

**UNITED STATES DEPARTMENT OF AGRICULTURE  
ANIMAL AND PLANT HEALTH INSPECTION SERVICE  
WILDLIFE SERVICES**

**ENVIRONMENTAL ASSESSMENT**

**Reducing Double-crested Cormorant Damage  
Through an  
Integrated Wildlife Damage Management Program  
In the State of Michigan**

**Prepared By:**

**UNITED STATES DEPARTMENT OF AGRICULTURE  
ANIMAL AND PLANT HEALTH INSPECTION SERVICE  
WILDLIFE SERVICES**

**In Cooperation with:**

**UNITED STATES DEPARTMENT OF INTERIOR  
FISH AND WILDLIFE SERVICE**

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## SUMMARY OF PROPOSED ACTION

The United States Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services (USDA, APHIS, WS) and the Department of Interior, U.S. Fish and Wildlife Service (USFWS) propose to implement a double-crested cormorant (*Phalacrocorax auritus*) damage management program in the State of Michigan, including the implementation of the Public Resource Depredation Order (PRDO) (50 CFR 21.48) as promulgated by the USFWS. An Integrated Wildlife Damage Management (IWDM) approach would be implemented to reduce cormorant damage and conflicts to aquaculture, property, natural resources, and human health and safety. Damage management would be conducted on public and private property in Michigan when the resource owner (property owner) or manager requests WS assistance. An IWDM strategy would be recommended and used, encompassing the use of practical and effective methods of preventing or reducing damage while minimizing harmful effects of damage management measures on humans, target and non-target species, and the environment. Under this action, WS could provide technical assistance and direct operational damage management, including non-lethal and lethal management methods by applying the WS Decision Model (Slate et al. 1992). When appropriate, physical exclusion, habitat modification, or harassment would be recommended and utilized to reduce damage. In other situations, birds would be humanely removed through use of shooting, egg addling/destruction, nest destruction, or euthanasia following live capture. In determining the damage management strategy, preference would be given to practical and effective non-lethal methods. However, non-lethal methods may not always be applied as a first response to each damage problem. The most appropriate response could often be a combination of non-lethal and lethal methods, or there could be instances where the application of lethal methods alone would be the most appropriate strategy. Wildlife damage management activities would be conducted in the State, when requested and funded, on private or public property, after an *Agreement for Control* or other comparable document has been completed. WS will acquire the necessary landowner permission prior to conducting cormorant damage management activities, including the appropriate landowner permission prior to conducting breeding colony control activities. All management activities would comply with appropriate Federal, State, and Local laws, including applicable laws and regulations authorizing take of double-crested cormorants, and their nests and eggs. The USFWS would be responsible for insuring compliance with the regulations at 50 CFR 21.48 and that the long-term sustainability of regional cormorant populations is not threatened.

## ACRONYMS

ADC	Animal Damage Control
APHIS	Animal and Plant Health Inspection Service
AQDO	Aquaculture Depredation Order
AVMA	American Veterinary Medical Association
BBS	Breeding Bird Survey
BO	Biological Opinion
CDM	Cormorant Damage Management
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DCCO	Double-crested Cormorant
EA	Environmental Assessment
EIS	Environmental Impact Statement
EJ	Environmental Justice
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEIS	Final Environmental Impact Statement
FY	Fiscal Year
IWDM	Integrated Wildlife Damage Management
MDNR	Michigan Department of Natural Resources
MBTA	Migratory Bird Treaty Act
MIS	Management Information System
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
NFH	National Fish Hatchery
NHPA	National Historic Preservation Act
NWRC	National Wildlife Research Center
PRDO	Public Resource Depredation Order
ROD	Record of Decision
SOP	Standard Operating Procedure
T&E	Threatened and Endangered
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WS	Wildlife Services

**NOTE:** On August 1, 1997, the Animal Damage Control program was officially renamed to Wildlife Services. The terms Animal Damage Control, ADC, Wildlife Services, and WS are used synonymously throughout this Environmental Assessment.

## CHAPTER 1: PURPOSE AND NEED FOR ACTION

### 1.0 INTRODUCTION

Across the United States, wildlife habitat has been substantially changed as human population expands and more land is used to meet human needs. These human uses often come into conflict with the needs of wildlife which increases the potential for negative human/wildlife interactions. In addition, segments of the public desire protection for all wildlife; this protection can create localized conflicts between human and wildlife activities. The *Animal Damage Control Programmatic Final Environmental Impact Statement* (EIS) summarizes the relationship in American culture of wildlife values and wildlife damage in this way (USDA 1997):

*"Wildlife has either positive or negative values, depending on varying human perspectives and circumstances . . . Wildlife is generally regarded as providing economic, recreational and aesthetic benefits . . . and the mere knowledge that wildlife exists is a positive benefit to many people. However . . . the activities of some wildlife may result in economic losses to agriculture and damage to property . . . Sensitivity to varying perspectives and values is required to manage the balance between human and wildlife needs. In addressing conflicts, wildlife managers must consider not only the needs of those directly affected by wildlife damage but a range of environmental, sociocultural and economic considerations as well."*

Wildlife damage management is the science of reducing damage or other problems associated with wildlife and is recognized as an integral part of wildlife management (The Wildlife Society 1990). The USDA, Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS) program (formerly known as Animal Damage Control) uses an Integrated Wildlife Damage Management (IWDM) approach, known as Integrated Pest Management (WS Directive 2.105<sup>1</sup>) ([www.aphis.usda.gov/ws/wsdirectives.html](http://www.aphis.usda.gov/ws/wsdirectives.html)), in which a combination of methods may be used or recommended to reduce wildlife damage. IWDM is described in Chapter 1:1-7 of USDA (1997). These methods may include alteration of cultural practices and habitat and behavioral modification to prevent or reduce damage. The reduction of wildlife damage may also require that local populations be reduced through lethal means. Wildlife damage management is not based on punishing offending animals but as one means of reducing damage and is used as part of the WS Decision Model (Slate et al. 1992). The imminent threat of damage or loss of resources is often sufficient for individual actions to be initiated. The need for action is derived from the specific threats to resources or the public.

USDA/APHIS/WS is authorized by Congress to manage a program to reduce human/wildlife conflicts (Act of March 2, 1931, as amended (46 Stat. 1486; 7 U.S.C. 426-426c) and the Rural Development, Agriculture, Related Agencies Appropriations Act of 1988, Public Law 100-102, Dec. 27, 1987. Stat. 1329-1331 (7 U.S.C. 426c), and the Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act of 2001, Public Law 106-387, October 28, 2000. Stat. 1549 (Sec 767)). WS's mission is to "provide leadership in wildlife damage control to protect America's agricultural, industrial and natural resources, and to safeguard public health and safety (USDA 1989)." This is accomplished through:

- training of wildlife damage management professionals;
- development and improvement of strategies to reduce economic losses and threats to humans from wildlife;
- collection, evaluation, and dissemination of management information;
- cooperative wildlife damage management programs;

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<sup>1</sup> WS Policy Manual - Provides guidance for WS personnel to conduct wildlife damage management activities through Program Directives. WS Directives referenced in this EA can be found in the manual but will not be referenced in the Literature Cited Appendix.

- informing and educating the public on how to reduce wildlife damage and;
- providing data and a source for limited-use management materials and equipment, including pesticides (USDA 1989).

This Environmental Assessment (EA) evaluates ways by which this responsibility can be carried out to resolve conflicts with the double-crested cormorant (*Phalacrocorax auritus*; DCCO) in the State of Michigan. This analysis relies on data contained in published documents (Appendix A), including the *Animal Damage Control Program Final Environmental Impact Statement* (USDA 1997) and *United States Fish and Wildlife Service Final Environmental Impact Statement: Double-crested Cormorant Management in the United States* (USFWS 2003).

WS is a cooperatively funded, service-oriented program. Before any operational wildlife damage management is conducted, *Agreements for Control* or *WS Work Plans* must be completed by WS and the landowner/administrator. WS cooperates with other Federal, State and Local government entities, private property owners and managers, and with appropriate land and wildlife management agencies, as requested, with the goal of effectively and efficiently resolving wildlife damage problems in compliance with all applicable Federal, State, and Local laws.

The primary responsibility of the USFWS is fish, wildlife, and plant conservation. While some of the USFWS's responsibilities are shared with other Federal, State, Tribal, and local entities, the USFWS has special authorities in managing the National Wildlife Refuge System; conserving migratory birds, endangered species, certain marine mammals, and nationally significant fisheries; and enforcing Federal wildlife laws. The USFWS has the primary statutory authority to manage migratory bird populations in the U.S., authority which comes from the Migratory Bird Treaty Act (MBTA).

Individual actions on the types of sites encompassed by this analysis may be categorically excluded under the APHIS Implementing Regulations for compliance with the National Environmental Policy Act (NEPA) (7 CFR 372.5(c)). APHIS Implementing Regulations also provide that all technical assistance furnished by WS is categorically excluded (7 CFR 372.5(c)) (60 Federal Register 6,000, 6,003 (1995)). Double-crested cormorant damage management is a component of the Michigan WS program. Therefore, WS and USFWS have decided to prepare this EA to assist in planning cormorant damage management activities and to clearly communicate with the public the analysis of cumulative effects for a number of issues of concern in relation to alternative means of meeting needs for such management in the State, including the potential cumulative impacts on DCCOs and other wildlife species. This analysis covers WS's plans for current and future CDM actions wherever they might be requested or needed within the State of Michigan.

## **1.1 PURPOSE**

The purpose of this EA is to analyze the effects of WS activities in Michigan to manage damage and conflicts involving double-crested cormorants. Resources protected by such activities include aquaculture, property, natural resources, and human health and safety. This EA considers the potential environmental effects of conducting cormorant management throughout the state of Michigan.

## **1.2 NEED FOR ACTION**

As stated in the USFWS FEIS (USFWS 2003), the recent increase in the North American DCCO population, and subsequent range expansion, has been well-documented along with concerns of negative impacts associated with this expanding population. Wires et al. (2001) and Jackson and Jackson (1995) have suggested that the current DCCO resurgence may be, at least in part, a population recovery following years of DDT-induced reproductive suppression and unregulated take prior to protection under the MBTA. Nonetheless, there appears to be a correlation between increasing DCCO populations and growing concern about associated negative impacts, thus creating a very real management need to address those concerns.

The need to protect aquaculture, property, natural resources, and human health and safety from damage and conflicts associated with DCCOs is described in the USFWS FEIS (USFWS 2003) and is summarized in the following subsections.

### **1.2.1 Need for CDM to Protect Aquaculture**

Double-crested cormorants can feed heavily on fish being raised for human consumption, and on fish commercially raised for other purposes (USFWS 2003). The principal species propagated in the United States are catfish, trout, salmon, tilapia, hybrid striped bass, mollusks, shrimp, crayfish, baitfish and ornamental tropical fish (Price and Nickum 1995; USDA 2000). A 1998 census revealed that the U.S. domestic aquaculture industry represents slightly over 4,000 farms, with total sales reaching \$978 million (USDA 2000).

As reported by Chopak and Newman (1998), Michigan has about 70 active commercial aquaculture businesses located throughout the lower and upper peninsulas. In 1990, there were 117 licensed game fish breeders located in 54 of Michigan's 83 counties. At least 16 different species of fish are raised in Michigan, with rainbow, brook and brown trout, largemouth bass and bluegills the most common. Fish raised for food are the three trout species, catfish, and yellow perch. Fish sold through fee-fishing ponds include the three trout species, bass, bluegills and catfish. All of the species raised in Michigan are also sold as game fish planting stock. In 2003, there were 22 aquaculture facilities selling and/or distributing trout and/or their eggs in Michigan, with total fish sales of \$823,000 and \$663,000 in 2002 and 2003, respectively (USDA-NASS 2003).

The State of Michigan operates six hatcheries and five permanent salmonid egg take stations (MDNR 2003). Two hatcheries are in the Upper Peninsula (Marquette and Thompson State Fish Hatcheries). Four hatcheries are in the Lower Peninsula and all are located on the west side of the peninsula. In addition, Michigan has three national fish hatcheries (NFH) operated by the USFWS; Hiawatha Forest NFH, Jordan River NFH, and Pendills Creek NFH; and three hatcheries operated by Great Lakes Indian Fish and Wildlife Commission member Tribes.

The frequency of occurrence of cormorants at a given aquaculture facility can be a function of many interacting factors, including: (1) size of the regional and local cormorant population; (2) the number, size, and distribution of ponds/raceways; (3) the size, distribution, density, health, and species composition of fish populations in the ponds/raceways; (4) the number, size, and distribution of natural wetlands in the immediate environs; (5) the size distribution, density, health, and species composition of natural fish populations in the surrounding landscape; (6) the number, size, and distribution of suitable roosting habitat; and (7) the variety, intensity and distribution of local damage abatement activities. Cormorants are adept at seeking out the most favorable foraging and roosting sites. As a result, cormorants rarely are distributed evenly over a given region, but rather tend to be highly clumped or localized. Damage abatement activities can shift bird activities from one area to another thereby not eliminating predation but only reducing damage at one site while increasing at another (Aderman and Hill 1995; Mott et al. 1998; Reinhold and Sloan 1999; Tobin et al. 2002). Thus, it is not uncommon for some aquaculture producers in a region to suffer little or no economic damage from cormorants, while others experience exceptionally high losses (Glahn and Bruggers 1995, Glahn et al. 2000b, Glahn et al. 1999, Glahn et al. 2002).

Price and Nickum (1995) conclude that the aquaculture industry has small profit margins so that even a small percentage reduction in the farm gate value due to predation is an economic issue. The magnitude of economic impacts that cormorants have on the aquaculture industry can vary dependent upon many different variables including, the value of the fish stock, number of depredating birds present, and the time of year the predation is taking place.

In Michigan, from 1990-2003, there were 82 reported requests for WS assistance from aquaculture facilities. Within this time period, DCCOs caused approximately \$1,146,400 in reported losses to fish stock at these facilities (WS Management Information System (MIS) data). Two of these requests were verified where DCCOs caused approximately \$600 in losses to fish at each facility.

### 1.2.2 Need for CDM to Protect Fishery Resources

The rapid increase in double-crested cormorant populations over the last 25 years has led to an increase in conflicts between humans and cormorants including those associated with sport fisheries (USFWS 2003). Double-crested cormorants are opportunistic feeders and therefore feed on a wide diversity of fish species dependant upon location (USFWS 2003). In the Great Lakes, fish species such as the alewife and gizzard shad, appear to be the most important prey items. Stickleback, scuplin, cyprinids, and yellow perch, and at some localities, burbot, freshwater drum, and lake/northern chub are also important prey fish species (Wires et al. 2001). However, cormorants can have a negative impact on recreational fishing on a localized level (USFWS 2003). Recreational fishing benefits local and regional economies in many areas of the U.S., with some local economies relying heavily on income associated with recreational fisheries (USFWS 2003). Outdoor recreation in the Great Lakes region, including Michigan, makes up a substantial portion of the region's economy and quality of life (USFWS 2003). In 1988, anglers spent \$850 million with a resulting impact on tourism and fishing equipment sectors of Michigan's economy of \$1.4 billion (MDNR 1988).

The degree of the effects of DCCO predation on fish in a given body of water is dependent on a number of variables, including the number of birds present, the time of year at which predation is occurring, prey species composition, and physical characteristics such as depth or proximity to shore (which affect prey accessibility). Environmental and human-induced factors affect aquatic ecosystems and fish populations as well. These can be classified as biological/biotic (overexploitation, exotic species, etc.), chemical (water quality, nutrient and contaminant loading, etc.) or physical/abiotic (dredging, dam construction, hydropower operation, siltation, etc.). Such activities may lead to changes in fish species density, diversity, and/or composition due to direct effects on year class strength, recruitment, spawning success, spawning or nursery habitat, and/or competition (USFWS 1995). One such fisheries species that may be affected by DCCO predation in Michigan is the yellow perch.

The following is a *Discussion of Fishery Impacts in the Les Cheneaux Islands, Lake Huron, Michigan* taken from the USFWS FEIS (USFWS 2003, Appendix 6):

Since the late 1970s, the yellow perch fishery in the Les Cheneaux Islands of northern Lake Huron, which had for decades been economically important to the area (Diana et al. 1987), has experienced a marked decline (Lucchesi 1988). In the mid-1980s, local concern helped lead to a Michigan DNR study which revealed that overfishing may have been at least partially responsible for the decline of the fishery (Lucchesi 1998 *in* Belyea et al. 1999). A 175mm minimum size limit was instituted in 1987 in an effort to reduce mortality for smaller fish, but did not help the fishery as predicted (Schneeberger and Scott 1997 *in* Belyea et al. 1999). Yellow perch populations have been declining in many areas of the Great Lakes for several decades, most likely as a result of repeated recruitment failures (Lucchesi 1988, Haas and Schaeffer 1992). Fisheries managers and sport anglers are both concerned that predation pressure from the abundant and growing populations of DCCOs will either contribute to the further decline of yellow perch fisheries or prevent its recovery (Diana and Maruca 1997).

In 1980, DCCOs naturally reestablished at St. Martins Shoal, just west of the Les Cheneaux Islands, after many years of absence. Population surveys in 2001 estimated 4,039 DCCO pairs in the Les Cheneaux Islands area (D. Trexel, University of Minnesota,

unpubl. data). Since 1980, diet studies in the Great Lakes have shown that alewife is the most prominent prey item for DCCOs in nearly every location where alewife and cormorants are found together (Belonger 1983, Craven and Lev 1987, Karwowski et al. 1992, Ludwig et al. 1989, Ross and Johnson 1994, Weseloh and Ewins 1994).

A study conducted in 1995 (Belyea et al. 1999) by the Michigan Department of Natural Resources and the University of Michigan evaluated cormorant-perch interactions in the Les Cheneaux Islands area and, in particular, evaluated population trends in cormorants and yellow perch and determined the effect of cormorant foraging on the yellow perch fishery. The study found that yellow perch comprised about 10 percent of overall DCCO diet with alewives and sticklebacks being the most common prey items, although yellow perch represented 48 percent of DCCO diet for a short period in April (Belyea et al. 1999). It was estimated that the biomass of yellow perch consumed by DCCOs was 7,100 kg during the perch spawning season and 4,300 g during the remainder of the year (1995). These biomass estimates correspond to a range of 270,000 to 720,000 individual perch consumed, with the best estimate being 470,000 (Maruca 1997 in Belyea et al. 1999). Approximately 7,000 to 17,000 of these fish consumed were figured to be young of the year perch. The authors felt it was a reasonable assumption that the removal of up to 17,000 young of the year would not have a substantial effect on yellow perch recruitment (Belyea et al. 1999). As for legal size perch, mortality caused by cormorant predation and summer sport fishing was low (no more than 3.5%) compared to the estimated total annual mortality rate (45%). The authors concluded that “other sources of mortality, therefore, accounted for the majority of yellow perch deaths” (Belyea et al. 1999).

The waters of the Les Cheneaux Islands comprise a dynamic area of physical and biological complexity. Part of the biological complexity results from proximity to open waters of Lake Huron and the St. Mary’s River. The Les Cheneaux sport fisheries were consistently dominated by yellow perch, but catches of perch varied nearly six fold in the period between 1979 and 1995. Yellow perch populations vary throughout their range, due in part to differences in year class strength. Sport catches of other species (such as northern pike, smallmouth bass, chinook salmon, pink salmon, and lake trout) in the Les Cheneauxs vary dramatically and could have considerable influence on the fish community of the Les Cheneauxs, whether or not they directly influence yellow perch. Also, white perch were documented for the first time in the 1995 creel survey, and if numbers continue to increase, white perch may affect yellow perch populations through competition as they have in other waters (Parish and Margraf 1990, Prout et al. 1990).

