



EXPLORE FLYING SEEDS

Grades 4-8: Day 2

MIMIC A MAPLE SEED'S FLIGHT

WELCOME

(5 min)

DRONE TIME!

(40 min)

Materials:

- Scissors
- Paperclips
- Tape
- String
- Mini-Flier



READ

(30 min)



MEDIA

(10 min)



Introduction: Welcome your students. Be friendly.

THE GREAT SEED RELAY!

Say: **Plants can't move around to spread out their seeds, instead, plants create seeds that are designed in special ways to be dispersed in nature. Today, you will use your mini-flier to move seeds across your schoolyard or classroom.**

What you'll do:

1. Each group gets one handout.
2. Students cut out the seed shapes. Students attach a paperclip to their mini-flier and then attach a seed to it too.
3. Students work together to transport the seeds from one side of the field to the other. One team member should be on the other side to collect the seeds. Rotate roles so everyone gets to fly. The first team to transport all the seeds wins!

**Please charge your drone batteries for the second drone activity today.*

LEARN ABOUT SEED DISPERSAL

Say: **Animals aren't the only aviators in nature. Many plants have evolved incredible ways to launch their seeds into new environments. From gliding and spinning to floating and bursting, seed dispersal is a key strategy for survival. By "flying," seeds avoid competition, find space to grow, and reach better conditions. Today, we'll explore the science behind these natural flight mechanisms—and engineer some of our own.**

Read the informational text handout titled 'Seed Dispersal Reading'. Spend time discussing the Think, Pair, Share prompts.

Say: **Even though we will be focusing on seeds that are moved through air currents, not all seeds 'fly' or rely on wind to move them. There are many ways seeds are dispersed. Let's explore a few.**

Sir David Attenborough Gives a Lesson on Seeds | The Green Planet

<https://www.youtube.com/watch?v=eHQXBCJhuZ0>



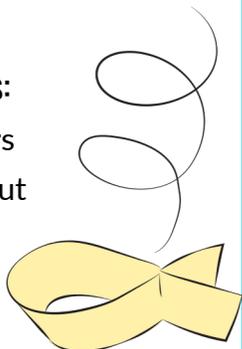
MEDIA
(Continued)



STEM TIME
(30 min)

Materials:

- Scissors
- Handout



MEDIA
(10 min)



GAME TIME
(20 min)

Materials:

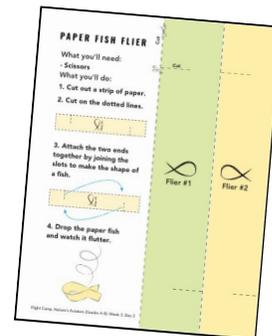
- Balls



How Maple Seeds Spin - BBC Earth Presenter Search
<https://www.youtube.com/watch?v=DdVx663WXkA>

MAKE AND TEST A MAPLE FLIER

Say: **Today we will mimic how a maple seed is dispersed in the wind by making a paper fish flier. Just try to drop it straight down and you will see that it does quite a bit of fluttering before it touches the ground.**



What you'll do:

Students use the handout to cut out their fish fliers. Students test their fliers outside by dropping them straight down. Remind students of the paper spinners, propellers, parachutes and other flight mechanisms they have tested. Ask: **How does this humble seed, engineered by trees in nature, compare?**

EXPLORE HOW DANDELION SEEDS TAKE FLIGHT

Say: **Dandelion seeds are also an engineering marvel. Most of us have seen them take flight, but how exactly do the aerodynamics work? Ask: Can you guess, with a show of hands, if a dandelion seed works via a parachute, balloon-like structure, or propeller?** Students guess. Call on volunteers to share their reasoning. **Explain: Each seed has a fluffy parachute made of fine hairs. When the wind blows, the seed lifts into the air and creates a tiny spinning vortex—a donut-shaped ring of air—that hovers just above it. This vortex helps the seed stay stable and aloft longer, even without wings!**

How a Vortex Helps Dandelions Fly | ScienceTake
<https://www.youtube.com/watch?v=clKEdi-nXVw>

PLAY "SEED SCATTER"

Objective: Students explore how seeds are moved by the wind when they need space to grow.

