

*A league and a league of marsh-grass,
waist-high, broad in the blade,
Green, and all of a height,
and unflecked with a light
or a shade . . .*

The Marshes of Glynn
Sidney Lanier (1878)

OUR NATION'S WETLANDS

Once there were many unspoiled wetlands to celebrate. Now the loss and degradation of these and other habitats threaten the future of our Nation's fish and wildlife.

CAUSES OF LOSS. Wetland habitat is especially vulnerable to human development and, along the coast, to the natural destruction of erosion and storms. For centuries, wetlands such as swamps and bogs were considered wastelands, only useful if drained or filled for agriculture, industry, or housing. Coastal marshes, estuaries, and barrier islands fared no better; the beauty of the coast drew people to seek recreation and homes near areas that were also critical as fish and shellfish nurseries and wildlife habitat.

EXTENT OF LOSS. Of the 215 million acres of wetlands in the continental United States at the time of European settlement, less than 99 million exist today. Annual wetland losses average 458,000 acres.

And the loss continues.

Can We Help?

The Center provides technical assistance to other Fish and Wildlife Service units, State and Federal agencies, and interested public and private groups. For information about our technical assistance, research and development, or publications, contact:

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U.S. Department of the Interior
Fish & Wildlife Service



**NATIONAL
WETLANDS
RESEARCH
CENTER**



NATIONAL WETLANDS RESEARCH CENTER



Recognizing the seriousness of wetland problems, the U.S. Fish and Wildlife Service in 1986 created the National Wetlands Research Center in Slidell, LA, with field stations in Baton Rouge, LA, Corpus Christi, TX, and Vicksburg, MS. The Center had formerly been the National Coastal Ecosystems Team, established in 1975 to synthesize and dis-



seminate coastal information. OUR MISSION is to provide national leadership in research and development studies that address resource issues related to the protection, restoration, and management of wetlands, with an emphasis on wintering waterfowl.

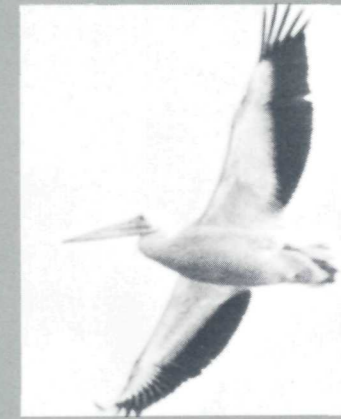
OUR STUDIES focus on Wetlands Ecology, Wintering Waterfowl, and Technology Development. Disciplines include ecology, hydrology, geography, oceanography,



LA Wildlife & Fisheries

computer analysis, and wildlife, waterfowl, and fishery biology.

COOPERATIVE STUDIES are conducted with state agencies and universities such as Louisiana State and Corpus Christi State Universities and Texas A&M. Cooperating federal agencies include the Environmental Protection Agency, Minerals Management Service, Bureau of Land Management, the U.S. Army Corps of Engineers, and the Fish and Wildlife Service's National Wildlife Refuges, Cooperative Units, Research Centers, and Ecological Service Offices.



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Staff members also work with scientists and committees from Canada, Mexico, South America, Europe, the U.S.S.R., and the People's Republic of China.

