Integrative Biology 335

Dispersal Mechanisms

There are two critical stages in the life cycle of a flowering plant:

1. The transfer of pollen from anther to stigma. As we will saw in the lecture on "Breeding Systems", most flowering plants have different types of mechanisms to promote the transfer of pollen from an anther in one flower to a stigma in a different flower, and hopefully this flower will be on a different plant.
2. The dispersal of seeds away from the parent plant.

Plants often solicit the aid of animals, as well as abiotic forces such as wind, to accomplish both of these. With regard to <u>dispersal</u>:

- insects — insects much less important for dispersal than pollination, but ants often involved in dispersal
- birds, mammals, reptiles, and even fish — much more important for dispersal than pollination
- wind — important in both pollination and dispersal
- water — minor importance in pollination, somewhat greater in dispersal
- self dispersal — just like some plants carry out self pollination, some plants have mechanisms for self dispersal.

Why is dispersal important?

- Avoid competition with parent and siblings
- Colonize new habitats
- Avoid pathogens and predators
- Minimize inbreeding

Units of Dispersal — Different plant parts become modified for dispersal.

- Seeds are the units of dispersal, and the seeds are released from the fruits ready for dispersal.
- Fruits, or parts of fruit, for dispersal.
- Other structures sometimes modified for dispersal — ovary wall, style, sepals, hypanthium, receptacle, bracts, even whole plant.
- The term DIASPORE is used for the unit of dispersal, no matter what it is morphologically,

Methods of dispersal are often tied to certain habitats

- Wind — prairie/grasslands, mountains, forest trees, weedy areas
- External attachment to animals — forest plants relatively low to ground
- Ingestion by animals — forest plants
- Water — plants that grow in wetlands and along streams
- Ballistic — various; some parasitic plants, some forest plants, some weedy plants

Wind Dispersal

Dust-like seeds

Tiny seeds

Samaras

Plumed diaspores

Woolly diaspores

Balloons

Roller plants

Water Dispersal

Splash cups

Sea currents

Streams

Animal Dispersal—Passive

Simple adhesion

Awns, hooks, & barbs

Animal Dispersal—Active

Carrying & caching

Ants (elaiosomes)

Ingestion

Mechanical Dispersal

Ballistic fruits

Shaker fruits

Hygroscopic