Say: **I am a tree and the ball is my seed. This seed can blow in the wind. Spread out around me so I can toss the ball to someone. You will be the wind to help spread this seed far away. If you get the ball, toss it to another student. See how far the seed can travel away from me, the tree. When the ball touches the ground, the game is over and you can bring the seed ball back to me.**

1. Toss the ball to a student.
2. The student with the ball tosses it to another student.
3. See how far your students can help the ball travel away from the starting point without letting the ball touch the ground.
4. Make the game harder by having students throw to each other from farther away. See how far they can scatter the seed.

DRONE TIME!

(60 min)

Materials:

- Seed balls
(from day 1)
- String
- Paper
- Mini-fliers



PLANT YOUR SEED BALL WITH YOUR MINI-FLIER

Objective: Students will explore seed dispersal and engineering design by using their mini-flier drones to deliver their dried clay seed balls. By experimenting with knots, carriers, and attachment methods, students will learn how engineers solve real-world challenges as they design their carry device used for seed dispersion.

Say: **Today we get to be seed-dispersing engineers! Earlier this week, you created clay seed balls. Now that they're dry and ready, your mission is to design a way for your drone to carry and plant them. Think creatively, test your ideas, and get ready for your seed-planting flight mission!**

Instructions:

1. Students get their clay seed ball from Day 1. It will now be dry.
2. Students work with various knots or techniques to engineer a way for their drone to carry the seed balls far away and plant them. Some ideas could include looping the string around the ball or suspending a folded paper carry-basket. Make sure you test to ensure a larger seed ball is not too heavy.
3. Students operate their seed planting mission. They fly out the drone with the seed ball attached to drop/plant it. They fly the drone back for the next student's turn. You can designate a planting zone or see how far they can fly the drone while maintaining line of sight.



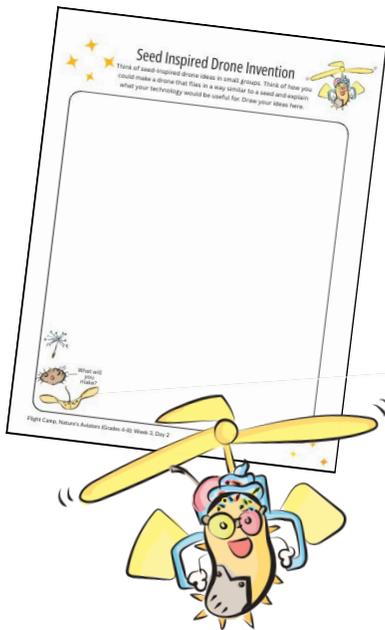
Design a way for your mini-flier to carry seed balls. Students can attach their own carrying devices to try out their own ideas. Just use a paperclip as a hook to connect to different carriers.

DISCUSSION

(20 - 30 min)

Materials:

- Seed inspired Drone Invention



EXPLORE HOW SEEDS INSPIRE ROBOTICS

Students watch this media about how maple seeds have inspired innovations in robotics. Say: **We have been experimenting with our quadcopter drone (quad means four). But nature's aviators, such as the maple and dandelion seed, have inspired a monocopter (mono means one) design. Let's watch the design and its real world applications.**

Smart innovation and design - wing monocopter

<https://www.youtube.com/watch?v=hw49NqV9KWc>

Say: **Imagine you're part of a team designing a tiny, seed-inspired drone that will fly into remote forest areas to detect signs of fire. What features would your seed drone need to safely navigate forests? How could it gather data (heat, smoke, humidity)? What kind of flight pattern would help it hover or drift like a seed over large areas?**

PRESENT YOUR ELEVATOR PITCH

What you'll do:

Say: **One of the videos we watched—about the maple seed drone—was actually an audition to become the next BBC Earth presenter. The speaker had just 60 seconds to grab the viewer's attention and clearly explain an exciting idea. This is called an elevator pitch—a short and compelling summary of your idea, as if you only had the time it takes to ride an elevator with someone to convince them it's worth exploring.**

Instructions:

Students discuss their seed-inspired drone ideas in small groups. Remind them to have a name, talk about the flight mechanism, and explain how it will help detect forest fires. Give students 10-15 minutes to come up with their idea. Then, invite volunteers to present their elevator pitch—a clear, engaging summary of their design and its purpose—in 60 seconds or less. Offer additional sand dollars to groups who choose to present.

Have student draw their seed inspired drone ideas before they present to the group.

Clean up/pack up/dismissal

Clean up, pack up and head home.

CLEAN UP / DISMISSAL



**SEED RELAY +
SEED DISPERSAL****METRICS****5-LS2-1.**

Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

3-LS3-2.

