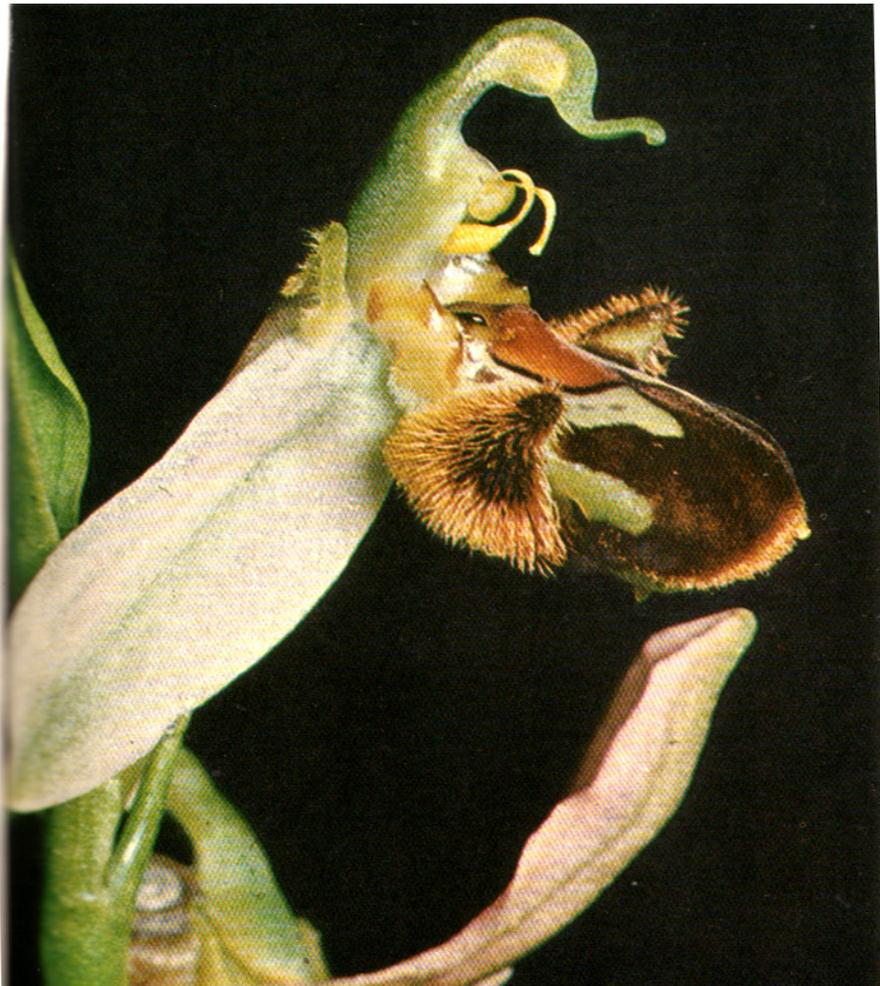


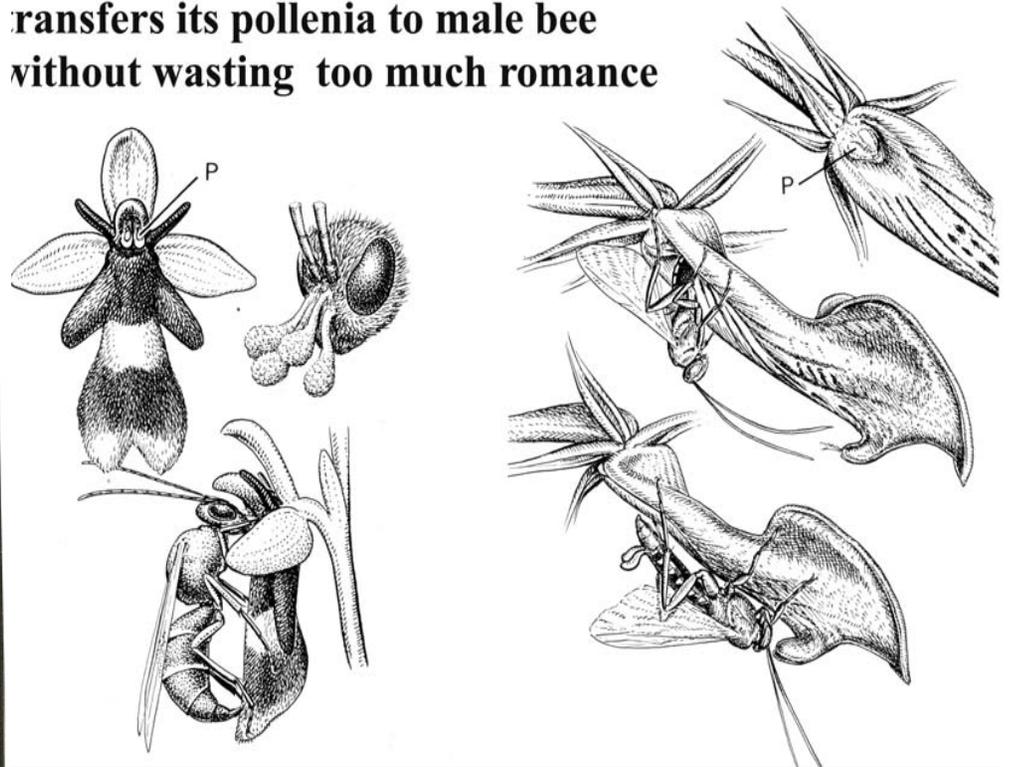
seeking sex outside your own species

sex, violence & betrayal
bee orchid *Ophrys apifera*
simulates female dummies



Several orchids specialized in producing female dummies luring young inexperienced males of flies, bees & wasps into a ludicrous game

fly orchid *Ophrys insectifera* with P- pollinia
transfers its pollinia to male bee
without wasting too much romance



Wolfgang Wickler (1974) *Mimicry in Plants and Animals*. McGraw-Hill, N.Y.

Simulation of insect egg deposition

Passion flowers developed two ways to counteract predation by *Heliconius* butterflies:

1. Some passion flowers can change their leaf shape when they detect heavy herbivory. The result is confusion on the part of the herbivores about the species identity.

