive. Others benefit only one of the organisms involved.

Let's explore other surprising relationships found in the African savanna ecosystem. The largest grassland in the world, the African savanna covers nearly half the continent of Africa. But close relationships between unrelated organisms can be found in every ecosystem.

Warthogs and Mongooses

The warthogs are healthier and the mongooses have a ready source of food because of their partnership.

Mutualism

The interaction between warthogs and mongooses is called **mutualism** because both organisms benefit from the relationship. Mutualisms usually occur between organisms that have very different needs. When two organisms require the same resources, they are likely to compete with each other rather than help each other.



Ants and Acacias

An eerie whistling sound comes from certain trees in the Serengeti plain of East Africa. These are the whistling thorn acacia trees. These trees have a mutualistic relationship with ants. Acacia ants make their homes inside the trees' swollen thorns. The tree provides nectar and small packets of protein and fats the ants use for nutrients. In return, the ants protect the trees against other insects and large grazing animals. The ants attack any threat to the trees, including other kinds of ants competing for the trees' resources. The wind causes the whistling sound as it blows past the ants' entrance holes in the hollow thorns.



Dwarf Mongooses and Hornbills

Dwarf mongooses are another kind of mongoose that lives in the savanna. Dwarf mongooses have a mutualistic relationship with large-beaked birds called hornbills. The mongooses spend the night in a termite mound, while the hornbills perch in trees nearby. The hornbills wait for the mongooses to come out in the morning. The birds sometimes even wake them by tapping their beaks on the mound. Then the two groups look for food together. The mongooses and hornbills have many of the same predators and warn each other if those predators are around.



Algae and Fungi

Lichens grow on rocks and tree trunks and dead branches. Lichens have varied shapes and a range of colors, such as light green, rusty red, or dull yellow. Some lichens resemble tiny plants, but they are not plants. Lichens are mutualisms between fungi and algae or blue-green bacteria. The producers use sunlight to make sugar, which the fungi take in for energy. The fungi absorb water from the air and provide it to the producers. The fungi in these partnerships can't survive on their own. The producers can live without the fungi. But the mutualism allows the producers to spread into places where they could not grow on their own, such as on a rock.



Cycads and Hornbills

Cycads are ancient plants that were common during the age of the dinosaurs. A few kinds of cycads still live in the African savanna today. Cycads produce fat cones that contain many large seeds with red, fleshy coverings. Hornbills eat the fleshy coverings and spit out the poisonous seeds. Less often, a hornbill may swallow a whole cone and digest the nutritious seed coverings. Then the bird gets rid of the seeds in its droppings. In either case, the hornbills get nutrients they need while spreading the seeds to places where they can sprout into new cycad plants. This is just one of the many mutualisms between seed-producing plants and seed-spreading animals.



Parasitism

Parasitism is a second type of symbiosis. In **parasitism**, one organism benefits while the other organism is harmed. The harmed organism is called a host. Parasitism is not the same as a predator-prey relationship. Unlike predators, which kill their prey right away, parasites live symbiotically with their hosts. Parasites need their hosts to survive at least long enough for the parasite to grow and reproduce.



Mistletoe Plants and Trees

Mistletoes, common plants found throughout the world, are parasites. Mistletoes in the savanna and elsewhere attach themselves to other plants, especially trees. Most mistletoes grow high on the host's branches. From there, a mistletoe gains access to sunlight and sucks water and nutrients from the host plant, slowly killing it.

Cuckoos and Shrikes

Rather than care for its own young, an African cuckoo often lays its eggs in the nest of a yellow-billed shrike. The cuckoo lays its egg while the shrike is out finding food. When the shrike returns to its nest, it cares for the cuckoo's egg—and hatchling—along with its own. This invasion takes away resources from the young shrikes. The young cuckoo may also push the baby shrikes right out of the nest, claiming the caretaker all for itself.



Commensalism

A third type of symbiotic relationship is commensalism. In **commensalism**, one organism benefits a lot from the relationship while the other organism is affected very little or not at all.

Elephants and Dung Beetles

Dung beetles often live alongside African elephants. Dung beetles have a unique behavior. They shape pieces of the elephants' droppings into balls and roll them away. The beetles bury the dung balls in the ground to feed on them or lay eggs in them later. The elephants' dung contains some undigested food that provides nutrients for the beetles. This relationship is an example of commensalism because the beetle benefits while the elephant is neither harmed nor directly helped by the beetle's actions. However, dung beetles benefit the ecosystem by removing wastes, improving soil, and controlling fly populations.



Unexpected connections like these in the savanna exist in every community. From a human's perspective, some symbiotic relationships seem charming, while others are quite ugly. But in all cases, the organisms involved are simply trying to survive.



IN YOUR SCIENCE NOTEBOOK

Compare and contrast mutualism, parasitism, and commensalism.