

call beautiful or restful is a diversified, healthy system. About four million people visit Virginia's parks and natural areas each year. Experiences in other states have shown that birdwatchers alone can bring in millions of tourism dollars annually. Virginia's first annual Migratory Bird Festival generated more than \$50,000 in tourism revenue. Manufacturing has long depended on animal oils and plant materials. Many plants, such as wild indigo, are valued as natural dyes and have contributed to the development of numerous color-fast products. The aromatic wild shrub bayberry provides an important ingredient in candle making. Biotechnology is one of the fastest growing industries in the country and Virginia is taking advantage of this vital economic opportunity.

Environmental Monitors. An endangered species is a reliable early indicator that something is wrong with the quality of our environment. The dangers of DDT, a strong, once widely used pesticide, were exposed through the rapid decline in bald eagles and peregrine falcons. Certain plants, such as the eastern white pine, are good indicators of excess ozone, sulfur dioxide and other air pollutants. Because they are filter feeders, mussels are important indicators of water quality. Nearly three-fourths of the nation's freshwater mussel species are considered imperiled.

Renowned evolutionary biologist E. O. Wilson said, "Discovery of important materials in the wild is only a fraction of the opportunities waiting." Once a natural chemical compound is identified, it can be synthesized, often at lower cost than by extraction from raw harvested tissue, providing the prototype for an entire class of new chemicals.

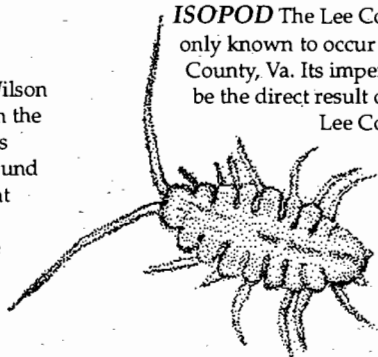
These factors provide a logical basis for protecting Virginia's biodiversity. We cannot allow species to become extinct and expect our own to endure.

However, the most compelling justification for preserving biodiversity may be its simple grace—the privilege of existing among so many different living things. Each element of nature comprises the world as we know it and, in the end, confirms the promise of tomorrow.

Limited resources currently are being focused on the conservation of biodiversity. However, the most proactive approach to species conservation is assuring that these organisms never become rare. To help accomplish this goal, Virginia is working to identify and classify its natural communities. Conservation of the best-known examples of the most widespread natural community types, as well as the rarest, will assure conservation of about 85 percent of Virginia's plant and animal species.

PIRATE BUSH, a threatened plant species in Virginia, is being studied for its promise in treating cancer. Every time a wild species becomes extinct, a storehouse of genetic information is lost.

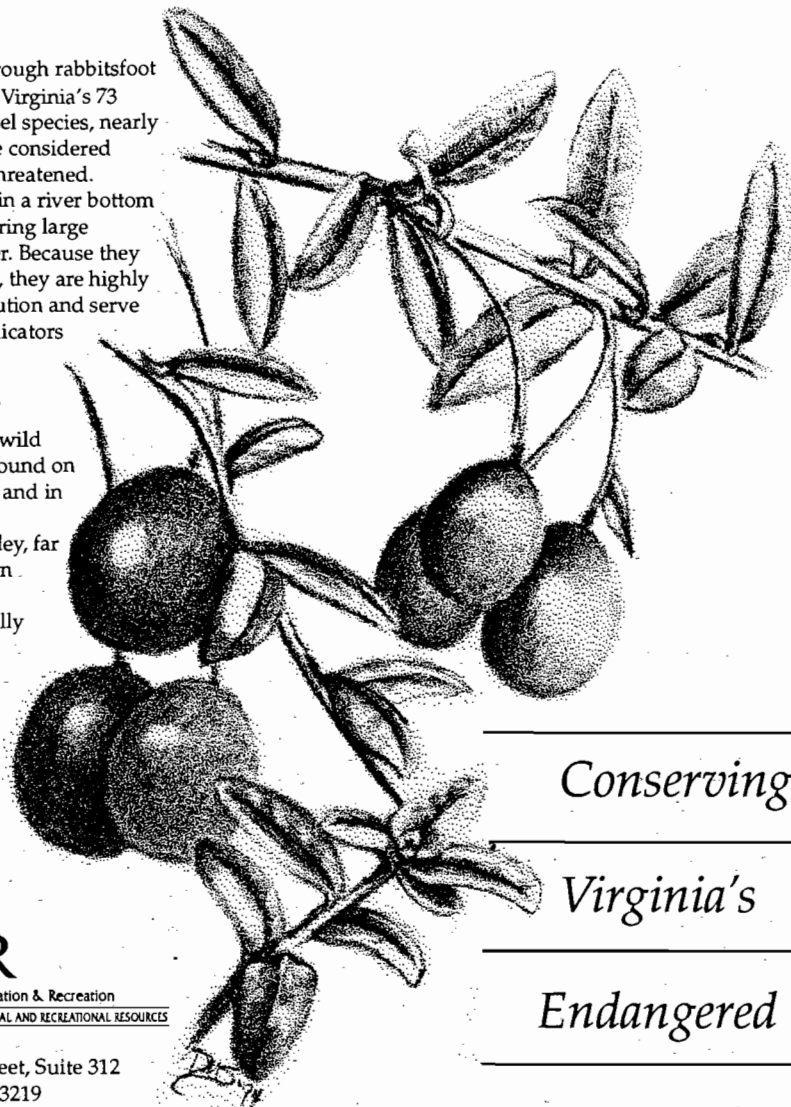
ISOPOD The Lee County cave isopod is only known to occur in two caves of Lee County, Va. Its impending demise will be the direct result of polluted water—Lee County residents depend on that same water.