Since the late 1970s, the yellow perch fishery in the Les Cheneaux Islands, Michigan has experienced a marked decline (Lucchesi 1988), with the fishery remaining relatively stable through the mid 1990s and then abruptly declined to a near total collapse in 2000 (Fielder 2004). The waters of the Les Cheneaux Islands comprise a dynamic area of physical and biological complexity with both natural and human induced factors potentially affecting the fisheries resource in the area (USFWS 2003). However, despite the recent collapse in angler harvest and fishing pressure, the total annual mortality rate in yellow perch has remained high, ranging from 67% to 78% from 1997 through 2002. During this same time period mean age of perch has also declined from 4.5 years to 1.5 years (Fielder 2004). Concurrent with the decline and collapse of the fishery and loss of perch in certain areas of the islands, was the proliferation of cormorants nesting in the area (Fielder 2004). Nesting populations in the area have increased nearly 6 fold since the early 1990’s to a local breeding population of over 5,500 nests in 2002 (Fielder 2004). As indicated by Trexel (2002), the Les Cheneaux DCCO population has slowed and may be to the point of stabilizing.

As described by USFWS (2003), fisheries investigations carried out in 1995 concurrently with

DCCO diet investigations in the Les Cheneaux Islands area found that DCCOs removed only 2.3% of the available yellow perch biomass and accounted for less than 20% of the total annual mortality of perch during that year. Overall, cormorants accounted for 0.8% of the mortality of legal-sized perch (178 mm), whereas summer sport fishing accounted for 2.5%. The conclusion was that DCCOs had minimal impact on the local perch population during that year because of the relatively high abundance of perch and because their predation was buffered for much of the year by abundant alewives (*Alsoa pseudoharengus*) (Fielder 2004, USFWS 2003). However, in the late 1990s the abundant populations of alewives that were fed upon by cormorants during the 1995 study became scarce raising the question of whether cormorant predation on perch may have been greater than previously measured (Fielder 2004).

Fielder (2004) observed that the timing of the rise in the DCCO population coincides closely with the collapse of the yellow perch fishery and such a predation scenario would account for the continued high total annual mortality rate and decline in mean perch age. Fielder (2004) further concludes that these data indicate that the collapse of the fishery and range contraction of perch were caused at least in part by the predatory effects of cormorants and that DCCOs may be contributing to the ongoing suppression of the perch population in the region. A Central Michigan University research study is currently underway investigating the impacts that DCCOs are having on the small-mouthed bass population in the Beaver Island Archipelago area of Michigan.

### **1.2.3 Need for CDM to Protect Wildlife and Native Vegetation, Including T&E Species**

Some of the species listed as threatened or endangered under the Endangered Species Act of 1973 are preyed upon or otherwise adversely affected by certain bird species, including double-crested cormorants (USFWS 2003). Double-crested cormorants are known to have a negative impact on wetland habitats (Jarvie et al. 1999, Shieldcastle and Martin 1999) and wildlife, including threatened and endangered species (Korfanty et al. 1999).

Cormorants can have a negative impact on vegetation by both chemical (cormorant guano) and physical means (stripping leaves and breaking tree branches) and is of concern in the Great Lakes region, including Michigan (USFWS 2003). Accumulation of cormorant droppings (which contribute excessive ammonium nitrogen), stripping leaves for nesting material, and the combined weight of the birds and their nests can break branches and ultimately kill many trees within 3 to 10 years (Bedard et al. 1995, Korfanty et al. 1999, Lemmon et al. 1994, Lewis 1929, Weseloh et al. 1995, Weseloh and Ewins 1994, Weseloh and Collier 1995). Lewis (1929) considers the killing of trees by nesting cormorants to be very local and limited, with most trees he observed to have no commercial timber value. However, tree damage may be perceived as a problem if these trees are rare species, or aesthetically valued (Hatch and Weseloh 1999).

Colonial waterbirds can be displaced by vegetation damage caused by cormorants. Double-crested cormorants can displace colonial species such as black-crowned night herons, egrets, great blue herons, gulls, common terns, and Caspian terns through habitat degradation and nest site competition (USFWS 2003). Cuthbert et al. (2002) examined potential impacts of DCCOs on great blue herons and black-crowned night-herons in the Great Lakes and found that DCCOs have not negatively influenced breeding distribution or productivity of either species at a regional scale, but did contribute to declines in heron presence or site abandonment in certain site specific circumstances. Furthermore, Cuthbert et al. (2002) did find that DCCOs have negative impacts on normal plant growth and survival on a localized level in the Great Lakes region. Wires and Cuthbert (2001) identified vegetation die off as an important threat to 66% of the colonial waterbird colony sites identified as priority conservation sites in the U.S. Great Lakes. Of the 29 priority conservation sites reporting vegetation die off as a threat, Wires and Cuthbert (2001) reported DCCOs present at 23 of these sites. Based upon survey information provided by Wires et al. (2001), biologists in the Great Lakes region, including Michigan, reported cormorants as having an impact to herbaceous layers and trees. Impacts to trees were reported mainly due to

guano deposition, and resulted in tree die off at breeding colonies and roost sites.

Impacts to the herbaceous layer were also reported due to guano deposition, and often this layer was reduced or eliminated from the colony site. In addition, survey respondents reported that DCCO impacts to avian species were mainly through habitat degradation and competition for nest sites (Wires et al. 2001).

#### **1.2.4 Need for CDM to Protect Property**

Birds frequently damage structures on private property, or public facilities, with fecal contamination. Accumulated bird droppings can reduce the functional life of some building roofs by 50% (Weber 1979). Corrosion damage to metal structures and painted finishes, including those on automobiles and boats, can occur because of uric acid from bird droppings. Property losses in Michigan associated with cormorants include impacts to stocked fish in privately-owned lakes; damage to boats and marinas or other properties found near cormorant breeding or roosting sites; and damage to vegetation on privately-owned land (USFWS 2003).

#### **1.2.5 Need for CDM to Protect Human Health and Safety**

Cormorants are a potential risk to human health and human safety (USFWS 2003). Of greatest concern are the potential impacts that cormorants may have on water quality and the aviation communities.

##### **Human Health Risks**

Concerns about water quality and DCCOs exist on two levels: contaminants and pathogens (USFWS 2003). Waterbird excrement can contain coliform bacteria, streptococcus bacteria, Salmonella, toxic chemicals, and nutrients, and it is known to compromise water quality, depending on the number of birds, the amount of excrement, and the size of the water body. Elevated contaminant levels associated with breeding and/or roosting concentrations of DCCOs and their potential effects on groundwater supplies are the major concerns regarding DCCO impacts to human health. Although this effect has not been documented, the potential still exists.

##### **Airport Safety**

It is widely recognized throughout the civil and military aviation communities that the threat to human health and safety from aircraft collisions with wildlife is increasing (Dolbeer 2000). Collisions between aircraft and wildlife are a concern throughout the world because they threaten passenger safety (Thorpe 1996), result in lost revenue and costly repairs to aircraft (Linnell et al. 1996, Robinson 1996), as well as erode public confidence in the air transport industry as a whole (Conover et al. 1995).

All birds are potentially hazardous to aircraft and human safety. The hazard potential is dependent on the physical, biological, and behavioral characteristics of each bird. Cormorants are a particular hazard to aircraft because of their body size and mass, slow flight speeds, and their natural tendency to fly in flocks. Blockpoel (1976) states that birds with slow flight speeds can create increased hazards to aircraft because they spend relatively greater lengths of time in aircraft movement areas. There is a very strong relationship between bird weight and the probability of plane damage (Anonymous 1992; Dolbeer 2000). For example, there is a 90% probability of plane damage when the bird weighs 70 or more ounces (4 1/3 pounds) versus a 50% probability of plane damage for a 6 ounce (1/3 pound) bird (Anonymous 1992). Adult DCCOs can weigh up to 6 pounds (Terres 1980).

According to the Federal Aviation Administration's Bird Strike database there were 16 wildlife strikes involving cormorants to civil aircraft in the U.S. from 1990-1999 (USFWS 2003). In October 2002, at Logan International Airport (Boston, MA), a B-767 struck a flock of double-

crested cormorants, resulting in an engine shut down, precautionary landing, and damage to the engine and landing lights. The aircraft was out of service for 3 days, and repairs cost \$1.7 million (Wright 2003). It is estimated that only 20 - 25% of all bird strikes are reported (Conover et al. 1995; Dolbeer et al. 1995; Linnell et al. 1996; Linnell et al. 1999), hence, the number of strikes involving double-crested cormorants is likely greater than Federal Aviation Administration records show. Since 1990, no cormorants have been identified as being involved in wildlife strikes to civil or military aircraft in Michigan.

WS recognizes that the risk to aircraft safety associated with DCCOs is low. WS has received requests for this type of assistance. In an effort to improve aviation safety at Detroit Metropolitan Airport, WS has removed nine DCCO's since 2001. These birds were utilizing drainage ponds which lie in close proximity to active runways and taxiways. Due to the fact that DCCO roosting and feeding sites are found in close proximity to some airports and military airbases in Michigan, it is possible that WS may receive requests for assistance in the future. WS may provide such assistance in Michigan if requested.

### 1.3 WS RECORD KEEPING REGARDING REQUESTS FOR CORMORANT DAMAGE MANAGEMENT ASSISTANCE

WS maintains a Management Information System (MIS) database to document assistance that the agency provides in addressing wildlife damage conflicts. MIS data is limited to information that is collected from people who have requested services or information from Wildlife Services. It does not include requests received or responded to by local, State or other Federal agencies, and it is not a complete database for all wildlife damage occurrences. The number of requests for assistance does not necessarily reflect the extent of need for action, but this data does provide an indication that needs exist.

The database includes, but is not limited to, the following information: species of wildlife involved; the number of individuals involved in a damage situation; tools and methods used or recommended to alleviate the conflict; and the resource that is in need of protection. Table 1-1 provides a summary of DCCO Technical Assistance projects completed by the Michigan WS program for Fiscal Year 1998-2003. A description of the WS Direct Control and Technical Assistance programs are described in Chapter 3 of this EA.

**Table 1-1. Number of independent incidents for cormorant technical assistance for Michigan Wildlife Services, by Fiscal Year.**

Fiscal Year	Aquaculture	Property	Health & Safety	Natural Resources	Other
1998	0	0	0	0	0
1999	0	0	0	0	0
2000	0	2	0	0	0
2001	4	1	0	0	0
2002	26	2	0	4	0
2003	25	1	1	5	0
Total	55	4	1	9	0

### 1.4 RELATIONSHIP TO OTHER ENVIRONMENTAL DOCUMENTS

**ADC Programmatic Environmental Impact Statement.** WS has issued a Final EIS (FEIS) on the

national APHIS/WS program (USDA 1997). Pertinent and current information available in the EIS has been incorporated by reference into this EA. The FEIS may be obtained by contacting the USDA, APHIS, WS Operational Support Staff at 4700 River Road, Unit 87, Riverdale, MD 20737-1234.

**Final Environmental Impact Statement: Double-crested Cormorant Management in the United States.** The USFWS has issued a Final EIS (FEIS) and Record of Decision (ROD) (68 Federal Register 58022) on the management of double-crested cormorants (USFWS 2003). WS was a formal cooperating agency in the preparation of the FEIS and has adopted the EIS to support WS' program decisions for its involvement in the management of DCCO damage. WS completed a ROD on November 18, 2003 (68 Federal Register 68020). This EA is tiered to that FEIS. Pertinent and current information available in the EIS has been incorporated by reference into this EA. The FEIS, final ruling and PRDO (see Appendix E) may be obtained by contacting the Division of Migratory Bird Management, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, MBSP-4107, Arlington, Virginia 22203 or by downloading it from the USFWS website at <http://migratorybirds.fws.gov/issues/cormorant/cormorant.html>. WS ROD may be viewed at <http://www.aphis.usda.gov/ws/pubs.html>.

## **1.5 DECISION TO BE MADE**

The decision making authority for each agency must select one of the alternatives analyzed in detail and will determine, based on the facts and recommendations contained herein, whether this Environmental Assessment is adequate to support a Finding of No Significant Impact (FONSI) decision, or whether an Environmental Impact Statement will need to be prepared.

Based on the scope of this EA, the decisions to be made by WS are:

- Should WS implement a CDM program including implementation of the PRDO?
- If not, how should cormorant damage and conflicts in the State be managed and what role should WS play in this?
- Might the proposed program have significant effects requiring preparation of an EIS?

## **1.6 SCOPE OF THIS ENVIRONMENTAL ASSESSMENT**

### **1.6.1 Actions Analyzed**

This EA evaluates double-crested cormorant damage management by WS to protect aquaculture, property, natural resources, and human health and safety on private and public land or facilities within the State wherever such management is requested from the WS program.

### **1.6.2 Period for Which this EA is Valid**

This EA would remain valid until both Michigan WS and USFWS along with other appropriate agencies determine that new needs for action, changed conditions, and/or new alternatives having different environmental effects must be analyzed. At that time, this analysis and document would be supplemented pursuant to NEPA. Review of the EA would be conducted each year to ensure that the EA is sufficient.

### **1.6.3 American Indian Tribes and Land**

Currently, Michigan WS does not have any MOUs with any American Indian tribe. If WS enters into an agreement with a tribe for CDM, this EA would be reviewed and supplemented if appropriate to insure compliance with NEPA. MOUs, agreements and NEPA compliance would be conducted as appropriate before conducting CDM on tribal lands.

### **1.6.4 Site Specificity**

This EA analyzes potential effects of WS's CDM activities that will occur or could occur at private and public property sites or facilities within Michigan. It also addresses the impacts of CDM in areas where additional agreements may be signed in the future. Because the proposed action is to reduce damage and because the program's goals and directives are to provide services when requested, within the constraints of available funding and workforce, it is conceivable that additional CDM efforts could occur. Thus, this EA anticipates this potential expansion and analyzes the impacts of such efforts as part of the program.

Planning for the management of cormorant damage must be viewed as being conceptually similar to federal or other agency actions whose missions are to stop or prevent adverse consequences from anticipated future events for which the actual sites and locations where they will occur are unknown but could be anywhere in a defined geographic area. Examples of such agencies and programs include fire and police departments, emergency clean-up organizations, insurance companies, etc. Although some of the sites where cormorant damage will occur can be predicted, all specific locations or times where such damage will occur in any given year cannot be predicted. The EA emphasizes important issues as they relate to specific areas whenever possible. However, the issues that pertain to the various types of cormorant damage and resulting management are the same, for the most part, wherever they occur, and are treated as such. The standard WS Decision Model (Slate et al. 1992) and WS Directive 2.105 is the routine thought process that is the site-specific procedure for determining methods and strategies to use or recommend for individual actions conducted by WS in the State (See USDA 1997 and Chapter 2 for a more complete description of the WS Decision Model as well as examples of its application). Decisions made using this thought process will be in accordance with any mitigation measures and standard operating procedures described herein and adopted or established as part of the decision.

The analyses in this EA are intended to apply to any action that may occur *in any locale* and at *any time* and by any agent (e.g. USFWS, MDNR, or tribal personnel) acting under the authority and guidance of WS within Michigan. In this way, APHIS-WS and USFWS believe they meet the intent of NEPA with regard to site-specific analysis and that this is the only practical way for WS to comply with NEPA and still be able to accomplish its mission.

### **1.6.5 Summary of Public Involvement**

Issues related to the proposed action were initially developed by WS and USFWS. In part, WS used the USFWS cormorant FEIS (2003) to further define the issues and identify preliminary alternatives. As part of this process, and as required by the Council on Environmental Quality (CEQ), APHIS-NEPA, and DOI implementing regulations, this document and its Decision are being made available to the public through "Notices of Availability" (NOA) published in local media and through direct mailings of NOA to parties that have specifically requested to be notified. New issues or alternatives raised after publication of public notices will be fully considered to determine whether the EA and its Decision should be revisited and, if appropriate, revised.

## **1.7 AUTHORITY AND COMPLIANCE**

### **1.7.1 Authority of Federal and State Agencies in Cormorant Damage Management in Michigan<sup>2</sup>**

**Wildlife Services Legislative Authority.** The USDA is directed by law to protect American agriculture and other resources from damage associated with wildlife. The primary statutory authority for the Wildlife Services program is the Act of 1931 (7 U.S.C. 426-426c; 46 Stat. 1468),

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<sup>2</sup>See Chapter 1 of USDA (1994) for a complete discussion of Federal laws pertaining to WS.

as amended in the Rural Development, Agriculture, Related Agencies Appropriations Act of 1988, Public Law 100-102, Dec. 27, 1987. Stat. 1329-1331 (7 U.S.C. 426c), and the Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act of 2001, Public Law 106-387, October 28, 2000. Stat. 1549 (Sec 767), which provides that:

*“The Secretary of Agriculture may conduct a program of wildlife services with respect to injurious animal species and take any action the Secretary considers necessary in conducting the program. The Secretary shall administer the program in a manner consistent with all of the wildlife services authorities in effect on the day before the date of the enactment of the Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2001.”*

Since 1931, with the changes in societal values, WS policies and its programs place greater emphasis on the part of the Act discussing “bringing (damage) under control”, rather than “eradication” and “suppression” of wildlife populations. In 1988, Congress strengthened the legislative directive and authority of WS with the Rural Development, Agriculture, and Related Agencies Appropriations Act. This Act states, in part:

*“That hereafter, the Secretary of Agriculture is authorized, except for urban rodent control, to conduct activities and to enter into agreements with States, local jurisdictions, individuals, and public and private agencies, organizations, and institutions in the control of nuisance mammals and birds and those mammals and birds species that are reservoirs for zoonotic diseases, and to deposit any money collected under any such agreement into the appropriation accounts that incur the costs to be available immediately and to remain available until expended for Animal Damage Control activities.”*

**U.S. Fish and Wildlife Service (USFWS).** The USFWS is responsible for managing and regulating the take of bird species that are protected under the Migratory Bird Treaty Act (MBTA) and those that are listed as threatened or endangered under the Endangered Species Act (ESA).

**Michigan Department of Natural Resources (MDNR).** The Michigan Department of Natural Resources authority in wildlife management is given under Article I, Part 5, Regulation 324.503 of Public Act 451 of 1994. This section states in part;

*The department shall protect and conserve the natural resources of this state; provide and develop facilities for outdoor recreation; prevent the destruction of timber and other forest growth by fire or otherwise; promote the reforestation of forest lands belonging to the state; prevent and guard against the pollution of lakes and streams within the state and enforce all laws provided for that purpose with all authority granted by law; and foster and encourage the protecting and propagation of game and fish.*

MDNR currently has a MOU with WS. The document establishes a cooperative relationship among WS and MDNR. Responsibilities include planning, coordinating, and implementing policies to address wildlife damage management and facilitating exchange of information.

### **1.7.2 Compliance with Other Federal Laws**

Several other Federal laws authorize, regulate, or otherwise affect WS wildlife damage management. WS complies with these laws, and consults and cooperates with other agencies as appropriate.

**National Environmental Policy Act.** WS prepares analyses of the environmental effects of program activities to meet procedural requirements of this law. This EA meets the NEPA

requirement for the proposed action in Michigan for both WS and USFWS. When WS operational assistance is requested by another Federal agency, NEPA compliance is the responsibility of the other Federal agency. However, WS could agree to complete NEPA documentation at the request of the other Federal agency.

**Endangered Species Act (ESA).** It is federal policy, under the ESA, that all federal agencies shall seek to conserve threatened and endangered (T&E) species and shall utilize their authorities in furtherance of the purposes of the Act (Sec.2(c)). WS conducts Section 7 consultations with the U.S. Fish & Wildlife Service to use the expertise of the USFWS to ensure that "any action authorized, funded or carried out by such an agency . . . is not likely to jeopardize the continued existence of any endangered or threatened species . . . Each agency shall use the best scientific and commercial data available" (Sec.7 (a)(2)). WS obtained a Biological Opinion (B.O.) from USFWS in 1992 describing potential effects on T&E species and prescribing reasonable and prudent measures for avoiding jeopardy (USDA 1997, Appendix F).

