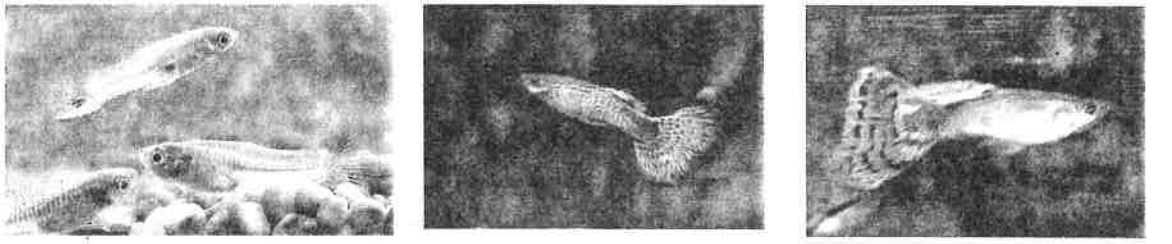
COLOR VARIATION IN VENEZUELAN GUPPIES (MECHANISMS OF EVOLUTION) 2

When biologist John Endler began studying a species of wild guppy (*Poecilia reticulata*) in the 1970s, he was struck by the wide color variation among guppies from different streams and sometimes even among guppies living in different parts of the same stream. Guppies from one pool sported vivid blue and orange splotches along their sides, while those farther downstream carried only modest dots of color near their tails. The pictures in Figure 2.1 show how the coloration of guppies can range from drab to bright.

Figure 2.1. Color Variation in Venezuelan Guppies



A guppy with drab coloration → A guppy with bright coloration

Endler photographed hundreds of guppies and carefully measured their size, color, and the placement of their spots. He began to see a pattern where guppies lived in a particular stream and whether the fish were bright or drab.

This led him to wonder: **What caused these trends in the coloration of the guppies?**

With your group, use the information that follows to develop a claim that best answers this question. Once your group has developed your claim, prepare a whiteboard that you can use to share and justify your ideas. Your whiteboard should include all the information shown in the diagram below.

To share your work with others, we will be using a round-robin format. This means that one member of the group will stay at your workstation to share your group's ideas while the other group members go to the other groups one at a time in order to listen to and critique the arguments developed by your classmates.

Remember, as you critique the work of others, you need to decide if their conclusions are valid or acceptable based on the quality of their claim and how well they are able to support their ideas.

Table 2.1. Information About the Pools Where the Venezuelan Guppies Were Found

Characteristic	Pool			
	1	2	3	4
Type	Deep (at a bend in the stream)	Deep (above a natural rock dam)	Shallow (at a bend in the stream)	Deep (above a 6 ft. waterfall)
Pool location (see Figure 2.3)	50 m upstream from the river	100 m upstream from the river	150 m upstream from the river	200 m upstream from the river
Turbidity of water (NTU)	Ranges between 27.50 and 36.25	Ranges between 8.75 and 27.50	Ranges between 3.00 and 8.75	Ranges between 3.00 and 8.75
Predatory fish in the pool (total)	28	15	6	0
Cichlids	12	0	0	0
Rivulus	6	10	6	0
Acara	10	4	0	0
Guppies found in the pool (total)	102	165	187	231
Bright males	5	50	76	108
Drab males	41	19	10	5
Bright females	0	0	0	0
Drab females	56	96	101	118

Note: Turbidity is the cloudiness or haziness of a fluid. Nephelometric turbidity unit (NTU) range in value from 0 (completely clear) to 50 (no light passes through the fluid).

Name _____ Date _____

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What Is Your Argument?

In the space below, write an argument in order to persuade another biologist that your claim is valid and acceptable. As you write your argument, remember to do the following:

- State the claim you are trying to support
- Include genuine evidence (data + analysis + interpretation)
- Provide a justification of your evidence that explains why the evidence is relevant and why it provides adequate support for the claim
- Organize your argument in a way that enhances readability
- Use a broad range of words including vocabulary that we have learned
- Correct grammar, punctuation, and spelling errors