

patterns, birds will fly lower and collide more often," Korschgen said. Korschgen pointed out that birds can and will strike power lines under ideal weather conditions.

Open water crossings in important flyways are of particular concern to biologists, but the data from the project will be applied to all flyway corridors and critical areas where power lines may be constructed. According to FWS officials, the technology and techniques learned from this project will allow biologists to get in on the ground floor of powerline project planning to alleviate possible problems before they occur. Biologists are hopeful that they can monitor bird activity before, during, and after construction and learn a great deal about the sensory perception of birds. The four-year study will be a joint effort by the FWS, the National Aeronautics and Space Administration (NASA) and Northern States Power Company.

### Chemical By-Product of PCBs Found in U.S. Fish for First Time

Little-known contaminants called polychlorinated dibenzofurans (PCDFs) have been detected in fish from U.S. waters for the first time, an international team of scientists recently reported.

PCDFs are chemical by-products of widespread, toxic industrial chemicals known as polychlorinated biphenyls (PCBs). They were detected by David Stalling of the U.S. Fish and Wildlife Service's National Fisheries Research Laboratory in Columbia, Missouri, and Ralph Dougherty of Florida State University, Tallahassee. Christopher Rappe of Sweden and Douglas Kuehl of the Environmental Protection Agency (EPA) are also collaborating in the investigation.

Although the occurrence of PCDFs in the aquatic environment in the United States has been suspected previously, this is the first time it has been confirmed. PCDFs were detected in carp, catfish, lake trout, and coho salmon collected in areas of the North Central and Northeastern United States where PCB pollution historically has been a problem. The detection was possible now only through the scientists' use of sophisticated new techniques of negative-ion high resolution mass spectrometry.

Stalling and Rappe emphasized that they are not yet certain whether the contaminants in their samples are hazardous to fish or other aquatic organisms. Some PCDF compounds are considered far more toxic than the parent PCB — a few up to 500 times more toxic than the most potent PCBs. Studies at the National Institute of Environmental Health Sciences and several universities have shown certain PCDFs to be highly toxic to guinea pigs and rats.

"There are 135 PCDF compounds," Stalling said, "We have not yet identified the individual chemical structures of the PCDFs in our samples, so we cannot be sure which of the 135 are present or whether they might have toxic effects."

The extent of PCDFs presence in the environment is not known. It is known, however, that the parent PCB compounds have been used in a wide variety of industrial equipment and products over the past 50 years. Use of PCBs is now tightly controlled by the EPA through the Toxic Substances Control Act of 1976. PCDFs are known to be produced by oxidation of PCBs and thus can be formed when materials containing PCBs are burned, especially at low temperatures.

"We know that very high temperature burning, if done for long enough, will completely destroy PCBs," Stalling said. "However, Rappe has demonstrated that low temperature combustion in

the 400°-to-600° C-range can convert 25 percent of PCBs to PCDFs.

Stalling and Rappe are currently working to identify the chemical structures of the PCDFs in their samples. "Once specific PCDFs in fish are identified," Stalling said, "laboratory scientists will have a better idea how they are formed and which structures should be tested for possible toxic effects in fish and other aquatic organisms."

### God's Dog Moves East

The Navajo call him "God's Dog," echoed in his scientific name, *Canis latrans* ("barking dog"). However, his more romantic common name derives from Coyotl, sacred god of the Aztecs. He is the coyote, that indispensable part of a Western desert night. However, this adaptable creature has now made his home in the East.

Since the turn of the century, the coyote has pushed eastward from the Great Lakes region to reach the Atlantic. Moving southeastward from Ontario, it has become firmly established in northern New England, and been sighted in every state northeast of Virginia. Filling in part the predatory role of the extinct eastern timber wolf, its expansion of range parallels the return of forests to more than 80 percent of Northern New England.

Eastern coyotes were first taken in New York in 1925, New Hampshire in 1944, Connecticut in 1956, and New Jersey in 1958. In northern New England, it is now a relatively common animal, with over 300 killed by hunters, trappers, and autos in Maine alone during 1977. Although more rare in southern New England and the mid-Atlantic states, it has become a breeding resident in forested, less populous areas.

What exactly is this new creature prowling the Northeastern woods? Information on its ancestry has come from cranial studies and observations of growth and behavioral development patterns. Notions of werewolves aside, it first was proposed that the eastern coyote was a "coy-dog," a fertile hybrid resulting from the mating of a coyote and a domestic dog. However, not showing the extreme variability exhibited by coyote-dog hybrids, these wild canids breed true, their offspring uniform in looks resembling the parents. Eastern coyotes and coy-dogs also have distinctly different behaviors. Behavioral and physical differences between western coyotes and the eastern variety have also discounted the theory that eastern ones are simply oversized western ones.

Eventually, its larger size and howling pattern led biologists to suspect that this wild canid might have acquired wolf antecedents during its relatively slow eastward movement through marginal







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