As part of the cormorant FEIS (USFWS 2003), the USFWS completed an intra-Service biological evaluation and informal Section 7 consultation on the management of double-crested cormorants in the U.S. and this resulted in specific provisions for T&E species protection in the regulations implementing the PRDO at 50 CFR 21.48 (see section 4.1.2).

**Migratory Bird Treaty Act of 1918 (16 U.S.C. 03-711; 40 Stat. 755), as Amended.** The Migratory Bird Treaty Act provides the USFWS regulatory authority to protect families of birds that contain species which migrate outside the United States. The law prohibits any "take" of these species by any entities, except as permitted or authorized by the USFWS.

The USFWS issues permits to requesters for reducing migratory bird damage in certain situations. WS provides on-site assessments for persons experiencing migratory bird damage to obtain information on which to base damage management recommendations. Damage management recommendations could be in the form of technical assistance or operational assistance. In severe cases of migratory bird damage, WS provides recommendations to the USFWS for the issuance of depredation permits to private entities or other agencies. The ultimate responsibility for issuing such permits rests with the USFWS.

**Executive Order 13186 of January 10, 2001 "Responsibilities of Federal Agencies to Protect Migratory Birds."** This Order states that each federal agency, taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations, is directed to develop and implement, a MOU with the USFWS that shall promote the conservation of migratory bird populations. WS has developed a draft MOU with the USFWS as required by this Order and is currently waiting for USFWS approval. WS will abide by the MOU once it is finalized and signed by both parties.

**The Native American Graves and Repatriation Act of 1990.** The Native American Graves Protection and Repatriation Act require Federal agencies to notify the Secretary of the Department that manages the Federal lands upon the discovery of Native American cultural items on Federal or tribal lands. Federal projects would discontinue work until a reasonable effort has been made to protect the items and the proper authority has been notified.

**National Historic Preservation Act (NHPA) of 1966 as amended.** The NHPA of 1966, and its implementing regulations (36 CFR 800), requires federal agencies to: 1) determine whether activities they propose constitute "undertakings" that has the potential to cause effects on historic properties and, 2) if so, to evaluate the effects of such undertakings on such historic resources and consult with the Advisory Council on Historic Preservation (i.e. State Historic Preservation Office, Tribal Historic Preservation Officers), as appropriate. WS actions on tribal lands are only

conducted at the tribe's request and under signed agreement; thus, the tribes have control over any potential conflict with cultural resources on tribal properties.

Each of the CDM methods described in this EA that might be used operationally by WS do not cause major ground disturbance, do not cause any physical destruction or damage to property, do not cause any alterations of property, wildlife habitat, or landscapes, and do not involve the sale, lease, or transfer of ownership of any property. In general, such methods also do not have the potential to introduce visual, atmospheric, or audible elements to areas in which they are used that could result in effects on the character or use of historic properties. Therefore, the methods that would be used by WS under the proposed action are not generally the types of activities that would have the potential to affect historic properties. If an individual activity with the potential to affect historic resources is planned under an alternative selected as a result of a decision on this EA, then site-specific consultation as required by Section 106 of the NHPA would be conducted as necessary.

There is potential for audible effects on the use and enjoyment of a historic property when methods such as propane exploders, pyrotechnics, firearms, or other noise-making methods are used at or in close proximity to such sites for purposes of hazing or removing birds. However, such methods would only be used at a historic site at the request of the owner or manager of the site to resolve a damage or nuisance problem, which means such use would be to benefit the historic property. A built-in mitigating factor for this issue is that virtually all of the methods involved would only have temporary effects on the audible nature of a site and can be ended at any time to restore the audible qualities of such sites to their original condition with no further adverse effects. Site-specific consultation as required by Section 106 of the NHPA would be conducted as necessary in those types of situations.

**Environmental Justice and Executive Order 12898 - "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations."** Executive Order 12898, promotes the fair treatment of people of all races, income levels and cultures with respect to the development, implementation and enforcement of environmental laws, regulations and policies. Environmental justice (EJ) is the pursuit of equal justice and protection under the law for all environmental statutes and regulations without discrimination based on race, ethnicity, or socioeconomic status. EJ is a priority within APHIS and WS and within DOI and USFWS. Executive Order 12898 requires Federal agencies to make environmental justice part of their mission, and to identify and address disproportionately high and adverse human health and environmental effects of Federal programs, policies and activities on minority and low-income persons or populations. APHIS implements Executive Order 12898 principally through its compliance with NEPA. All WS and USFWS activities are evaluated for their impact on the human environment and compliance with Executive Order 12898. Both agencies' personnel use only legal, effective, and environmentally safe wildlife damage management methods, tools, and approaches. It is not anticipated that the proposed action would result in any adverse or disproportionate environmental impacts to minority and low-income persons or populations.

**Protection of Children from Environmental Health and Safety Risks (Executive Order 13045).** Children may suffer disproportionately from environmental health and safety risks for many reasons. CDM as proposed in this EA would only involve legally available and approved damage management methods in situations or under circumstances where it is highly unlikely that children would be adversely affected. Therefore, implementation of the proposed action would not increase environmental health or safety risks to children.

## **CHAPTER 2: ISSUES AND AFFECTED ENVIRONMENT**

### **2.0 INTRODUCTION**

Chapter 2 contains a discussion of the issues, including issues that will receive detailed environmental impact analysis in Chapter 4 (Environmental Consequences), issues that have driven the development of mitigation measures and/or standard operating procedures, and issues that will not be considered in detail, with rationale. Pertinent portions of the affected environment will be included in this chapter in the discussion of issues used to develop mitigation measures. Additional descriptions of affected environments will be incorporated into the discussion of the environmental effects in Chapter 4.

### **2.1 AFFECTED ENVIRONMENT**

The areas of the proposed action could include areas in and around public and private facilities and properties and at other sites where cormorants may roost, loaf, feed, nest or otherwise occur. Examples of areas where cormorant damage management activities could be conducted are, but are not necessarily limited to: aquaculture facilities; fish hatcheries; lakes; ponds; rivers; swamps; marshes; islands; communally-owned homeowner/property owner association properties; boat marinas; natural areas; wildlife refuges; wildlife management areas; and airports and surrounding areas. The proposed action may be conducted on properties held in private, local, state or federal ownership. WS may conduct breeding bird control activities in any breeding colony site in Michigan, including any of the 48 breeding sites currently identified throughout the state (USDI/USGS 2001). This would include the Les Cheneaux Islands region of Lake Huron and possibly other nesting locations identified by Wires and Cuthbert (2001) as high priority for the conservation of colonial waterbirds in the U.S. Great Lakes. WS will consult the USFWS before undertaking cormorant control activities at the high-priority sites. Of these 48 breeding sites, 19 have been identified to occur on publicly owned land (see Appendix D). WS will acquire the necessary landowner permission prior to conducting cormorant damage management activities, including the appropriate landowner permission prior to conducting breeding colony control activities.

### **2.2 SUMMARY OF ISSUES**

The following issues have been identified as areas of concern requiring consideration in this EA. These will be analyzed in detail in Chapter 4:

- Effects on double-crested cormorant populations
- Effects on other wildlife species, including T&E species
- Effects on human health and safety
- Effects on aesthetic values
- Humaneness and animal welfare concerns of the methods used

#### **2.2.1 Effects on Double-crested Cormorant Populations**

A common concern among members of the public is whether wildlife damage management actions adversely affect the viability of target species populations. The target species selected for analysis in this EA is the double-crested cormorant (*Phalacrocorax auritus*).

#### **Impacts of West Nile virus on bird populations**

West Nile (WN) virus has emerged in recent years in temperate regions of North America, with the first appearance of the virus in North America occurring in New York City in 1999 (MMWR 2002, Rappole et al. 2000). Since 1999 the virus has spread across the United States and was reported to occur in 44 states and the District of Columbia in 2002 (MMWR 2002). West Nile virus is typically transmitted between birds and mosquitoes. Mammals can become infected if bitten by an infected mosquito, but individuals in most species of mammals do not become ill

from the virus. The most serious manifestation of the WN virus is fatal encephalitis in humans, horses, and birds. West Nile virus has been detected in dead bird species of at least 138 species, including DCCOs (CDC 2003). Although birds infected with WN virus can die or become ill, most infected birds do survive and may subsequently develop immunity to the virus (CDC 2003, Cornell University 2003). In some bird species, particularly Corvids (crows, blue jays, ravens, magpies), the virus causes disease (often fatal) in a large percentage of infected birds (Audubon 2003, CDC 2003, Cornell University 2003, MMWR 2002). In 2002, WN virus surveillance/monitoring programs revealed that Corvids accounted for 90% of the dead birds reported with crows representing the highest rate of infection (MMWR 2002). Large birds that live and die near humans (i.e. crows) have a greater likelihood of being discovered, therefore the reporting rates tend to be higher for these bird species and are a “good indicator” species for the presence of WV virus in a specific area (Cornell University 2003, Audubon 2003). According to US Geological Survey (USGS), National Wildlife Health Center (2003), information is not currently available to know whether or not WN virus is having an impact on bird populations in North America. USGS states that it is not unusual for a new disease to cause high rates of infection or death because birds do not have the natural immunity to the infection. Furthermore, it is not known how long it will take for a specific bird population to develop sufficient immunity to the virus. Surveys of wild birds completed in the last three years have shown that some birds have already acquired antibodies to the virus (USGS-WHC 2003). Based upon available Christmas Bird Counts and Breeding Bird Surveys, USGS-WHC (2003) states that there have been declines in observations of some local bird populations, however they do not know if the decline can be attributed to WN virus or to some other cause. A review of available crow population data by Audubon (2003) reveals that at least some local crow populations are suffering high WN virus related mortality, but crow numbers do not appear to be declining drastically across broad geographic areas. USGS does not anticipate that the commonly seen species, such as crows and blue jays, will be adversely affected by the virus to the point that these bird species will disappear from the U.S. (USGS-WHC 2003).

### **2.2.2 Effects on other Wildlife Species, Including T&E Species**

A common concern among members of the public and wildlife professionals, including WS and USFWS personnel, is the impact of CDM methods and activities on nontarget species, particularly T&E species. WS’s standard operating procedures (SOPs) include measures intended to mitigate or reduce the effects on nontarget species populations and are presented in Chapter 3. To reduce the risks of adverse effects to nontarget species, WS would select damage management methods that are target-selective or apply such methods in ways to reduce the likelihood of capturing or killing nontarget species.

Special efforts are made to avoid jeopardizing T&E species through biological evaluations of the potential effects and the establishment of special restrictions or mitigation measures. WS has consulted with the USFWS under Section 7 of the Endangered Species Act concerning potential effects of CDM methods on T&E species and has obtained a Biological Opinion. For the full context of the Biological Opinion, see Appendix F of the ADC FEIS (USDA 1997, Appendix F). WS is also in the process of reinitiating Section 7 consultation at the program level to assure that potential effects on T&E species have been adequately addressed.

As part of the cormorant FEIS (USFWS 2003), the USFWS completed an intra-Service biological evaluation and informal Section 7 consultation on the management of double-crested cormorants in the U.S. As stated in WS cormorant ROD (68 Federal Register 68020), applicable conservation measures identified in the FEIS and the regulations at 50 CFR 21.48 (d)(8) have been incorporated into the Michigan WS’ CDM program (see Section 4.1.2). Of the Federally listed species in Michigan, only the piping plover and bald eagle are of potential concern. Other listed species, including the Kitland’s warbler, are not anticipated to be impacted from this program. WS will evaluate potential impacts on T&E species once specific actions are identified to assure that

potential effects on T&E species have been adequately addressed.

Some nontarget species, including colonial waterbirds, may actually benefit from CDM. As described in Section 1.2.3, colonial waterbirds can benefit from reductions in cormorant populations, which may compete for nesting space and destroy important nesting habitat.

### **2.2.3 Effects on Human Health and Safety**

#### **2.2.3.1 Effects on Human Health and Safety from CDM Methods**

Some people may be concerned that WS's use of CDM methods, such as firearms and pyrotechnic scaring devices, could cause injuries to people. WS personnel occasionally use rifles and shotguns to remove or scare cormorants that are causing damage. Shotguns may also be used on airports to scare or remove birds which pose a threat to aircraft or air passenger safety. WS frequently uses pyrotechnics in noise harassment programs to disperse or move birds. There is some potential fire hazard to agricultural sites and private property from pyrotechnic use.

Firearm use is very sensitive and a public concern because of safety relating to the public, and misuse. To ensure safe use and awareness, WS employees who use firearms to conduct official duties are required to attend an approved firearms safety and use training program within three months of their appointment and a refresher course every two years afterwards. WS employees who carry firearms as a condition of employment are required to sign a form certifying that they meet the criteria as stated in the *Lautenberg Amendment* which prohibits firearm possession by anyone who has been convicted of a misdemeanor crime of domestic violence.

#### **2.2.3.2 Effects on Human Health and Safety from Not Conducting CDM**

The concern stated here is that the absence of adequate CDM would result in adverse effects on human health and safety, because cormorant damage would not be curtailed or reduced to the minimum levels possible and practical. The potential impacts of not conducting such work could lead to increased incidence of injuries, illness, or loss of human lives.

### **2.2.4 Effects on Aesthetic Values**

Aesthetics is a philosophy dealing with the nature of beauty, or the appreciation of beauty. Therefore, aesthetics is subjective in nature and is dependent on what an observer regards as beautiful. The human attraction to animals has been well documented throughout history and started when humans began domesticating animals. The American public is no exception, and today a large percentage of households have pets. However, some people may consider individual wild animals and birds as “pets” or exhibit affection toward these animals, especially people who enjoy coming in contact with wildlife. Therefore, the public reaction is variable and mixed to wildlife damage management because there are numerous philosophical, aesthetic, and personal attitudes, values, and opinions about the best ways to reduce conflicts/problems between humans and wildlife.

There may be some concern that the proposed action or alternatives would result in the loss of aesthetic benefits to the public, resource owners, or neighboring residents. Wildlife generally is regarded as providing economic, recreational, and aesthetic benefits (Decker and Goff 1987), and the mere knowledge that wildlife exists is a positive benefit to many people.

Wildlife populations provide a range of social and economic benefits (Decker and Goff 1987). These include direct benefits related to consumptive and non-consumptive use (e.g., wildlife-related recreation, observation, harvest, sale), indirect benefits derived from vicarious wildlife related experiences (e.g., reading, television viewing), and the personal enjoyment of knowing wildlife exists and contributes to the natural ecosystems (e.g., ecological, existence, bequest values) (Bishop 1987). Direct benefits are derived from a user's personal relationship to animals and may take the form of direct consumptive use (using the animal or intending to) or non-consumptive use (viewing the animal in nature or in a zoo, photography) (Decker and Goff 1987). Indirect benefits or indirect exercised values arise without the user being in direct contact with the animal and come from experiences such as looking at photographs and films of wildlife, reading about wildlife, or benefiting from activities or contributions of animals such as their use in research (Decker and Goff 1987). Indirect benefits come in two forms: bequest and pure existence (Decker and Goff 1987). Bequest is providing for future generations and pure existence is merely knowledge that the animals exist (Decker and Goff 1987).

Many people, directly affected by problems and threats to public health or safety associated with wildlife, insist upon their removal from the property or public location when they cause damage. Some members of the public have an idealistic view and believe that all wildlife should be captured and relocated to another area to alleviate damage or threats to public health or safety. Others, directly affected by the problems caused by wildlife, strongly support removal. Individuals not directly affected by the harm or damage caused by wildlife may be supportive, neutral, or totally opposed to any removal of wildlife from specific locations or sites. Those totally opposed to wildlife damage management want WS to teach tolerance for damage and threats to public health or safety, and that wildlife should never be killed. Some people would strongly oppose removal of wildlife regardless of the amount and type of damage. Some members of the public who oppose removal of wildlife do so because of human-affectionate bonds with individual wildlife. These human-affectionate bonds are similar to attitudes of a pet owner and result in aesthetic enjoyment.

### **2.2.5 Humaneness and Animal Welfare Concerns of Methods Used by WS**

The issue of humaneness and animal welfare, as it relates to the killing or capturing of wildlife is an important but very complex concept that can be interpreted in a variety of ways. Schmidt (1989) indicated that vertebrate pest damage management for societal benefits could be compatible with animal welfare concerns, if "*. . . the reduction of pain, suffering, and unnecessary death is incorporated in the decision making process.*"

Suffering is described as a "*. . . highly unpleasant emotional response usually associated with pain and distress.*" However, suffering "*. . . can occur without pain . . .*," and "*. . . pain can occur without suffering . . .*" (AVMA 1987). Because suffering carries with it the implication of a time frame, a case could be made for "*. . . little or no suffering where death comes immediately . . .*" (CDFG 1991), such as shooting.

Defining pain as a component in humaneness of WS methods appears to be a greater challenge than that of suffering. Pain obviously occurs in animals. Altered physiology and behavior can be indicators of pain, and identifying the causes that elicit pain responses in humans would "*. . . probably be causes for pain in other animals . . .*" (AVMA 1987). However, pain experienced by individual animals probably ranges from little or no pain to considerable pain (CDFG 1991). Pain and suffering, as it relates to WS damage management methods, has both a professional and lay point of arbitration. Wildlife managers and the public would be better served to recognize the complexity of defining suffering, since "*. . . neither medical or veterinary curricula explicitly address suffering or its relief*" (CDFG 1991).

Therefore, humaneness, in part, appears to be a person's perception of harm or pain inflicted on an

animal, and people may perceive the humaneness of an action differently. The challenge in coping with this issue is how to achieve the least amount of animal suffering within the constraints imposed by current technology and funding.

## **2.3 ISSUES CONSIDERED BUT NOT IN DETAIL WITH RATIONALE**

### **2.3.1 Appropriateness of Preparing an EA (Instead of an EIS) for Such a Large Area**

Some individuals might question whether preparing an EA for an area as large as Michigan would meet the NEPA requirements for site specificity. Wildlife damage management falls within the category of Federal or other agency actions in which the exact timing or location of individual activities cannot usually be predicted well enough ahead of time to accurately describe such locations or times in an EA or EIS. The WS program is analogous to other agencies or entities with damage management missions such as fire and police departments, emergency clean-up organizations, insurance companies, etc. Although WS can predict some of the possible locations or *types* of situations and sites where some kinds of wildlife damage will occur, the program cannot predict the specific locations or times at which affected resource owners will determine a cormorant damage problem has become intolerable to the point that they request assistance from WS. Nor would WS be able to prevent such damage in all areas where it might occur without resorting to destruction of wild animal populations over broad areas at a much more intensive level than would be desired by most people, including WS and State agencies. Such broad scale population control would also be impractical, or impossible, to achieve.

If a determination is made through this EA that the proposed action would have a significant environmental impact, then an EIS would be prepared. In terms of considering cumulative effects, one EA analyzing impacts for the entire State will provide a better analysis than multiple EA's covering smaller zones.

### **2.3.2 WS's Effect on Biodiversity**

The WS program does not attempt to eradicate any native species of wildlife in Michigan. WS operates in accordance with international, Federal and State laws, and regulations enacted to ensure species viability. Effects on target and nontarget species populations because of WS's lethal CDM activities are minor, as shown in Section 4.1.1 and 4.1.2. The effects of the WS program on biodiversity are not significant nationwide or statewide (USDA 1997).

