



Flesh-eating plants? Carnivory (from Latin *carnis*, flesh, and *vorare*, to devour) sounds like a rare plant feature. But it occurs in at least 9 families, 19 genera, and 600 species.

North America is home to 3 genera of carnivorous plants found no where else.



Venus flytrap

Pitcher plant

Cobra lily

Scientific name: *Dionaea muscipula*

Sarracenia (~8 species)

Darlingtonia californica

Range: e USA (NC, SC)*

e USA, Canada

nw USA (CA, OR)

Habitat: coastal plains, pocosin, pine savannas

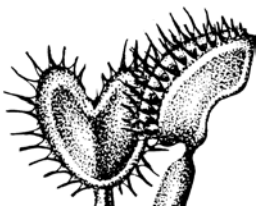
bogs, swamps, open pine forests, wetlands

bogs, border of springs, wet areas with cool running water

Flytraps (family Droseraceae) and pitcher plants and cobra lilies (family Sarraceniaceae) are endemic. Other carnivorous plants in North America include sundews (*Drosera*, family Droseraceae), butterworts and bladderworts (*Pinguicula* and *Utricularia*, family Lentibulariaceae), and *Catopsis berteroniana* (family Bromeliaceae). *introduced FL, DE, NJ

Why are plants carnivorous? Most plants absorb nitrogen and other nutrients from the soil through their roots. Carnivorous plants live in nutrient-poor soils. They get additional nitrogen by absorbing animal prey through their modified leaves.

How do carnivorous plants catch prey? Color, odor, nectar, glistening globules, ultraviolet guides, or translucent patterns lure animals into a trap. Once trapped, the prey (insects, slugs, spiders, tadpoles, and other animals) are digested by special glands.



snap traps

Prey touch the trigger hairs and spring the trap.

Fangs on the leaf margin form a cage preventing escape.

sticky traps

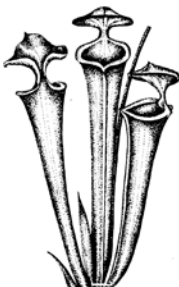
Prey land on stalked glands sticky with mucilage and are quickly stuck.

Some species have leaves that also curl around the prey.



pitfall traps

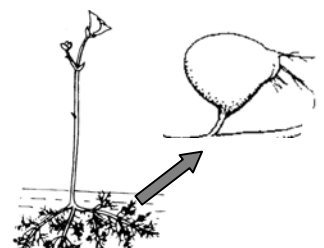
Slippery when wet! Prey stumble, tumble, and even aquaplane on slippery inner walls, falling into a deep pitcher filled with rain water, digestive enzymes, and prey debris.



suction traps

Aquatic prey touch trigger hairs and open a trap door to a tiny, water-filled sac.

As the prey is sucked in, the door shuts behind it.



Are American pitcher plants and other pitcher plants closely related?

For many years researchers thought all carnivorous plants came from the same ancestor. In fact, carnivory originated independently multiple times. Remarkably similar pitfall traps occur in four distantly related groups: American pitcher plants, tropical pitcher plants, Australian pitcher plants, and American carnivorous bromeliads.

The independent evolution pitfall traps is an example of convergent evolution.

Convergent evolution:
 similarity between unrelated organisms due to independent evolution in response to similar environment or lifestyle, rather than a common ancestor.

Convergent evolution can mislead scientists into thinking that similar organisms are closely related.

How similar are pitfall traps?