2. They simulate areas of egg deposition which signal to the female butterfly that her offspring would likely be exposed to cannibalism by the older conspirators. Which mom would take such risks??

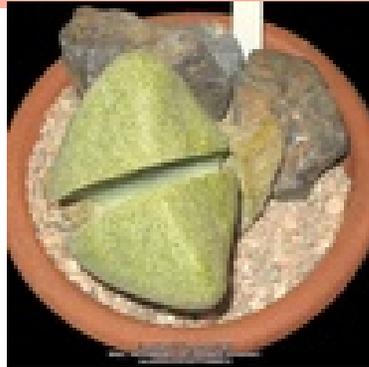


Wolfgang Wickler (1974) Mimicry in Plants and Animals. McGraw-Hill, N.Y.

When growing in the desert, look like a rock!

Lithops are called mimicry plants:

they have a unusual **deceptive camouflage**: shape, size and color causes them to resemble small split stones in the desert. Animals could otherwise eat them during drought common in Southern Africa.



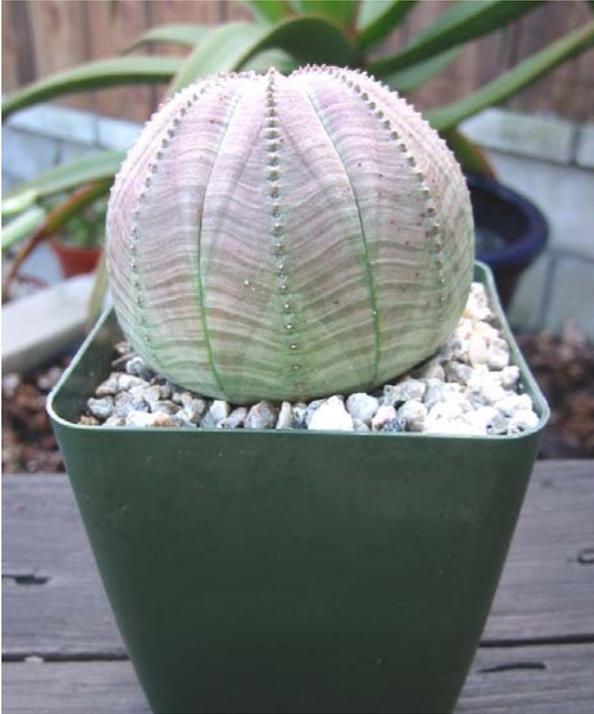
Aposematic color warnings are the opposite of camouflage. This is new in plant sciences.

They rely upon the fact that herbivores learned to associate these colors with pain.



