

## APPENDIX A

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## APPENDIX B

### SPECIES THAT ARE FEDERALLY-LISTED AS THREATENED OR ENDANGERED IN THE STATE OF OHIO

(T= Threatened, E= Endangered)

#### Federally Endangered, Threatened and Candidate Species in Ohio

##### MAMMALS

Indiana bat - endangered

##### BIRDS

Bald eagle - threatened

Piping plover - endangered

Kirtland's warbler - endangered

##### REPTILE

Eastern massasauga – candidate

Copperbelly watersnake – threatened

Lake Erie watersnake - threatened

##### FISH

Scioto madtom - endangered

##### INSECTS

Hine's emerald dragonfly – endangered

Karner blue butterfly – endangered

Mitchell's satyr butterfly – endangered

American burying beetle - endangered

##### MOLLUSKS

Fanshell - endangered

Purple catspaw - endangered

White catspaw - endangered

Northern riffleshell - endangered

Pink mucket - endangered

Clubshell - endangered

##### PLANTS

Running buffalo clover - endangered

Northern monkshood - threatened

Lakeside daisy - threatened

Small whorled pogonia - threatened

Prairie fringed orchid - threatened

Virginia spiraea - threatened

## APPENDIX C

### SPECIES THAT ARE LISTED AS ENDANGERED AND THREATENED BY THE STATE OF OHIO

#### PURPOSE, SCOPE, AND RELATIONSHIP TO FEDERAL LAWS

The Division of Wildlife's mission is to conserve and improve the fish and wildlife resources and their habitats, and promote their use and appreciation by the public so that these resources continue to enhance the quality of life for all Ohioans. The Division has legal authority over Ohio's fish and wildlife, which includes about 56 species of mammals, 200 species of breeding birds, 84 species and subspecies of amphibians and reptiles, 170 species of fish, 100 species of mollusks, and 20 species of crustaceans (ODNR 2005).

In addition, there are thousands of species of insects and other invertebrates which fall under the Division's jurisdiction. Furthermore, Ohio law grants authority to the chief of the Division to adopt rules restricting the taking or possession of native wildlife threatened with statewide extirpation and to develop and periodically update a list of endangered species (Ohio Revised Code 1531.25).

#### DEFINITIONS

A species is considered **endangered**, if it is threatened with extirpation from the state. The danger may result from one or more causes, such as habitat loss, pollution, predation, interspecific competition, or disease.

A species is considered **threatened**, whose survival in Ohio is not in immediate jeopardy, but to which a threat exists. Continued or increased stress will result in its becoming endangered.

#### MAMMALS

##### Endangered

<i>Myotis sodalists</i> .....	Indiana Bat
<i>Neotoma magister</i> .....	Allegheny woodrat
<i>Felis rufus</i> .....	bobcat
<i>Ursus americanus</i> .....	black bear
<i>Lepus americanus</i> .....	snowshoe hare

## **BIRDS**

### **Endangered**

<i>Botaurus lentiginos</i> .....	American bittern
<i>Haliaeetus leucocephalus</i> .....	bald eagle
<i>Circus cyaneus</i> .....	northern harrier
<i>Falco peregrinus</i> .....	peregrine falcon
<i>Rallus elegans</i> .....	king rail
<i>Grus canadensis</i> .....	Sandhill crane
<i>Charadrius melodus</i> .....	Piping plover
<i>Sterna hirundo</i> .....	Common tern
<i>Chlidonias niger</i> .....	Black tern
<i>Sphyrapicus varius</i> .....	Yellow-bellied sapsucker
<i>Thryomanes bewickii</i> .....	Bewick's wren
<i>Lanius ludovicianus</i> .....	Loggerhead shrike
<i>Vermivora chrysoptera</i> .....	Golden-winged warbler
<i>Dendroica kirtlandii</i> .....	Kirtland's warbler *E
<i>Chondestes grammacus</i> .....	Lark sparrow
<i>Pandion haliaetus</i> .....	Osprey
<i>Cygnus buccinator</i> .....	Trumpeter swan
<i>Egretta thula</i> .....	Snowy egret
<i>Bubulcus ibis</i> .....	Cattle egret

