



CONSERVATION

EDUCATION PROGRAM

Learning on the Land

October 2011

www.sjma.org

San Juan Mountains Association - For Lands' Sake!

Welcome to our e-Newsletter!

We hope you enjoy SJMA's newsletter created for everyone - whether you teach in the classroom or outdoors, or simply enjoy being outdoors and learning new things, this newsletter is for you! In each monthly issue, you will receive helpful information on natural and cultural resources found in the Four Corners area, as well as field and classroom activities to do with your students.

The San Juan Mountains Association is the educational non-profit partner of the San Juan National Forest, BLM Tres Rios Resource Area, and BLM Canyons of the Ancients National Monument. If you received this newsletter and do not wish to continue receiving it, send an "unsubscribe teacher newsletter" email to gabi@sjma.org. If a friend or colleague sees this newsletter and is interested in receiving it, please have them send an email to gabi@sjma.org.

Start Spreading the Seeds

It is fall, the days are getting cooler and shorter, and the leaves are changing color. Birds are migrating, and... seeds are dispersing. Ok, so most people probably don't think about seed dispersal first when they are thinking about fall, but for many plants, late summer or early fall is the time of year to spread themselves out before they die in the winter.

The Life of a Seed

Technically, a seed is a 'ripened plant ovule containing an embryo'. It is where new plants come from, most of the time. Plants have other ways of reproducing themselves, including sending out new shoots from stems, leaves or roots, but seeds are the most common way plants reproduce, and seeds are created via pollination. Pollination is the process by which pollen grains from the male part of a plant, called an anther, fertilizes the female part, called a stigma. This creates a seed, which has the potential to create a new plant.

So, why do seeds need to disperse anyway? The answer is simple - they need to get away from their parents! In order to grow, seeds need a perfect combination of substrate, light, water, and even temperature. If they all fell directly below their parent plant, they would constantly be competing with them for these resources. Seeds need to move away to have a better chance at germinating, or growing up. The main ways they do this is via wind, water, ballistic dispersal, hitching a ride on animals, and being eaten by animals.



Wind dispersal

Dandelions are a classic wind-dispersed type of seed. Dandelion seeds are called achenes, and they exhibit the parachute method of wind seed dispersal. The seed is lightweight, and flies through the air via a hair-like or feather-like structure called a pappus that is shaped like an umbrella. Plants that produce wind-blown seeds usually produce lots of them to help ensure that at least some of the seeds will land someplace where they can germinate.



Other wind-dispersed seeds include those from milkweed, maple trees, cottonwood trees, and even tumbleweeds. The seeds of a maple tree are called samaras, and have a wing-like attachment which moves through the air like a helicopter when released from the tree.

Tumbleweed is more of a non-traditional type of wind-dispersed plant. When the plant dies and dries up, it detaches from its roots and gets blown around the land. As it is blown around, up to 50,000 seeds are dispersed in its path. In the Southwest, the most common form of tumbleweed is the non-native, invasive Russian thistle.



Water dispersal

Plants that live near water often use that water to help with seed dispersal.

A classic example is the palm tree, whose huge seed, the coconut, falls off the tree, then rolls toward the ocean, where it will (hopefully) float to an ideal location where it can germinate. Water lilies also disperse their seeds via water. Their flowers make a fruit that first floats, and then eventually drops to the bottom of the pond to take root and grow.

Ballistic/Mechanical

Ballistic dispersal may be the most interesting ways that seeds move around. Ballistic refers to seeds that are literally 'shot' out of their seed pods. This might happen when the seed pod simply dries out, touches the ground, when something else touches the seed pod, or even when water touches it. 'Touch-me-nots', a *Geranium* species, disperse seeds this way, as do 'squirting cucumbers'. You can see a short video of a touch-me-not seed pod exploding here: <http://www.youtube.com/watch?v=zMWvlmfH4w>. Although seeds that are dispersed ballistically may not spread as far as other seeds, sometimes they have a secondary dispersal method, such as being spread by animals as well.



Animal dispersal

Walk through a field in the fall, by yourself or with your dog, and you will understand one way in which animals help disperse seeds. Check out your socks and/or your dog's fur and investigate the number of different seeds that have some sort of barb or other structure that allows them to stick to socks or fur. Now think of all the wild animals running around in the forest or field this time of year, looking for food, getting ready for the winter, and you'll see that this is a great adaptation that some plants have for dispersing.

Another way seeds are dispersed by animals is very different, although just as ingenious. Some plants produce delicious fruit that is eaten by animals, usually along with the seeds. The seeds pass through the digestive tract of the animal, coming out the other end in a completely different place from where it started. Apples, strawberries, raspberries, etc. are moved around in this way.

Finally, some seeds are dispersed by animals such as squirrels that bury them in preparation for winter, but then forget where they put them 'for safe keeping'.

Field & Classroom Activities

Seed Dispersal Investigations

Set up 3 stations around the room. Each station will have 3 different seeds, and a household item that shows a physical demonstration of how one of those seeds gets dispersed. At each station, a student or small group of students needs to decide which seed gets dispersed in the way the household item moves.

