

# DEPARTMENT of the INTERIOR

news release

FISH AND WILDLIFE SERVICE

FEATURE MATERIAL

For Release October 27, 1975

Levitt 202/343-5634

## HERONS MAY FORECAST ENVIRONMENTAL CHANGE

Herons, those slender, long-legged wading birds so common in marshes and estuaries, may be one of the future barometers of environmental change.

Recent research by the U.S. Fish and Wildlife Service indicates that fish-eating birds such as herons accumulate a variety of environmental pollutants and that they may be particularly sensitive to habitat alteration. By studying the distribution of wading bird colonies, population trends, reproductive success, and eggshell thickness in relation to environmental characteristics, scientists hope that these birds can serve as "biological indicators" to measure the impact of pollution and other habitat changes. The birds could become another environmental early warning system and help to predict potential calamities such as those that occurred in Lake Erie and Mobile Bay where high pollutant levels wiped out entire wildlife communities.

Herons, ibises, and other wading birds are particularly good research candidates because of their wide geographic distribution and position atop several food chains. They have a tendency to nest in

(more)

large colonies, often numbering in the thousands, and are relatively easy to observe. Scientists view them as offering an unusual opportunity to measure the effect of heavy metals, pesticides, and industrial pollutants that are washed into rivers and flushed downstream to estuaries.

In extremely urbanized areas, especially in New England and the Great Lakes States, heavy metal waste products such as mercury, lead, and cadmium often escape into rivers. Toxic chemicals used in industry such as polychlorinated biphenyls, called PCB's, and phthalates also escape into waterways. DDT, dieldrin, chlordane, toxaphene, and other pesticides that have been commonly used for agricultural purposes enter aquatic systems through drainage.

These chemicals play havoc with estuarine food webs. For example, PCB's and DDT accumulate in certain types of algae and bacteria which become the food of daphnia and other tiny organisms. Aquatic animals also take in these chemicals directly from the water through gills or body surface. When birds eat fish and other aquatic animals, they, too, acquire the chemicals, and if the pollutant level becomes high enough it may cause eggshell thinning or stop embryo development. Shells are sometimes so thin they break during nesting.

Dredge-and-fill operations, dikes, and other activities associated with coastal development also affect the birds, and the current studies should reveal new information for measuring these effects.

Although studies of pollutant effects on birds have been conducted for quite some time, it was only in 1972 that Service scientists began large-scale collection of information concerning wading birds. Researchers began and are continuing to identify the location of major heronries along the Atlantic and Gulf coasts. Information is being collected on species composition, reproductive success, population density, and pollutant levels in eggs and young. Since certain species of waders use specific types of habitat, this information is also being assembled. All of these data will be subjected to computer analysis and compared with data on water quality, chemical contamination, human disturbance and habitat structure.

Initial research indicates that pollutants do not affect all birds in the same way. Some species seem to tolerate pollutant levels that would be lethal to others. Similarly, high levels of pollutants accumulate in the tissues of certain birds while other species in the same environment have low levels. Thus, it is necessary to study various species to understand the significance of environmental pollutants.

To complete these studies, a considerable amount of additional work is required. As scientists and field researchers continue to collect the data needed, new and innovative wildlife research projects are being implemented by personnel at the U.S. Fish and Wildlife Service's Patuxent Wildlife Research Center in Laurel, Maryland.