Isopod
by Jeff Gaither

MUSSEL The rough rabbitsfoot mussel is one of Virginia's 73 freshwater mussel species, nearly half of which are considered endangered or threatened. Mussels anchor in a river bottom and feed by filtering large volumes of water. Because they are filter feeders, they are highly sensitive to pollution and serve as important indicators of water quality.

CRANBERRY In Virginia, rare wild cranberries are found on the coastal plain and in one site in the Shenandoah Valley, far from the northern climes in which cranberries usually live. Virginia's variety is being studied for the key to its hardiness and may contribute to the production of cultivated cranberries.



Cranberry
by Debbie Smith



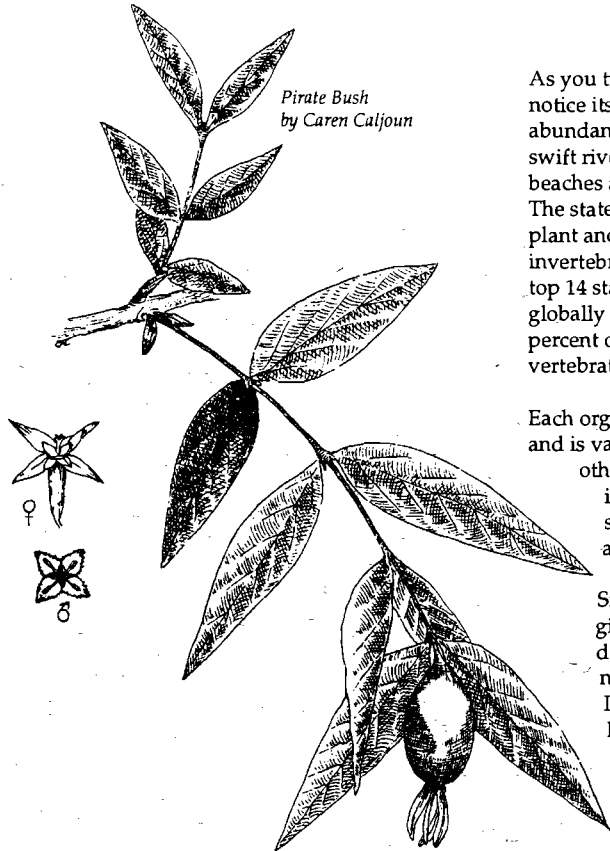
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Conserving

Virginia's

Endangered

Species: Why?



Pirate Bush
by Caren Caljoun

As you travel across Virginia, it is hard not to notice its rich diversity of habitats and abundant natural resources. Blue mountains, swift rivers, piedmont meadows, commanding beaches and lush swamps grace the landscape. The state is home to more than 3,200 native plant and vertebrate species, as well as 30,000 invertebrate species. Virginia ranks among the top 14 states in the nation for the number of globally rare plants and animals, with 28 percent of its flora and 36 percent of its vertebrate species considered rare.