Mimicry & Convergence

Mimicry provides great examples for similar appearances in genetically different, i.e. **phylogenetically unrelated species, i.e. for convergent evolution. *Muellerian mimicry*** explains the evolutionary advantage to look like a poisonous species or another thing dangerous to the predator.



Euphorbia obesa



Euphorbia ingens toxic

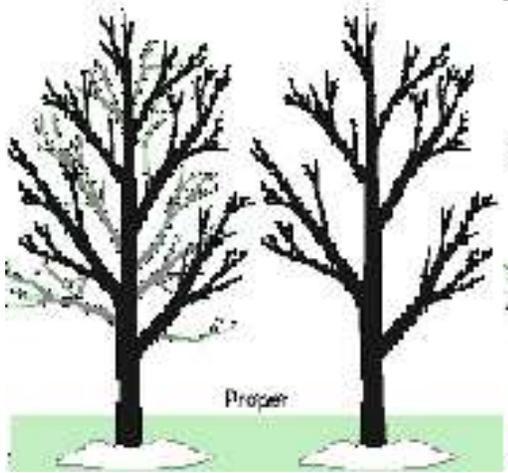


Cactus converges in shape

Wolfgang Wickler (1974) *Mimicry in Plants and Animals*. McGraw-Hill, N.Y.

Pruning

Pruning is the selective removal of plant parts, typically shoots and branches, to improve health, control growth or enhance fruiting, flowering or appearance.

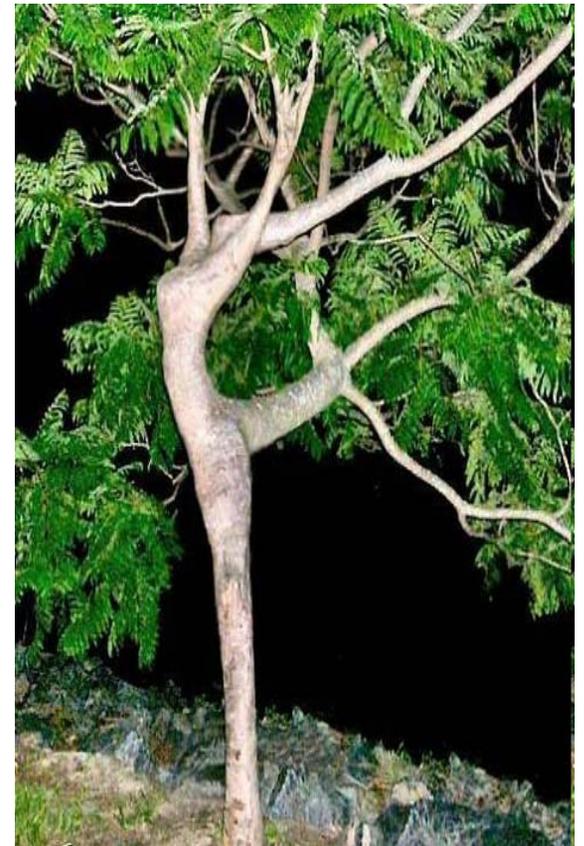
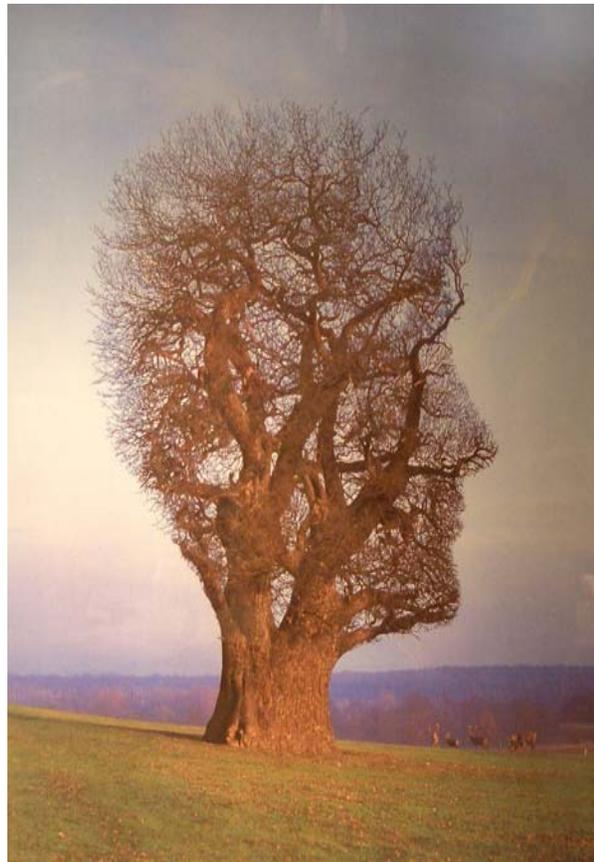


Plant Mimicry under human influence

Shape your house plants into genuine partners of life that you can enjoy in the privacy of your home and yard!

