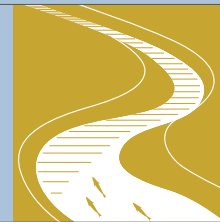




Environmental education

Children learn about the river environment in the experimental streams through programs that include catching fish.



Study 1

Increasing understanding of study results by using models and movies

We cannot directly observe many of the phenomena that occur underwater. In this study, we examined ways to organize exhibits, using models and movies, to effectively communicate the spatial structure of fish habitats. We used our studies on the structure of streambank areas and the populations of fish species as a theme. By using models of a vegetated bank, concrete revetment, and gravel bank and movies of the underwater environment around these structures, the exhibit explains the structure of the habitats; their physical environment, such as flow velocity and underwater brightness; and their effects on fish inhabitation. The models are designed to encourage an intuitive understanding of the functions of streambanks and a visual image of what research data commonly provide in a quantitative manner. The movies also provide information on the presence of organisms not readily visible below the water surface.

Movies

- Information difficult to see because of the character of water
- Information that changes over time
- Information in spaces at different scales

Models

- Information for understanding invisible spatial structure

Research data

- Information that presents specific numbers, such as research results

Exhibits for understanding underwater phenomena

Study 2

Using portable terminals in the field

There are many aspects of rivers, such as floods and underwater habitat, which cannot be readily understood by field observations. To present these invisible worlds, we created movies of the experimental streams. One movie sequence shows a time-compressed process of floodwaters overflowing the river and inundating the flood plain. The movie was shot with a fixed-point video camera. With these movies, we developed a program that effectively communicates obscure natural phenomena through a self-guided walking tour of the experimental streams. Visitors download the contents of about 30 movies to an iPod* (Apple Inc.) and can obtain information on the river environment by watching the appropriate movie in front of a simple interpretive panel installed in the field.

* iPod is a trademark of Apple, Inc.

Normal discharge Increasing discharge During the flood After the flood

Providing information on the river environment by using portable terminals

Study 3

A program that integrates experiences and fragments of knowledge

Information obtained through experience tends to be specific to a particular place and time; often it does not involve the holistic understanding of ecosystems. To help children learn about the flood plain environment, ARRC provided an environmental educational program on the freshwater mussels that inhabit the backwater. Here, a river system was divided into (a)basin, (b)habitat, and (c)microhabitat. In (a)basin, aerial photographs were used to describe the environment where backwaters are found. Then, in (b)habitat, children collected freshwater mussels, which inhabit the backwater research zone of the experimental streams, and we observed an artificial flood to watch how the river and the backwater connected. Finally in (c)microhabitat, we described the relationship between freshwater mussel and Japanese bitterling, both of which inhabit the backwater.



Environmental educational program using the backwater research zone of the experimental streams