

WEEKDAY WONDERS



Content developed by the
Tennessee Aquarium
Education Department



TENNESSEE
AQUARIUM



Adaptations: Day 5

This week, Weekday Wonders will help young scientists go deeper into exploring and understanding different characteristics seen in animals. This week will help young scientists learn about adaptations and how they allow an animal to obtain food, protect themselves, and help them survive. We will discuss how and why different animals have different types of adaptations, as well as touch on the differences between physical and behavioral adaptations. Young scientists will also have a chance to consider why animals have similar or different adaptations in certain habitats.

These curated activities are listed in a suggested sequence but may be done in the order that works best for you and your young scientists. Learn more about this series in the [Introduction to Weekday Wonders](#).



Question of the Day

Why are there differences among animals that are the same species?



Daily Nature Journal

Have your young scientist go outside to observe living and nonliving things. Then have him or her complete a nature journal entry as described in the [Guide to Nature Journaling](#).



A Guppy Investigation

Tell your young scientist that he or she is going to analyze a scientific investigation. Show your scientist or print the “field notebook” on pages 4 and 5.

Tell your scientist that this information is from research about guppies. It is a field notebook with observations and ideas. The scientist made observations at 3 different pools of water along the same stream. But, the scientist did not finish and needs your scientist’s help.

First, your scientist should sketch the water in the box to the right of the pool information. Make sure s/he pays attention to the description of whether there are rocks and whether the water is rough or calm.

Have your scientist decide on a symbol to represent each kind of fish. If your scientist enjoys drawing s/he may want to use a small fish symbol for guppies and large fish symbols of different colors for the three predators. Another idea would be to use small dots, squares, triangles, and Xs or different colored pens. Make sure he or she records what they plan to use in the table for each pool.

Next, your scientist should draw the symbols in the boxes to represent the number of each fish in the pools. This will help him or her visualize the data the scientist collected.

Once your scientist has completed all 3 sketches, have him or her fill in ideas for the analysis on page 5.

This representation is based on work by John Endler in the 1970s in the country of Trinidad. When your scientist has written his or her ideas, discuss your scientist's observations and Endler's research.

Endler was looking at guppies and their colors. He found that when water was fast and rough, with many rapids, fewer fish lived there. It takes a lot of energy to live where the water is fast and rough. The male guppies were much brighter with more colors. This is attractive to female fish. With few predators around, the guppies did not get eaten, even when they were brightly colored. Over the years, the brightest of the male fish attracted the females and were able to pass on their bright colors to baby fish.

In calmer waters, there were many more fish. Endler also found that the male guppies' colors were drab and dull. Because there were more predators in the area, these guppies blended in better with the surroundings. Over the years, fish that had bright colors were easily seen by predators and were eaten. This left only more dully colored fish to attract females, so the baby fish were also duller colors and blended in to the colors in the stream better.

Even though all the guppies were the same species and living in the same stream, their adaptations made them better-suited to live in their own environments—whether the pool had fast, rough water or slow, calm water.



May I Have Your Attention, Please?!

Remind your scientist that some adaptations are in the behavior of an animal. In all birds, wing flapping and calling generally means a bird is either seeking attention or displaying happiness. But in the wild, the male bird with the brightest colors and best song or dance gets the most attention. Some bird species have erratic dance movements, while others bounce around or bob their head while they sing.

Have your young scientist change clothes to dress in the most colorful and outrageous outfit possible. Then have your scientist come up with his or her own song or dance. Remember, the birds who get the most attention wave their wings, bob their heads, and sing all at the same time.

For some ideas on how your scientist can dance like a bird watch [this video compilation](#).

If you have more than one young scientist they can “mirror mimic.” Have the scientists face each other, and then one scientist should make up movements on the spot. The other should try to mirror his or her exact movements.

In the wild, some animals, such as hyenas, fish, insects, and some birds, will mirror each other in behavior or appearance. This can signal that they like one other or they can use it as a survival strategy.



