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**SCIENCE, TECHNOLOGY & ENVIRONMENT**


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### *The Silence Of the Birds*

"Why American Songbirds Are Vanishing" by John Terborgh, in *Scientific American* (May 1992), 415 Madison Ave., New York, N.Y. 10017.

The trills and calls of thrushes, warblers, tanagers, and other favorite American songbirds are heard less frequently in many cities and suburbs. A decline of the songbird population has been under way for decades. By the 1970s, for example, the number of breeding birds in Rock Creek Park, in Washington, D.C., was only about one-third what it was in the 1940s, and species that bred there but wintered in the tropics had fallen off by almost 90 percent. Similar declines were reported elsewhere in the country, with the most marked losses appearing east of the Mississippi.

Why have seemingly friendly environments such as Rock Creek Park become hostile to songbirds? The answer, which took years to discover, has two parts, according to Duke University environmental scientist John Terborgh. First, the songbirds' city and suburban habitats are also friendly to their predators. Raids on bird nests by blue jays, raccoons, and opossums have increased along with the predators' population. In an experiment to gauge the impact, Princeton's David S. Wilcove stocked artificial nests with quail eggs and set them out in rural and suburban woodlots, and at a "control" site in the Great Smoky Mountains National Park. In the Smokies, only one "nest" in 50 was raided, whereas in the suburban and rural

woodlots the rate was, in some cases, 100 percent.

But predators are not the songbirds' only foe. Parasitic birds, especially the brown-headed cowbird, are another. They lay their eggs in the nests of other species, which often raise the resulting offspring as their own. Because the parasite's eggs typically hatch sooner than the host's, the hatchling parasite has a head start over its nest mates and is able to grab much of the food. Often, the host's own offspring starve. Researchers Margaret C. Brittingham and Stanley A. Temple of the University of Wisconsin found that nearly two-thirds of the nests on the edges of forest in southern Wisconsin had cowbirds' eggs in them.

Further studies in several states, Terborgh says, have confirmed that such predators and parasites are largely responsible for the songbirds' plight. The long-distance tropical migrants, such as orioles, warblers, and thrushes, are most vulnerable.

Alas, the decline of the songbirds in settled areas seems bound to continue, Terborgh concludes. To save the birds and their music, he writes, it will be necessary to consolidate and expand their safe havens in areas such as the Smokies, the Adirondacks, and the north woods of Minnesota and Maine.

### *The Comets' Tale*

"Comets: Mudballs of the Solar System?" by Ron Cowen, in *Science News* (Mar. 14, 1992), 1719 N St. N.W., Washington, D.C. 20036.

For millennia mankind has been watching comets with fascination and even awe without knowing much about them. Only when it nears the sun can the exterior of a comet be seen. Even then, its nucleus is enveloped in a transparent coma (a faintly luminous cloud of dust and gas), and the comet sports a tail of tiny dust particles, as well as another tail of ions (charged gas molecules). What is beneath the coma remains a mystery.

In 1951, astronomer Fred L. Whipple of the Smithsonian Astrophysical Observatory in Cambridge, Massachusetts, suggested that comets were like huge dirty snowballs—flying

pieces of ice mixed with small amounts of dust. Ice being a poor conductor of heat, *Science News* writer Ron Cowen notes, Whipple's theory helped to explain why comets passing close to the sun do not simply burn up. It also helped to account for those tails. "[A] blast of heat from the sun would vaporize ice on the surface of a comet, converting some of the frozen material into a jet of gas that could propel dust out of the comet—like sand lashed by a fierce windstorm. Pressure exerted on the dust by solar radiation then sweeps the dust into a tail; charged particles from the sun (the solar wind) sculpt some of the comet's expelled gas into a

separate, faint ion tail."

That has been the accepted view among astronomers for four decades. But new findings based on infrared images of cometary dust are modifying the theory. Mark V. Sykes of the University of Arizona in Tucson suggests that comets are more like frozen mudballs, with ice making up just one-fourth of their mass and one-half of their volume.