### **Threatened**

<i>Bartramia longicauda</i> .....	Upland sandpiper
<i>Nycticorax nycticorax</i> .....	Black-crowned night-heron
<i>Nyctanassa violacea</i> .....	Yellow-crowned night-heron
<i>Tyto alba</i> .....	Barn owl
<i>Junco hyemalis</i> .....	Dark-eyed junco
<i>Catharus guttatus</i> .....	Hermit thrush
<i>Ixobrychus exilis</i> .....	Least bittern
<i>Empidonax minimus</i> .....	Least flycatcher

## **AMPHIBIANS AND REPTILES**

### **Endangered**

<i>Nerodia erythrogaster neglecta</i> .....	copperbelly watersnake
<i>Thamnophis radix radi</i> .....	eastern plains garter snake
<i>Crotalus horridus horridus</i> .....	timber rattlesnake
<i>Nerodia sipedon insularum</i> .....	Lake Erie watersnake
<i>Cryptobranchus alleganiensis alleganiensis</i> .....	eastern hellbender
<i>Ambystoma laterale</i> .....	blue spotted salamander
<i>Aneides aeneus</i> .....	green salamander
<i>Eurycea lucifuga</i> .....	cave salamander
<i>Scaphiopus holbrookii</i> .....	eastern spadefoot
<i>Sistrurus catenatus</i> .....	massasauga

### **Threatened**

<i>Clonophis kirtlandii</i> .....	Kirtland's snake
<i>Clemmys guttata</i> .....	spotted turtle
<i>Pseudotriton montanus</i> .....	mud salamander

## **FISH**

### **Threatened**

<i>Salvelinus fontinalis</i> .....	Brook trout
<i>Notropis boops</i> .....	Bigeye shiner
<i>Exoglossum laurae</i> .....	Tonguetied minnow
<i>Moxostoma valenciennesi</i> .....	Greater redhorse
<i>Percina copelandi</i> .....	Channel darter
<i>Anguilla rostrata</i> .....	American eel
<i>Clinostomus funduloides</i> .....	Rosyside dace
<i>Notropis dorsalis</i> .....	Bigmouth shiner
<i>Erimyzon sucetta</i> .....	Lake chubsucker
<i>Percina shumardi</i> .....	River darter
<i>Etheostoma camurum</i> .....	Bluebreast darter
<i>Etheostoma tippecanoe</i> .....	Tippecanoe darter
<i>Polyodon spathula</i> .....	paddlefish

### **Endangered**

<i>Ichthyomyzon bdellium</i> .....	Ohio lamprey
<i>Ichthyomyzon fossor</i> .....	Northern brook lamprey
<i>Ichthyomyzon greeleyi</i> .....	Mountain brook lamprey
<i>Acipenser fulvescens</i> .....	Lake sturgeon
<i>Scaphirhynchus platyrhynchus</i> .....	Shovelnose sturgeon
<i>Lepisosteus oculatus</i> .....	Spotted gar
<i>Lepisosteus platostomus</i> .....	Shortnose gar
<i>Coregonus artedii</i> .....	Cisco (or Lake herring)
<i>Hiodon alosoides</i> .....	Goldeye
<i>Macrhybopsis aestivalis</i> .....	Speckled chub
<i>Opsopoeodus emiliae</i> .....	Pugnose minnow
<i>Notropis ariomus</i> .....	Popeye shiner
<i>Notropis heterodon</i> .....	Blackchin shiner
<i>Notropis heterolepis</i> .....	Blacknose shiner
<i>Hybognathus nuchalis</i> .....	Mississippi silvery minnow
<i>Cycleptus elongates</i> .....	Blue sucker
<i>Catostomus catostomus</i> .....	Longnose sucker
<i>Ictalurus furcatus</i> .....	Blue catfish
<i>Noturus eleutherus</i> .....	Mountain madtom
<i>Noturus stigmosus</i> .....	Northern madtom
<i>Noturus trautmani</i> .....	Scioto madtom *E
<i>Aphredoderus sayanus</i> .....	Pirate perch
<i>Fundulus diaphanus menona</i> .....	Western banded killifish
<i>Etheostoma maculatum</i> .....	Spotted darter

