Cormorants and Human Interactions: An Introduction

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Abstract.—This article introduces the special publication prepared for *Colonial Waterbirds* from the proceedings of the symposium "The Double-crested Cormorant: Biology, Conservation and Management" held as part of the Colonial Waterbird Society Annual Meeting at the University of Mississippi, Oxford, Mississippi, USA, 14-18 October 1992. The twenty-seven papers presented fall into six subject categories – population history, population dynamics, feeding ecology, fisheries and aquaculture, cormorants and human interactions, management responsibility and future needs – and form four parts: "The Bird and the Problem" (three introductory papers), "Regional Distribution, Status, and Conflicts" (19 papers), "Management Responsibility and Policy" (three papers), and "Conclusions and Recommendations" (two papers). Together, they provide a small first step at looking at problems associated with cormorants, their origins within cormorant ecology and population dynamics, and an evaluation of the nature of problems where they occur, both in Mississippi and in other aquacultural and natural systems, and what approaches can be taken to resolve them.

Key words.—Animal control, aquaculture, avian biology, Channel Catfish, colonial waterbirds, conservation, cormorant, distribution, Double-crested Cormorant, fish farms, *Ictalurus punctatus*, management, *Phalacrocorax auritus*, policy, population biology, research.

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Human conflicts with animals go back at least as far as humans have been a species (Cansdale 1952, Fisher and Lockley 1954). We have spent a great deal of our evolutionary history running from a variety of animals, when our position at the top of the food chain remained in doubt. Even when we exterminated most of the large animals that might contest our position, we barely held our own in competition with micro-organisms that foraged on us unimpeded for much of our history (see Crosby 1986). The still recent triumphs over smallpox and polio represent significant victories over such plagues, but the rise in new disease-bearing organisms suggests that the war is far from over (Institute of Medicine 1992, Garrett 1994).

At the same time, we have entered into many mutually profitable relationships with animals, such as the yeast that makes bread and beer, the cereals and cattle that feed us, the cotton that clothes us, and the dogs that protect and befriend us (e.g., Zeuner 1963, Thévenin 1967). We have also chosen to protect species we exploited in the past, because we feel that we benefit from their presence and abundance (e.g., Nicholson 1951, Cansdale 1952, Fisher and Lockley 1954, Murton 1971).

In the Channel Catfish *Ictalurus punctatus* farms of the Mississippi Delta, we see these relationships coming together. We have domesticated the catfish and farm it, much as we farm cows or chickens. People can now eat catfish who could or would never dip a fishing line in a bayou. At the same time, we decided to protect and encourage the Double-crested Cormorant *Phalacrocorax auritus*, a species we came close to exterminating, through hunting, disturbance and chemical pollution. We protect the cormorant because we value wild species and because we value the clean water and ecosystems in which such species thrive, as we do their sensitivities to environmental change (see Furness and Greenwood 1993).

In the Delta region of Mississippi, wintering cormorants have found a home with a steady source of food that is also the liveli-

hood of a bunch of otherwise reasonable, but not masochistic, farmers who understandably do not want the birds that devastate their ponds. Human actions have clearly led to the problem. What can be done now to resolve it?

This collection of integrated papers is a first step, a look at the origins of the problem in cormorant ecology and population dynamics, an assessment of the problem, both in Mississippi and in other aquacultural and natural systems, and an evaluation of some of the approaches to solving the problem. The symposium from which the papers are derived, was a carefully structured meeting that was held as part of the Colonial Waterbird Society Annual Meeting at the University of Mississippi, Oxford, Mississippi, USA, 14-18 October 1992. The papers presented were supplemented by a series of workshops to determine where we should go from here: what we know about cormorants that could reduce the problem, what we still need to learn, and how the problem fits into the larger scheme of both cormorant population biology and aquaculture. These discussions allowed all interest groups—fish farmers to conservation biologists—to voice their views and contribute to finding solutions. In addition, it also benefited authors in preparing the final drafts of their manuscripts. Overall, the symposium was a small but forward step to getting colonial waterbird biologists to talk to those who have had problems with colonial waterbirds.