### **2.3.3 Wildlife Damage is a Cost of Doing Business — a “Threshold of Loss” Should Be Established Before Allowing Any Lethal CDM**

WS is aware that some people feel Federal wildlife damage management should not be allowed until economic losses reach some arbitrary predetermined threshold level. Such policy, however, would be difficult or inappropriate to apply to human health and safety situations. Although some damage can be tolerated by most resource owners, resource owners and situations differ widely and a set wildlife damage threshold levels would be difficult to determine or justify. WS has the legal direction to respond to requests for assistance, and it is program policy to aid each requester to minimize losses. WS uses the Decision Model thought process discussed in Chapter 3 to determine appropriate strategies.

In a ruling for Southern Utah Wilderness Alliance, et al. vs. Hugh Thompson, Forest Supervisor for the Dixie National Forest, et al., the United States District Court of Utah denied plaintiffs' motion for preliminary injunction. In part the court found that a forest supervisor needs only show that damage from wildlife is threatened, to establish a need for wildlife damage management (Civil No. 92-C-0052A January 20, 1993). Thus, there is judicial precedence indicating that it is not necessary to establish a criterion such as percentage of loss of a particular resource to justify

the need for wildlife damage management actions.

## CHAPTER 3: ALTERNATIVES

Alternatives were developed for consideration using the WS Decision Model (Slate et al. 1992); Appendix J (“*Methods of Control*”), Appendix N (“*Examples of WS Decision Model*”), and Appendix P (“*Risk Assessment of Wildlife Damage Control Methods Used by USDA, Wildlife Services Program*”) of the ADC FEIS (USDA 1997); and Appendix 4 (“*Management Techniques*”) of the USFWS Cormorant FEIS (USFWS 2003).

### 3.0 ALTERNATIVES ANALYZED IN DETAIL

Alternatives analyzed in detail are:

- Alternative 1 - Integrated CDM Program, including implementation of the PRDO (Proposed Action).
- Alternative 2 - Non-lethal CDM Only By WS.
- Alternative 3 - Technical Assistance Only.
- Alternative 4 - No Federal WS CDM. This alternative consists of no CDM program by WS.
- Alternative 5 – Integrated CDM Program, excluding implementation of the PRDO (No Action). This is the “No Action” alternative as defined by the Council on Environmental Quality

### 3.1 DESCRIPTION OF THE ALTERNATIVES

#### 3.1.1 Alternative 1 - Integrated CDM Program, including implementation of the PRDO (Proposed Action)

WS and USFWS propose to implement a double-crested cormorant damage management program in the State of Michigan, including the implementation of the PRDO (50 CFR 21.48) as promulgated by the USFWS. An Integrated Wildlife Damage Management approach would be implemented to reduce cormorant damage and conflicts to aquaculture, property, natural resources, and human health and safety. Damage management would be conducted on public and private property in Michigan when the resource owner (property owner) or manager requests WS assistance. An IWDM strategy would be recommended and used, encompassing the use of practical and effective methods of preventing or reducing damage while minimizing harmful effects of damage management measures on humans, target and non-target species, and the environment. Under this action, WS could provide technical assistance and direct operational damage management, including non-lethal and lethal management methods by applying the WS Decision Model (Slate et al. 1992). When appropriate, physical exclusion, habitat modification, or harassment would be recommended and utilized to reduce damage. In other situations, birds would be humanely removed through use of shooting, egg addling/destruction, nest destruction, or euthanasia following live capture. In determining the damage management strategy, preference would be given to practical and effective non-lethal methods. However, non-lethal methods may not always be applied as a first response to each damage problem. The most appropriate response could often be a combination of non-lethal and lethal methods, or there could be instances where the application of lethal methods alone would be the most appropriate strategy. Wildlife damage management activities would be conducted in the State, when requested and funded, on private or public property, after an *Agreement for Control* or other comparable document has been completed. WS will acquire the necessary landowner permission prior to conducting cormorant damage management activities, including the appropriate landowner permission prior to conducting breeding colony control activities. All management activities would comply with appropriate Federal, State, and Local laws, including applicable laws and regulations authorizing take of double-crested cormorants, and their nests and eggs. The USFWS would be responsible for insuring compliance with the regulations at 50 CFR 21.48 and that the long-term sustainability of regional cormorant populations is not threatened.

### **3.1.2 Alternative 2 - Non-lethal CDM Only By WS**

Under this alternative, WS would be restricted to implementing or recommending only non-lethal methods in providing assistance with cormorant damage problems. Entities requesting CDM assistance for damage concerns would only be provided information on non-lethal methods such as harassment, resource management, exclusionary devices, or habitat alteration. However, it is possible that persons receiving WS' non-lethal technical and direct control assistance could still resort to lethal methods that were available to them. Information on lethal CDM methods would not be available from WS but would still be available to through sources such as USDA Agricultural Extension Service offices, USFWS, MDNR, universities, or pest control organizations.

### **3.1.3 Alternative 3 - Technical Assistance Only**

This alternative would not allow for WS operational CDM in Michigan. WS would only provide technical assistance and make recommendations when requested. Producers, property owners, agency personnel, or others could conduct CDM using any non-lethal or lethal method that is legally available to them. WS would not take part in the implementation of the PRDO.

### **3.1.4 Alternative 4 - No Federal WS CDM**

This alternative would eliminate WS involvement in CDM in Michigan. WS would not provide direct operational or technical assistance and requesters of WS services would have to conduct their own CDM without WS input. Information on CDM methods would still be available through other sources such as USDA Agricultural Extension Service offices, USFWS, MDNR, universities, or pest control organizations.

### **3.1.5 Alternative 5 - Integrated CDM Program, excluding implementation of the PRDO (No Action)**

This alternative would be similar to Alternative 1, with the exception that WS will not take part in the implementation of the PRDO. More specifically, WS would not kill DCCO's or conduct egg addling/destruction to protect public resources (fish, wildlife, plants, and their habitats) on private and public lands, and freshwaters under the authority provided to WS by 50 CFR 21.48. The MDNR and Indian Tribes would be able to implement the PRDO; and the USFWS would continue to issue migratory bird permits to take DCCOs and their eggs. An Integrated Wildlife Damage Management approach would be implemented to reduce cormorant damage and conflicts to aquaculture, property, natural resources, and human health and safety. Damage management would be conducted on public and private property in Michigan when the resource owner (property owner) or manager requests WS assistance including the use of lethal and non-lethal methods. Under this action, WS could provide technical assistance and direct operational damage management, including non-lethal and lethal management methods by applying the WS Decision Model (Slate et al. 1992).

## **3.2 CDM STRATEGIES AND METHODOLOGIES AVAILABLE TO WS IN MICHIGAN**

The strategies and methodologies described below include those that could be used or recommended under Alternatives 1, 2, 3 and 5 described above. Alternative 4 would terminate both WS technical assistance and operational CDM by WS. Appendix 4 of the USFWS cormorant FEIS (USFWS 2003) provides a more detailed description of the methods that could be used or recommended by WS.

### **3.2.1 Integrated Wildlife Damage Management (IWDM)**

The most effective approach to resolving wildlife damage is to integrate the use of several methods simultaneously or sequentially. The philosophy behind IWDM is to implement the best combination of effective management methods in a cost-effective<sup>3</sup> manner while minimizing the potentially harmful effects on humans, target and nontarget species, and the environment. IWDM may incorporate cultural practices (e.g., fish husbandry), habitat modification (e.g., exclusion, vegetation management), animal behavior modification (e.g., scaring, roost dispersal), and removal of individual offending animals (e.g., shooting, live capture), local population reduction (e.g., shooting, nest and egg destruction), or any combination of these, depending on the circumstances of the specific damage problem.

### **3.2.2 The IWDM Strategies That WS Employs**

#### **Technical Assistance Recommendations**

“Technical assistance” as used herein is information, demonstrations, and advice on available and appropriate wildlife damage management methods. The implementation of damage management actions is the responsibility of the requester. In some cases, WS provides supplies or materials that are of limited availability for non-WS entities to use. Technical assistance may be provided through a personal or telephone consultation, or during an on-site visit with the requester. Generally, several management strategies are described to the requester for short and long-term solutions to damage problems; these strategies are based on the level of risk, need, and the practicality of their application.

Under APHIS NEPA implementing regulations and specific guidance for the WS program, WS technical assistance is categorically excluded from the need to prepare an EA or EIS. However, it is discussed in this EA because it is an important component of the IWDM approach to resolving cormorant damage problems.

#### **Direct Damage Management Assistance**

This is the implementation or supervision of damage management activities by WS personnel. Direct damage management assistance may be initiated when the problem cannot effectively be resolved through technical assistance alone, and when *Agreements for Control* or other comparable instruments provide for direct damage management by WS. The initial investigation defines the nature, history, extent of the problem, species responsible for the damage, and methods that would be available to resolve the problem. Professional skills of WS personnel are often required to effectively resolve problems, especially if restricted use chemicals are necessary, or if the problems are complex.

#### **Educational Efforts**

Education is an important element of WS program activities because wildlife damage management is about finding balance and coexistence between the needs of people and needs of wildlife. This is extremely challenging as nature has no balance, but rather, is in continual flux. In addition to the routine dissemination of recommendations and information to individuals or organizations sustaining damage, lectures, courses, and demonstrations are provided to producers, homeowners, state and county agents, colleges and universities, and other interested groups. WS frequently cooperates with other agencies in education and public information efforts. Additionally, technical papers are presented at professional meetings and conferences so that WS personnel, other wildlife professionals, and the public are periodically updated on recent developments in damage management technology, programs, laws and regulations, and agency policies.

#### **Research and Development**

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<sup>3</sup>The cost of management may sometimes be secondary because of overriding environmental, legal, human health and safety, animal welfare, or other concerns.

The National Wildlife Research Center (NWRC) functions as the research arm of WS by providing scientific information and development of methods for wildlife damage management that are effective and environmentally responsible. NWRC scientists work closely with wildlife managers, researchers, field specialists and others to develop and evaluate wildlife damage management techniques. NWRC scientists have authored hundreds of scientific publications and reports, and are respected world-wide for their expertise in wildlife damage management.

### **3.2.3 Examples of WS Direct Operational and Technical Assistance in CDM in Michigan**

#### **Management of Damage to Aquaculture**

Michigan WS is currently cooperating with the Michigan Aquaculture Association<sup>4</sup>, the Michigan DNR, and private aquaculture producers and sportsman's clubs to resolve many problems caused by cormorants. Assistance is offered primarily in the form of technical assistance via site visits or phone consultations. Issues are addressed through an integrated program for conducting cormorant damage management activities. Michigan WS also works closely with the NWRC Starkville Field Station to collect data and evaluate problems related to fish-eating birds.

WS may receive requests for assistance in resolving aquaculture conflicts with cormorants in the future from entities previously discussed, or other agencies or property owners in Michigan. WS may provide technical assistance and/or direct operational assistance using any combination of approved methods discussed in this EA which are appropriate for use in these situations.

#### **Management of Damage to Property/Natural Resources**

Habitat damage by roosting cormorants within the Les Cheneaux islands in northern Lake Huron has been increasing over the last few years. Accumulation of the cormorants' acidic feces, the proclivity of stripping of leaves for nests and the weight of both birds and nests in trees can destroy vegetation (Bedard et al. 1995, Korfanty et al. 1999, Lemmon et al. 1994, Lewis 1929, Weseloh et al. 1995, Weseloh and Ewins 1994, Weseloh and Collier 1995).

The perch fishery around the Les Cheneaux islands was once an attractive fishing and tourist destination. However, the decline in the perch fishery and similar decline in the aesthetic appeal of the Les Cheneaux islands has reduced the attractiveness of this area for tourism. Assistance to the public concerned about overabundant cormorants has generally been in the form of non-lethal harassment with pyrotechnics. However, the use of non-lethal harassment may not be feasible in all situations. The use of pyrotechnics can displace and disrupt nesting colonial waterbirds in some situations, and the noise attributed to pyrotechnics can cause negative impacts to neighboring property owners. When WS assistance is provided in these situations, WS provides recommendations of how to minimize these impacts.

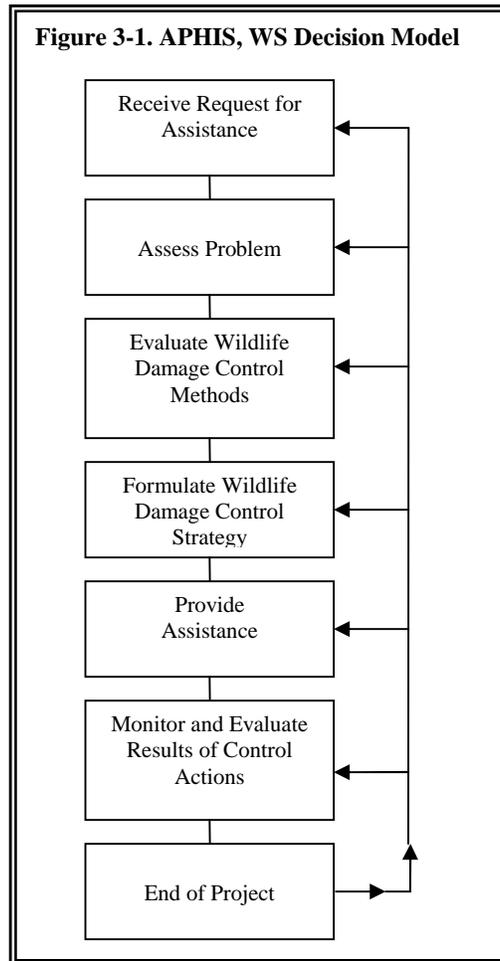
### **3.2.4 WS Decision Making**

WS personnel use a thought process for evaluating and responding to damage complaints that is depicted by the WS Decision Model described by Slate et al. (1992) (Figure 3-1). WS personnel are frequently contacted after requesters have tried or considered non-lethal methods and found them to be impractical, too costly, or inadequate for acceptably reducing damage. WS personnel assess the problem; and evaluate the appropriateness and availability (legal and administrative) of strategies and methods based on biological, economic and social considerations. Following this evaluation, methods deemed to be practical for the situation are incorporated into a management strategy. After this strategy has been implemented, monitoring is conducted and evaluation continues to assess the effectiveness of the strategy. If the strategy is effective, the need for

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<sup>4</sup> In compliance with a Federal court injunction granted to the American Farm Bureau and Texas Farm Bureau (February 9, 2000), which states that WS is restrained and prohibited from releasing to third parties any private information, this information has been removed from this document.

further management is ended. In terms of the WS Decision Model (Slate et al. 1992), most damage management efforts consist of continuous feedback between receiving the request and monitoring the results of the damage management strategy. The Decision Model is not a written documented process, but a mental problem-solving process common to most, if not all, professions.



**3.2.5 Cormorant Damage Management Methods Available for Use by WS (see Appendix 4 of USFWS FEIS (USFWS 2003) for detailed description of methods)**

**3.2.5.1 Non-lethal Methods**

**Agricultural producer and property owner practices** consist primarily of non-lethal preventative methods such as **cultural methods**<sup>5</sup> and **habitat modification**.

**Animal behavior modification** refers to tactics that alter the behavior of birds to reduce damages. Some, but not all, of these tactics include the following:

<sup>5</sup>Generally involves modifications to the management of protected resources to reduce their vulnerability to wildlife

- Exclusion methods such as netting,
- Propane exploders (to scare birds),
- Pyrotechnics (to scare birds),
- Distress calls and sound producing devices (to scare birds),
- Visual repellents and scaring tactics (to scare birds),
- Lasers (to scare birds), and
- Scarecrows.

**Dispersal** of DCCO day/night roosts.

**Nest destruction** of the target species before eggs or young are in the nest.

**Lasers** are a non-lethal technique recently evaluated by NWRC (Blackwell et al. 2002, Glahn et al. 2000a). The low-powered laser has proven to be effective in dispersing a variety of bird species in a number of different environments. The low-powered laser is most effective before dawn or after dusk when the red beam of the laser is clearly visible. Bright sunlight will "wash out" the laser light rendering it ineffective. Although researchers are not sure if birds see the same red spot as people, it is clear that certain bird species elicit an avoidance response in reaction to the laser. The birds view the light as a physical object or predator coming toward them and generally fly away to escape. Research, however, has shown that the effectiveness of low-powered lasers varies depending on the bird species and the context of the application.

Waterfowl, such as ducks and geese, have been successfully relocated using low-powered lasers (Blackwell et al. 2002). Long-legged wading birds, like great blue herons, have also been successfully dispersed using low-powered laser light. This discovery is especially important to aquaculture producers because it gives them another non-lethal tool for combating the heron, the double-crested cormorant, and other fish-eating birds (Glahn et al. 2000a).

The low-powered lasers that have been developed safely and effectively disperse birds without harming them or people. At higher levels, lasers can burn tissue, causing injury to people and animals. Although low-powered lasers can be effective when used in combination with other non-lethal methods, they should not be considered a cure-all. As with any non-lethal measure, once enforcement stops, problem birds can return to cause conflict again. In certain situations, non-lethal management efforts must be continuous to have the desired impact.

### 3.2.5.2 Lethal Methods

**Egg addling/destruction** is the practice of destroying the embryo in the egg prior to hatching; physically breaking eggs; or directly removing eggs from a nest and destroying them.

**Egg oiling** is a method for suppressing reproduction of birds by spraying a small quantity of food grade vegetable/corn oil on eggs in nests.

**Live traps/nets** are various types of traps designed to capture birds alive. Cormorants captured in live traps, nets, or by hand would be humanely euthanized.

**Shooting** is more effective as a dispersal technique than as a way to reduce bird numbers. Shooting with rifles or shotguns is sometimes used to manage DCCO damage problems when lethal methods are determined to be appropriate. The birds are killed as quickly and humanely as possible. The number that can be killed by shooting is generally very small in relation to the number involved in damage situations. Shooting can be helpful in some situations to supplement and reinforce other dispersal techniques. It is selective for target species and may be used in conjunction with the use of spotlights and decoys.

**Cervical dislocation** is an American Veterinary Medical Association (AVMA) approved

euthanasia method (Beaver et al. 2001) which is sometimes used to euthanize birds which are captured by hand or in live traps/nets. The bird is stretched and the neck is hyper-extended and dorsally twisted to separate the first cervical vertebrae from the skull. The AVMA approves this technique as a humane method of euthanasia and states that cervical dislocation when properly executed is a humane technique for euthanasia of poultry and other small birds (Beaver et al. 2001). Cervical dislocation is a technique that may induce rapid unconsciousness, does not chemically contaminate tissue, and can be quickly accomplished (Beaver et al. 2001).

**Carbon dioxide (CO<sub>2</sub>) gas** is an AVMA approved euthanasia method (Beaver et al. 2001) which is sometimes used to euthanize birds which are captured in live traps/nets or by hand. Live birds are placed in a container or chamber into which CO<sub>2</sub> gas is released. The birds quickly expire after inhaling the gas. CO<sub>2</sub> gas is a byproduct of animal respiration, is common in the atmosphere, and is required by plants for photosynthesis. It is used to carbonate beverages for human consumption and is also the gas released by dry ice. The use of CO<sub>2</sub> by WS for euthanasia purposes is exceedingly minor and inconsequential to the amounts used for other purposes by society.

### **3.3 ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL WITH RATIONALE**

#### **3.3.1 Lethal CDM Only By WS**

Under this alternative, WS would not conduct any non-lethal control of cormorants for CDM purposes in the State, but would only conduct lethal CDM. This alternative was eliminated from further analysis because some cormorant damage problems can be resolved effectively through non-lethal means and at times lethal methods may not be available for use due to safety concerns or local ordinances prohibiting the use of some lethal methods, such as the discharge of firearms.

