

Revealing Contaminants in Maine's Bald Eagles

Reprinted from July/August 1999 issue of the U.S. Fish and Wildlife Service's [Fish and Wildlife News](#).

After the Environmental Protection Agency banned the pesticide DDT in 1972, bald eagle populations across the nation began to rebound. Eagles reproduced so successfully that the Service reclassified the species from endangered to threatened in 1995, and recently proposed removing bald eagles from the endangered species list.

The rebound has been slower in Maine, however, where bald eagles are still struggling to reproduce at a healthy rate. Several years ago, a University of Maine graduate student began investigating the situation; her research helped bring to light several environmental contaminants affecting Maine's bald eagles, including polychlorinated biphenyls, or PCBs, dioxin and mercury.

In the late 1980s, environmental contaminants biologists in the Service's ecological services field office in Concord, New Hampshire, began working more closely with the New England states to identify joint research topics. Maine's bald eagles were high on the list. Enter Linda Welch with her graduate study proposal to determine whether or not environmental contaminants might play a role in the eagles' low reproductive rate.

Sponsored by the Service and assisted by a professional tree-climber, Welch took blood and feather samples from six to eight-week old eaglets in their high-rise nests. In all, during the summers of 1991 and 1992, Welch took more than 200 blood and feather samples from nests located both inland and along the Maine coast.

The results of Welch's research proved alarming. She found four types of contamination: DDE, a derivative of DDT that lingers in the environment; dioxin, a chemical discharged primarily from Maine's paper mills; PCBs, used in the manufacture of electrical equipment and banned in 1979; and mercury, both naturally-occurring and air-borne from fossil fuel plants in the Midwest. Maine's inland eagles were contaminated with high levels of mercury and the coastal birds carried the highest load of PCBs ever recorded in the United States. The levels of both contaminants were high enough to interfere with the eagles' productivity.

Welch's ground-breaking work with the popular bird caught the attention of many organizations and agencies, including the Environmental Protection Agency and the media. Research expanded beyond eagles. State health agencies reviewed and updated old studies on mercury contamination in freshwater fish populations. Eventually, every New England state issued public health advisories on the consumption of freshwater fish because of mercury contamination.

The impacts of contaminants on the environment even began to affect policy and legislative proceedings. In 1995, the Lincoln Pulp and Paper Company in Lincoln, Maine, sought approval from EPA for renewal of a discharge permit to continue releasing wastewater containing dioxin into the Penobscot River. The section of the river receiving the discharge provides habitat for several nesting eagle pairs as well as wintering eagles.

New England Field Office biologists reviewed the permit application and wrote a formal biological opinion. They determined that the contaminated discharge would hamper reproduction in adult bald eagles or cause the death of eagle chicks, constituting illegal take under the Endangered Species Act.

In the end, Lincoln Pulp and Paper's permit required the company to lower levels of dioxin in the discharge, take steps to minimize impacts to bald eagles, and monitor dioxin in the eagles' food chain. The monitoring studies will provide biologists with more information on the impacts of dioxin on fish and wildlife.

Linda Morse, New England Field Office, Concord, New Hampshire