DISTANCE LEARNING GUIDES

Nā Mū ʻEkolu
The Three Ws

GUIDING QUESTION

What are three ways native species arrived to Hawai‘i?

WHAT WE'LL LEARN

Hawai‘i’s native plants and animals got to Hawai‘i without the help of humans, and that means they crossed thousands of miles of ocean all on their own! How did they do it?

In this activity we will explore the three ways native species got to Hawai‘i, also known as their dispersal methods. By the end of the activity you will be able to name the three different dispersal methods in English and ʻōlelo Hawai‘i. You will also become a dispersal detective and figure out which methods brought different natives to Hawai‘i. E huaka‘i kākou! Let’s explore!

TIME

45 mins

MATERIALS

- Learning journal or scrap paper
- Nā Mū ʻEkolu, 3 Ws worksheet, on page 3
- Dispersal Detective worksheet, on pages 4-5

GET STARTED

You might have heard that Hawai‘i is the most isolated island chain on Earth. The land mass closest to us is North America which is 2,500 miles away! That is a lot of ocean! Native species didn’t have planes or boats to travel this distance, so how did they get here? We will answer that in this lesson, but first let’s see what we already know. Take a moment to answer the questions below on a scrap piece of paper or your learning journal.

- **List some plants and animals that could make the journey to Hawai‘i across at least 2,500 miles of ocean.**
- **How would the species that you listed get to Hawai‘i?**

EXPLORE

WATCH →
Nā Mū ʻEkolu, 3 Ws

As you watch the video, fill in the prompts on page 3, “Nā Mū ʻEkolu” worksheet. Pause the video if you need more time to write down answers.

ACTIVITY

INVESTIGATE →

Check out the "Dispersal Detective" worksheet on pages 4-5. There are pictures of a native seed and plant that it came from. There is also a description for each seed and plant. Make your best guess on which "W" or "Mū" brought that native to Hawai ʻi. (Check your answers on the bottom of page 5.)

REFLECT

Answer these questions in your learning journal or on a piece of paper →

- **What are the three ways native plants and animals got to Hawai ʻi? List both the English and ʻŌlelo Hawai ʻi terms.**
- **What are some characteristics of a seed that uses waves to get to Hawai ʻi? Wings? Wind?**
- **We only have one land mammal native to Hawai ʻi, that is our Hawai ʻi Hoary Bat or ʻōpe ʻape ʻa. Why do you think that is?**
- **Would other mammals like cows, pigs or cats be able to get to Hawai ʻi using the 3 Ws?**

If you can, share your answers with a family member or friend.

EXPLORE MORE

INVESTIGATE →

All plants have to disperse their seeds somehow, not just our native plants. Go out into your yard and see if you can find plants with seeds. How does this plant transport its seeds? Wind? Wings? Waves? Don't worry if it's not a native, just see if you can be a dispersal detective in your own backyard. Remember to look for the key characteristics that help the seed get from place to place.

INVESTIGATE →

Find native species in your area and take a look at their seeds. See the "Natives in your Neighborhood" worksheet on pages 6-7 for a list of native plants that are easier to find. Head out in your neighborhood, your favorite beach or forest to see if you can find these natives. Check each native plant for seeds. Using the dispersal characteristics, guess which of the 3 Ws helped this plant get to Hawai'i. Mimic each dispersal method to test your guess. Do they float? Do they stick? Do they fly on the wind when you blow on them?

CHECK OUT →

PRISM lessons, Exploring Hawai ʻi's Forests

Nā Mū 'Ekolu

Define the following terms :

Native _____

Dispersal _____

Seed _____

Fill in the chart below with the different seed dispersal methods (3 Ws) and their corresponding characteristics.

Dispersal Method				
	English			
	'Ōlelo Hawai'i			
Characteristics				

Dispersal Detective

Use the photos provided along with the list of seed characteristics to guess which of the 3 Ws transported each native plant to Hawai‘i. Answers are on the bottom of page 5.

Native Plant	Plant Photo	Seed Photo	Seed Characteristics	3W?
1) `ILIE`E		 	• Sticky seed pod • Lightweight • Tiny, hard seed	
2) KŪPAOA		 	• Lightweight • Tiny • Seed has feather-like tuft on one end • Long stalks grow from center of plant to raise seeds above height of plant	
3) NAUPAKA			• Fruit is very airy, like Styrofoam • Floats • Usually found close to shoreline	

Dispersal Detective

Native Plant	Plant Photo	Seed Photo	Characteristics	3W?
4) pōhuehue			• Found at shoreline • Lightweight • Floats	
5) hāpu`u			• Very, very tiny • Lightweight • Actually not a seed, ferns reproduce using spores!	
6) `ōhelo			• Fruit is fleshy • Fruit can be made into jam • Lots of tiny seeds in one fruit	

1) Wings/ Manu, 2) Wind/ Makani 3) Waves/ Moana, 4) Waves/ Moana, 5) Wind/ Makani, 6) Wings/ Manu

Natives in Your Neighborhood

Use this worksheet to help you find natives where you live.
Use your sleuthing skills to figure out which of the three dispersal methods brought each of these plants to Hawai ʻi. Test out your theory! Do they float? Do they blow on the wind? Would they stick to you if you were a bird? Try more than one method!

Native Plant	Plant Photo	Where to find	How to Identify	Seed/ Seed Pods
ʻŌhiʻa		• From coast to mountain tops • Wet and dry climates • Sometimes used in landscaping	• Small to large tree • Grayish, often shaggy bark • Unmistakable bright blossoms in red, yellow or orange.	
Kupukupu		• Used in landscaping • Likes partial to full sun • Found in a variety of landscapes from disturbed areas like new lava flows to wet forests	• Ground cover, usually grows only 1-3 ft. high • Check out spore pattern on back of leaflets and match to the picture • Can often be mistaken for other ferns (but if you find another fern, check out its spores as a substitute)	
Hala		• Grows from shoreline to about 2,000 ft. in elevation • Likes drier climates	• Medium tree, 10 - 30 ft. tall • Known for stilt-like aerial roots and razor edged leaves • Fruits resemble a large pineapple	

Natives in Your Neighborhood

Native Plant	Plant Photo	Where to find	How to Identify	Seed/ Seed Pods
MILO		• Likes coastal locations, usually above high tide line, but can handle some brackish water inundation. • Grows up to 1000 ft. in elevation	• Medium sized tree, up to 50 ft. tall • Heart-shaped leaves • Flowers are yellow or orange with maroon centers	
PŌHINAHINA		• Found on sandy beaches and rocky shores • Found from coast to about 50 ft. above sea level • Often used in landscaping	• Sprawling shrub • Silvery leaves • Light purple flowers • Smells a little like basil or sage	
KOU		• Found Sea-level to 1000 ft. elevation • Can grow near coast, but will not handle a lot of salt spray.	• Medium sized tree, 25-35 ft. tall • Orange flowers, about 2” in size • Glossy medium green leaves with raised veins on back