#### **3.3.2 Compensation for Cormorant Damage Losses**

The compensation alternative would require the establishment of a system to reimburse persons impacted by cormorant damage. This alternative was eliminated from further analysis because no Federal or State laws currently exist to authorize such action. Under such an alternative, WS would not provide any direct control or technical assistance. Aside from lack of legal authority, analysis of this alternative in the FEIS indicated that the concept has many drawbacks (USDA 1997):

- § It would require larger expenditures of money and labor to investigate and validate all damage claims, and to determine and administer appropriate compensation. A compensation program would likely cost several times as much as the current program.
- § Compensation would most likely be below full market value. It is difficult to make timely responses to all requests to assess and confirm damage, and certain types of damage could not be conclusively verified.
- § Compensation would give little incentive to resource owners to limit damage through improved cultural, husbandry, or other practices and management strategies.
- § Not all resource owners would rely completely on a compensation program and unregulated lethal control would most likely continue as permitted by Federal and State law.
- § Compensation would not be practical for reducing threats to human health and safety or damage to public resources.

#### **3.3.3 Non-lethal Methods Implemented Before Lethal Methods**

This alternative is similar to Alternative 1 except that WS personnel would be required to always

recommend or use non-lethal methods prior to recommending or using lethal methods to reduce cormorant damage. Both technical assistance and direct damage management would be provided in the context of a modified IWDM approach. The Proposed Action recognizes non-lethal methods as an important dimension of IWDM, gives them first consideration in the formulation of each management strategy, and recommends or uses them when practical before recommending or using lethal methods. However, the important distinction between the Non-lethal Methods First Alternative and the Proposed Alternative is that the former alternative would require that all non-lethal methods be used before any lethal methods are recommended or used.

While the humaneness of the non-lethal management methods under this alternative would be comparable to the Proposed Program Alternative, the extra harassment caused by the required use of methods that may be ineffective could be considered less humane and may unduly disturb co-nesting species. As local bird populations increase, the number of areas negatively affected by birds would likely increase and greater numbers of birds would be expected to congregate at sites where non-lethal management efforts were not effective. This may ultimately result in a greater number of birds being killed to reduce damage than if lethal management were immediately implemented at problem locations (Manuwal 1989). Once lethal measures were implemented, cormorant damage would be expected to drop relative to the reduction in localized populations of birds causing damage.

Since in many situations this alternative would result in greater numbers of cormorants being killed to reduce damage, at a greater cost to the requester, and result in a delay of reducing damage in comparison to the Proposed Alternative, the Non-lethal Methods Implemented Before Lethal Methods Alternative is removed from further discussion in this document.

### **3.4 MITIGATION AND STANDARD OPERATING PROCEDURES FOR CORMORANT DAMAGE MANAGEMENT TECHNIQUES**

Mitigation measures are any features of an action that serve to prevent, reduce, or compensate for effects that otherwise might result from that action. The current WS program, nationwide and in Michigan, uses many such mitigation measures and these are discussed in detail in Chapter 5 of the ADC FEIS (USDA 1997) and Chapter 4 of the DCCO FEIS (USFWS 2003).

#### **3.4.1 Mitigation in Standard Operating Procedures**

Some key mitigating measures pertinent to the proposed action and the other alternatives that are incorporated into WS's Standard Operating Procedures include:

- § The WS Decision Model thought process which is used to identify effective wildlife damage management strategies and their effects.
- § Reasonable and prudent measures or alternatives are identified through consultation with the USFWS and are implemented to avoid effects to T&E species.
- § Research is being conducted to improve CDM methods and strategies so as to increase selectivity for target species, to develop effective non-lethal control methods, and to evaluate nontarget hazards and environmental effects.
- § WS uses CDM devices and conducts activities for which the risk of hazards to public safety and hazard to the environment have been determined to be low according to a formal risk assessment (USDA 1997, Appendix P). Where such activities are conducted on private lands or other lands of restricted public access, the risk of hazards to the public is even further reduced.
- § Agents acting under the authority provided to WS to protect public resources (50 CFR 21.48(c)(2)) will be informed and trained in the safe and proper use of CDM methods including applicable laws and regulations authorizing use of these methods.

### **3.4.2 Additional Mitigation Specific to the Issues**

The following is a summary of additional mitigation measures that are specific to the issues listed in Chapter 2 of this document.

#### **Effects on Target Species Populations**

- § CDM activities are directed to resolving DCCO damage problems by taking action against individual problem birds, or local populations or groups, not by attempting to eradicate populations in the entire area or region.
- § WS take is monitored by comparing numbers of birds killed with overall populations or trends in populations to assure the magnitude of take is maintained below the level that would threaten the long-term sustainability of regional DCCO populations (See Chapter 4).
- § As applicable, WS will review the USFWS Final Report (Wires and Cuthbert 2001) – “Prioritization of waterbird colony sites for conservation in the U.S. Great Lakes region” prior to conducting control activities at DCCO breeding colonies. If WS conducts control activities at any of the sites identified in this report as “priority sites for waterbird conservation”, WS will consult with the USFWS at that time for advice on how to proceed with management actions.
- § To avoid adverse impacts on DCCO populations, WS will abide by the terms and conditions of the PRDO (50 CFR 21.48) and USFWS migratory bird permits issued to WS for the management and control of DCCO damage and conflicts, including, but not limited to, reporting on annual basis the number of nests in which eggs were oiled or destroyed and the number of DCCOs killed.
- § In certain circumstances when conducting control activities in DCCO breeding colonies, WS is required to notify the USFWS prior to conducting control activities with the approximate number of DCCOs that may be killed under the proposed project (50 CFR 21.48(d)(9)). The USFWS will review this advanced notification to determine if the proposed project would threaten the long-term sustainability of regional DCCO populations.
- § When shooting nesting DCCOs, WS will attempt to remove both breeding adults from a specific nest to prevent the possibility of renesting.
- § If determined practical and effective, egg oiling and shooting of DCCOs will target different nests or areas of a colony to maximize effectiveness and minimize the potential of renesting.

#### **Effects on Nontarget Species Populations Including T&E Species**

- § WS personnel are trained and experienced to select the most appropriate method for taking problem animals and excluding nontargets.
- § Observations of birds in areas that are associated with cormorant concentrations are made to determine if nontarget or T&E species (Federal or State Listed) would be at risk from CDM activities.
- § As appropriate, management actions taken in mixed-species waterbird colonies would be conducted in such a manner to avoid or minimize impacts to non-target species (i.e. visiting sites during early morning and late afternoon hours to avoid thermal stress to eggs/nestlings, conducting actions as early as possible in the nesting season to reduce nestling abandonment, etc.).
- § Egg oiling will only be used for ground and shrub nesting DCCOs to minimize disturbances to co-nesting colonial waterbird species.
- § When possible, egg oiling activities will take place during night hours to minimize potential impacts to co-nesting colonial waterbird species. However, WS will not conduct such activities during night hours if it is determined unsafe to do so.

- § When possible, when shooting DCCOs from blinds set up in breeding colonies, moving to and from the blinds and blind preparation will be conducted during periods of darkness to minimize impacts to co-nesting colonial waterbird species. However, WS will not conduct such activities during night hours if it is determined unsafe to do so.
- § When shooting DCCOs in breeding colonies, WS will utilize the smallest caliber firearm that is effective and will utilize noise-suppressed firearms (silencers) as deemed appropriate to minimize repeated disturbances to co-nesting colonial waterbird species.
- § The removal of DCCO carcasses will be completed at such intervals and times of day that will cause the least amount of disturbances to co-nesting colonial waterbird species.
- § WS has consulted with the USFWS regarding potential effects of control methods on T&E species, and abides by reasonable and prudent alternatives and/or reasonable and prudent measures established as a result of that consultation (see Section 4.1.2).
- § WS will abide by the conservation measures specified in the USFWS FEIS (USFWS 2003) and at 50 CFR 21.48(d)(8) to avoid adverse effects on listed species.
- § The Michigan Wildlife Services Office will, prior to undertaking any cormorant management, check the following web site to determine if there are any Federally endangered or threatened species in the counties in which WS wishes to work: [http://midwest.fws.gov/Endangered/lists/cty\\_indx.html](http://midwest.fws.gov/Endangered/lists/cty_indx.html). If there are, they will contact the U. S. Fish and Wildlife Service's East Lansing Ecological Services Field Office to determine whether the listed species are known to occur at or near any specific sites where WS will be conducting cormorant management activities and could potentially be affected by the work. If they do, WS will comply with the regulations at 50 CFR 21.48 (d)(8) to ensure the protection of these species.
- § Prior to any control action, WS will consult with the MDNR to ensure that no actions taken under this plan will adversely affect Michigan's listed species.
- § Non-toxic shot will be used when using shotguns to harass or kill DCCOs.
- § As applicable, WS will review the USFWS Final Report (Wires and Cuthbert 2001) – "Prioritization of waterbird colony sites for conservation in the U.S. Great Lakes region" prior to conducting control activities at DCCO breeding colonies. If WS conducts control activities at any of the sites identified in this report as "priority sites for waterbird conservation", WS will consult with the USFWS at that time for advice on how to proceed with management actions.
- § To avoid adverse impacts on nontarget species, WS will abide by the terms and conditions of the PRDO (50 CFR 21.48) and USFWS migratory bird permits issued to WS for the management and control of DCCO damage and conflicts.
- § As specified in the PRDO (50 CFR 21.48(d)(10)), on an annual basis, WS is required to provide the USFWS with a statement of efforts being made to minimize incidental take of nontarget species and also to report the number and species of migratory bird involved in such take, if any. The USFWS will review this information to ensure control activities taken under the PRDO will not adversely impact nontarget migratory bird species.
- § In certain circumstances when conducting control activities in DCCO breeding colonies, WS is required to notify the USFWS prior to conducting control activities which species of other (non-target) bird species are present (50 CFR 21.48(d)(9)). The USFWS will review this advanced notification to determine if the proposed project may threaten the long-term sustainability of nontarget migratory bird species.

## CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

### 4.0 INTRODUCTION

Chapter 4 provides information needed for making informed decisions in selecting the appropriate alternative for meeting the purpose of the proposed action. The chapter analyzes the environmental consequences of each alternative in relation to the issues identified for detailed analysis in Chapter 2. This section analyzes the environmental consequences of each alternative in comparison with the no action alternative to determine if the real or potential effects would be greater, lesser, or the same.

The following resource values within the State are not expected to be significantly impacted by any of the alternatives analyzed: soils, geology, minerals, water quality/quantity, flood plains, wetlands, visual resources, air quality, prime and unique farmlands, aquatic resources, timber, and range. These resources will not be analyzed further.

**Cumulative Effects:** Discussed in relationship to each of the alternatives analyzed, with emphasis on potential cumulative effects from methods employed, and including summary analyses of potential cumulative impacts to target and nontarget species, including T&E species.

**Irreversible and Irretrievable Commitments of Resources:** Other than minor uses of fuels for motor vehicles and other materials, there are no irreversible or irretrievable commitments of resources.

**Effects on sites or resources protected under the National Historic Preservation Act:** WS CDM and USFWS actions are not undertakings that could adversely affect historic resources (See Section 1.7.2)

### 4.1 ENVIRONMENTAL CONSEQUENCES FOR ISSUES ANALYZED IN DETAIL

#### 4.1.1 Effects on Double-crested Cormorant Populations

##### **Alternative 1 – Integrated CDM Program, including implementation of the PRDO (Proposed Action)**

The analysis for magnitude of impact generally follows the process described in Chapter 4 of USDA (1997). Magnitude is described in USDA (1997) as “. . . a measure of the number of animals killed in relation to their abundance.” Magnitude may be determined either quantitatively or qualitatively. Quantitative determinations are based on population estimates, allowable harvest levels, and actual harvest data. Qualitative determinations are based on population trends and harvest data when available. Generally, WS only conducts damage management on species whose population densities are high and usually only after they have caused damage. Mitigation measures to avoid adverse impacts on DCCO populations are described in Chapter 3.

##### **Double-crested Cormorant Population Effects**

Double-crested cormorants range throughout North America, from the Atlantic coast to the Pacific coast (USFWS 2003). During the last 20 years, the cormorant population has expanded to an estimated 372,000 nesting pairs; with the U.S. population (breeding and non-breeding birds) conservatively estimated to be greater than 1 million birds (Tyson et al. 1999). The USFWS estimates the current continental population at approximately 2 million birds (USFWS 2003). Tyson et al. (1999) found that the cormorant population increased about 2.6% annually during the early 1990's. The greatest increase was in the Interior region which was the result of a 22% annual increase in the number of cormorants in Ontario and the U.S. States bordering the Great Lakes (Tyson et al. 1999). The number of breeding pairs of cormorants in the Atlantic and Interior

population is estimated at over 85,510 and 256,212 nesting pairs, respectively (Tyson et al. 1999). DCCOs primarily occur in Michigan during the spring, summer and fall months when the breeding and migrating populations are present (Belyea et al. 1999, Wires et al. 2001, USFWS 2003). This population of DCCOs is primarily composed of birds from the Interior population (USFWS 2003, Tyson et al. 1999). From 1990 to 1997, the annual growth rate in the Interior population was estimated at 6% with the most dramatic increases occurring on Ontario, Michigan, and Wisconsin waters (Tyson et al. 1999, USFWS 2003). Nest counts in 2000 estimated 115,000 nests in the Great Lakes (Weseloh et al. 2002).

Michigan's breeding population has continued to increase with 30,016 nesting pairs being counted in 1997 (Tyson et al. 1999) and is considered by Wires et al. (2001) to have the largest breeding population in the U.S. Great Lakes. This population estimate does not include sub-adults and nonbreeding birds. Estimates of 0.6 to 4.0 nonbreeding cormorants per breeding pair have been used for several populations (Tyson et al. 1999). Therefore, the spring/summer cormorant population in Michigan can conservatively be estimated at more than 78,000 birds. Data from the Breeding Bird Survey (BBS) (1966-2002) shows that the DCCO populations throughout the United States, Canada, USFWS Region 3 (Midwest US), the Eastern BBS region, and Michigan have increased at an annual rate of 8.0%, 11.0%, 6.3%, 8.7% and 9.3%, respectively (Sauer et al. 2003). Nesting populations in the Les Cheneaux Island area have increased nearly 6 fold since the early 1990's to a local breeding population of over 5,500 nests in 2002 (Fielder 2004). As indicated by Trexel (2002), the Les Cheneaux DCCO population has slowed and may be to the point of stabilizing.

Double-crested cormorants are protected by the USFWS under the MBTA. Therefore, cormorants are taken in accordance with applicable state and federal laws and regulations authorizing take of migratory birds; and their nest and eggs, including the USFWS Aquaculture Depredation Order (AQDO) (50 CFR 21.47), USFWS Public Resource Depredation Order (PRDO) (50 CFR 21.48), and the USFWS and the MDNR permitting processes. The USFWS, as the agency with migratory bird management responsibility, will impose restrictions on depredation harvest as needed to assure cumulative take does not adversely affect the continued viability of populations. This will assure that cumulative impacts on double-crested cormorant populations would have no significant adverse impact on the quality of the human environment.

Nationwide, the FEIS predicts that the implementation of the AQDO, PRDO and issuance of migratory bird permits will affect approximately 8% of the continental DCCO population on an annual basis (USFWS 2003). Furthermore, the FEIS predicts that authorized take of cormorants and their eggs for the management of double-crested cormorant damage, including those taken in Michigan, is anticipated to have no significant impact on regional or continental double-crested cormorant populations (USFWS 2003). This includes DCCOs that may be killed in Michigan under the PRDO by WS, MDNR, and Indian Tribes; and those taken under USFWS issued permits. DCCOs are a long-lived bird and egg oiling programs are anticipated to have minimal effects on regional or continental cormorant populations (USFWS 2003).

#### **Public Resource Depredation Order (50 CFR 21.48)**

According to the FEIS (USFWS, 2003), under the PRDO, the implementation of a state-wide program to reduce cormorant impacts to public resources could result in the lethal take of up to an additional 4,140 cormorants on an annual basis in Michigan. WS predicts that the Michigan WS program would lethally take no more than approximately 85% (3,519) of this statewide total on an annual basis, with the MDNR and Indian Tribes in Michigan lethally removing 15% (621) of this total estimate on an annual basis. The FEIS predicts that the implementation of the PRDO in Michigan will have no significant impact to regional or continental DCCO populations (USFWS 2003).

### **USFWS Migratory Bird Permits**

In 2003, the USFWS authorized 625 DCCOs to be taken under migratory bird permits in Michigan. From FY 1990 through FY 2003, Michigan WS personnel removed only nine cormorants at all project sites in the State in all damage situations (MIS database). However, based on a predicted increase in future requests for services, WS anticipates that no more than 1,000 DCCOs will be taken annually by WS in Michigan under USFWS issued migratory bird permits. The FEIS predicts that the issuance of migratory bird permits in Michigan will have no significant impact to regional or continental DCCO populations (USFWS 2003).

Based upon the above information, Michigan WS potential impacts to populations of DCCOs is expected to be insignificant to the overall viability and reproductive success of this bird species population on a local, state, regional, and nationwide scale. The MDNR concurs with the assertion that the proposed action will not have a significant impact on the overall viability and reproductive success of DCCOs in Michigan (W.E. Moritz, MDNR)

#### **Alternative 2 - Non-lethal CDM Only By WS**

Under this alternative, WS would not kill any DCCOs or destroy eggs because no lethal methods would be used. MDNR, USFWS, Indian Tribes, and others could still implement lethal control actions that are available to them. Although WS lethal take of cormorants would not occur, it is likely that without WS conducting some level of lethal CDM, CDM efforts by non-WS personnel could increase, leading to potentially similar or even greater effects on DCCO populations than those of the no action alternative. For the same reasons shown in the population effects analysis under the proposed action it is unlikely that cormorant populations would be adversely impacted by implementation of this alternative.

#### **Alternative 3 - Technical Assistance Only**

Under this alternative, WS would have no impact on cormorant populations in the State because the program would not conduct any operational CDM activities but would be limited to providing advice only. WS would not take part in the implementation of the PRDO. MDNR, USFWS, Indian Tribes, and others could still implement control actions that are available to them. CDM efforts by non-WS personnel, to reduce or prevent cormorant damage and conflicts could increase which could result in similar or even greater effects on those populations than no action alternative. For the same reasons shown in the population effects analysis under the proposed action it is unlikely that cormorant populations would be adversely impacted by implementation of this alternative. Effects on cormorant populations under this alternative would probably be about the same as those under Alternative 2.

#### **Alternative 4 - No Federal WS CDM**

Under this alternative, WS would have no impact on cormorant populations in the State. MDNR, USFWS, Indian Tribes, and others could still implement control actions that are available to them. Private efforts to reduce or prevent damage and conflicts could increase which could result in effects on cormorant populations to an unknown degree. Effects on cormorants under this alternative could be the same, less, or more than those of the no action alternative depending on the level of effort expended by these individuals. For the same reasons shown in the population effects analysis under the proposed action it is unlikely that cormorant populations would be adversely impacted by implementation of this alternative.

#### **Alternative 5 - Integrated CDM Program, excluding implementation of the PRDO (No Action)**

Impacts of this alternative would be similar to Alternative 1, except WS would not take part in the implementation of the PRDO. The MDNR and Indian Tribes would be able to implement the PRDO; and the USFWS would continue to issue migratory bird permits to take DCCOs and their eggs.

#### **Public Resource Depredation Order (50 CFR 21.48)**

According to the USFWS (2003), under the PRDO, the implementation of a state-wide program to reduce cormorant impacts to public resources could result in the lethal take of up to an additional 4,140 cormorants on an annual basis in Michigan. The FEIS predicts that the implementation of the PRDO in Michigan will have no significant impact to regional or continental DCCO populations (USFWS 2003).

#### **USFWS Migratory Bird Permits**

In 2003, the USFWS authorized 625 DCCOs to be taken under migratory bird permits in Michigan. From FY 1990 through FY 2003, Michigan WS personnel removed only nine cormorants at all project sites in the State in all damage situations (MIS database). However, based on a predicted increase in future requests for services, WS anticipates that no more than 1,000 DCCOs will be taken annually by WS in Michigan under USFWS issued migratory bird permits. The USFWS predicts that the issuance of migratory bird permits in Michigan will have no significant impact to regional or continental DCCO populations (USFWS 2003).