Unlike your current partners these plants do not

- ask you what you can do for them
-
- cook you meals
- tell you to



Camouflage and Mimicry

Ophrys orchid

insect



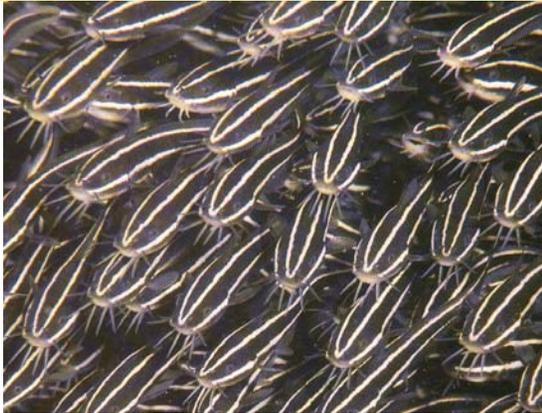
Camouflage in jungle Plants

Found in the rain forests of Ecuador these sick-looking plants appear to have already been attacked. As a rule of (green) thumb, plants that compromise their ability to transform sunlight into energy via photosynthesis die out. However, in this case the survivors seem to be those that sacrifice a bit of light-harvesting capacity for a camouflaged appearance.

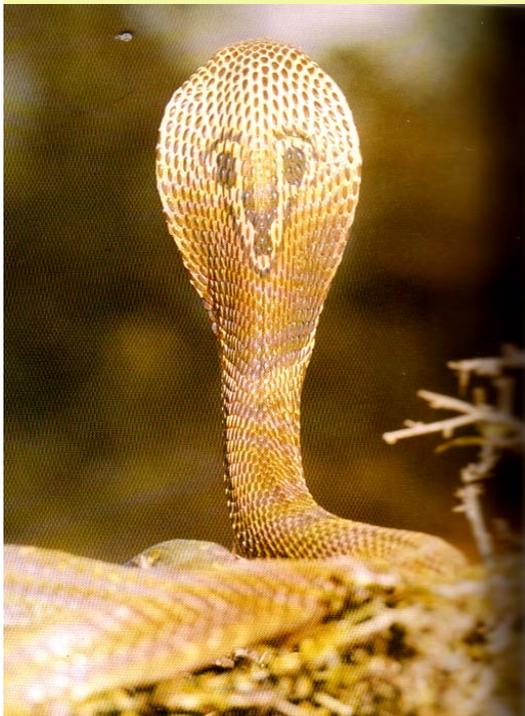


Typically, the top predator of this particular plant lays its eggs on the leaves, which in turn hatch into larvae that leave a trail of white behind as they feast on the leaves. By displaying a white pattern from the beginning, however, these plants look already-inhabited and thus further egg-laying moths are deterred from laying their own offspring.

Camouflage is a deceptive method of avoidance of observation that allows an visible organism to remain indiscernible from the surroundings.



Catfish & zebras are using lines or stripes to hide their individuality & body outlines. The SAmerican eyespot frog fakes wrong directionality plus wrong identity



Mimicry is faking similarity to another species that is a threat to the predator. This similarity can be in appearance, behaviour, sound, scent and even location.

The Indian cobra protects its back by face markings of a monkey or human.

Emperor moths show an attacking bird a pair of staring eyes of a dangerously large lurking, bird-eating vertebrate



Plant Quiz

1. Which plant is the smallest flowering plant?

1. *Wolffia arrhiza* – the small relative of duckweed Lemnna being only 0.5 mm across.



2. Which plant has the largest single flower?

2. *Rafflesia* , a stinky parasitic plant from the Mediterranean region.



3. Which plant has the largest leaves? ...

3. The *Raffia* palm This imposing African palm has the largest leaves of any tree. **IT has leaves that measure up to 20 m in length.** are the source of raffia, a natural fiber



4. Which plant has no leaves?
.....
.....

4. *First*, there are lower plants like *mosses*, which do not have real leaves. *Second*, there are *desert plants and deciduous trees* that drop their leaves part of the year. *Third*, there are parasitic plants like *coralroots and pinedrops* that are pale and have no leaves, just scales. *Fourth*, there are *cacti* that have modified leaves appearing as spines.