- trap is hollow tube formed by in rolled leaf margin
- long vertical, narrow-necked tube forces prey down to digestive pool
- often ultraviolet guides direct prey into tube
- often a lid prevents easy escape from tube
- smooth or waxy interior makes tube slippery, and hairs lining tube point toward digestive pool

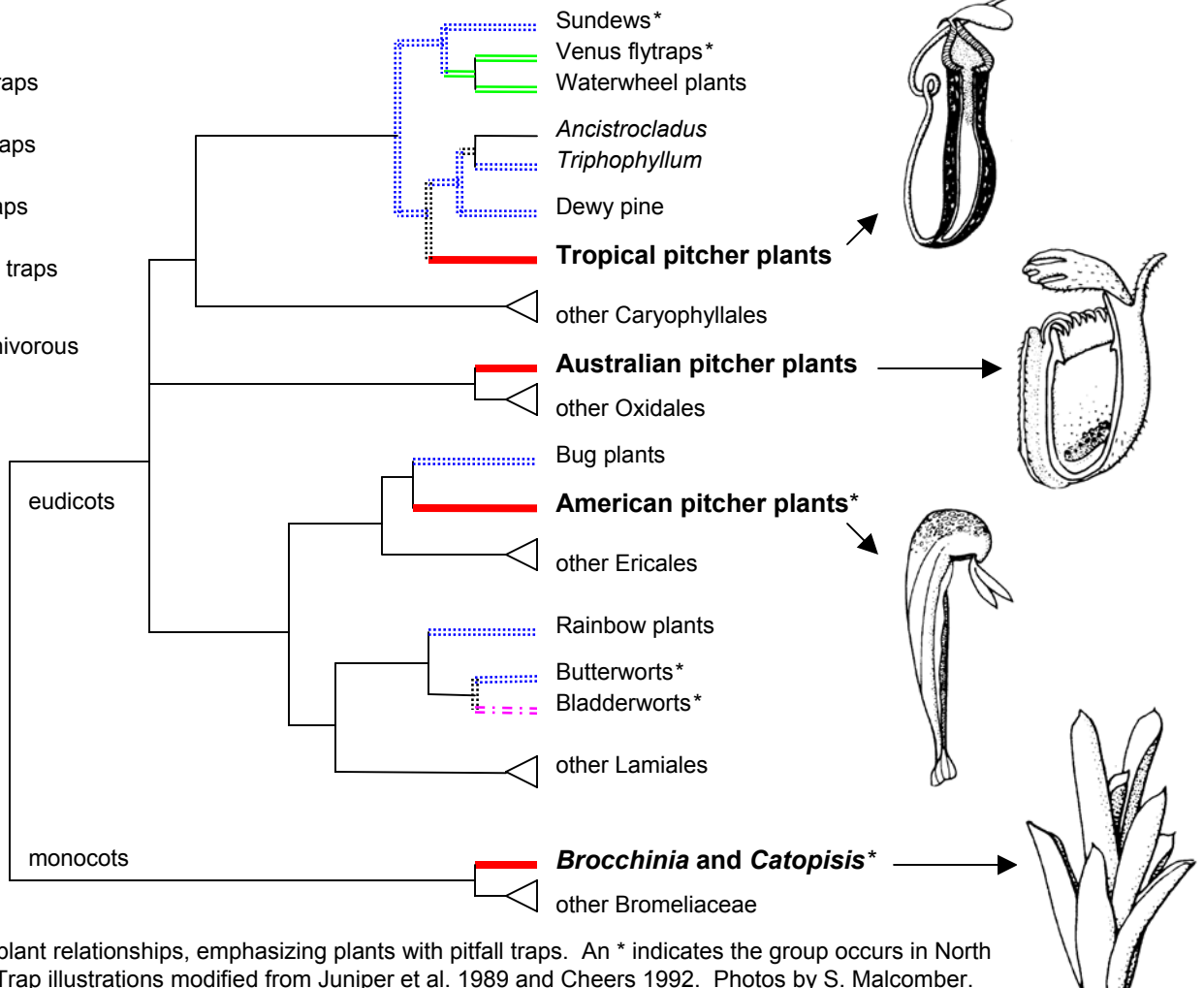
pitfall traps

sticky traps

snap traps

suction traps

not carnivorous



Simplified plant relationships, emphasizing plants with pitfall traps. An * indicates the group occurs in North America. Trap illustrations modified from Juniper et al. 1989 and Cheers 1992. Photos by S. Malcomber.