

## AV Reviews

Rachel Hays

Department Editor

**Biodiversity: The variety of life.** 1991. Bullfrog Films (Oley, PA 19547). VHS. 42.5 min. Rental \$40, purchase \$150.



You might expect from the title that this video would have a global vision on biological adaptations and emphasize the number and distribution of species. Instead, the message is about environmental conservation and how human impact can influence species diversity in the Pacific Northwest. The method is to introduce and explain ecological concepts to better understand how diversity is affected. The building of roads, for example, creates "fragmentation" that can subdivide whole populations. Extremely large ecosystems are needed to maintain a "viable population" of grizzly bears.

The narrator is periodically shown standing in a clear cut or walking along the forest edge. These are the only motion images shown. Close-up views of living organisms are stills. Graphics are low quality. In one case a black and white map showing the distribution of ages of trees in a forest is unlabeled. Stylistically, the video is like a lecture with a slide show. The viewer is heaped with new terms, most of which are more distracting than helpful (i.e. metapopulations, shifting mosaic steady state). This approach is all the more baffling given that this seems to be intended for a broad public audience (the producers claim grades 10 and above). There is little here to engage the viewer. My guess is that younger audiences will

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find this video to be tedious and abstract.

The ecological principles presented are very timely. An overall understanding of the principles outlined would be a great asset to elevate public discourse on the complexities of maintaining stable ecosystems. Certainly the need is exemplified by the uniformed rhetoric we hear from the political arena regarding the spotted owl. Unfortunately, this video with its bland visuals and laundry list of eco-terminology is not up to the job.

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**Characteristics of life.** 1991. Adventure Video Productions (24435 W. Blvd de John, Naperville, IL 60564). VHS. 25 min. Purchase \$99.



Differentiating precisely between living and nonliving objects on this planet is among the more difficult exercises in biology and philosophy. Some nonliving objects show certain properties usually associated with life: Your car, when running, exhibits at least catabolism, movement and reaction to its environment. Conversely, living objects sometimes do not show all the properties commonly associated with life or do so to such a small degree as to make their demonstration difficult. Many organisms, such as worker bees or old mammals, do not reproduce, and the metabolic rates of some dry seeds are too low for easy observation. In view of these difficulties, teaching children in the later elementary school or the middle school grades to decide whether an object is alive represents a major challenge.

This video and its accompanying booklet take up this challenge—to define the characteristic attributes of life. Unfortunately, the challenge is only partially met because the presentation is neither clear about the distinctions between living and nonliving materials nor focused completely on the intellectual and vocabulary level of the target group.

We see a large variety of living organisms, ranging from the microscopic to bears and trees, and we hear about activities that cause us to call them living. Among these activities are ingestion of food, gas exchange, reaction to environmental stimuli, growth, cellular differentiation and, at least, asexual reproduction. The sound track is quite insistent that movement in itself is not a significant criterion but in several scenes the only obvious activity is motion, either motion of the whole organism or cytoplasmic streaming. The narration does not present the idea that life is often recognized by the joint possession of several properties that rarely co-occur in nonliving matter. Nor is the ability of at least some members of any species of living organism to self-reproduce from materials quite different from those of their own bodies presented. This is an ability not found in nonliving systems. The cardinal property of mutable hereditary information is only hinted, using the unfortunate and undefined "DNA information." Students might also get the erroneous idea that the characteristics of plant and animal life are quite different since they are told that plants "are not doing any of the things" that bears do.

Perhaps the most definitive statement is that, "All living things organize protoplasm," but this is reduced to a near tautology since protoplasm is defined as "the very substance of life itself." The cell theory is well presented, perhaps too thoroughly for the principal theme of the presentation. During this discussion we see various cell types, appropriately without their technical names, except for the erroneous use of the term "epithelial."

The quality of the photography ranges from excellent in many of the outdoor shots to muddy in some microscopic scenes. The commentator rightly emphasizes that all experimentation on living organisms must be carried out with due regard to their welfare. The booklet enclosed with the tape is a useful compilation of various materials. It gives detailed instructions for setting up Petri dishes for a growth

of *Physarum polycephalum* sclerotia, a matter also presented briefly on the tape after the closing credits. Also in the booklet are a review of NASA's Mars Lander's life detection experiments, a letter from an imaginary inhabitant of Venus inquiring as to life on Earth, and a series of true-false examinations.

While these materials may be useful to stimulate discussion and thought in pre-high school students, they do raise the old question of whether a subject requiring considerable abstract thought for a genuine solution should be presented to children who are at a Piagetian stage long before that of the abstract. Is it better to introduce this

important subject early even though it cannot be developed rigorously, or should it be held for an older audience?

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