Plant Quiz

5. Which plants have no roots?
.....

Lower plants (bryophytes) have no real roots. There are parasitic plants like cuscuta (dodder) or mistletoe that absorb nutrients from their hosts. Third, there are duckweeds like *Wolffia arrhiza*.

5. Which plant makes only tow leaves although living more than 1000 years?

Welwitschia mirabilis. This South African desert plant produces only 2 leaves, which it extends during its whole world.

6. Which plant produces the largest seeds?

Coco de Mer, Seychelles nuts

7. Which plant family has the smallest seeds?

The orchids.

8. Which plant has the longest-living seeds?

Arctic Lupine were found frozen in the soil of the Canadian Yukon were estimated to be 10-15,000 years old. Nevertheless, they did germinate into new plants.

Plant Quiz

9. Which plant has the edible fruit with the most calories?

Avocado has 750 cal per pound. On the other hand cucumber has only 70 cal /pound.

10. Which plant produces the largest edible fruits?

Of course, the **pumpkin** reaching up to 180 pounds followed by melons with 45 pounds.

11. Which creature is largest living being on earth?

Sequoia gigantea specimen “General Sherman” is 83 m tall with a trunk of 24.22 meters circumference.

12. Which creature is longest living being on earth?

Lichens in Antarctica were shown to be older than 10,000 years growing 3.4 mm/century. A clone of quaking aspens in Utah is said to be 80 000 a old.

13. Which creature is longest living plant on earth?

Pinus longaeva – the Bristlecone pine form the SW of the USA. A clone of quaking aspens in Utah is said to be 80 000 a old

Plant Quiz

14. Which plant was the first one in space?

It was *Arabidopsis* aboard the Soviet spaceship Salute 7 in 1982.

15. Which plant is the oldest recent species (old but still around) flower plant?

Ginkgo biloba first appeared all over the world 180 Million years ago. 300 years ago, it was extinct except for some monasteries in China.

16. Which plant has the deepest roots and how deep do they go?

The deepest roots were found with a *Ficus* species in South Africa reaching 120 m deep. **The official record is with the 10 m tall tree *Boscia albitrunca* from Kalahari Desert with roots measured 68 m lon**

17. Which plant is the tallest monocot?

It is giant bamboo *Phyllostachys nigra* reaches up to 18 m tall.

18. Which plant is the tallest dicot?

Eucalyptus regnans at Mt. Baw Baw, Victoria, Australia, is believed to have measured 143 m (470 ft.) in 1885. Formerly, another Australian eucalyptus, at Watts River, Victoria. almost certainly had been over 150 m (492 ft.) tall."

Plant Quiz

19. Which creature is the largest by volume being on the planet?

Avocado has 750 cal per pound. On the other hand **Sequoia gigantea** specimen “General Sherman” is 83 m tall with a trunk of 24.22 meters circumference. **It has a volume of 1,487 m³ (52,500 cu ft).**

20. Which creature is the largest being by area?

A giant fungus of the species *Armillaria ostoyae* (honey mushrooms) in the Malheur National Forest in Oregon was found **to span 8.9 km² (2,200 acres)**, which would make it the largest organism by area.

21. Which creatures are the longest beings in the ocean?

These are the **giant kelps *Macrocystis pyrifera***, which may reach a length of over 100 ft (30 m). This majestic giant of the kelp forest grows faster than tropical bamboo—about three to five inches each day.

22. Which stinky plant has the largest inflorescence of all flowers on earth?

Amorphophallus titanum – the devils stinking horn is in the skunkcabbage family Araceae from Indonesia

Plant Quiz

23. Which plant shoots its fruit over distance of 3 m using the same principle as a rocket motor?

**The squirting cucumber
*Ecballium elaterium***



24. Which plant burps out a foul-smelling spray when you tug on one of its leaves?

**The Bursera or
elephant tree from
California**



25. Which plant resembles most the burning bush of Bible and Koran stories?

**The burning bush
Dictamnus albus is a
Mediterranean member
of the Rutaceae**

26. There are two huge differences in and inthat exists between perennial trees and all other life forms on the planet.

Size and Age (= longevity of individual life)

27. What is a compass plant?

Prickly lettuce *Lactuca seriola* is a compass plant as well as *Silphium laciniatum* – the Compass Flower. They align their leaves in the N – S direction