- Station 1 has a large yogurt container filled with water, and a ping pong ball (representing the seed). The seed options should include a coconut, plus two other kinds of seeds.
- Station 2 has a propeller stick toy (see picture). The seed options should include a maple seed, plus two other kinds of seeds.
- Station 3 has two sides of a piece of Velcro. The seed options should include a burr dock seed, or some other type of seed that has a barb, plus two other kinds of seeds.



Seed Studies

Collect seeds in various ways - one good way is to put socks on over shoes and walk around outside, especially in a field. Collect other seeds found, including dandelions, cottonwood seeds, sunflower seeds, etc.

- When you get back to the classroom, put together all the seeds and use magnifying lenses to check out what you collected.
- See if the seeds float in water
- See if they fly in the air. If they do fly, how far can they fly in the wind (or in front of a fan)?
- See if they stick to fur/clothing
- Categorize the seeds into wind, water, animal dispersed. Draw pictures of the seeds.

Grow a Seed

Discuss what a seed needs to be able to grow - proper amount of water, soil, sunlight. And, grow a seed! Keep a science journal showing how long it took for the seedling to sprout, drawings of your plant, etc. Attempt to grow seeds in different environments - with more or less water or sunlight. How does this affect the seed's ability to germinate and grow?

Extend the Experience

- Read The Tiny Seed by Eric Carle
- Read How a Seed Grows by Helen Jordan
- Web studies -
 - o This website has some great activities regarding seed dispersal:
<http://www.mbgnet.net/bioplants/downloads/seeds.pdf>
 - o This website has a cool video of a seed sprouting:
<http://www.mbgnet.net/bioplants/grow.html>

Announcements

Backcountry Experience presents...

Chili Chase Fun Run & Chili Cookoff benefitting San Juan Mountains Association Saturday, October 22nd

at Backcountry Experience 1205 Camino del Rio, Durango

Register: 9 - 10 am

Run starts: 10:30 am

Chili time: 11 am - 2 pm

\$10 for run, \$5 for chili

5K+ Road and Trail Run

Pre-register at Active.com

Or register the day of from 9 to 10

BACKCOUNTRY EXPERIENCE DURANGO, COLORADO

HOKA ONE ONE TIME TO FLY

BACKCOUNTRY EXPERIENCE presents . . .

CHILI CHASE

Fun Run & Chili Cookoff

benefitting San Juan Mountains Association

Saturday, Oct. 22 @
Backcountry Experience
1205 Camino del Rio, Durango
Register: 9:00-10:00 a.m.
Run starts: 10:30 a.m.
Chill time: 11:00 a.m. - 2:00 p.m.
\$10 for run; \$5 for chili
5K+ Road/Trail Run

Pre-register at Active.com

Prizes & Shoe Demo by **HOKA**
Try before you buy!

Save the date!
BCEXP's
Huge Fall Sale
is Oct. 29th

For more info, visit Backcountry Experience's facebook page or call 970-247-5830

Announcements, continued

Schedule a FREE Field Trip for your class! Sign up now for fall field trips to San Juan Public Lands. Trips are free but space is limited. Many subjects can be covered including water ecology. For more information, contact SJMA at 970-385-1256 or gabi@sjma.org

Free Classroom Presentations

Teachers, looking for a way to supplement your science lessons with fun, hands-on activities? SJMA and San Juan Public Lands have teamed up to provide Four Corners teachers with presentations to fulfill your needs.

- Correlated with state standards
- Available for K-5th grade
- Presentations last 30-45 minutes
- Choose from these 4 themes
 - * Tree-mendous Trees
 - * Fire in the Forest
 - * Walk the Walk in the Outdoors
 - * Pumas on Parade
- * Available in November - Groovy Glacial Landforms - Grades 3 to 5

Presentations on other topics may be available upon request. Presentations are geared for one classroom at a time. Contact Gabi Morey 970-385-1256 or gabi@sjma.org

Educators—Become a member of SJMA today and receive a 20% off coupon to our bookstore!

Whether you're a 'formal' K-12 school teacher or a non-formal educator, to receive your 20% off coupon valid at any of SJMA's bookstore locations, simply print this or a future newsletter and bring it and your new membership information in to one of our bookstores (Durango, Pagosa Springs, Bayfield or Dolores).

San Juan Mountains Association has been around since 1988. For 20 years, SJMA has been establishing a legacy of caring for the land. Side by side with our members and volunteers, we are helping to ensure the survival of Southwest Colorado's natural glories for generations to come. SJMA also offers classroom visits, naturalist walks and talks, teacher for-credit workshops, and field trips to public lands. For more information, visit our website at www.sjma.org, or call 970-385-1256.

If you do not wish to continue receiving this newsletter, send an "unsubscribe teacher newsletter" email to gabi@sjma.org. If a friend or colleague sees this newsletter and is interested in receiving it, please have them send an email to gabi@sjma.org.



SAN JUAN
MOUNTAINS
ASSOCIATION

www.SJMA.org