Mechanisms of Seed Dispersal:

Animals, Wind, Water, & Other

Methods of Seed Dispersal

Wind Dispersed

- Melanorrhea
- Dandelion

Animal Dispersed

- Cranesbill
- Banana

Water Dispersed

- Coconut
- Sedge
Mature Seed:

- Consists of an embryo that is frequently surrounded by a food reserve and a protective coating.
- Is capable of germinating under the proper conditions and forming a mature plant.

Seed Dispersal:

- Adaptive mechanism of plants that ensures seeds will be:
  - separated from the parent plants.
  - distributed over as large an area as possible to ensure the germination and survival of some of the seeds to adult plants.

Dispersal by Animals:

Most flowering plants use animals to carry seeds.
Dispersal by Animals cont’d

Some flowering plants produce edible fruits.

These juicy, tasty, sweet, colorful fruits often have seeds that are animal dispersed.
Dispersal by Animals cont’d

When the seeds of the plant become mature, the surrounding fruit becomes softer and its sugar content increases.

Some fruits become fragrant and brightly colored to advertise their ripeness to animals.

Ripened and unripened banana fruits on banana tree

Interactions with animals have helped flowering plants become the most successful plants on earth.

Brown capuchin monkey (Cebus apella) snarling while eating fruit.

Animals eat fruits and defecate:

When the animal ingests the fruit the animal digests the fleshy part.

The seed coat usually prevents the digestion of the seeds.

Many such fruits contain laxatives to help the process along.

The tough seeds usually pass unharmed through the digestive tract.
The animal deposits the seeds, along with a fertilizer supply, miles from the parent plant where the fruit was eaten.
Note: One of the most common colors of fruits is red, a color insects cannot see very well; therefore, most of the fruit is saved for animals large enough to disperse the seeds.


Some flowering plants have fruits modified as burrs that cling to animal fur or the clothes of humans.

Cocklebur seeds on fur, seed dispersal

Animals bury seeds

Small animals collect seeds and bury them as food stores for a later date when food is scarcer. Occasionally, these animals do not return to collect these seeds, and they leave them planted in the ground.
Animals bury seeds cont’d

Squirrels bury oak acorns and sometimes forget where they buried them, thus planting a tree far away from the parent plant.

natzoo.si.edu/Animals/.../
UrbanNatureWatch/Watches
Animals bury seeds cont’d

Blue Jays also bury acorns. They usually remember where they bury them, but at times they bury more than they need. This leaves some acorns in the ground, which may eventually sprout.
Wind Dispersal

Small, hard, dry fruits are often dispersed by wind. Some plants have seeds within fruits acting as kites or propellers that aid in wind dispersal.

Seed dispersal from the Common Milkweed (Asclepias syriaca), North America.

Leroy Simon / Visuals Unlimited
Wind Dispersal cont’d:

- Most of these plants produce a large number of seeds, but most of the seeds will not produce mature plants.
- Their large number and ability to disperse to new habitats ensure that at least some will grow and eventually produce seeds themselves.

www.painetworks.com/pagesrf/ii/ii0822.html
Wind Dispersal cont’d:

Some plants have seeds within fruits acting as kites or propellers that aid in wind dispersal.

Maple winged fruits

www.oplin.lib.oh.us/tree/.../maple_hedge.html
Wind Dispersal cont’d

The entire tumbleweed plant dries up and is blown across fields and roads, dispersing seeds as it tumbles.

http://waynesword.palomar.edu/images/tweed3b.jpg
Pine cones use wind to disperse their seeds:

After one to three years of maturing, the pine cone opens up and the winged seeds travel on the wind.

http://www.bio.brandeis.edu/fieldbio/pkenlan/HTML/Pinaceae/pinus_rigida.html
Where natural fires are common, many seeds require intense heat to break dormancy. Seedlings are therefore most abundant after fire has cleared away competing vegetation.

Ex: Pitch pine cone: during a fire the pitch pine cones will open in extreme heat.

http://www.campton.sau48.k12.nh.us/neflora/images/neflora/3-29_Pitch_Pine_Cone_small.JPG
The process of seed production for pine trees to seeds.

Water Dispersal

Some small, hard, dry fruits are also dispersed by water. These plants have seeds that float and travel on the water until washed up on shore.

Fruits such as the large seeded pod of the 'Black bean' Castano-spermum australe (below) float well in water.

[Image of a fruit pod with water dispersion]

http://rainforest-australia.com/Fruits_and_Seed_Dispersal.html
Water Dispersal cont’d

• Some plants produce a moderate number of very large seeds with a high amount of nutrients, which ensures the survival of most of the offspring.

Coconut Palm

http://www.ericandleandra.com/photos/cancun/images/1_coconut_tree.jpg
Box fruits, *Barringtonia asiatica*, are widespread drift fruits in the tropical Pacific, remaining buoyant for more than two years. They are common in the turquoise-blue waters of French Polynesia.
Popping Seeds

Some seeds have evolved a popping mechanism for short distance dispersal.

As the seed matures, the pod or husk dries out and may start to shrink around the seeds.

After it shrinks so far, it may “pop” and scatter the seeds around.

**Touch-me-nots** are aptly named. The seed capsules develop from mid summer through fall. If touched, picked or otherwise disturbed, they rupture like a broken spring; projecting their seeds several feet.
The End

Cockleburs stuck to shoe and sock of hiker.

http://waynesword.palomar.edu/images/cockle6b.gif
# Seed Dispersal Key Points

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<th>Animal</th>
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**Other Methods:**

**Summary (30-40 word):**