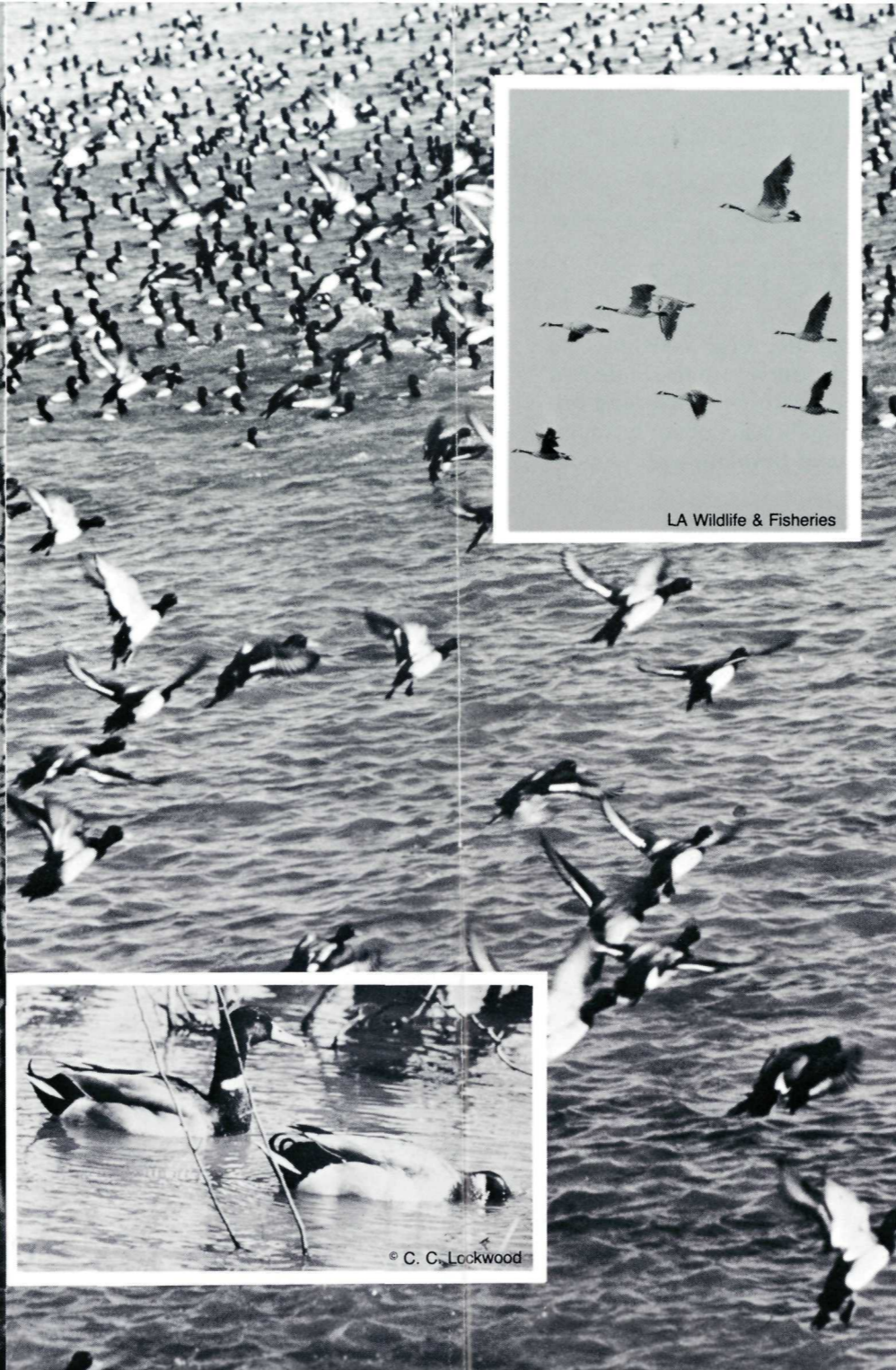


Wetlands Ecology Research

MODELING. An example of the tremendous national loss of wetlands is the critical loss of bottomland hardwoods in the lower Mississippi River floodplain. To aid managers of this resource, the Center develops and applies computerized models such as FORFLO, which predicts the effects over time of hydrologic changes on plant species composition within the bottomland hardwood community. FORFLO has been used to predict impacts of green-tree reservoirs, floodway levee construction, and reservoir construction upstream of wetland forests. The Center also develops models of the structure and function of other wetlands such as seagrass beds to predict how these systems will react to natural and human alterations.

WETLAND MANAGEMENT AND RESTORATION. Permit activities and legislative mandates increasingly require or promote wetland restoration and creation to offset habitat losses from development and other impacts. But there is much we do not know about how to restore wetlands or how they will respond to management efforts. To provide guidance to managers and increase the likelihood of successful restoration, the Center gathers data on plant and animal ecology in both managed and natural wetland systems.

WETLAND PUBLICATIONS. The Center synthesizes the most current information on the ecology of biological communities and selected estuaries for publication as Community, Estuarine, or Ecological Profiles in the *Biological Report* series. Other series publications include Species Profiles, which give the life histories and environmental requirements of coastal fishes and invertebrates of commercial, sport, or ecological importance.



Wintering Waterfowl Research

Waterfowl research has traditionally focused on breeding birds in the belief that factors influencing reproduction were primarily responsible for regulating populations. Since the mid 1970's, however, interest has increased in the wintering period and the relation between reproductive and nonreproductive stages.

