Nepenthes

Nepenthes are some of the most iconic carnivorous plants of the tropics, capable of catching everything from mosquitoes to treeshrews. But how do they trick animals into supplying their next meal, and why would a plant even bother? Are they all killers, and how would they survive if they weren't?

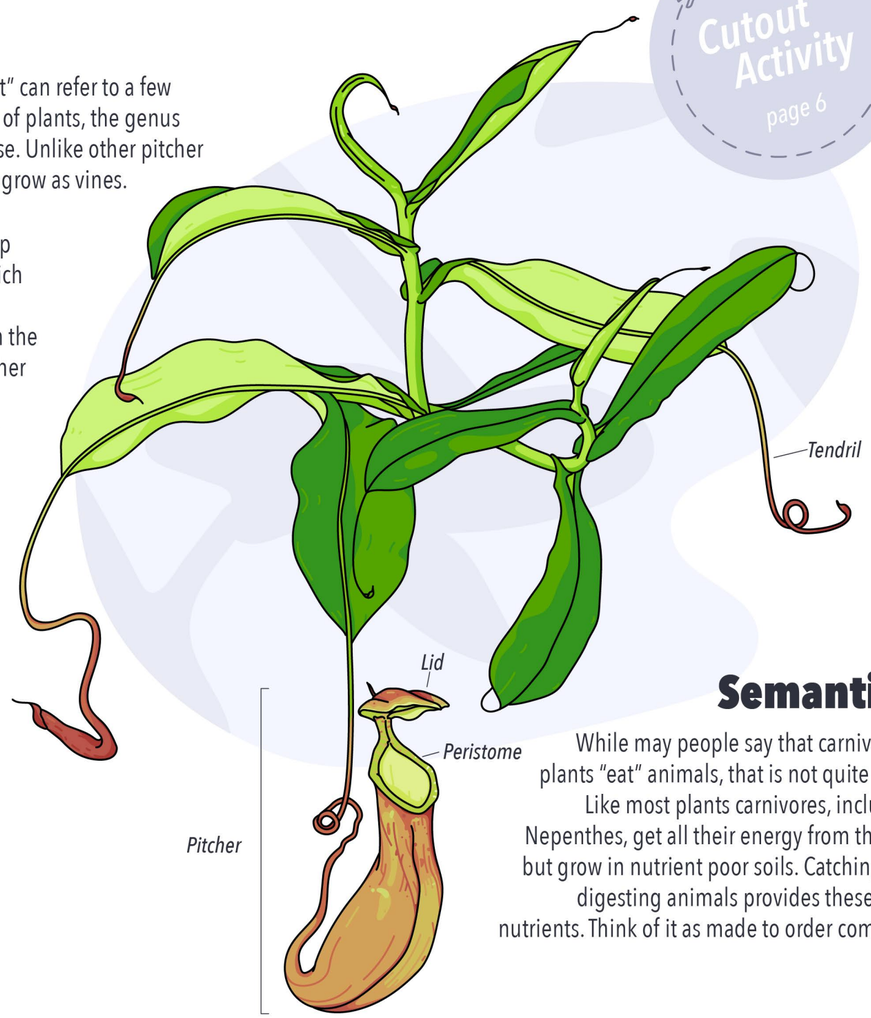
The Basics

While the term "pitcher plant" can refer to a few similar yet unrelated groups of plants, the genus Nepenthes is the most diverse. Unlike other pitcher plants, Nepenthes generally grow as vines.

As new leaves emerge, the tip extends to form a tendril which whips around searching for something to climb on. From the end of the tendril a new pitcher starts to grow, swelling and stretching until the top pops open.

The peristome and the inside of the pitcher are waxy, causing prey to slip and become trapped within. The lower portion of the pitchers are filled with digestive fluid converting prey into nutrients which the plant can then absorb.

Cutout Activity page 6



Semantics

While may people say that carnivorous plants "eat" animals, that is not quite right. Like most plants carnivores, including Nepenthes, get all their energy from the sun but grow in nutrient poor soils. Catching and digesting animals provides these trace nutrients. Think of it as made to order compost!

Biogeography

Nepenthes are found across the old world tropics, primarily in the Malay Archipelago. While a high level of genetic diversity between and within species makes it hard to say exactly where Nepenthes first evolved, there are clear bursts of diversification on the islands of Borneo, Sumatra, the Philippines where 84%, 87%, and 98% of Nepenthes species are found nowhere else.

Fatal Attraction

It might seem hard to think a plant could successfully catch animals without moving, but plants are experts at manipulation. Consider flowers, which are capable of attracting pollinators using a range of sensory signals and directing them to perform tasks beneficial to the plant. Nepenthes pitchers similarly use many of the same strategies as flowers, but for a much more nefarious purpose.

Taste

Many Nepenthes attract animals using droplets of sugar. This nectar is typically found on the underside of the lid or around the peristome, both places where a slip could prove fatal. Some plants go even further and produce a breadcrumb trail of droplets from the stem and up the outside of the pitchers to direct crawling insects like ants.

Sight

In the past decade scientists have discovered that multiple species of Nepenthes fluoresce around the rim of their traps in response to UV light. In turn, insects are attracted to this beacon like well… moths to a flame. When scientists blocked out this fluorescence, insect capture was drastically reduced. Interestingly, similar fluorescence has been found in unrelated North American pitcher plants, further suggesting the usefulness of this adaptation for insect capture.

Smell

Many insects are highly sensitive to airborne chemicals, and in this regard Nepenthes can be real tricksters. Some give off the same smell as flowers, luring would-be pollinators to their deaths. Others mimic decomposing material or the breath of animals by enriching the air within and around their pitchers with carbon dioxide, trapping unsuspecting scavengers and bloodsuckers.