The mutual benefits of such dialogue might include a greater range of biologists to work on the cormorant and related problems, new approaches arising from research far removed from Mississippi, greater funding opportunities for researchers, and opportunities for experimental work on a scale otherwise impossible. In short, this meeting and its workshops were just a beginning to the search for wise answers to difficult environmental and socio-economic problems. The hope is for the development of rational and meaningful solutions that will serve to safeguard and sustain the systems required both by wildlife and humans.

THE SPECIAL PUBLICATION

The monograph "The Double-crested Cormorant: Biology, Conservation and Management" has four parts. In Part One, "The Bird and the Problem," Hatch discusses characteristics of the species' range, its taxonomic and geographic divisions, followed by a review of the present status and recent changes of each. Duffy then provides a brief history of associations between cormorants and humans focusing upon the interrelationships between ecological aspects of cormorant biology and human sociology. Part One concludes with a consideration by Price and Nickum of the economics of aquaculture developments, past and present, and the suspected injury to such commercial fishery endeavours by fish-eating animals such as the cormorant. Together, these three introductory papers lay the basis for the following nineteen papers presented in Part Two which are each dedicated to specific geographic regions or key components of regional conflicts.

Part Two, "Regional Distribution, Status, and Conflicts," looks at the status and problems of the Double-crested Cormorant in individual regions from the Great Lakes (Weseloh *et al.*, Ludwig *et al.*) through the Gulf of St. Lawrence (Bedard *et al.*), Scotian Shelf (Milton *et al.*) and the Gulf of Maine (Krohn *et al.*) southward along the Atlantic seaboard to Florida (Brugger), the south-central United States including Mississippi (Jackson and Jackson, Kirsch, Glahn and Stickley, Aderman and Hill, King *et al.*, Glahn *et al.*, Glahn and Brugger, Mott and Boyd) and Texas (Thompson *et al.*), and the Pacific coast from western Mexico north to Alaska (Carter *et al.*, Stenzel *et al.*). As a case study, emphasis is placed on a seven paper overview of the perceived impact of cormorants on the catfish industry in the Delta region of Mississippi in an attempt to better understand the magnitude of the bird-human conflict and the nature of the management task in finding meaningful solutions to formidable problems. Collectively, the papers in Part Two provide a vivid picture of the immense

diversity of attitude and concern displayed towards the Double-crested Cormorant through its North American range. Clearly, the present need is to consider carefully all of these concerns in the development of any cormorant management plan.

Part Three, "Management Responsibility and Policy," addresses the mechanisms in place through regional, national and international legislation for the conservation and management of cormorants in North America, and the agencies responsible. The three summary papers by Trapp *et al.*, Acord, and Keith go a long way to reveal the complexities in the protection and management of a migratory bird species, where responsibility is not only shared between countries, but also within a single nation either by different federal government departments (United States) dedicated to opposing mandates (USFWS - protection, and USDA - damage control) or by numerous regional governments (Canada) with widely different policies varying from total protection to none (provincial legislatures). Of particular importance as far as management of cormorants is concerned are the relatively low likelihood of successful program development at either the national or international level and the vulnerability of the species to management responding only to local human needs and concerns, with little regard for biological requirements of the species throughout its range in North America. We all know that wise decision-making comes largely from a broad knowledge base, but how that is to be achieved through the narrow and region-specific matrix for management and policy that exits at the present time in the United States and Canada is unclear.

The final part, "Conclusions and Recommendations," is concerned with an overview of the research needs for the Double-crested Cormorant in North America (Erwin) and what we have learned from this symposium exercise (Nisbet). These two papers succeed admirably in briefly summarizing available information on the biology of cormorants with respect to their conservation and management requirements. By doing this, the summarizers have skillfully provided us with a workchart for the future, one that can be integrated with findings of researchers and decision-makers worldwide (e.g., Cormorant Research Group 1993, Bregnballe and Asbirk 1995, Kirby 1995, Platteeuw and van Eerden 1995).

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