



# Jonathan Bird's Blue World

## Episode 2 • Ginnie Springs Cavern Exploration Study Guide

Jonathan Bird's Blue World: *Cavern Exploration* is a story about aquifers and the flow of water from within the Earth to the surface. In this adventure, Jonathan explores Ginnie Springs, a place in Florida where warm, fresh water flows from underground to the surface, creating a surface river. The head of the spring is a popular place for swimming and diving. Jonathan explores the spring underground to see the kind of life in the waters of the spring as well as to investigate the source of the water. This segment features a type of diving called *overhead environment diving* which can be hazardous. A separate feature on overhead environment diving accompanies this segment, explaining the risks and safety procedures of this type of diving.

### Objectives

1. Explains how groundwater comes to the surface from a spring.
2. Explains how water from deep underground is very clear because it is free of plankton and other microscopic life.
3. Shows the relative scarcity of life in underground water.
4. Shows how water can carve a path through solid rock.

### Questions for before watching the program

1. Rock seems very hard. Can water carve its way through solid rock?
2. Is water coming from deep underground generally warm or cold? Why?
3. Is there a lot of life living in water in caves? Why?

### Discussion for after watching the program

1. What is limestone? As rock goes, is this a soft or a hard rock?
2. Why is the water coming from within the Earth very clear and warm?
3. Water actually flows up and out of the spring to form a river. What force pushes the water uphill?
4. Why do exhaled breaths that hit the ceiling of the cavern but later come out above in the river?
5. In the video it looks like we are exploring a cave, but by scuba diving standards, it is considered a cavern. What is the distinction? (This may take some on-line research).
6. Most of the underwater food chain is based on having tiny animals and plants called plankton to eat. Not much can live in spring-fed caves and caverns because there is very little to eat. Why does plankton have a hard time surviving in this environment?
7. Ginnie springs flows at about 1.25 million gallons per hour. Assuming that the average bathtub holds 42 gallons of water, how many bathtubs could Ginnie springs fill in a day? (24 hours)