For the same reasons shown in the population effects analysis under the proposed action it is unlikely that cormorant populations would be adversely impacted by implementation of this alternative.

#### **4.1.2 Effects on Other Wildlife Species, Including T&E Species**

##### **Alternative 1 - Integrated CDM Program, including implementation of the PRDO (Proposed Action)**

Adverse Effects on Nontarget (non-T&E) Species. Impacts would be similar to the no action alternative.

Beneficial Effects on Nontarget Species. Programs to control cormorant damage can benefit those wildlife species that are impacted by their predation or competition for habitat. Besides competing for nesting space, the acidic droppings of cormorants destroy vegetation, making the area unsuitable for rapid nesting colony restoration. This alternative has the greatest possibility of successfully reducing cormorant damage and conflicts to wildlife species since all CDM methods could possibly be implemented or recommended by WS and WS would be able to implement the PRDO.

T&E Species Effects. Special efforts are made to avoid jeopardizing T&E species through biological evaluations of the potential effects and the establishment of special restrictions or mitigation measures. Mitigation measures to avoid adverse T&E effects are described in Chapter 3.

***Federally Listed Species.*** WS has obtained and reviewed the list of federally listed T&E species for Michigan (see Appendix B for species list). The USFWS has completed an intra-Service biological evaluation and an informal Section 7 consultation on the management of double-crested cormorants in the U.S. for the FEIS and has determined that only the bald eagle, interior least tern

(not listed in MI), wood stork (not listed in MI), and piping plover could be adversely affected by CDM actions (USFWS 2003). In accordance with this consultation the USFWS states that the following conservation measures would avoid adverse effects on the bald eagle, wood stork, interior least tern and piping plover:

Under PRDO

(i) Discharge/use of firearms to kill or harass double-crested cormorants or use of other harassment methods are allowed if the control activities occur more than 1000 feet from active piping plover or interior least tern nests or colonies; occur more than 1500 feet from active wood stork nesting colonies, more than 1000 feet from active wood stork roost sites, and more than 750 feet from feeding wood storks; or occur more than 750 feet from active bald eagle nests;

(ii) Other control activities such as egg oiling, cervical dislocation, CO<sub>2</sub> asphyxiation, egg destruction, or nest destruction are allowed if these activities occur more than 500 feet from active piping plover or interior least tern nests or colonies; occur more than 1500 feet from active wood stork nesting colonies, more than 1000 feet from active wood stork roost sites, and more than 750 feet from feeding wood storks; or occur more than 750 feet from active bald eagle nests;

(iii) To ensure adequate protection of piping plovers, any Agency or their agents who plan to implement control activities that may affect areas designated as piping plover critical habitat in the Great Lakes Region are to make contact with the appropriate Regional Migratory Bird Permit Office prior to implementing control activities.

WS will abide by these conservation measures to avoid adverse impacts to the bald eagle and piping plover in Michigan. Therefore, WS has determined the proposed action will have no effect on any T&E species or critical habitat.

The Michigan Wildlife Services Office will, prior to undertaking any cormorant management, check the following web site to determine if there are any Federally endangered or threatened species in the counties in which WS wishes to work:

[http://midwest.fws.gov/Endangered/lists/cty\\_indx.html](http://midwest.fws.gov/Endangered/lists/cty_indx.html). If there are, they will contact the U. S. Fish and Wildlife Service's East Lansing Ecological Services Field Office to determine whether the listed species are known to occur at or near any specific sites where WS will be conducting cormorant management activities and could potentially be affected by the work. If they do, WS will comply with the regulations at 50 CFR 21.48 (d)(8) to ensure the protection of these species.

*State Listed Species.* WS has obtained and reviewed the State list of Endangered and Threatened Species for Michigan (see Appendix C for species list) and has determined that CDM has the potential to affect only the common and caspian terns, piping plover, and bald eagle in Michigan. Prior to any control action, WS will consult with the MDNR to ensure that no actions taken under this plan will adversely affect Michigan's listed species. In some situations, WS actions could benefit State listed species by reducing cormorant conflicts with those species.

**Alternative 2 - Non-lethal CDM Only By WS**

Adverse Effects on Nontarget Species

Under this alternative, WS take of nontarget animals would probably be less than that of the no action alternative because no lethal control actions would be taken by WS. However, nontarget take, including impacts on T&E species, would not differ substantially from the current program because the current program has no recorded take of non-target animals. Non-target migratory bird species and other non-target wildlife species are usually not affected by WS non-lethal CDM methods, except for the occasional scaring from harassment devices. In these cases, migratory

birds and other affected non-target wildlife may temporarily leave the immediate vicinity of scaring, but would most likely return after conclusion of the action.

People whose cormorant damage problems were not effectively resolved by non-lethal control methods would likely resort to other means of lethal control. This could result in less experienced persons implementing control methods and could lead to greater take of nontarget wildlife. For example, shooting by persons not proficient at bird identification could lead to killing of nontarget birds.

#### Beneficial Effects on Nontarget Species

This alternative would reduce negative impacts caused by cormorants to wildlife species and their habitats, including T&E species, if non-lethal methods were effective in reducing such damage to acceptable levels.

If non-lethal methods were ineffective at reducing damage to acceptable levels, WS would not be available to conduct or provide advice on any other types of control methods. In these situations it would be expected that cormorant damage to wildlife species and their habitats would likely remain the same or possibly increase dependent upon actions taken by the affected resource or landowner.

### **Alternative 3 - Technical Assistance Only**

#### Adverse Effects on Nontarget Species

Alternative 3 would not allow any WS direct operational CDM in Michigan. There would be no impact on nontarget or T&E species by WS activities from this alternative. Technical assistance or self-help information would be provided at the request of resource owners and others. Although technical support might lead to more selective use of lethal control methods by private parties than that which might occur under Alternative 2, private efforts to reduce or prevent depredations could still result in less experienced persons implementing control methods leading to greater take of nontarget wildlife.

#### Beneficial Effects on Nontarget Species

The ability to reduce negative impacts caused by cormorants to wildlife species and their habitats, including T&E species, would be variable based upon the skills and abilities of the person implementing control actions. It would be expected that this alternative would have a greater chance of reducing damage than Alternative 4 since WS would be available to provide information and advice.

### **Alternative 4 - No Federal WS CDM**

#### Adverse Effects on Nontarget Species

Alternative 4 would not allow any WS CDM in the State. There would be no impact on nontarget or T&E species by WS CDM activities from this alternative. However, private efforts to reduce or prevent depredations could increase which could result in less experienced persons implementing control methods and could lead to greater take of nontarget wildlife.

#### Beneficial Effects on Nontarget Species

The ability to reduce negative impacts caused by cormorants to wildlife species and their habitats, including T&E species, would be variable based upon the skills and abilities of the person implementing control actions.

### **Alternative 5 - Integrated CDM Program, excluding implementation of the PRDO (No Action)**

Adverse Effects on Nontarget (non-T&E) Species. Direct impacts on nontarget species occur when WS program personnel inadvertently kill, injure, or harass animals that are not target species, including eggs or young of nesting adults that are disturbed. In general, these impacts result from the use of methods that are not completely selective for target species. Non-target migratory bird species and other non-target wildlife species are usually not affected by WS's CDM methods, except for the occasional scaring from harassment devices and when WS conducts breeding DCCO management in mixed-species waterbird colonies. In these cases, migratory birds and other affected non-target wildlife may temporarily leave the immediate vicinity of scaring, but would most likely return after conclusion of the action. Mitigation measures to reduce potential impacts to nontarget species are listed in Chapter 3.

WS take of non-target species during CDM activities has not occurred and should not increase substantially. No non-targets birds or mammals have been killed during CDM operations in Michigan from FY 1999-2003 (MIS database).

While every precaution is taken to safeguard against taking nontarget birds, at times changes in local flight patterns and other unanticipated events can result in the incidental take of unintended species. These occurrences are rare and should not affect the overall populations of any species under the proposed program.

Beneficial Effects on Nontarget Species. Programs to control cormorant damage can benefit those wildlife species that are impacted by their predation or competition for habitat. This alternative would reduce negative impacts caused by cormorants to wildlife species and their habitats, including T&E species, if they could be resolved through other means besides WS implementation of the PRDO. If not, damage and conflicts would likely continue to occur or possibly increase.

T&E Species Effects. Impacts would be similar to the proposed action.

### **4.1.3 Effects on Human Health and Safety**

#### **4.1.3.1 Effects on Human Health and Safety from CDM Methods**

##### **Alternative 1 - Integrated CDM Program, including implementation of the PRDO (Proposed Action)**

CDM methods that might raise safety concerns include shooting with firearms and harassment with pyrotechnics. Firearms are only used by WS personnel and their designated agents who are experienced in handling and using them. WS personnel receive safety training on a periodic basis to keep them aware of safety concerns. The Michigan WS program has had no accidents involving the use of firearms or pyrotechnics in which a member of the public was harmed. A formal risk assessment of WS's operational management methods found that risks to human safety were low (USDA 1997, Appendix P). Therefore, no adverse effects on human safety from WS's use of these methods are expected.

Agents acting under the authority provided to WS to conduct to protect public resources (50 CFR 21.48(c)(2)) will be informed and trained in the safe and proper use of CDM methods including the use of firearms.

##### **Alternative 2 - Non-lethal CDM Only By WS**

Under this alternative, CDM methods that might raise safety concerns include shooting with firearms when used as a harassment technique and harassment with pyrotechnics.

Firearms are only used by WS personnel who are experienced in handling and using them. WS personnel receive safety training on a periodic basis to keep them aware of safety concerns. The Michigan WS program has had no accidents involving the use of firearms or pyrotechnics in which a member of the public was harmed. A formal risk assessment of WS's operational management methods found that risks to human safety were low (USDA 1997, Appendix P). Therefore, no adverse effects on human safety from WS's use of these methods are expected. Impacts would be similar to the no action alternative.

### **Alternative 3 - Technical Assistance Only**

Under this alternative, WS would not engage in direct operational use of any CDM methods. Risks to human safety from WS's use of firearms and pyrotechnics would hypothetically be lower than the no action alternative, but not significantly because Michigan WS's current program has an excellent safety record in which no accidents involving the use of these devices have occurred that have resulted in a member of the public being harmed.

Resource owners and other non-WS employees would be able to use pyrotechnics or firearms in CDM programs and this activity would likely occur to a greater extent in the absence of WS's assistance. Hazards to humans and property could be greater under this alternative if personnel conducting CDM activities are poorly or improperly trained. Since WS would be available to provide advice and information on the safe and proper use of these methods adverse impacts should be less than Alternative 4.

### **Alternative 4 - No Federal WS CDM**

Alternative 4 would not allow any WS CDM in the State. Concerns about human health risks from WS's use of CDM methods would be alleviated because no such use would occur. The use of firearms or pyrotechnics by WS would not occur in CDM activities in the State.

However, private efforts to reduce or prevent damage would be expected to increase, resulting in less experienced persons implementing damage management methods and potentially leading to greater risk to human health and safety than the no action alternative. Resource owners and other non-WS employees would be able to use pyrotechnics or firearms in CDM programs and this activity would likely occur to a greater extent in the absence of WS's assistance. Hazards to humans and property could be greater under this alternative if personnel conducting CDM activities are poorly or improperly trained.

### **Alternative 5 - Integrated CDM Program, excluding implementation of the PRDO (No Action)**

CDM methods that might raise safety concerns include shooting with firearms and harassment with pyrotechnics. Firearms are only used by WS personnel who are experienced in handling and using them. WS personnel receive safety training on a periodic basis to keep them aware of safety concerns. The Michigan WS program has had no accidents involving the use of firearms or pyrotechnics in which a member of the public was harmed. A formal risk assessment of WS's operational management methods found that risks to human safety were low (USDA 1997, Appendix P). Therefore, no adverse effects on human safety from WS's use of these methods are expected.

#### **4.1.3.2 Effects on Human Health and Safety from Not Conducting CDM**

### **Alternative 1 - Integrated CDM Program, including implementation of the PRDO (Proposed Action)**

Impacts would be similar to the no action alternative. Airport managers and air safety officials are concerned that the absence of a WS CDM program could lead to a failure to adequately address complex wildlife hazard problems faced by the aviation community. Hence, potential effects of not conducting such work could lead to an increased incidence of human injuries or loss of life due to cormorant bird strikes to aircraft.

### **Alternative 2 - Non-lethal CDM Only By WS**

Under this alternative, WS would be restricted to implementing and recommending only non-lethal CDM methods in providing assistance with cormorant damage problems and conflicts. The success or failure of the use of non-lethal methods can be quite variable. In some situations the implementation of non-lethal controls such as harassment could actually increase the risk of human health problems at other sites by causing the birds to move to other sites not previously affected. Some requesting entities would reject WS assistance for this reason and would likely seek to achieve cormorant control by other means. However, if WS is providing direct operational assistance in relocating cormorants, coordination with local authorities may be conducted to assure they do not re-establish in other undesirable locations.

### **Alternative 3 - Technical Assistance Only**

Potential impacts would be variable. With WS technical assistance but no direct management, entities requesting CDM assistance for human health concerns would either take no action, which means the risk of human health problems would likely continue or increase in each situation as bird numbers are maintained or increased, or implement WS recommendations for non-lethal and lethal control methods. Individuals or entities that implement management actions may or may not have the experience necessary to efficiently and effectively conduct an effective CDM program.

In some situations the implementation of non-lethal controls such as harassment could actually increase the risk of human health problems at other sites by causing the birds to move to other sites not previously affected. This potential risk would be less likely under this alternative than Alternative 4 when people requesting assistance receive and accept WS technical assistance recommendations.

### **Alternative 4 - No Federal WS CDM**

Potential impacts would be variable. With no WS assistance, resource owners (land managers) would be responsible for developing and implementing their own CDM program. Efforts by these individuals to reduce or prevent conflicts could result in less experienced persons implementing control methods, therefore leading to a greater potential of not reducing cormorant hazards, than under the proposed action.

In some situations the implementation of non-lethal controls such as harassment could actually increase the risk of human health problems at other sites by causing the birds to move to other sites not previously affected. Under this alternative, human health problems could increase if affected individuals were unable to find and implement effective means of controlling cormorants that cause damage problems.

### **Alternative 5 - Integrated CDM Program, excluding implementation of the PRDO**

### **(No Action)**

People are concerned with potential injury, illness, and loss of human life resulting from damage and conflicts associated with cormorants. An Integrated CDM strategy, a combination of lethal and non-lethal means, has the greatest potential of successfully reducing this risk. All CDM methods could possibly be implemented and recommended by WS.

An IWDM approach reduces damage or threats to public health or safety for people who would have no relief from such damage or threats if non-lethal methods were ineffective or impractical. As discussed in Chapter 1, cormorants are a threat to aviation safety and can also carry or transmit diseases to humans. In most cases, it is difficult to conclusively prove that cormorants were responsible for transmission of individual human cases or outbreaks of bird-borne diseases. Nonetheless, certain requesters of CDM service may consider this risk to be unacceptable and may request such service primarily for that reason. In such cases, CDM, either by lethal or non-lethal means, would, if successful, reduce the risk of bird-borne disease transmission at the site for which CDM is requested.

In some situations the implementation of non-lethal controls such as harassment could actually increase the risk of human health problems at other sites by causing the birds to move to other sites not previously affected. In such cases, lethal removal of the birds may actually be the best alternative from the standpoint of overall human health concerns in the local area. If WS is providing direct operational assistance in relocating cormorants, coordination with local authorities may be conducted to assure they do not reestablish in other undesirable locations.

#### **4.1.4 Effects on Aesthetic Values**

##### **Alternative 1 - Integrated CDM Program, including implementation of the PRDO (Proposed Action)**

Impacts would be similar to the no action alternative, except in those instances where the implementation of the PRDO improves the aesthetic values of those persons adversely affected by cormorant damage and conflicts to wildlife species and their habitats. In these situations this type of aesthetic “damage” would be less than the no action alternative.

The WS program in Michigan only conducts CDM at the request of the affected property owner or resource manager. If WS received requests from an individual or official for CDM, WS would address the issues/concerns and consideration would be made to explain the reasons why the individual damage management actions would be necessary. Management actions would be carried out in a caring, humane, and professional manner.

##### **Alternative 2 - Non-lethal CDM Only By WS**

Under this alternative, WS would not conduct any lethal CDM but would still use non-lethal CDM methods, such as harassment of birds that were causing damage. Some people who oppose lethal control of wildlife by government but are tolerant of government involvement in non-lethal wildlife damage management would favor this alternative. Persons who have developed affectionate bonds with individual wild birds would not be affected by the death of individual birds under this alternative, but might oppose dispersal or translocation of certain birds. Although WS would not perform any lethal activities under this alternative, other private/public entities would likely conduct lethal CDM activities in WS absence. The effects would then be similar to the no action alternative.

This alternative would reduce the negative impacts caused by cormorants to aesthetic values if non-lethal methods were effective in reducing such damage to acceptable levels. If non-lethal methods were ineffective WS would not be available to conduct or provide advice on any other types of control methods. In these situations it would be expected that negative impacts caused by cormorants would likely remain the same or possibly increase dependent upon actions taken by the affected resource or land owner.

### **Alternative 3 - Technical Assistance Only**

Under this alternative, WS would not conduct any direct operational CDM but would still provide technical assistance or self-help advice to persons requesting assistance with cormorant damage. WS would not take part in the implementation of the PRDO. Some people who oppose direct operational assistance in wildlife damage management by the government but favor government technical assistance would favor this alternative. Persons who have developed affectionate bonds with individual wild birds would not be affected by WS's activities under this alternative because the individual birds would not be killed by WS. However, other private/public entities would likely conduct lethal CDM activities in WS absence. The effects would then be similar to the no action alternative.

Under this alternative, the lack of operational assistance in reducing cormorant problems could result in an increase in adverse affects on aesthetic values. However, potential adverse affects would likely be less than as those under Alternative 4, since WS would be providing technical assistance.

### **Alternative 4 - No Federal WS CDM**

Under this alternative, WS would not conduct any CDM in Michigan. Some people who oppose any government involvement in wildlife damage management would favor this alternative. Persons who have developed affectionate bonds with individual cormorants would not be affected by WS's activities under this alternative. However, other private/public entities would likely conduct CDM activities similar to those no longer conducted by WS. The effects would then be similar to the no action alternative.

Under this alternative, the lack of any operational or technical assistance by WS in reducing cormorant problems would mean aesthetic values of some individuals would continue to be adversely affected if the property owner/manager were not able to achieve CDM some other way. In many cases, this type of aesthetic "damage" would worsen because property owners/managers would not be able to resolve their problems.

### **Alternative 5 - Integrated CDM Program, excluding implementation of the PRDO (No Action)**

Some people who routinely view individual birds or flocks of cormorants would likely be disturbed by removal of such birds under the current program. WS is aware of such concerns and takes this into consideration when planning CDM activities.

Some people have been opposed to the killing of any birds during CDM activities. Under the current program, some lethal control of cormorants would continue and these persons would continue to be opposed. However, many persons who voice their opposition have no direct connection or opportunity to view or enjoy the particular birds that would be killed by WS's lethal control activities. Lethal control actions would generally be restricted to local sites and to small, unsubstantial percentages of overall populations. Therefore, the species subjected to limited lethal control actions would remain common and abundant, therefore continuing to remain available for viewing by persons with that interest. Lethal removal of cormorants

from airports should not affect the public's enjoyment of the aesthetics of the environment since airport properties are closed to public access. The abilities to view and interact with cormorants at these sites are usually either restricted to viewing from a location outside boundary fences or forbidden.

