A beautiful and dramatic view of Earth from space opens the DVD *Biodiversity: The Web of Life* and creates the idea of seeing biodiversity on a global scale. The interactions between organisms have significance across the planet as well as in each separate niche. Students immediately see an intriguing montage of moving images that capture their attention and illustrate the huge range of life found on Earth today. Live action video of microscopic organisms such as bacteria and protists contrast with animals of the rain forest, desert, and ocean and with colorful flowering plants to show a sample of the more than one million species identified so far. The program also establishes humans as a part of this vast biodiversity.

Rich images of tropical rain forests then are used to examine the factors that affect the degree of diversity and density of life in any given area. Multiple habitats, climate, and the number of niches are among the influences of diversity. Beautiful views of coral reefs extend this example to another ecosystem that has tremendous biodiversity. Students see the reef that results from growth of coral polyps and the myriad of organisms that use the reef as home. In contrast, deserts have much less density of life. Yet many students will be surprised to find that even in the harsh desert environment, many different species thrive. The giant and impressive saguaro cactus demonstrates the adaptations that have enabled species to live in the desert. Its accordion-like structure rapidly soaks up a huge volume of water after a rare rainstorm and stores this precious commodity for use during the long periods of drought that will follow.

Students learn that an ecosystem is more than just a location—it includes the living things in a particular location. Organisms are not only affected by their physical surroundings, they also can alter those surroundings. The flow of energy is traced through an ecosystem, starting with photosynthetic organisms such as prairie grass and oceanic phytoplankton. Students also learn that bacteria and fungi have an important job as decomposers, breaking down and recycling organic materials to return nutrients to the physical environment, available for use by other organisms. Most importantly, students see the importance of the interdependence of living things. For example, sea stars in tide pools provide an essential control on the population of mussels.

Diversity is not only an aspect of healthy ecosystems, it is also a source of useful products for human culture. Rain forests and coral reefs are two potentially rich sources of medicines. Countries with abundant biodiversity, such as Costa Rica, also are benefiting from ecotourism. This industry often can replace revenue that might have come from damaging harvest of forests and other natural areas.

Humans have made an enormous impact on the planet and its degree of biodiversity. For example, in the 19th century, herds of American Bison were reduced from hundreds of thousands to just a few hundred survivors. In the 20th century, careful efforts to protect these huge mammals have resulted in a partial comeback for the species. Other species may not be
so fortunate. With over six billion people on Earth, human populations intrude and sometimes destroy the habitats and disrupt the niches of many species. The cutting of a forest, for example, affects far more species than just the trees being cut. The forest provides a variety of niches for many different species, all of which will have to find other sources of food and shelter if the forest is clear cut. In some cases, the damage to an ecosystem comes from the introduction of foreign species into a particular ecosystem. Miconia, a plant introduced to Hawaii, grows so thickly that it chokes off sunlight from many native species.

The program then explores the process of extinction on a variety of levels. Students learn about the mass extinctions of 65 million years ago that destroyed the dinosaurs. Naturalists describe the high level of extinction under human influence in modern times. The program establishes the idea that human decisions about lifestyles and the value of biodiversity can alter the course of extinction and survival for other species. One step toward preservation is the reduction of pollution in air and water.

Habitat preservation is one of the most effective measures to protect biodiversity. The United States is among those countries that have set aside hundreds of natural parks and forests to protect wildlife. Beautiful images reinforce these ideas. However, in many cases, the habitat set aside is fragmented into areas too small to adequately maintain a wide range of species. Biodiversity: The Web of Life presents the need for a realistic balance between the short term needs of local inhabitants and the need for habitat and natural resource protection. The situation is not simple in many cases. For instance, in Arizona, irrigation has made it possible to grow crops that otherwise could not survive in the harsh, dry landscape—but an unfortunate side effect is that rivers and streams have decreased flow, endangering organisms that depend on these aquatic habitats. Students learn that their decisions will help determine the level of biodiversity in the future.

Students also have the opportunity to think about the threshold nature of extinction. In some endangered populations, individuals survive but at a level that may not be sufficient to maintain the species in the long run. The DVD uses very active visual examples throughout to remind students of the huge range of life as they consider how vulnerable it is. One difficulty is that the diversity within the gene pool of a population or species may be greatly reduced if adverse conditions kill off many individuals. Those that survive repopulate the habitat, but the level of diversity at the genetic level may be greatly reduced. If new adverse conditions arise, there may not be sufficient variety in the gene pool to provide for survivors.

A naturalist at the Desert Museum in Arizona describes the role of captive breeding programs for species such as Mexican wolf, St. Esteban Chuckwalla (a large lizard) and native fishes. These programs can be useful for producing more individuals of the species, but unless habitats are protected or restored, the programs may fail because there is no place to reintroduce the organisms. The program closes with a reiteration of the key ideas, illustrated by excellent motion imagery of a wide range of species.