

The 3 chapters of Section III, “Urban Habitats and Hazards,” focus on the structure and function of urban ecosystems, with descriptions and discussions of the types of green spaces, gray spaces (buildings, roads, etc.), and urban streams where urban wildlife management takes place. The book also touches on the effects of habitat fragmentation, supplemental feeding, animal damage control activities, and environmental pollutants on wildlife population dynamics.

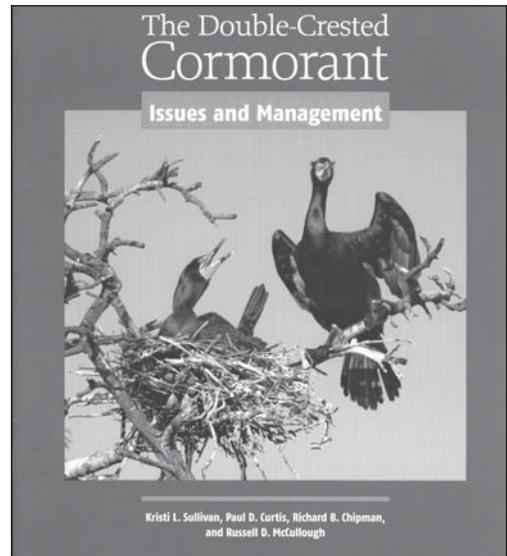
The authors selected several species to showcase in Chapter 11, “The Ecology and Management Considerations of Selected Species”; they include coyotes, black bears, American crows, Mexican free-tailed bats, feral cats, and feral hogs. I found the selection of species examined in this section to be unusual, with a disproportionate amount of text dedicated to feral hogs. Instead of their devoting 13 of the 40 pages of this chapter to feral hog management, I would have preferred to see other species addressed, such as blackbirds, gulls, and woodpeckers, that present widespread problems.

Chapter 12 is devoted to the distribution, abundance, and management considerations of resident Canada geese and urban white-tailed deer. I felt this chapter was done well, as it focuses on 2 species that pose an urban problem in most of the United States. Part of this chapter discusses the role of white-tailed deer in relation to Lyme disease and its potential threats to humans. This was a nice addition to this chapter, but it is the only in-depth discussion of a zoonotic disease in this book. Perhaps a chapter or a section on zoonoses could have been added to address diseases such as avian influenza, rabies, and other diseases that are currently at the forefront of public attention.

While *Urban Wildlife Management* is written in textbook style, it is easy to read and incorporates good anecdotal support. Most chapters include perspective essays or case studies related to the chapter topic. These perspective essays complement the rest of the chapters, and they provide a nice recess from the usual textbook writing style.

Overall, I feel that *Urban Wildlife Management* addresses an important area of wildlife management that generally has not received its due attention. Adams et al. have done a commendable job of compiling data and filling a void in the

study of urban wildlife management.*



The Double-crested Cormorant: Issues and Management

by Kristi L. Sullivan, Paul D. Curtis, Richard B. Chipman, and Russell D. McCullough. Cornell University, Department of Natural Resources. Ithaca, New York, USA. 2006. 32 pages.

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FISH-EATING BIRDS and their interactions with fisheries cause mixed feelings for many people. Avian and human fisheries are perceived to be in conflict throughout the world, particularly in areas where piscivorous bird populations are increasing numerically and expanding geographically. These interactions have long been the subject of research, with papers dating back to at least the 1930s. Not only are the conflicts of fish-eating birds of scientific concern, the birds also cause political, biological, ecological, and socioeconomic issues throughout the country.

The double-crested cormorant (*Phalacrocorax auritus*) is the most numerous and widespread North American cormorant. It is also the only cormorant that occurs in large numbers inland, as well as along the coast. Growing in numbers

throughout its range, this cormorant is increasingly being blamed for declines in sport fisheries and is causing devastating economic losses for aquaculture facilities. It has the ability to transmit disease, destroy vegetation and habitat, reduce sport fish numbers, and cause a significant monetary loss to aquaculture producers.

This 32-page bulletin was created to serve as a guide to the management issues associated with the double-crested cormorant in the interior United States and the northeastern Atlantic Coast. The bulletin is arranged into 7 sections and is written in a format that is very easy to follow and read, with pictures that aid the reader in visualizing the magnitude of destruction that cormorants cause to a wide variety of stakeholders. The intended audiences include anglers, fish-hatchery operators, fisheries and wildlife professionals, lake association members, nature center personnel, cooperative extension educators, secondary school teachers, and the interested public. The introduction explains the factors that have led to the increase of the double-crested cormorant population. The authors do an excellent job summarizing the population fluctuations of the cormorant and explaining why their numbers are currently so high.

The biology and natural history section summarizes the description, habitat, breeding and nesting behavior, migration, food and feeding habits of double-crested cormorants. A map summarizing the migration path of 14 cormorants equipped with satellite-transmitting radio collars displays 2 primary migration routes: down the Atlantic Coast and through the Missouri and Mississippi river valleys to the Gulf Coast. Cormorants are adaptable and opportunistic, feeding on fish that are both easy to catch and abundant. Throughout their migration, cormorants feed primarily on small, bottom-dwelling, or schooling, fish. They congregate where there are high concentrations of fish (release sites, aquaculture facilities, dams, etc.) causing significant local impacts.

The main section of the bulletin, titled "Concerns about Cormorants," covers impacts on recreational fisheries and aquaculture, effects on vegetation and habitat, Newcastle disease, and impacts on other bird species, recreation, property values, and tourism. The

authors want to educate anglers on the complexity of open water systems. In the "Impacts on Recreational Fisheries" section, the authors state, "The impacts of any single predator species are difficult to demonstrate with a high degree of certainty," acknowledging that no significant research concludes that the double-crested cormorant is the single factor contributing to the decline of sport fish.

One section of the bulletin does an excellent job of presenting management tools (both lethal and nonlethal) available to discourage cormorants from using specific sites. Methods include audio and visual harassment in conjunction with overhead wires and shooting as an effective way to deter cormorants from a site of concern. In addition, pyrotechnics can be combined with shooting to enhance the effectiveness of control.

The bulletin outlines new strategies for managing cormorant damage and increasing local control by utilizing the Public Resource Depredation Order and the Aquaculture Depredation Order. These federal orders were set by the U.S. Fish and Wildlife Service (FWS). The FWS issues depredation permits to enable the public to engage in legitimate wildlife-related activities that would otherwise be prohibited by law. The depredation permit program ensures that such activities are carried out in a manner that safeguards wildlife. Private landowners also may obtain depredation permits if cormorants cause damage to privately-stocked ponds, physical structures, vegetation, or if the birds pose a human health and safety hazard.

This bulletin clearly and effectively outlines the human–wildlife conflict issues posed by the double-crested cormorant and offers stakeholders practical suggestions to control the destruction caused by these water birds. *