Nature Journal

Have your scientist spend some time observing living things outside. Ask him or her to notice when there are many of one kind of living thing. Ask your scientist to pick one type of living thing and observe at least 5 different individuals. Prompt your scientist to write about the following questions.

- What differences are there between the individuals?
- Why does your scientist think there might be differences?

Credits

Pool 1 fish photo: Amy E. Deacon, Hideyasu Shimadzu, Maria Dornelas, Indar W. Ramnarine; & Anne E. Magurran / CC BY (<https://creativecommons.org/licenses/by/4.0>)

Pool 2 fish photo: Per Harald Olsen / CC BY (<https://creativecommons.org/licenses/by/3.0>)

Pool 3 fish photo: Emilio17 / CC BY-SA (<https://creativecommons.org/licenses/by-sa/3.0>)

A Guppy Investigation Field Notebook

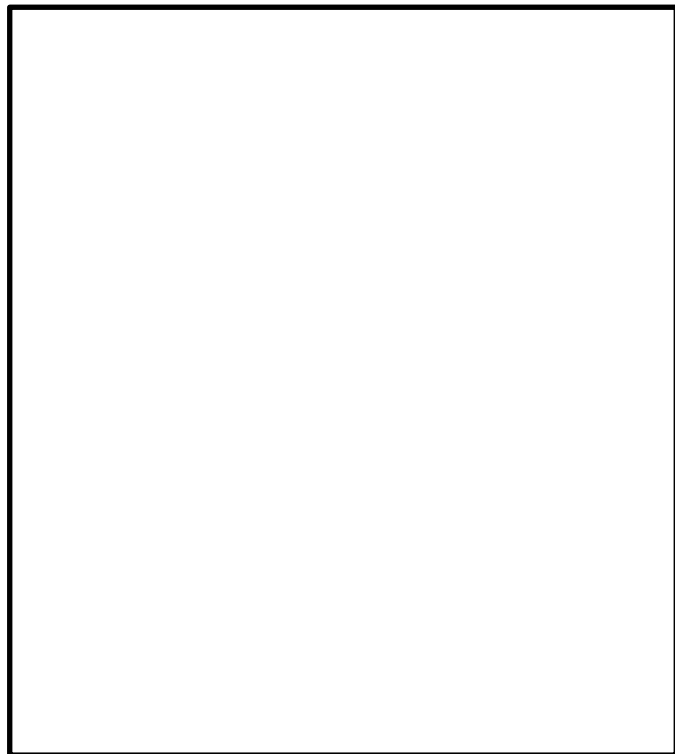
Pool 1: Near the headwaters of the stream.
Rough water, lots of rocks.

Guppy Appearance (male): bright, many colors



Fish	# fish	Symbol on sketch
Guppies	60	
Predator: Rivulus	10	
Predator: Pike Cichlid	0	
Predator: Blue Acara Cichlid	0	

Pool 1



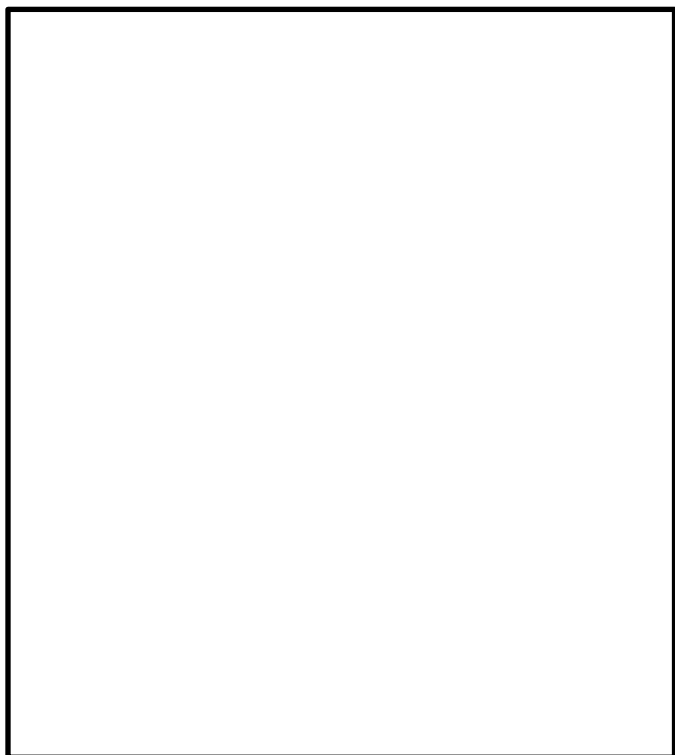
Pool 2: Somewhat rocky, fast water, few rapids