In some instances, large roosting or nesting populations of cormorants can destroy habitat and displace other nesting birds, reducing the aesthetic value for some people. This alternative would reduce negative impacts caused by cormorants to wildlife species and their habitats, if they could be resolved through other means besides WS implementation of the PRDO. If not damage and conflicts would likely continue to occur or possibly increase.

#### **4.1.5 Humaneness and Animal Welfare Concerns of the Methods Used**

##### **Alternative 1 - Integrated CDM Program, including implementation of the PRDO (Proposed Action)**

Impacts would be similar to the no action alternative. WS has improved the selectivity and humaneness of management techniques through research and development. Research is continuing to bring new findings and products into practical use. Until new findings and products are found practical, a certain amount of animal suffering could occur when some CDM methods are used in situations where non-lethal damage management methods are not practical or effective.

Michigan WS personnel are experienced and professional in their use of management methods so that they are as humane as possible under the constraints of current technology, workforce and funding. Mitigation measures/SOPs used to maximize humaneness are listed in Chapter 3.

##### **Alternative 2 - Non-lethal CDM Only By WS**

Under this alternative, lethal methods viewed as inhumane by some persons would not be used by WS. Shooting; and live capture and euthanization by decapitation, cervical dislocation or CO<sub>2</sub> gas could be used by non-WS entities and, similar to the no action alternative, would be viewed by some persons as inhumane.

##### **Alternative 3 - Technical Assistance Only**

Under this alternative, WS would not conduct any lethal or non-lethal CDM, but would provide self-help advice only. Thus, lethal methods viewed as inhumane by some persons would not be used by WS. Similar to Alternative 2, shooting; and live capture and euthanization by decapitation, cervical dislocation or CO<sub>2</sub> gas would be available for use by non-WS entities and would be viewed by some persons as inhumane.

##### **Alternative 4 - No Federal WS CDM**

Under this alternative, methods viewed as inhumane by some persons would not be used by WS. Similar to Alternative 2 and 3, shooting; and live trapping/capture and euthanasia by decapitation, cervical dislocation or CO<sub>2</sub> gas could be used by non-WS entities and would be viewed by some persons as inhumane.

##### **Alternative 5 - Integrated CDM Program, excluding implementation of the PRDO (No Action)**

Under this alternative, methods viewed by some persons as inhumane would be used in CDM by WS. Shooting, when performed by experienced professionals, usually results in a quick death for target birds. Occasionally, however, some birds are initially wounded and must be

shot a second time or must be caught by hand and then dispatched or euthanized. Some persons would view shooting as inhumane.

Occasionally, cormorants captured alive would be euthanized. The most common method of euthanasia would be by decapitation, cervical dislocation or CO<sub>2</sub> gas. These methods are described and approved by AVMA as humane euthanasia methods (Beaver et al. 2001). Most people would view AVMA approved euthanasia methods as humane.

## **4.2 CUMULATIVE IMPACTS**

Cumulative impacts, as defined by CEQ (40 CFR 1508.7), are impacts to the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts may result from individually minor, but collectively significant, actions taking place over time.

Under Alternatives 1, 2, 3 and 5, WS would address damage associated with cormorants in a number of situations throughout the State. The WS CDM program would be the primary federal program with CDM responsibilities; however, some state and local government agencies may conduct CDM activities in Michigan as well. Through ongoing coordination with these agencies, WS is aware of such CDM activities and may provide technical assistance in such efforts. WS does not normally conduct direct damage management activities concurrently with such agencies in the same area, but may conduct CDM activities at adjacent sites within the same time frame. In addition, private individuals may conduct CDM activities in the same area as WS. The potential cumulative impacts analyzed below could occur either as a result of WS CDM program activities over time, or as a result of the aggregate effects of those activities combined with the activities of other agencies and individuals.

### **Cumulative Impacts on Wildlife Populations**

CDM methods used or recommended by the WS program in Michigan will likely have no cumulative adverse effects on double-crested cormorant populations and non-target wildlife populations. The intent and expected result of this program is not to reduce the statewide population but to move or remove local groups of birds. WS limited lethal take of DCCOs is anticipated to have minimal impacts on cormorant populations in Michigan, the region, and the U.S. Population trend data and information provided in the FWS FEIS (USFWS 2003) indicate that cormorant populations have increased for Michigan, the region and the U.S. over the past 20 years. When control actions are implemented by WS the potential lethal take of non-target wildlife species is expected to be minimal to non-existent.

### **Cumulative Impact Potential from CDM Methods**

CDM methods used or recommended by WS may include exclusion through use of various barriers, habitat modification of structures or vegetation, live trapping and euthanasia of birds, harassment of birds or bird flocks, nest and egg destruction, and shooting. No adverse effects are anticipated from implementation of these CDM methods.

## **SUMMARY**

No significant cumulative environmental impacts are expected from any of the five alternatives. Under the Proposed Action, the lethal removal of cormorants by WS would not have a significant impact on overall cormorant populations in Michigan, but some local reductions may occur. No risk to public safety is expected when WS' services are provided and accepted by requesting individuals in Alternatives 1, 2, 3 and 5 since only trained and experienced wildlife biologists/specialists and designated agents would conduct and recommend CDM activities. There is a slight increased risk to public safety when persons who reject WS assistance and recommendations in Alternatives 1, 2, 3 and 5 and conduct their own CDM

activities, and when no WS assistance is provided in Alternative 4. In all five Alternatives, however, it would not be to the point that the impacts would be significant.

Although some persons will likely be opposed to WS' participation in CDM activities on public and private lands within the state of Michigan, the analysis in this EA indicates that WS Integrated CDM program will not result in significant cumulative adverse impacts on the quality of the human environment. Table 4-2 summarizes the expected impact of each of the alternatives on each of the issues.

**Table 4-1. Summary of impacts of each of the alternatives on each of the issues related to CDM by WS in Michigan.**

<b>Issues</b>	<i>Alternative 1 Integrated CDM Program Including PRDO (Proposed Action)</i>	<i>Alternative 2 Non-lethal CDM Only by WS</i>	<i>Alternative 3 Technical Assistance Only</i>	<i>Alternative 4 No Federal WS CDM Program</i>	<i>Alternative 5 Integrated CDM, Excluding PRDO (No Action)</i>
<b>Effects on DCCO Populations</b>	Low effect - reductions in local cormorant numbers; would not significantly affect state, regional and continental populations	Low effect - reductions in local cormorant numbers by non-WS personnel likely; would not significantly affect state, regional and continental populations.	No effect by WS.  Low effect - reductions in local cormorant numbers by non-WS personnel likely; would not significantly affect state, regional and continental populations.	No effect by WS.  Low effect - reductions in local cormorant numbers by non-WS personnel likely; would not significantly affect state, regional and continental populations	Low effect - reductions in local cormorant numbers; would not significantly affect state, regional and continental populations
<b>Effects on Other Wildlife Species, Including T&amp;E Species</b>	Low effect - methods used by WS would be highly selective with very little risk to non-target species.	Low effect - methods used by WS would be highly selective with very little risk to non-target species.	No effect by WS.  Impacts by non-WS personnel would be variable.	No effect by WS.  Impacts by non-WS personnel would be variable.	Low effect - methods used by WS would be highly selective with very little risk to non-target species. PRDO has specific measures to minimize impacts to T&E species.
<b>Effects on Human Health and Safety</b>	This alternative will reduce this risk. Low risk from methods used by WS.	Impacts could be greater under this alternative. Low risk from methods used by WS.	Efforts by non-WS personnel to reduce or prevent conflicts could result in less experienced persons implementing control methods, leading to a greater potential of not reducing cormorant damage.	Efforts by non-WS personnel to reduce or prevent conflicts could result in less experienced persons implementing control methods, leading to a greater potential of not reducing cormorant damage.	This alternative will reduce this risk. Low risk from methods used by WS.
<b>Aesthetic Enjoyment of Cormorants</b>	Low to moderate effect at local levels; Some local populations may be reduced; WS cormorant damage management activities do not adversely affect overall state, regional and continental cormorant populations.	Low to moderate effect. Local bird numbers in damage situations would remain high or possibly increase when non-lethal methods are ineffective unless non-WS personnel successfully implement lethal methods; no adverse affect on overall state, regional and continental cormorant populations.	Low to moderate effect. Local bird numbers in damage situations would remain high or possibly increase unless non-WS personnel successfully implement lethal methods; no adverse affect on overall state, regional and continental cormorant populations.	Low to moderate effect. Local bird numbers in damage situations would remain high or possibly increase unless non-WS personnel successfully implement lethal methods; no adverse affect on overall state, regional and continental cormorant populations.	Low to moderate effect at local levels; Some local populations may be reduced; WS cormorant damage management activities do not adversely affect overall state, regional and continental cormorant populations.

<b>Issues</b>	<i>Alternative 1 Integrated CDM Program Including PRDO  (Proposed Action)</i>	<i>Alternative 2 Non-lethal CDM Only by WS</i>	<i>Alternative 3 Technical Assistance Only</i>	<i>Alternative 4 No Federal WS CDM Program</i>	<i>Alternative 5 Integrated CDM, Excluding PRDO  (No Action)</i>
<b>Aesthetic Damage Caused by Cormorants</b>	Low effect - cormorant damage problems most likely to be resolved without creating or moving problems elsewhere.	Moderate to High effect - cormorants may move to other sites which can create aesthetic damage problems at new sites. Less likely than Alt. 3 and 4.	Moderate to High effect - cormorants may move to other sites which can create aesthetic damage problems at new sites.	High effect - cormorant problems less likely to be resolved without WS involvement. Birds may move to other sites which can create aesthetic damage problems at new sites	Low effect - cormorant damage problems most likely to be resolved without creating or moving problems elsewhere.
<b>Humaneness and Animal Welfare Concerns of Methods Used</b>	Low to moderate effect - methods viewed by some people as inhumane would be used by WS.	Lower effect than Alt. 1 since only non-lethal methods would be used by WS	No effect by WS.  Impacts by non-WS personnel would be variable.	No effect by WS.  Impacts by non-WS personnel would be variable.	Low to moderate effect - methods viewed by some people as inhumane would be used by WS.

**CHAPTER 5: LIST OF PREPARERS AND PERSONS CONSULTED**

David S. Reinhold, Environmental Coordinator	USDA, APHIS, Wildlife Services
Timothy S. Wilson, Wildlife Biologist	USDA, APHIS, Wildlife Services
Peter H. Butchko, State Director	USDA, APHIS, Wildlife Services
John Sinclair, Staff Officer	USDA, APHIS, Wildlife Services
Dave Fielder	MI Dept. of Natural Resources
William E. Moritz	MI Dept. of Natural Resources
Ray Rustem	MI Dept. of Natural Resources
Shauna Hanisch	USFWS
Jeff Gosse	USFWS
Steve Lewis	USFWS
Jack Dingedine	USFWS
Mike DeCapita	USFWS

## **CHAPTER 6: RESPONSE TO PUBLIC COMMENTS RECEIVED ON THE PRE-DECISIONAL EA**

**Issue 1:** *To fully comply with NEPA, an Environmental Impact Statement (EIS) should be completed for the proposed cormorant damage management program in Michigan. (This issue is a result of comments received from a conservation organization and an animal protection organization).*

**Program Response 1:** WS and USFWS follow all applicable laws, regulations, and guidelines in analyzing potential impacts of their actions, including those established by NEPA. In making an informed decision of potential environmental impacts, WS uses the best available scientific information, data and expert advice, including the DCCO FEIS (USFWS 2003). As allowed under CEQ NEPA regulations, this EA is tiered to the DCCO FEIS. Appendix A provides a list of documents that are used and referenced throughout the EA for analyzing potential impacts of the proposed program; Chapter 5 provides a list of the persons consulted in the development of the EA; and potential impacts are systematically analyzed in Chapter 4. Each issue is fully explained and analyzed against each alternative to allow the reader an objective way to evaluate potential outcomes of each alternative. By conducting such a systematic and objective analysis, and using the best available scientific information, data and expert advice, WS and USFWS are able to make an informed decision as required by NEPA.

WS and USFWS have determined that the analysis in the EA showed no significant impact on the quality of the human environment. The EA took a hard look at the need for action, the issues, alternatives, and environmental consequences, and resulted in a FONSI by each agency that discussed, under each of the ten CEQ points of significance, why each was not significant. WS and USFWS carefully considered all comments from respondents to the public involvement efforts. The agency followed CEQ NEPA regulations, and Agency NEPA implementing procedures. Thus, the EA resulted in FONSIs that specified why an EIS was not required.

**Issue 2:** *The need to protect sport fisheries and other public resources on a broad scale (regional level) has not been substantiated, is based upon perceived conflicts, is not justified or warranted, and is not supported by science. Cormorant damage to public resources may occur on a localized level, but is having minimal impacts on resources at a broader regional level. (This issue is a result of comments received from a conservation organization; 3 animal protection organizations; and 2 university researchers).*

**Program Response 2:** As described in Sections 1.2.2 and 1.2.3, WS recognizes that cormorant damage to public resources is not a wide spread or common occurrence and occurs on a localized level. When determining if DCCOs are impacting a resource, including sport fisheries and other public resources, WS will use the best information that is available at that time to make this decision. This could include the use of published literature, results of on-going or completed research activities, consultation with the agency or agencies charged with responsibility of overseeing or managing a specific resource, consultation with person(s) with expertise in managing a particular resource, or any other information that will assist WS in making an informed decision.

WS has the legislative authority and responsibility to respond to such requests for assistance, the Michigan WS office will respond to these types of requests for assistance and will take the appropriate course of actions based upon the site specific information collected at the time of the request. Upon receiving a request for assistance, WS will use the WS Decision Model described in Section 3.2.4 when determining the necessary course of action.

WS and USFWS recognize that there is currently contradictory scientific information regarding cormorant impact on the perch fishery in the Great Lakes. This is why we support and are sponsoring continued research on the subject (see Responses 9 and 10). At the same time, there is strong scientific information as presented in the DCCO FEIS (USFWS 2003 and also Response 14) that the proposed cormorant control measures will not threaten the long-term sustainability of the overall cormorant population.

Admittedly, part of the impetus for doing cormorant control is based upon human perception and desire beyond what science can clearly document. Conversely, part of the opposition to conducting such control is also based upon human perception and desires beyond what science can justify.

**Issue 3:** *There is no evidence to substantiate the need to conduct DCCO control activities in the Les Cheneaux region to protect yellow perch. The only published study (Belyea et al. 1997) on DCCO impacts on fish populations in the Les Cheneaux area showed that DCCOs have very little impacts on the yellow perch fish population. (This issue is a result of comments received from a conservation organization; 3 animal protection organizations; and 2 university researchers).*

**Program Response 3:** As discussed in Section 1.2.2 and Appendix 6 of the DCCO FEIS (USFWS 2003), WS recognizes that the 1995 study by Belyea et al. (1997) concluded that DCCOs were having minimal impacts on the yellow perch fish population in the Les Cheneaux region at that time. However (as described in Section 1.2.2), since the completion of the 1995 study, Fielder (2004) has observed that the timing of the rise in the DCCO population in the Les Cheneaux region coincides closely with the collapse of the yellow perch fishery and such a predation scenario would account for the continued high total annual mortality rate and decline in mean perch age. Fielder (2004) further concludes that these data indicate that the collapse of the fishery and range contraction of perch were caused at least in part by the predatory effects of cormorants and that DCCOs may be contributing to the ongoing suppression of the perch population in the region. WS will implement control actions in the Les Cheneaux region based upon the information provided by Fielder (2004). As described in the response to Issue 10, research activities will be conducted concurrently to evaluate the effectiveness of the proposed program in the Les Cheneaux region.

**Issue 4:** *Cormorant management actions will result in significant negative disturbance to other colonial nesting birds, which will impact their reproductive success. (This issue is a result of comments received from a conservation organization; 2 animal protection organizations; and 2 university researchers).*

**Program Response 4:** This issue has been evaluated in Section 4.1.2. Mitigation measures to reduce potential adverse impacts to colonial waterbirds are provided in 3.4, including several additional mitigation measures that have been incorporated in the final EA. By adhering to these mitigation measures, WS DCCO management actions will not have a significant impact on other colonial waterbirds.

**Issue 5:** *The EA fails to mention the priority conservation status of specific colonial waterbird sites located in the Great Lakes Region. Cormorant control should not be implemented on these priority conservation sites due to the potential adverse impacts that control actions may have on colonial waterbirds occupying these sites. Control activities will impact ongoing research activities being conducted on these sites. (This issue is a result of comments received from a conservation organization; and 2 university researchers).*

**Program Response 5:** WS agrees that management actions should be taken in such a manner to minimize potential adverse impacts to these priority conservation sites. WS only conducts damage management activities upon request and will not conduct control activities without first obtaining the necessary landowner permission prior to conducting management actions. Therefore the landowner or land manager can restrict WS access to all or a portion of their property that they do not want management actions to take place. When management actions take place, WS will adhere to the mitigation measures provided in Section 3.4 to reduce potential adverse effects to colonial waterbirds using these locations. Furthermore, as specified in Section 3.4, as applicable, WS will review the USFWS Final Report (Wires and Cuthbert 2001) – “Prioritization of waterbird colony sites for conservation in the U.S. Great Lakes region” prior to conducting control activities at DCCO breeding colonies to determine the potential impacts that control actions may have on a specific DCCO breeding colony and any nontarget colonial waterbirds that may be utilizing the site. If it is determined that WS actions have the potential to adversely affect nontarget

colonial waterbird species, WS will consult with the USFWS at that time for advise on how to minimize potential impacts.

WS and the USFWS acknowledge that ongoing research may be adversely affected by DCCO management activities in certain circumstances. WS will take the appropriate course of action to reduce or eliminate this potential impact whenever possible. This includes not conducting control activities on Green Island where ongoing research is currently being conducted on the interactions of DCCOs with black-crowned night-herons. With respect to the other priority conservation sites referenced by the commentors, more than 90% of the individuals and half of the species nesting at those sites are gulls, which are not of high conservation concern in Michigan or the Great Lakes.

**Issue 6:** *The priority conservation status of specific colonial waterbird sites located in the Great Lakes Region should be conserved and protected from habitat loss or destruction through land acquisition, easements or agreements with landowners. (This issue is a result of comments received from a conservation organization).*

**Program Response 6:** The conservation of waterbird nesting sites through the acquisition of land, easements or agreements with landowners is outside the scope of this EA and WS legislative authority.

**Issue 7:** *Implementation of the Public Resource Depredation Order is not necessary to reduce cormorant damage to natural resources (including sport fisheries), aquaculture, property or human health and safety. There is little evidence to support the need for expanded cormorant control efforts. The current USFWS depredation permitting process is adequate to address these concerns on a case-by-case basis. (This issue is a result of comments received from a conservation organization; and 2 animal protection organizations).*

**Program Response 7:** As discussed above in response to issue # 2 and # 3, WS recognizes that cormorant damage to public resources is not a wide spread or common occurrence and occurs on a localized level. WS has the legislative authority and responsibility to respond to such requests for assistance, the Michigan WS will respond to these types of requests for assistance and will take the appropriate course of actions based upon the site specific information collected at the time of the request.

As described in the proposed action, WS will continue to work with the USFWS to protect aquaculture, property, and human health and safety in Michigan through the USFWS depredation permitting process. Upon receiving a request for assistance, WS will use the WS Decision Model described in Section 3.2.4 when determining the necessary course of action. The Public Resource Depredation Order will not be used to address DCCO conflicts with these types of resources. However, since WS has been given the legal authority to conduct management actions under the Public Resource Depredation Order and the USFWS has acknowledged that migratory bird permits will not be issued to protect public resources in Michigan, WS will use this authority when determined necessary to reduce DCCO conflicts and damage to public resources in Michigan. Similar to the current USFWS migratory bird permitting process, WS will not take management actions under the Depredation Order until the need arises and a request is received for WS assistance.