Sykes was a graduate student in 1986 when he noticed something odd in the infrared images formed from data gathered three years earlier by the Infrared Astronomical Satellite. "Telltale streaks in the images," Cowen writes, "revealed the presence of giant, never-before-seen trails of dust particles associated with three comets that visit the inner solar system every three to seven years." The trails' pebble-sized debris was larger than the extremely tiny

particles in the dust tails visible when comets move near the sun. That same year, the European Space Agency's Giotto spacecraft flew within 605 kilometers of Halley's Comet and detected about three times as much rock as ice in the famous visitor.

More recently, Sykes and Russell G. Walker of Jamieson Science and Engineering, Inc., in Scotts Valley, California, have done a new analysis of the infrared images and found a total of 17 dust trails. From the amount of dust in the trails, they calculated that rocky debris accounts for three-fourths of a comet's mass and half of its volume. The rock-to-ice ratios, Cowen notes, are about the same as for Pluto and Neptune's largest moon, Triton. This lends support to the theory, around since the early 1980s, that many comets were formed in that outer region of the solar system.

## A 'Herstory' Of Evolution

"Female Choice in Mating" by Meredith F. Small, in *American Scientist* (Mar.-Apr. 1992), P.O. Box 13975, Research Triangle Park, N.C. 27709.

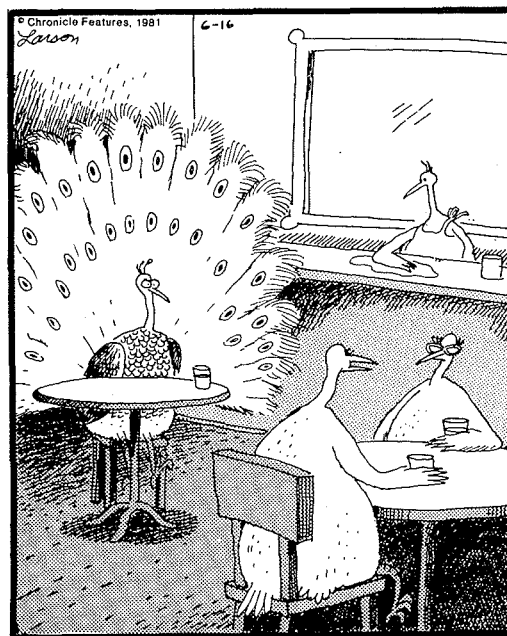
Charles Darwin thought there was a "passion gap" between male and female animals. The ardent males competed for females, evolving traits—massive horns in the case of bighorn sheep or protective manes in the case of lions—that helped them in contests with other males. Female animals were passionless and passive, just like "proper" Victorian ladies—and the impact of their choice of mates on the evolutionary process was, with rare exceptions, very minor.

Darwin has been proven wrong about the passion gap: Female animals are anything but sexually passive. But evolutionary biologists, under the influence of feminism, have gone even further in recent decades: They have embraced the idea that females' choice of mates is a significant evolutionary force. After studying the mating behavior of a group of monkeys, however, Cornell anthropologist Meredith Small has her doubts.

That female choice could have an evolutionary impact on males was recognized by Darwin. The peahen's attraction for males with lavish tails, to take an oft-cited example, led to the peacock's extravagant adornment. But a different sort of female choice was proposed by British scientist John Maynard Smith during the 1950s. Studying a ritualized courtship dance of male and female fruit flies, he noticed that inbred males proved clumsy dancers and were rejected as mates. Smith suggested that the dance had evolved as a result of the choice of

## THE FAR SIDE

By GARY LARSON



"Don't encourage him, Sylvia."

The peacock's lavish tail has evolved for a simple reason: Peahens are attracted to it.

the female, acting in her own reproductive interests to screen out unfit suitors. The time was not right for Smith's suggestion, however, and