## **MOLLUSKS**

### **Endangered**

<i>Epioblasma triquetra</i> .....	Snuffbox
<i>Fusconaia ebena</i> .....	Ebonys shell
<i>Cyprogenia stegaria</i> .....	Fanshell
<i>Ellipsaria lineolata</i> .....	Butterfly
<i>Elliptio crassidens crassidens</i> .....	Elephant-ear
<i>Epioblasma o. obliquata</i> .....	Purple catspaw
<i>Epioblasma obliquata perobliqua</i> .....	White catspaw
<i>Epioblasma torulosa rangiana</i> .....	Northern riffleshell

<i>Fusconaia maculata maculata</i>	Long-solid
<i>Lampsilis orbiculata</i>	Pink mucket
<i>Lampsilis ovata</i>	Sharp-ridged pocketbook
<i>Lampsilis teres</i>	Yellow sandshell
<i>Ligumia nasuta</i>	Eastern pondmussel
<i>Megalonaias nervosa</i>	Washboard
<i>Plethobasus cyphus</i>	Sheepnose
<i>Pleurobema clava</i>	Clubshell
<i>Pleurobema cordatum</i>	Ohio pigtoe
<i>Pleurobema rubrum</i>	Pyramid pigtoe
<i>Quadrula cylindrica cylindrica</i>	Rabbitsfoot
<i>Quadrula metanevra</i>	Monkeyface
<i>Quadrula nodulata</i>	Wartyback
<i>Toxolasma lividus</i>	Purple lilliput
<i>Villosa fabalis</i>	Rayed bean
<i>Villosa lienosa</i>	Little spectaclecase

**Threatened**

<i>Ligumia recta</i>	Black sandshell
<i>Obliquaria reflexa</i>	Threehorn wartyback
<i>Truncilla donaciformis</i>	Fawnsfoot
<i>Unimerus tetralasmus</i>	Pondhorn

**BUTTERFLIES AND MOTHS**

**Endangered**

<i>Erynnis persius</i>	Persius dusky wing
<i>Incisalia irus</i>	Frosted elfin
<i>Lycaeides melissa samuelis</i>	Karner blue
<i>Lycaena helloides</i>	Purplish copper
<i>Calephelis muticum</i>	Swamp metalmark
<i>Speyeria idalia</i>	Regal fritillary
<i>Pyrgus cantarella wyandot</i>	Grizzled skipper
<i>Neonympha mitchellii</i>	Mitchell's satyr
<i>Cycnia inopinatus</i>	Unexpected cycnia
<i>Catocala gracilis</i>	Graceful underwing
<i>Spartiniphaga inops</i>	
<i>Hypocoena enervata</i>	
<i>Papaipema silphii</i>	
<i>Papaipema beeriana</i>	
<i>Lithophane semiusta</i>	
<i>Trichoclea artesta</i>	
<i>Tricholita notata</i>	
<i>Melanchra assimilis</i>	
<i>Epiglaea apiata</i>	Pointed sallow
<i>Ufeus plicatus</i>	
<i>Ufeus satyricus</i>	
<i>Erythroecia hebardei</i>	Hebard's noctuid moth

**Threatened**

<i>Boloria selene</i>	Silver-bordered fritillary
<i>Catocala antinympha</i>	Wayward nymph

*Spartiniphaga panatela*  
*Fagitana littera*  
*Faronta rubripennis*..... The pink-streak

**CADDISFLIES**

**Endangered**

*Chimarra socia*  
*Oecetis eddlestoni*  
*Brachycentrus numerosus*

**Threatened**

*Psilotreta indecisa*  
*Hydroptila albicornis*  
*Hydroptila artesa*  
*Hydroptila koryaki*  
*Hydroptila talledaga*  
*Hydroptila valhalla*

**BEEETLES**

**Endangered**

*Pseudanophthalmus krameri*..... Kramer's cave beetle  
*Pseudanophthalmus ohioensis*..... Ohio cave beetle  
*Nicrophorus americanus*..... American burying beetle

**Threatened**

*Cicindela hirticollis*  
*Cicindela marginipennis*..... Cobblestone tiger beetle

