

natural sciences

Status of the white-tail deer

The most plentiful big game animal in the United States is the white-tail deer—they have almost no natural predators. In fact, wildlife biologists believe that today there are more white-tail deer in America than at the time the continent was discovered by Europeans. Keeping the deer population in check has been a major concern of wildlife officials, but methods of estimating their population density have been slow and expensive. Now, parasitologist Frank A. Hayes, working at the University of Georgia College of Veterinary Medicine, has discovered a fast, effective way to measure white-tail deer density in a given habitat by counting the worms in deer stomachs.

The number of worms in a deer's stomach is directly related to the animal's nutritional base—the poorer the deer diet, the more susceptible they are to parasites and disease. The count can reveal whether an area is overpopulated, whether the herd is below environmental capacity or whether the herd and food supply are in balance.

"The APC, or abomasal parasite count, should be a boon to everybody who is concerned with protecting the natural environment," said Hayes, "though some of my colleagues accuse me of practicing augury."

Help for the black-footed ferret

The black-footed ferret may be the most critically endangered mammal in North America, according to studies made by the U.S. Department of Interior. The ferret, known to exist only in the glasslands in South Dakota, feeds on small rodents, one of which is the prairie dog. The primary cause of its near extinction is the poisoning campaigns waged against prairie dogs. For decades, cattlemen have been destroying huge populations of prairie dogs by chemical poisoning. The Government has been pursuing the same policy on Federal land used for livestock grazing.

Now, pressure applied to the U.S. Forest Service by Fund for Animals, a national conservation and animal organization, and by the South Dakota Department of Game, Fish and Parks, has arrested plans to poison prairie dog towns located on the Buffalo Gap National Grasslands. This may be only a temporary reprieve for prairie dogs and ferrets, however, as the U.S. Forest Service is exploring other ways to control prairie dog population.

Bluegills in hot water

The University of Wisconsin and the Madison Gas and Electric Co. are jointly studying the effects of thermal discharge on fish and what fish are attracted to or repelled by hot water plumes.

One experiment involves divided tanks in which fish can control the water temperature by swimming through a tunnel from side to side. The researchers ran a bluegill and a coho salmon. Each fish showed marked differences for temperature preference. The coho salmon seldom raised the temperature in excess of 18 degrees C. while the bluegill rarely allowed water temperatures to fall below 29 degrees C.

Other studies are being conducted on location near hot water plumes in Lake Monona and Lake Michigan. With sonar sounding, gill netting and trawling, the researchers are gathering data on fish distribution and types of fish present. So far, they have found that mostly alewives gather in the plumes during the summer as the plumes are closer to their preferred temperature than the lake. The researchers hope that knowledge of water temperature preference of fish will guide future utility and nuclear plant construction.

january 19, 1974

aerospace

Domestic comsat service for U.S.

The first commercial domestic satellite communications service in the United States was officially begun Jan. 8 by RCA Global Communications Inc., using leased channels on the Anik 2 satellite of the Canadian Telesat system.

The service, intended to compete with land-line communications, is later to be transferred to RCA-operated satellites, planned for launch beginning in 1975. A typical, coast-to-coast leased land line that costs \$2,298, for example, could be replaced by satellite service costing \$1,700, say RCA officials.

Another commercial U.S. service will begin in 1974, with the launching of as many as three satellites for Western Union. Other communications satellites will be launched this year for the United Kingdom, Germany, France and Comsat Corp.

Cayley formation and the magnetic moon

The strong, localized variations in the moon's otherwise weak magnetic field may be due to basins filled with breccia rocks rich in a type of iron formation that enables them to retain magnetism acquired in their molten state.

The moon's mean surface magnetic field is believed to have a strength of less than two gammas. But measurements around the Apollo landing sites have revealed areas where the field is as high as 313 gammas. Many of the largest variations were found in the Cayley plains, near the Apollo 16 site, where there is a basin filled with light-colored, relatively smooth-surfaced breccia now known as the Cayley formation.

These variations, as well as others measured from orbit by satellites launched from the Apollo 15 and 16 command modules and by Explorer 35, may be due to basins with Cayley-like breccia deposits about one kilometer thick, according to David Strangway of Johnson Space Center and colleagues in the Dec. 17-24 NATURE. These breccia blankets would have been at extremely high temperatures, above 1,400 degrees F., when they began to harden into place. They could have been deposited, the researchers propose, by a "base surge," due either to an impact or a volcanic eruption, similar to the ground level outflow of ash from an atomic explosion.

If the basins where the anomalies were detected had been filled with conventional mare basalt, the scientists calculate, the deposits would have had to be about 40 times as thick. "Such a thickness," they suggest, "seems quite unreasonable."

Berry is academia-bound

In 1958, as an Air Force flight surgeon, Charles A. Berry was part of the medical team that helped in the selection of America's first spacemen, the seven Mercury astronauts. Now Director of Life Sciences for NASA, he is leaving the space agency to become president of the University of Texas Health Science Center in Houston.

After three years of private practice in California, Berry joined the Air Force in 1951, came to NASA in 1962 and assumed his present position in 1971, in charge of all of the agency's biomedical programs.

His post at Texas will be a newly created one to give a single administrator supervision over all of the University's health-related schools, including medicine, dentistry, public health, biomedical sciences and research. He will continue, however, with the Skylab program throughout the analysis of the biomedical data from the present, final mission.