Each organism has its own place in the scheme and is valuable to and dependent upon the others. When a species becomes imperiled, it may indicate that something is wrong with the system—an imbalance that threatens survival.

Since life began, species have evolved, giving rise to new life forms and destroying others, continually creating new ecosystems. It is the natural order. In recent history, however, species have begun to disappear at an inordinate rate in direct relation to the dispersion of humankind. Habitat destruction is considered the leading cause of extinction. Each year, some

70 square miles of Virginia are converted from a natural state for residential, industrial, industrial and commercial purposes.

Scientists estimate that the earth is losing more than 70 species each day, as compared to the "pre-modern era" estimate of one extinction per year. In the past, extinction of species has generally made available ecological niches for new life forms to evolve. Species are disappearing so rapidly that others do not have time to evolve. Twenty-five species which once occurred in Virginia are no longer found

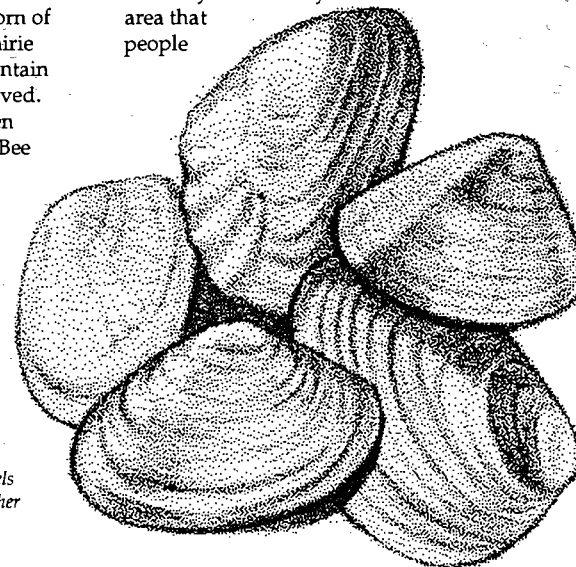
here. The consequence of this destruction can only be surmised, but our dependence on all living things is clear.

Earth, Air and Water. Plants and animals provide the very basis for our existence. We rely on them for food, livelihood, medicine, shelter, clothes and recreation. Plants remove carbon dioxide from the air and replenish it with oxygen. Vegetation filters and holds water to ensure a clean, reliable water supply and reduces downstream flooding. Plants hold soil and, along with animals, replenish the earth with nutrients. Reducing diversity can weaken entire natural systems. Diversified, healthy ecosystems tend to have overlapping systems of checks and balances which buffer them in times of environmental stress, such as drought.

Medicine. Nearly 40 percent of the prescriptions written in the United States today are derived from plants and animals, giving hope in the fight against heart disease, cancer and other deadly threats. Penicillin was born of a simple fungus. The rare queen of the prairie and its close relatives in the rose family contain salicylic acid, from which aspirin was derived. The blood of the horseshoe crab has proven invaluable in the diagnosis of meningitis. Bee venom provides new prospects in the treatment of arthritis. The spring wildflower bloodroot contains a promising anti-plaque compound. We are only beginning to understand the value of these natural agents and the unique reservoirs of genetic information that produce them.

Agriculture. Fewer than 12 of the earth's 250,000 flowering plants provide 90 percent of our food supply. The cultivated varieties of corn, wheat and rice on which we depend so heavily have genetically variable relatives that, when cross-bred, can result in highly productive, high-protein crops that can feed millions of people worldwide or provide alternatives if agricultural strains are threatened. A wild relative of corn recently discovered in Mexico is resistant to disease and unique among living forms of corn in that it possesses perennial growth. Its genes are being studied for transfer into domestic corn and could boost production worldwide. In Virginia, rare wild cranberries are being studied for similar attributes and may contribute to the production of cultivated cranberries.

Industry. Given Virginia's natural resources, it is no wonder tourism is its largest industry. Humans have an innate need for natural diversity. Almost any natural area that people



Rare Mussels
by Jeff Gaither

Most would consider the demise of Virginia's Lee County cave isopod a relatively unimportant event. It is a pallid, ignoble creature with an obscure evolutionary history on which no one appears to depend.

Yet, it is estimated that for every organism that becomes extinct, as many as 30 more, whose lives are intertwined, will follow. It may be difficult to see, but the trickle down effect alters our world.