**CRAYFISHES**

**Threatened**

*Orconectes sloanii*..... Sloan's crayfish

**DRAGONFLIES**

**Endangered**

*Somatochlora hineana*..... Hine's emerald  
*Aeshna clepsydra*..... Mottled darner  
*Gomphus externus*..... Plains clubtail  
*Cordulia shurtleffi*..... American emerald  
*Helocordulia uhleri*..... Uhler's sundragon  
*Leucorrhinia frigida*..... Frosted whiteface  
*Nannothemis bella*..... Elfin skimmer  
*Aeshna Canadensis*..... Canada darner  
*Dorocordulia libera*..... Racket-tailed emerald  
*Somatochlora walshii*..... Brush-tipped emerald  
*Ladona deplanata*..... Blue corporal  
*Ladona julia*..... Chalk-fronted corpora  
*Libellula flavida*..... Yellow-sided skimmer

**Threatened**

*Ophiogomphus carolus*.....Riffle snaketail

## **DAMSELFLIES**

### **Endangered**

*Ischnura kellicott*..... Lilypad forktail  
*Argia bipunctulata*.....Seepage dancer

### **Threatened**

*Calopteryx aequabilis*.....River jewelwing

## **MIDGES**

### **Endangered**

*Rheopelopia acra*

### **Threatened**

*Bethbilbeckia floridensis*  
*Apsectrotanypus johnsoni*  
*Radotanypus florens*

## **VASCULAR PLANTS**

### **Endangered**

*Acer pensylvanicum*.....Striped Maple  
*Aconitum noveboracense*.....Northern Monkshood  
*Aconitum uncinatum*.....Southern Monkshood  
*Agalinis auriculata*.....Ear-leaved-foxglove  
*Agalinis purpurea* var. *parviflora*.....Small Purple-foxglove  
*Agalinis skinneriana*.....Skinner's-foxglove  
*Agrostis eliottiana*.....Elliott's Bent Grass  
*Amelanchier sanguinea*.....Rock Serviceberry  
*Andropogon glomeratus*.....Common Broom-sedge  
*Arabis divaricarpa*.....Limestone Rock Cress  
*Arabis drummondii*.....Drummond's Rock Cress  
*Arabis hirsuta* var. *pyncocarpa*.....Western Hairy Rock Cress  
*Arabis missouriensis*.....Missouri Rock Cress  
*Arabis patens*.....Spreading Rock Cress  
*Aralia hispida*.....Bristly Sarsaparilla  
*Arenaria patula*.....Spreading Sandwort  
*Arethusa bulbosa*.....Dragon's-mouth  
*Aristida necopina*.....False Arrow-feather  
*Artemisia campestris*.....Beach Wormwood  
*Aster surculosus*.....Creeping Aster  
*Astragalus neglectus*.....Cooper's Milk-vetch  
*Aureolaria pedicularia* var. *ambigens*.....Prairie Fern-leaved False Foxglove  
*Aureolaria pedicularia* var. *pedicularia*.....Woodland Fern-leaved False Foxglove  
*Baptisia australis*.....Blue False Indigo  
*Bartonia paniculata*.....Screw-stem  
*Botrychium lanceolatum*.....Triangle Grape Fern  
*Botrychium simplex*.....Least Grape Fern  
*Calamagrostis porteri* ssp. *Insperrata*.....Bartley's Reed Grass  
*Campanula rotundifolia*.....Harebell  
*Cardamine pratensis* var. *palustris*.....American Cuckoo-flower

