Community Ecology **Community - A group of** populations living together and evolving in response to one another.

















Clownfish living among the tentacles of sea anemones

cattle egrets - obtain insects stirred up by cattle





Figure 52=7 Commencedium. Epiphytes, small plants that grow attached to the body of a true, are an example of commencedium.

### <u>Mutualism</u>

both organisms benefit by living together

#### Examples:

- Lichens fungus and algal partnership
- Flowers and pollinators
- microorganisms in gut of termites or ruminant mammals
- acacia trees and ants



## Parasitism

two organisms living together, one benefits (from obtaining resources) while the other is harmed

- Endoparasites
  - tapeworms, round worms, Malaria
- Ectoparasites
  - fleas, ticks, aphids, mistletoe
- Brood parasites
  - lay eggs in nest of other species



## Evolution Fosters Complex Predator:Prey Interactions

- Plant defenses against herbivory
  - mechanical defenses...
    - thorns, spines, prickles, trichomes
  - Chemical defenses...
    - produce chemicals that are noxious, poisonous, or distasteful
    - But... some herbivores adapt!



#### • Animal defenses against predation

- physical defenses...
  - spines/quills... fish, porcupine
  - Deceptive coloration... look big or bad
  - Cryptic coloration (camouflage)
- chemical defenses...
  - produce chemicals that are noxious, poisonous, or distasteful
  - many have warning coloration



FIGURE 48.6 **Deceptive coloration.** The hindwing markings of the io moth (*Automerisio*) resemble the eyes of a much larger animal. Potential predators may be momentarily startled when the moth moves its forewings, enabling the moth to escape.





Figure 52-4 Cryptic coloration, (s) Geometrid larvae are caterpillan that resemble twigs. Can you find the caterpillar? (b) The bay pipefielt is thin, narrow, and green like the eel grass or algae in which it hides. Note its halts of holding its body in a position that resembles waving eel grass or algae. (e, Jones L. Geowr, 6, Dog Websler)

### Warning Coloration

FIGURE 48.7

Aposematic (warning) coloration. Many toxic or unpalatable animals are conspicuously colored with black and yellow or red stripes. The fire salamander shown here, for example, can squirt a nerve poison (visible in the photograph as two streams of dots) from glands on its back. Warning coloration probably trains predators quickly to avoid such brightly colored animals.

gure 52–3 Chemical animal defenses. The poison arrow frog soletotics instance) advertoes its poisonous nature with its compleis coloring, warning away would-be predators. *(Michael Fogén:Ani-Animal)*.

# Mimicry- taking advantage of a bad reputation

- Batesian Mimicry
  - a palatable species mimics an unpalatable or harmful model
  - Mimic must be less abundant and both species' ranges must overlap



# Mimicry- taking advantage of a bad reputation

- Mullerian Mimicry
  - two or more unpalatable species resemble each other







## Community Stability and Diversity

- In general, more diverse communities are more stable and less susceptible to disruptions.
- Measures of community complexity
  - species richness- number of species in community
  - species diversity- weighted measure of richness based on relative abundance





