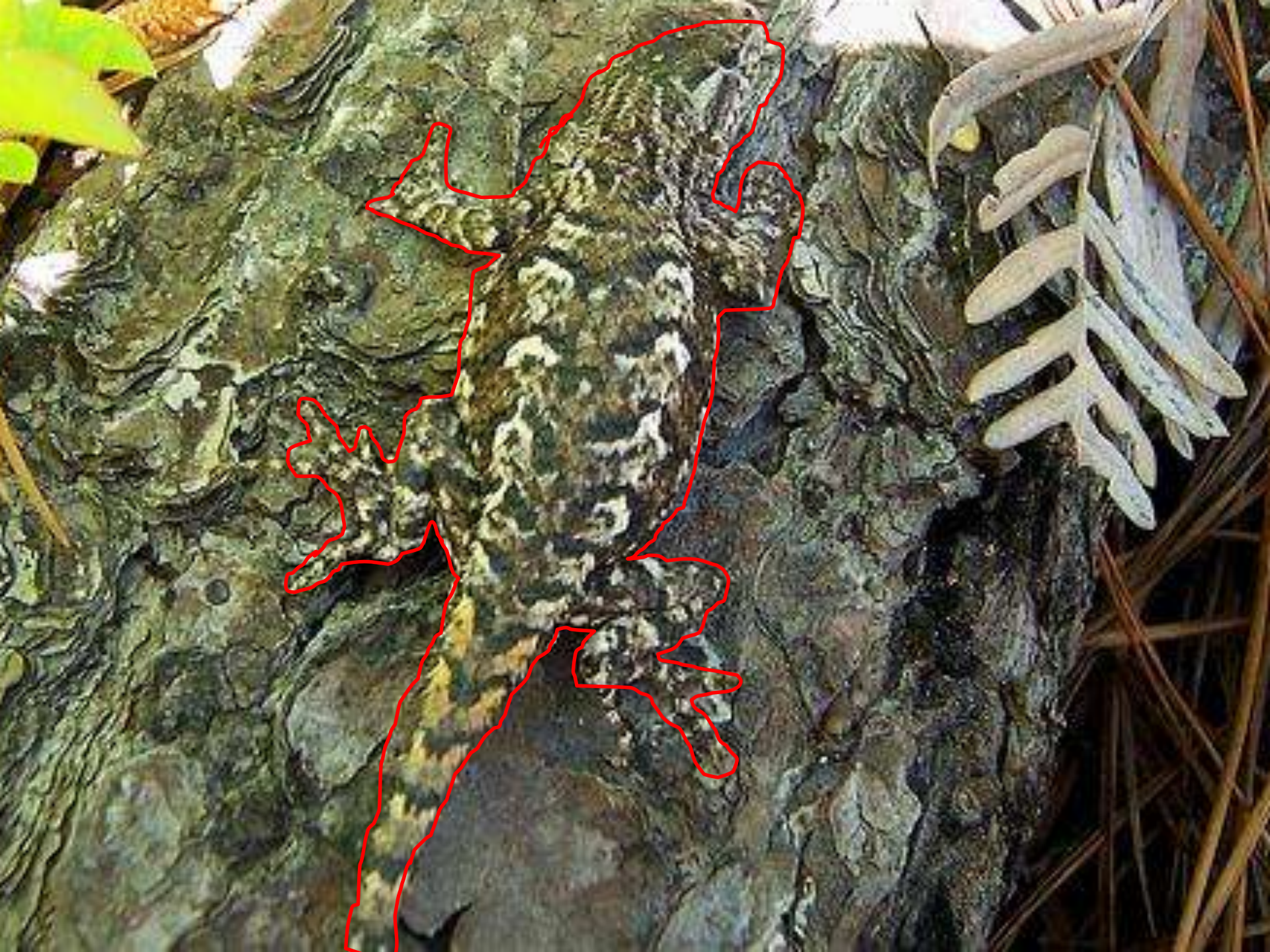

Camouflage


arcroft Media


arcroft Media




Piet Grobler 2007


Pat Snider 2007

Camouflage

- An animals ability to hide itself from predators or prey
- Increases chances of survival and reproduction

Types of Camouflage

- Crypsis: the use of colours and patterns to prevent detection

Background matching

Disruptive colouration

Types of Camouflage

- **Motion Dazzle**: bold patterns cause a misrepresentation of the animals true speed and direction

- **Countershading**: Two tones of colour on different areas of the body to account for directional sunlight

Camouflage is Different Based On:

- Environment
- Animals physiology and behaviour
- Type of predator or prey they are trying to evade

Changing Colours

- Sometimes based on seasons

- Sometimes based on surroundings or mood

Changing Colours

- Changed by:
  - Change in diet
  - Shedding one layer
  - Releasing hormones based on environment
  - Chromatophores

How Colour Change Occurs

- ***Chromatophores***: Cells which contain or produce pigments or reflect light to produce colour
- ***Biochromes***: contain and produce pigment
- ***Schemochromes***: change the way light is reflected

Second:frame 0:00

0:08 (270 msec)

2:02 (2,070 msec)

Mimicry

What Is Mimicry

- The superficial resemblance of two or more organisms that are not closely related

- The resemblance which certain animals and plants exhibit to other animals and plants or to the natural objects among which they live, a characteristic which serves as their chief means of protection against enemies

Basic Types of Mimicry

- Batesion Mimicry – *eg: syrphid fly vs. honey bee*
- Muellerian Mimicry – *eg: monarch vs. viceroy butterfly*
- Self Mimicry – *eg: countless moth*

Batesion Mimicry

- Named after British scientist Henry Walter Bates
- A form of protective mimicry in which an unprotected species, especially of an insect, closely resembles an unpalatable or harmful species and therefore is similarly avoided by predators.
- The second species has no defense other than resembling the unpalatable species and is afforded protection from certain predators by its resemblance to the unpalatable species, which the predator associates with a certain appearance and a bad experience

Muellerian Mimicry

- Named after German zoologist Fritz Mueller
- A form of protective mimicry in which two or more poisonous or unpalatable species closely resemble each other and are therefore avoided equally by all their natural predators
- All mimics share the benefits of the coloration since the predator will recognize the coloration of an unpalatable group after a few bad experiences

Self Mimicry

- A misleading term for animals that have one body part that mimics another to increase survival during an attack or helps predators appear innocuous
- To trick prey into believing the attack is originating from where it is not
- Less often predators utilize self-mimicry to aid in catching prey by appearing less threatening or fooling the prey as to the origin of the attack

Evolution of Mimicry

Evolution of Mimicry and Camouflage

- Natural selection normally works by allowing animals with beneficial mutations to survive

- Mimicry evolved the same way – animals that are better at disguising themselves survive to mate more often, spreading their better genes

An Arms Race

- Mimics and the species they are trying to fool are in an ongoing arms race
- Mimics are under selection to avoid being spotted by the animals they are trying to fool, but those animals are under selection to be able to spot the mimics
- This selection is constantly ongoing

- The eastern tiger swallowtail caterpillar camouflages itself as bird droppings
- Originally, the caterpillars looked nothing like bird excrement, and the birds would ignore bird excrement
- One mutation to look 1% like bird feces allowed that caterpillar to be selected for

- As this 1% mutation spread and was selected for, the predators would also be undergoing natural selection

- Then, a new caterpillar mutation that looks 2% like poop will be selected for and spread.

- This trend continues, with the caterpillars evolving to become better mimics while the predators evolve to spot them better

- Eventually the entire caterpillar population and bird population will have evolved to be better mimics/hunters