<i>Carex alopecoidea</i> .....	Northern Fox Sedge
<i>Carex arctata</i> .....	Drooping Wood Sedge
<i>Carex bushii</i> .....	Bush's Sedge
<i>Carex cephaloidea</i> .....	Thin-leaved Sedge
<i>Carex crinita</i> var. <i>brevicrinis</i> .....	Short-fringed Sedge
<i>Carex decomposita</i> .....	Cypress-knee Sedge
<i>Carex disperma</i> .....	Two-seeded Sedge
<i>Carex echinata</i> .....	Little Prickly Sedge
<i>Carex garberi</i> .....	Garber's Sedge
<i>Carex limosa</i> .....	Mud Sedge
<i>Carex longii</i> .....	Long's Sedge
<i>Carex louisianica</i> .....	Louisiana Sedge
<i>Carex lucorum</i> .....	Fire Sedge
<i>Carex merritt-fernaldii</i> .....	Fernald's Sedge
<i>Carex planispicata</i> .....	Flat-spiked Sedge
<i>Carex pseudocyperus</i> .....	Northern Bearded Sedge
<i>Carex retrorsa</i> .....	Reflexed Bladder Sedge
<i>Carex siccata</i> .....	Hay Sedge
<i>Carex striatula</i> .....	Lined Sedge
<i>Carex timida</i> .....	Timid Sedge
<i>Chrysopsis graminifolia</i> .....	Silk-grass
<i>Clintonia borealis</i> .....	Bluebead-lily
<i>Coeloglossum viride</i> .....	Long-bracted Orchid
<i>Collinsonia verticillata</i> .....	Early Stoneroot
<i>Corallorhiza trifida</i> .....	Early Coral-root
<i>Crataegus uniflora</i> .....	Dwarf Hawthorn
<i>Cuscuta coryli</i> .....	Hazel Dodder
<i>Cuscuta cuspidate</i> .....	Cuspidate Dodder
<i>Cuscuta indecora</i> .....	Pretty Dodder
<i>Cyperus lancastriensis</i> .....	Many-flowered Umbrella-sedge
<i>Cyperus refractus</i> .....	Reflexed Umbrella-sedge
<i>Cyperus retrofractus</i> .....	Rough Umbrella-sedge
<i>Cypripedium candidum</i> .....	White Lady's-slipper
<i>Cypripedium parviflorum</i> var. <i>parviflorum</i> .....	Small Yellow Lady's-slipper
<i>Desmodium glabellum</i> .....	Hairy Tick-trefoil
<i>Desmodium sessilifolium</i> .....	Sessile Tick-trefoil
<i>Draba brachycarpa</i> .....	Little Whitlow-grass
<i>Drosera intermedia</i> .....	Spathulate-leaved Sundew
<i>Dryopteris celsa</i> .....	Log Fern
<i>Dryopteris clintoniana</i> .....	Clinton's Wood Fern
<i>Dryopteris filix-mas</i> .....	Male Fern
<i>Echinodorus berteroi</i> .....	Burhead
<i>Eleocharis engelmannii</i> .....	Engelmann's Spike-rush
<i>Eleocharis geniculata</i> .....	Caribbean Spike-rush
<i>Eleocharis ovata</i> .....	Ovate Spike-rush
<i>Eleocharis parvula</i> .....	Least Spike-rush
<i>Eleocharis quinqueflora</i> .....	Few-flowered Spike-rush
<i>Eleocharis robbinsii</i> .....	Robbins' Spike-rush
<i>Eleocharis wolfii</i> .....	Wolf's Spike-rush
<i>Epilobium angustifolium</i> .....	Fireweed
<i>Equisetum variegatum</i> .....	Variegated Scouring-rush
<i>Eriocaulon aquaticum</i> .....	White-buttons
<i>Erysimum arkansanum</i> .....	Western Wallflower
<i>Erythronium rostratum</i> .....	Golden-star
<i>Eupatorium hyssopifolium</i> .....	Hyssop Thoroughwort