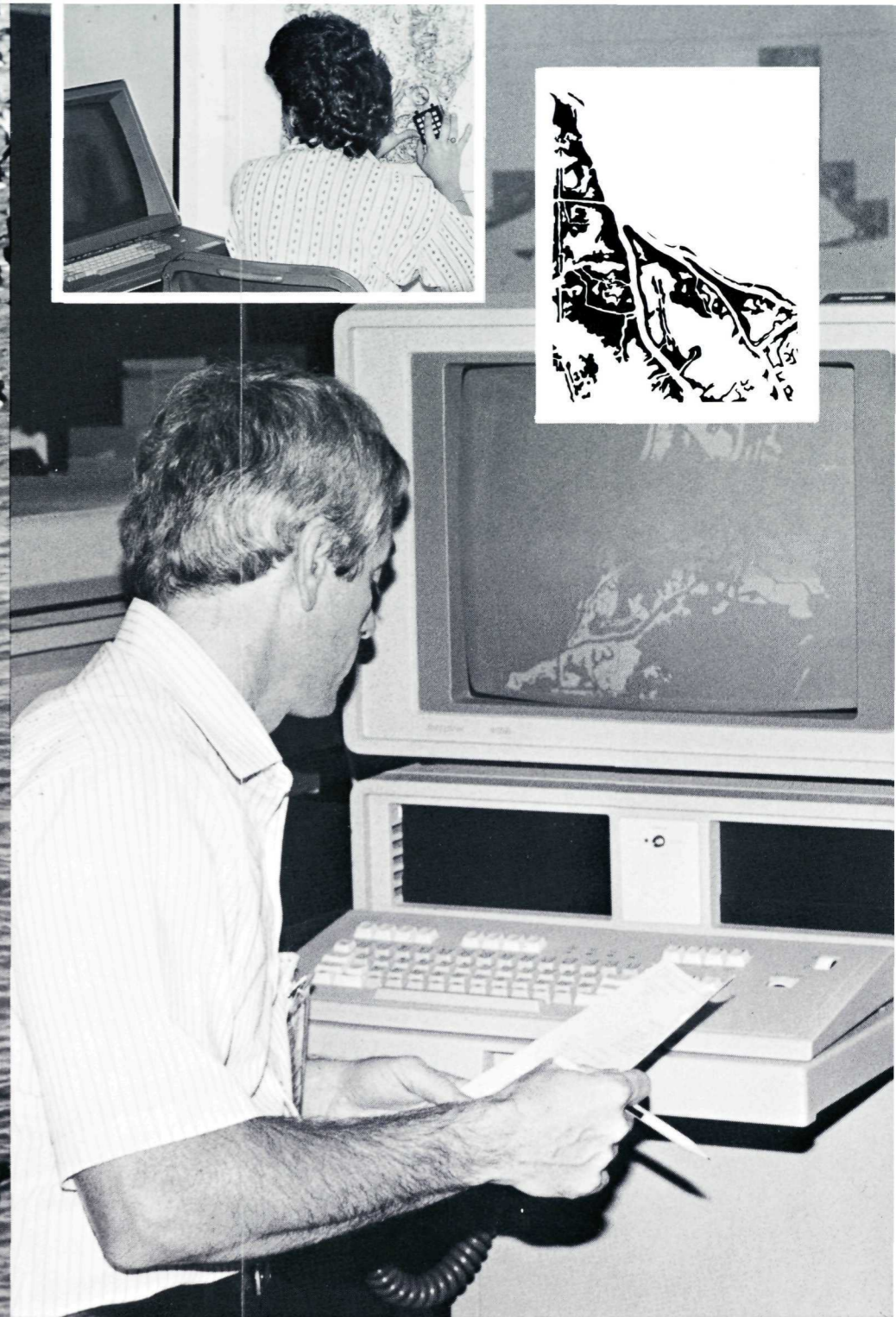
STUDY AREAS. To learn how environmental conditions of the wintering grounds influence waterfowl survival and recruitment, the Center has begun long-term research in the lower Mississippi River Valley and along the Gulf of Mexico. These areas are vital wintering grounds for the Mississippi and Central Flyways, migratory corridors for over half of North America's waterfowl.

MALLARDS. The recovery of midcontinental mallard populations is an immediate international priority. To help, the Center is studying the value to wintering waterfowl of temporarily flooded bottomlands in the lower Mississippi Valley.

CANVASBACKS. Declining continental populations of canvasbacks, despite U.S. hunting regulations, suggest that recruitment and nonhunting mortality may be regulating their numbers. The Center is estimating daily survival rates and identifying mortality causes in the gulf coast region.

REDHEADS. Population decline and possible contaminant problems associated with redheads wintering along the gulf coast have caused concern. The Center studies their feeding ecology, population, distribution, habitat use; the effects of contaminants in foods; and the concentration of contaminants in body tissue.

OTHER WATERFOWL. Declining populations of mottled duck, pintail, and other species are also a concern. The Center is developing census techniques to provide better population estimates for these waterfowl and is supporting research on habitat requirements of mottled duck broods.



Technology Development

RESEARCH includes studies on the effects of contaminated sediments in estuaries on fish and wildlife resources, analyzing cumulative impacts of development on wetlands, and evaluating wetland mitigation techniques.

GEOGRAPHIC INFORMATION SYSTEMS are used to inventory and monitor changes in critical wetland habitats caused by natural and human impacts. Habitats are identified from aerial photographs and delineated on base maps. In turn, these base maps are converted into digital form for analysis and display as computer-generated maps and tables.

Numerous coastal studies, such as the Mississippi River Delta study, graphically depict the immense loss of habitat vital to the survival of many species. Other projects use computerized cartographic modeling techniques to predict impacts of wetland contaminants on fish and wildlife resources. Examples include waterborne contaminant studies in San Joaquin Valley, CA, and wetland modifications in Tampa Bay, FL.

FUTURE DEVELOPMENTS. Although geographic information systems are used extensively, the Center is committed to developing new methods of monitoring and modeling habitat change. Image processing of satellite data and airborne video offer the potential for obtaining fast, low-cost data over relatively large geographic areas.