

# Program Outline

Alive in Dyke Marsh

## I. Introduction: The Marsh is Alive!

The marsh is made up of both nonliving and living things. Sometimes it is hard to tell whether something is living or nonliving because there is no one definition of what makes something alive. Instead we have to look for things that most living things have in common like eating, reproducing, growing, moving, and having cells. Those last two are tricky because they can be hard to see: sometimes the movement is only on the inside of a living thing, and cells are too small to see without a microscope.

Transition: There are living things of all different sizes, shapes, colors in this marsh. We're going to use our senses to describe these things and to think about how we know they are alive.

## II. Explain Mystery Bags

* One person at a time will reach into the bag without looking
* Each person who reaches into the bag will make an observation using a describing word
* After several observations the group will think about what the item might be
* Then the teacher will reveal the item in the mystery bag

## III. Hydrilla Likes to Eat

Mystery Bag Item: Piece of hydrilla

Hydrilla is long and skinny with lots, and lots of little leaves. All that surface area helps it to float on top of the water where it can soak in the sun. The leaves are green because they have chlorophyll, so we know the plant can turn sunlight into food. How do we know it is alive? Because it has so many parts that help it eat.

## IV. Marsh Wrens Lay Eggs

Mystery Bag Item: Chicken egg

Marsh wren eggs are much smaller than this chicken egg and they are brown with darker brown speckles.

Just like this chicken egg, marsh wren eggs are totally different on the inside and the outside. A hard shell that is not quite round is less likely to break when an adult bird sits on it (like the arch of a bridge) and less likely to roll away (like a football). The inside of the egg is liquid. The clear liquid cushions the bird growing in the egg and gives it water. The yellow yolk gives food to the bird growing in the egg. The eggs we eat are unfertilized; they are just a ball of food without a bird growing inside. If you just saw an egg, would you think that it is alive? (As a scientist, it is important to make many observations of an object over time.)

## V. Spatterdock Grows Giant Green Leaves and Tubers

Mystery Bag Item: Potato

It is easy to watch spatterdock leaves grow because they are above the water. Below the water, the plant grows something much harder to see: a hard, heavy, bumpy tuber. Spatterdock tubers are a way for the plant to store the food that it has eaten but doesn't need right away (like fat on a person). Its giant green leaves eat more sunshine than it can use during the summer, so the plant uses it to grow a tuber. If you just saw this hard, bumpy tuber, would you ever have guessed that it grew from a wide, flat leaf? (As a scientist, it is important to observe every part of an object.)

## VI. Red-winged Blackbirds Move Around on Feathered Wings

Mystery Bag Item: Feather

Only birds have feathers. Feathers are hollow, making them nice and light so that they don't addmuch weight to a bird while it flies. This kind of feather has lots of little stringy parts that are covered in tiny hooks. The hooks zip all of the little pieces together so that the feather acts more like a piece of paper than a bunch of strings when the bird pushes it against the air. Another kind of feather has lots of fluffy parts that are not covered in tiny hooks. These feathers puff up with air and keep the bird warm when it flies high up in the cold sky.

Birds fly, but humans walk. Think of all the different ways that living things move. Imagine landing on a planet where all the life is alien. Do you think you would always recognize movement if you saw it, even when it is a kind of movement totally different from your own? (As a scientist, it is important to keep an open mind about what you are observing. It helps to have lots of different people make observations about the same thing because everyone sees it a little bit differently.)

## VII. Cattails Seeds Are the Beginning of a Life Cycle

Mystery Bag Item: Cattail fluff

Cattail seeds are attached to fluff that catches the wind. The seeds are a lot like an egg: they have a hard shell with food and a growing plant inside. When the seeds land, they eat the food and start to grow leaves and stems and roots so that they can eat even more food. Eventually they grow seeds that float away on the wind, and the whole process starts over again.

## VIII. Conclusion

Observing each part of the cattail at different times helps us to understand how it lives. But it is hard to observe things properly without disturbing them. We broke open the egg and took the Hydrilla out of the water so that we could make observations, but when we did that we changed the things we were observing. Scientists have to be careful to make as few changes as possible.

Observing things in their homes is the best way to understand how they live. What can you do to while watching living things to make sure that you don't disturb them?