Guppy Appearance (male): some bright spots,
few colors



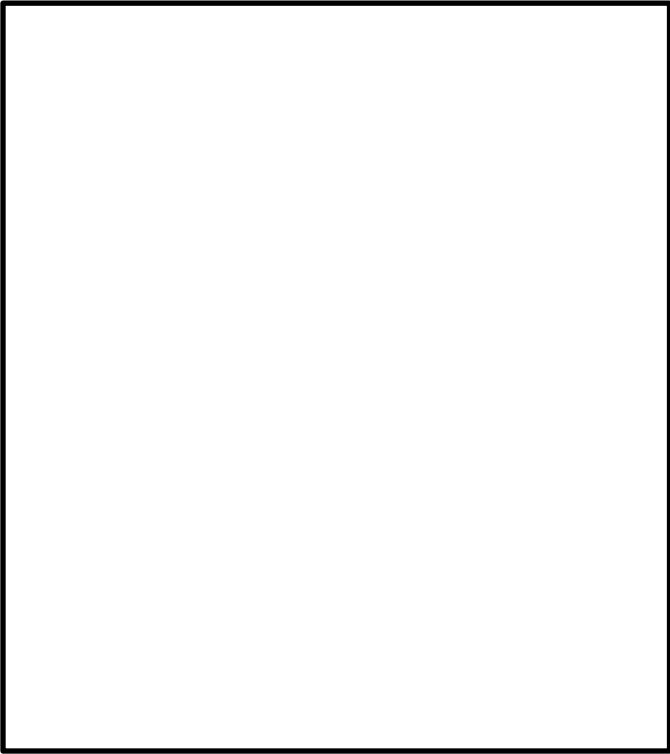
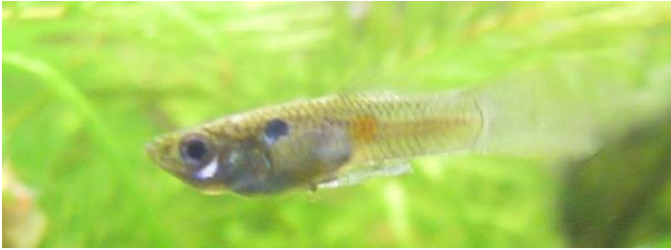
Fish	# fish	Symbol on sketch
Guppies	78	
Predator: Rivulus	13	
Predator: Pike Cichlid	0	
Predator: Blue Acara Cichlid	5	

Pool 2



Pool 3: Near lake, slow, calm water

Guppy Appearance (male): not many colored spots, small spots



Fish	# fish	Symbol on sketch
Guppies	99	
Predator: Rivulus	4	
Predator: Pike Cichlid	16	
Predator: Blue Acara Cichlid	18	

Analysis Ideas

There were more guppies in Pool ____, which had water that is:

There were more predators in Pool ____, which had water that is:

The guppies were brighter with more colors in Pool ____, which had water that is:

The guppies had dull colors in Pool ____, which had water that is:

I think more fish live in water that is:

Because....

When there are not many predators, the guppies have _____ colors. When there are a lot of predators, the guppies have _____ colors.