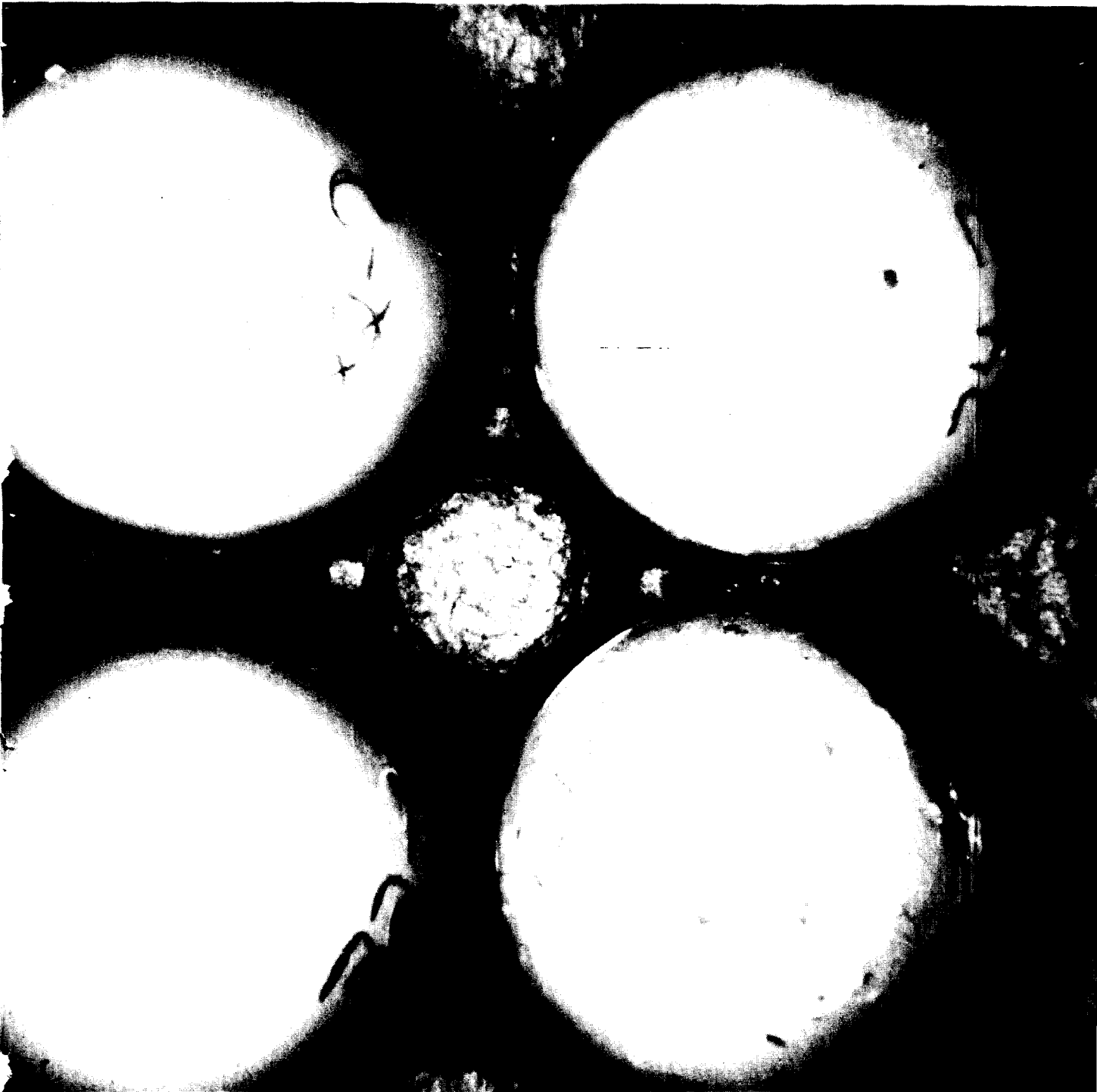
Some of the projects include:

- The establishment and study of a breeding colony of herons in captivity.
- The monitoring with time lapse photography of heron nesting behavior.
- The development of a miniature radio transmitter that can be fitted into an empty black-crowned night heron egg. The device would be equipped with thermal and gravity sensors that would record the incubation patterns of the birds and how often the eggs are being turned by the parents.

Long considered cradles of aquatic life, estuaries are prime breeding grounds and nurseries for countless species of fish, shrimp, crabs, oysters, clams, birds, reptiles, and mammals. Each species occupies and depends upon a specific ecological niche. Each exists in a complex web of interdependent food chains, and a decline in the population of any one species may have devastating effects on dozens of others. Biologists are hopeful that their research on herons and wading birds can be used to prevent such disasters. However, they point out that the additional research required may take years to complete.

x      x      x

Editors may obtain glossy prints of attached photo from Public Affairs, U.S. Fish and Wildlife Service, Department of the Interior, Washington, D. C. 20240, or by telephoning (202) 343-8770.



Pesticides caused severely thinned eggshells in these heron eggs. Some eggshells are so thin, they crack during nesting.