**Issue 8:** *WS should not manage wildlife based on subjective individual and economic tolerances. (This issue is a result of comments received from an animal protection organization).*

**Program Response 8:** WS has the legal direction to respond to requests for assistance, and it is program policy to aid each requester to minimize losses. The USDA is directed by law to protect American agriculture and other resources from damage associated with wildlife. The primary statutory authority for the Wildlife Services program is the Act of 1931 (7 U.S.C. 426-426c; 46 Stat. 1468), as amended in the Rural Development, Agriculture, Related Agencies Appropriations Act of 1988, Public Law 100-102, Dec. 27, 1987. Stat. 1329-1331 (7 U.S.C. 426c), and the Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act of 2001, Public Law 106-387, October 28, 2000.

Stat. 1549 (Sec 767), which provides that:

*“The Secretary of Agriculture may conduct a program of wildlife services with respect to injurious animal species and take any action the Secretary considers necessary in conducting the program. The Secretary shall administer the program in a manner consistent with all of the wildlife services authorities in effect on the day before the date of the enactment of the Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2001.”*

Since 1931, with the changes in societal values, WS policies and its programs place greater emphasis on the part of the Act discussing “bringing (damage) under control”, rather than “eradication” and “suppression” of wildlife populations. In 1988, Congress strengthened the legislative directive and authority of WS with the Rural Development, Agriculture, and Related Agencies Appropriations Act.

**Issue 9:** *What means or methods will WS use to determine whether cormorants are impacting a specific resource and that the course of action taken will reduce impacts to acceptable levels? How does WS plan to monitor the effectiveness of control actions on affected resources? (This issue is a result of comments received from a conservation organization; 3 animal protection organizations; and 2 university researchers).*

**Program Response 9:** As described in Section 3.2.4, WS uses a decision model which involves evaluating each request for assistance, taking action and evaluating and monitoring results of the actions taken. This decision model will be used when WS receives a request for assistance. Furthermore, when using the authority provided to WS through the PRDO, WS is required on an annual basis, to provide the USFWS with a description of the impacts or anticipated impacts to public resources by DCCOs and a statement of the management objectives for the area in question; a description of the evidence supporting the conclusion that DCCOs are causing or will cause impacts to a public resource; and a discussion of other limiting factors affecting the resource (50 CFR 21.48(d)(10)).

When appropriate, WS will assist in research projects evaluating the impacts of DCCO management actions. Information obtained from these studies will be used to evaluate program activities and may be used in planning subsequent DCCO management actions.

**Issue 10:** *How will WS evaluate the effectiveness of DCCO program activities in the Les Cheneaux Islands? (This issue is a result of comments received from a conservation organization; and 2 university researchers).*

**Program Response 10:** In addition to conducting operational activities in the Les Cheneaux Islands, WS National Wildlife Research Center and the Michigan DNR will be conducting concurrent research activities to evaluate the effectiveness of control methods, the effects that control activities are having on DCCOs, and the effects that DCCOs are having on yellow perch populations in the region. Information obtained from these studies will be used when planning subsequent DCCO management actions.

**Issue 11:** *WS assistance provided to aquaculture producers should focus on making aquaculture facilities less attractive to cormorants and on “good” husbandry practices. Cormorant predation at aquaculture facilities can be prevented or reduced through exclusion methods or design of facilities. (This issue is a result of comments received from a conservation organization; and 2 animal protection organizations).*

**Program Response 11:** As described in Section 3.2.5, WS considers such non-lethal approaches as part of the proposed program and WS will make such recommendations to persons requesting assistance when determined practical and effective for the given situation.

**Issue 12:** *WS should focus cormorant management on non-lethal control and use lethal control only as a last resort. (This issue is a result of comments received from a conservation organization; and 2 animal protection organizations).*

**Program Response 12:** This alternative is analyzed in detail in the EA (Alternative 2) and also under Section 3.3.3 (Non-lethal Methods Implemented Before Lethal Methods). WS recognizes the importance of non-lethal methods as part of an integrated approach to managing cormorant damage. As described in the proposed action, WS will continue to consider and use non-lethal methods when appropriate.

**Issue 13:** *The EA does not analyze the impacts of the program on fish populations or angling in Michigan. (This issue is a result of comments received from 2 animal protection organizations).*

**Program Response 13:** The management of fish populations is outside the scope of this EA. The intent of the proposed program is not to manage fish populations, but is to manage cormorant damage to specific resources, including fisheries. When a DCCO damage management program is implemented, it is predicted that recreational fishing opportunities will improve in those situations where DCCOs are negatively impacting a fisheries resource. The level of potential increase will be dependent upon not only the reduction of DCCO predation on the resource, but also on environmental and human-induced factors that affect aquatic ecosystems and fish populations as well.

**Issue 14:** *The Public Resource Depredation Order may adversely impact DCCO populations since the order does not put any restrictions or limits on the number of cormorants that WS may kill. (This issue is a result of comments received from 3 animal protection organizations).*

**Program Response 14:** As discussed in Section 4.1.1, the USFWS determined in the DCCO FEIS that cormorant populations are unlikely to be adversely affected by implementation of this depredation order. According to the DCCO FEIS (USFWS, 2003), under the PRDO, the implementation of a state-wide program to reduce cormorant impacts to public resources could result in the lethal take of up to an additional 4,140 cormorants on an annual basis in Michigan. WS predicts that the Michigan WS program would lethally take no more than approximately 85% (3,519) of this statewide total on an annual basis, with the MDNR and Indian Tribes in Michigan lethally removing up to 15% (621) of this total estimate on an annual basis. The FEIS predicts that the implementation of the PRDO in Michigan will have no significant impact to regional or continental DCCO populations (USFWS 2003).

As specified in 50 CFR 21.48, on an annual basis WS will report all take of cormorants and eggs to the USFWS to assure that the cumulative impacts of cormorant damage management actions in Michigan are not adversely affecting the long-term sustainability of DCCOs in Michigan, the region or nationwide. Furthermore, as described in Section 1.6.2, WS will on an annual basis review this EA to ensure the analysis provided (including impacts to DCCO populations) in the EA is sufficient.

**Issue 15:** *WS should coordinate management activities with other states to avoid adverse impacts to cormorant populations and other wildlife species that may be affected by management actions. (This issue is a result of comments received from 3 animal protection organizations).*

**Program Response 15:** WS agrees that a coordinated approach should be taken to manage DCCO damage in a socially acceptable and biologically controlled manner. As described in the WS Record of Decision (ROD) for the FEIS (68 Federal Register 68020), WS supports a management strategy that includes national, regional, and local DCCO population goals and objectives. This type of coordinated approach to managing DCCO damage would be developed jointly and in cooperation with affected state and federal agencies. Furthermore, as specified in 50 CFR 21.48, on an annual basis WS will report all take of cormorants and eggs to the USFWS to assure that the cumulative impacts of cormorant damage management actions in Michigan are not adversely affecting the long-term sustainability of DCCOs in Michigan, the region or nationwide. As described in Section 1.6.2, WS will on an annual basis review this

EA to ensure the analysis provided (including impacts to DCCO populations and other wildlife species) in the EA is sufficient.

**Issue 16:** *WS implementation of the Public Resource Depredation Order violates the Migratory Bird Treaty Act (MBTA). (This issue is a result of comments received from 2 animal protection organizations).*

**Program Response 16:** As outlined in Section 1.7 and the USFWS Final Rule and ROD (68 Federal Register 58022), WS actions are conducted in accordance with applicable Federal, State, and Local environmental laws and regulations, including the MBTA. The MBTA authorizes the Secretary of Interior, subject to the provisions of, and in order to carry out the purposes of, the applicable conventions, to determine when, if at all, and by what means it is compatible with the terms of the conventions to allow the killing of migratory birds. DCCOs are covered under the terms of the Convention for the Protection of Migratory Birds and Game Mammals with Mexico. The DCCO is a nongame, noninsectivorous bird for which the applicable treaty does not impose specific prohibitions or requirements other than the overall purpose of protection so as not to be exterminated and to permit rational utilization for sport, food, commerce, and industry. In the FEIS for this action, the USFWS considered all of the statutory factors as well as compatibility with the provisions of the convention with Mexico. The Russian convention (Convention between the United States of America and the Union of Soviet Socialist Republics Concerning the Conservation of Migratory Birds and Their Environment, concluded November 19, 1976) provides an authority to cover DCCOs even though not listed in the Appendix. To the extent the USFWS choose to apply the convention, it contains an exception from the prohibitions that may be made for the protection against injury to persons or property.

**Issue 17:** *The list of non-lethal methods available to WS in Michigan does not include anthraquinone. (This issue is a result of comments received from 2 animal protection organizations).*

**Program Response 17:** Anthraquinone, a naturally occurring chemical found in many plant species and in some invertebrates as a natural predator defense mechanism, has shown effectiveness in protecting rice seed from red-winged blackbirds and boat-tailed grackles (Avery et al. 1997). It has also shown effectiveness as a foraging repellent against Canada goose grazing on turf and as a seed repellent against brown-headed cowbirds (Dolbeer et al. 1998). Anthraquinone has not been proven effective for use on DCCOs. If and when this chemical is proven effective and safe to use for DCCO damage management in Michigan, this EA and its analysis would be supplemented pursuant to NEPA at that time.

**Issue 18:** *The EA must address the economic impact of birders and other non-consumptive users on Michigan's economy. (This issue is a result of comments received from 2 animal protection organizations).*

**Program Response 18:** This issue is outside the scope of the EA.

**Issue 19:** *Potential impacts of WS management actions on wildlife watching; specifically those people that enjoy the presence cormorants and other birds in their natural settings are not mentioned in the EA. (This issue is a result of comments received from 2 animal protection organizations).*

**Program Response 19:** The WS program does not anticipate that the proposed action will have a significant impact on those that enjoy the presence of cormorants or other wildlife species. The WS program does not attempt to eradicate any species of wildlife, including cormorants, in Michigan. As discussed in Section 4.1.4, WS management actions would generally be restricted to local sites and to small, unsubstantial percentages of the overall population. Even though some local populations of cormorants may decline on the short term, these birds would remain common and abundant, and available for viewing by persons with that interest. Mitigation measures to reduce potential adverse impacts to DCCOs and other wildlife are provided in 3.4 of the EA. By adhering to these mitigation measures, WS DCCO management actions will not have a significant impact on wildlife populations in Michigan.

**Issue 20:** *WS implementation of control efforts could have adverse effects on communal nesting bird species, and threatened and endangered species (non-target species). (This issue is a result of comments received from a conservation organization; 3 animal protection organizations; and university researcher).*

**Program Response 20:** These potential effects were analyzed in the DCCO EIS (Sections 4.2.3 and 4.2.5). As that analysis concluded, and as further described in Section 4.1.2, WS impacts on non-target species are predicted to be minimal and should not affect the overall populations of any non-target species. WS personnel are trained and experienced to select the most appropriate method for taking target animals and excluding nontargets. Methods used by WS would be highly selective with very little risk to non-target species. Non-target migratory bird species and other non-target wildlife species are usually not affected by WS's CDM methods, except for the occasional scaring from harassment devices and when WS conducts breeding DCCO management in mixed-species waterbird colonies. Mitigation measures to eliminate or reduce impacts to non-target species, including nesting colonial waterbird species, are listed in Section 3.4. Furthermore, as described in Section 4.1.2, WS has determined that cormorant damage management activities in Michigan will not adversely impact any Federally or State listed T&E species.

**Issue 21:** *The EA should have considered an alternative that prohibited the lethal control of any DCCO, but permitted and expanded egg-oiling and nest destruction activities. (This issue is a result of comments received from an animal protection organization).*

**Program Response 21:** As stated in Chapter 7 of the USFWS FEIS (USFWS 2003), there is no significant qualitative difference between an entirely "non-lethal" alternative, as analyzed in the FEIS and the EA (Alternative 2), and an alternative that allows destruction of eggs but not of adult or juvenile DCCOs. A nonlethal approach to managing DCCO damage is analyzed in detail in the EA as Alternative 2 (Non-lethal CDM Only by WS).

**Issue 22:** *The EA did not to included relevant information from Cuthbert et al (2002) and Trexel (2002). (This issue is a result of comments received from a conservation organization; 2 animal protection organizations; and a university researcher).*

**Program Response 22:** Information from these citations has been added to Sections 1.2.2; 1.2.3; and 4.1.1.

**Issue 23:** *Two commenters requested to have their names removed from the list of persons consulted during the preparation of the EA. (This issue is a result of comments received from 2 university researchers).*

**Program Response 23:** These two names have been removed from the list of persons consulted in Chapter 5. However, their comments were seriously considered and a number of changes or additions have been made to the EA as a result of them. WS and USFWS welcome input from these respected researchers and hope that they will continue to provide their comments and advise on this subject.

**Issue 24:** *According to remarks made at a public meeting by the Michigan WS State Director, the Michigan WS program has apparently already decided to adopt the preferred alternative and begin DCCO control at the Les Cheneaux Islands rendering the draft EA public comment period meaningless. (This issue is a result of comments received from a conservation organization).*

**Program Response 24:** The commentator here is making reference to a news article that came out on March 28, 2004 after the MI WS State Director gave a presentation on potential DCCO management programs that may occur in Michigan. This presentation was given prior to the pre-decisional EA being finalized and released to the public for review and comment. It is correct that the project that was discussed (Les Cheneaux Islands) at this meeting is considered part of the proposed action analyzed in the EA. However,

as allowed under CEQ NEPA regulations (40 CFR 1502.14 (e)), identifying a preferred alternative in the pre-decisional EA is appropriate, especially if it allows the reader a better understanding of what the proposed program will entail. The pre-decisional EA was prepared and released to the public for a 31-day comment period by a legal notice in *The Detroit News* and the *Detroit Free Press* on April 4, 2004. A notice of availability of pre-decisional EA was also mailed directly to agencies, organizations, and individuals with probable interest in the proposed program. The USFWS Region 3 office also placed a notice of availability of the pre-decisional EA on their website (<http://midwest.fws.gov/NEPA/Micormorant/index.html>). All comments were analyzed to identify substantial new issues, alternatives, or to redirect the program.

**Issue 25: According to remarks made at a public meeting by the Michigan WS State Director, the Michigan WS program is planning to reduce the population of DCCO in the Les Cheneaux Islands from 15,000 to 2,000 birds within 6 to 10 years. An effort will be made to kill more than 15% or more of the adults and reduce reproduction from 100% to 10% by spraying eggs and other techniques. (This issue is a result of comments received from a conservation organization).**

**Program Response 25:** The commentator here is making reference to a news article that came out on March 28, 2004 after the MI WS State Director gave a presentation on potential DCCO management programs that may occur in Michigan. WS has made no decision with regard to a population goal for DCCOs in the Les Cheneaux Island and set no timetable to achieve a goal. No such goal or timetable was announced publicly. In developing plans for potential pilot project, the prospective goal of reducing reproduction by egg oiling as much as possible was seen as reasonable within the PRDO. It was recognized that reducing reproduction completely was unlikely as a matter of practicality and that reducing it to 10% was more realistic. Likewise, the potential pilot project also contained a component to remove a certain percentage of breeding adults as allowed by the PRDO. This combination of egg oiling and removal of adults was demonstrated to be effective in Quebec (Bedard et al. 1999). DCCO management actions (killing of adult birds and egg oiling) that may be taken in the Les Cheneaux Island region will be within the level of take predicted and analyzed in Section 4.1.1. The DCCO FEIS predicts that authorized take of cormorants and their eggs for the management of double-crested cormorant damage, including those taken in Michigan, is anticipated to have no significant impact on regional or continental double-crested cormorant populations (USFWS 2003). This includes DCCOs that may be killed in Michigan under the PRDO by WS, MDNR, and Indian Tribes; and those taken under USFWS issued permits. DCCOs are a long-lived bird and egg oiling programs are anticipated to have minimal effects on regional or continental cormorant populations (USFWS 2003).

**Issue 26: It was publicly stated by the Michigan WS State Director that 1) the Michigan WS is unsure of the potential impacts of the proposed program in the Les Cheneaux Islands; 2) the program will be made up as it goes along; 3) it is the first of it's kind in North America to control the cormorant in an environment like Les Cheneaux; 4) the WS program is unsure if birds from other areas would simply replace those which had been eliminated. Such statements as this indicate that the EA process is tainted and based on WS 's statements, a NEPA EIS is needed for such a broad-scale "pioneering pilot program" that WS will be making up as it goes along for DCCO population controls to theoretically resolve a fishery conflict. (This issue is a result of comments received from a conservation organization).**

**Program Response 26:** The commentator here is making reference to a news article that came out on March 28, 2004 after the MI WS State Director gave a presentation on potential DCCO management programs that may occur in Michigan. Many of the comments above have been taken out of context from what was presented at this meeting. The potential impacts of the proposed program in the Les Cheneaux Islands have been analyzed as part of the proposed program alternative (Alternative1). In making an informed decision of potential environmental impacts, WS used the best available scientific information, data and expert advice, including the DCCO FEIS (USFWS 2003). As allowed under CEQ NEPA regulations, this EA is tiered to the DCCO FEIS. Appendix A provides a list of documents that are used and referenced throughout the EA for analyzing potential impacts of the proposed program; Chapter 5 provides a list of the

persons consulted in the development of the EA; and potential impacts are systematically analyzed in Chapter 4. Each issue is fully explained and analyzed against each alternative to allow the reader an objective way to evaluate potential outcomes of each alternative. By conducting such a systematic and objective analysis, and using the best available scientific information, data and expert advice, WS is able to make an informed decision as required by NEPA.

WS has determined that the analysis in the EA showed no significant impact on the quality of the human environment. The EA took a hard look at the need for action, the issues, alternatives, and environmental consequences, and resulted in a FONSI that discussed, under each of the ten CEQ points of significance, why each was not significant. WS carefully considered all comments from respondents to the public involvement efforts. The agency followed CEQ NEPA regulations, and Agency NEPA implementing procedures. Thus, the EA resulted in a FONSI that specified why an EIS was not required.

**Issue 27: WS should employ all possible methods to control DCCO damage, including the shooting of adult birds and oiling of their eggs. WS should use the authority provided to them under the PRDO to protect public resources in Michigan. WS should implement an IWDM approach to reduce damage associated with DCCOs on property, economy, and public health and safety in affected communities. (This issue is a result of comments received from a US Congressman; the Michigan DNR; the City of Alpena; 6 Lake/Fishing Associations; and 5 private citizens).**

**Program Response 27:** As described in Section 3.1.1, this is the proposed action alternative (Alternative 1). WS considers such approaches as part of the proposed program and will make these types of recommendations or take such actions when determined practical and effective for a given situation.

**Issue 28: While not specifically required under NEPA, when mentioning consideration of Federally-listed species it would be appropriate to mention State-listed species at the same point in Section 3.4.2 (Additional Mitigation Specific to the Issues). (This issue is a result of comments received from the Michigan DNR).**

**Program Response 28:** Mitigation measures to reduce potential impacts to State listed T&E species have been added to this section of the EA.

**Issue 29: The EA makes no mention of the tremendous stench that is caused by DCCO feces. (This issue is a result of comments received from a private citizen).**

**Program Response 29:** Although not specifically mentioned in Section 1.2.4, WS recognizes that DCCOs may cause this type of damage on a site specific basis. If WS receives such a type of request for assistance, WS will take the appropriate action determined practical and effective for the given situation.

**Issue 30: The EA makes no mention of the adverse impacts that the DCCO may have on nesting terns and bald eagles in Michigan. (This issue is a result of comments received from a private citizen).**

**Program Response 30:** Although these two bird species are not specifically mentioned in Section 1.2.3, WS recognizes that DCCOs may cause adverse impacts to a variety of bird species on a site specific basis. If WS receives such a type of request for assistance, WS will take the appropriate action determined practical and effective for the given situation.

## APPENDIX A

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