Use evidence to support the explanation that traits can be influenced by the environment.

3-PS2-4.

Define a simple design problem that can be solved by applying scientific ideas about magnets.*

**MAPLE FLIER +
MEDIA****3-PS2-2.**

Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

STEM GAME**3-LS4-3.**

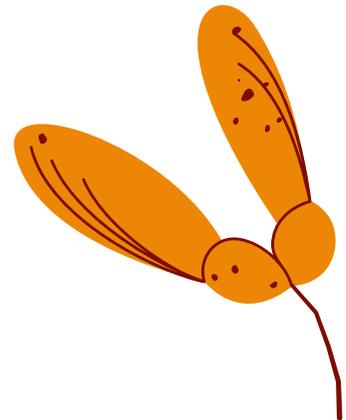
Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

PYRAMID SMASH**3-PS2-2.**

Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

**ROBOTICS
DISCUSSION****3-5-ETS1-2.**

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.



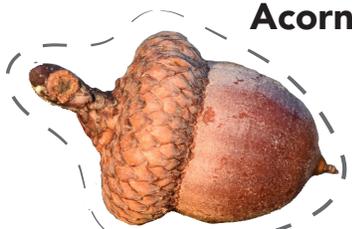
TRANSPORT SEEDS

Cut out these seeds and attach paperclips to them. Tie a string to your drone and attach a magnet. Use your drone to transport them across the field.

Cut out the seeds when you need them in the unit.



**Burdock
Bur**



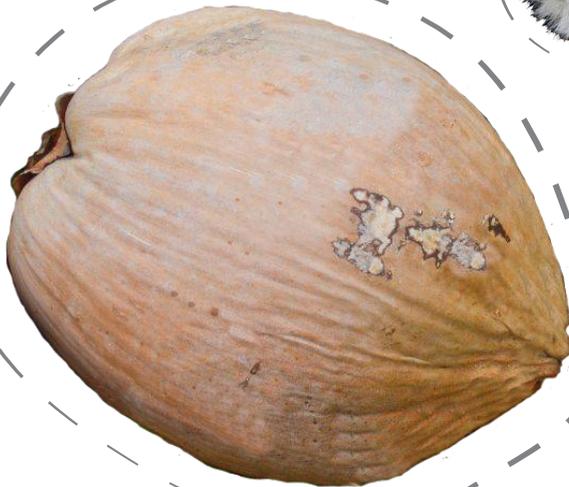
Acorn



**Dandelion
Parachute**



Blackberry



Coconut



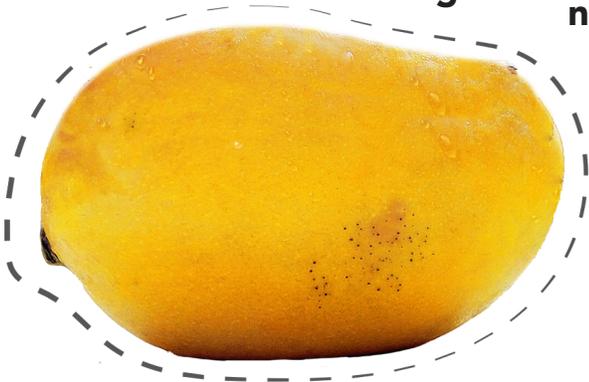
**Maple
Seed
Helicopter**



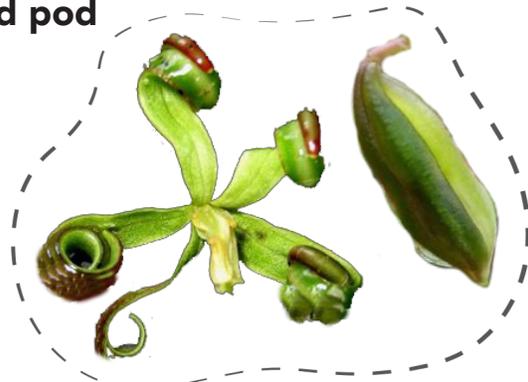
**Think,
Pair,
Share!**

**What moves
these seeds
around?**

Mango



**Touch-me-
not seed pod**



PAPER FISH FLIER

What you'll need:

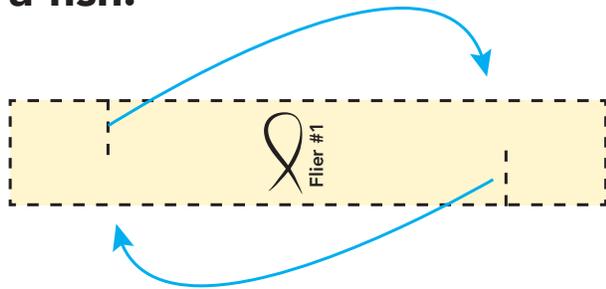
- Scissors

What you'll do:

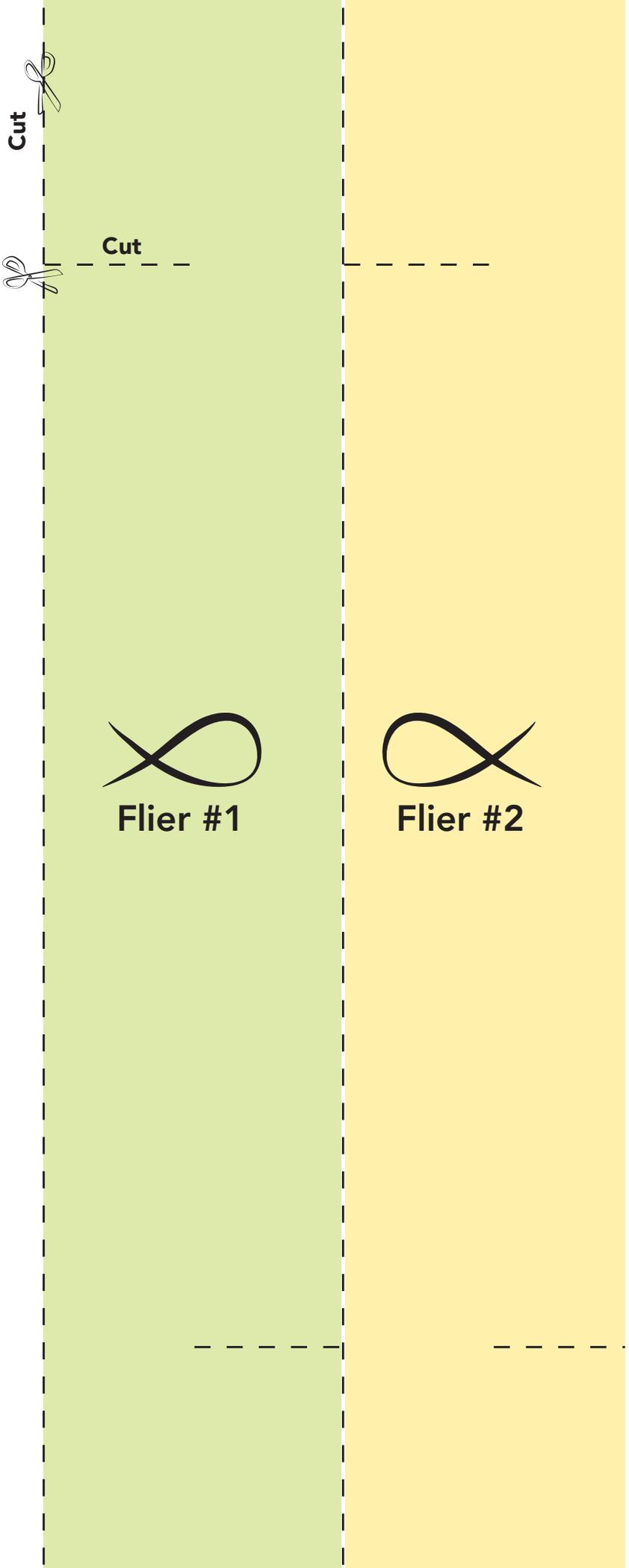
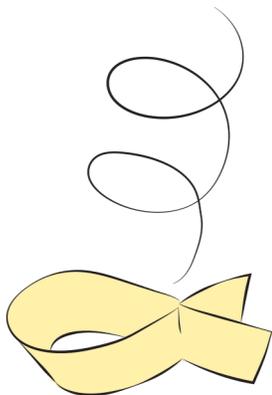
1. Cut out a strip of paper.
2. Cut on the dotted lines.



3. Attach the two ends together by joining the slots to make the shape of a fish.



4. Drop the paper fish and watch it flutter.



Seed Inspired Drone Invention

Think of seed-inspired drone ideas in small groups. Think of how you could make a drone that flies in a way similar to a seed and explain what your technology would be useful for. Draw your ideas here.



What will you make?