<i>Euphorbia purpurea</i> .....	Glade Spurge
<i>Euphorbia serpens</i> .....	Round-leaved Spurge
<i>Fissidens hyalinus</i> .....	Filmy Fissidens
<i>Froelichia floridana</i> .....	Common Cottonweed
<i>Galium labradoricum</i> .....	Bog Bedstraw
<i>Galium palustre</i> .....	Marsh Bedstraw
<i>Gentiana puberulenta</i> .....	Prairie Gentian
<i>Gentiana saponaria</i> .....	Soapwort Gentian
<i>Gentiana villosa</i> .....	Sampson's Snakeroot
<i>Geranium bicknellii</i> .....	Bicknell's Crane's-bill
<i>Gnaphalium viscosum</i> .....	Winged Cudweed
<i>Heteranthera reniformis</i> .....	Mud-plantain
<i>Heuchera longiflora</i> .....	Long-flowered Alum-root
<i>Hieracium longipilum</i> .....	Long-bearded Hawkweed
<i>Hydrocotyle umbellata</i> .....	Navelwort
<i>Hymenoxys herbacea</i> .....	Lakeside Daisy
<i>Hypericum canadense</i> .....	Canada St. John's-wort
<i>Hypericum denticulatum</i> .....	Coppery St. John's-wort
<i>Hypericum gymnanthum</i> .....	Least St. John's-wort
<i>Hypnum pretense</i> .....	Wrinkled-leaved Marsh Hypnum
<i>Iris brevicaulis</i> .....	Leafy Blue Flag
<i>Isoetes engelmannii</i> .....	Appalachian Quillwort
<i>Isotria medeoloides</i> .....	Small Whorled Pogonia
<i>Juncus diffusissimus</i> .....	Diffuse Rush
<i>Juncus greenei</i> .....	Greene's Rush
<i>Juncus interior</i> .....	Inland Rush
<i>Juncus platyphyllus</i> .....	Flat-leaved Rush
<i>Juniperus communis</i> .....	Ground Juniper
<i>Koeleria macrantha</i> .....	June Grass
<i>Lactuca hirsute</i> .....	Hairy Tall Lettuce
<i>Lathyrus venosus</i> .....	Wild Pea
<i>Ledum groenlandicum</i> .....	Labrador-tea
<i>Leersia lenticularis</i> .....	Catchfly Grass
<i>Linaria Canadensis</i> .....	Old-field Toadflax
<i>Lipocarpa drummondii</i> .....	Drummond's Dwarf Bulrush
<i>Magnolia macrophylla</i> .....	Bigleaf Magnolia
<i>Monarda punctata</i> .....	Dotted Horsemint
<i>Moneses uniflora</i> .....	One-flowered Wintergreen
<i>Muhlenbergia cuspidata</i> .....	Plains Muhlenbergia
<i>Myrica pensylvanica</i> .....	Bayberry
<i>Myriophyllum heterophyllum</i> .....	Two-leaved Water-milfoil
<i>Myriophyllum verticillatum</i> .....	Green Water-milfoil
<i>Najas gracillima</i> .....	Thread-like Naiad
<i>Nuphar variegata</i> .....	Bullhead-lily
<i>Oenothera clelandii</i> .....	Cleland's Evening-primrose
<i>Ophioglossum engelmannii</i> .....	Limestone Adder's-tongue
<i>Oryzopsis asperifolia</i> .....	Large-leaved Mountain-rice
<i>Oxalis montana</i> .....	White Wood-sorrel
<i>Panicum commonsianum</i> .....	Commons' Panic Grass
<i>Panicum lindheimeri</i> .....	Lindheimer's Panic Grass
<i>Panicum perlongum</i> .....	Long-panicled Panic Grass
<i>Panicum philadelphicum</i> .....	Philadelphia Panic Grass
<i>Panicum praecocius</i> .....	Early Panic Grass
<i>Panicum scoparium</i> .....	Velvet Panic Grass
<i>Panicum spretum</i> .....	Narrow-headed Panic Grass

<i>Panicum tuckermanii</i> .....	Tuckerman's Panic Grass
<i>Panicum villosissimum</i> .....	Villous Panic Grass
<i>Panicum yadkinense</i> .....	Spotted Panic Grass
<i>Paxistima canbyi</i> .....	Cliff-green
<i>Penstemon laevigatus</i> .....	Smooth Beard-tongue
<i>Phacelia dubia</i> .....	Small-flowered Scorpion-weed
<i>Phacelia ranunculacea</i> .....	Blue Scorpion-weed
<i>Phlox latifolia</i> .....	Mountain Phlox
<i>Phyllanthus caroliniensis</i> .....	Carolina Leaf-flower
<i>Placidium lachneum</i> .....	Brown Stipplescale
<i>Plantago cordata</i> .....	Heart-leaved Plantain
<i>Plantago patagonica</i> .....	Woolly Plantain
<i>Platanthera blephariglottis</i> .....	White Fringed Orchid
<i>Platanthera psychodes</i> .....	Small Purple Fringed Orchid
<i>Pluchea camphorate</i> .....	Camphor-weed
<i>Poa saltuensis</i> .....	Pasture Blue Grass
<i>Poa wolfii</i> .....	Wolf's Blue Grass
<i>Podostemum ceratophyllum</i> .....	Riverweed
<i>Polygala cruciata</i> .....	Cross-leaved Milkwort
<i>Polygala curtissii</i> .....	Curtiss' Milkwort
<i>Polygala paucifolia</i> .....	Gay-wings
<i>Polygonum cilinode</i> .....	Mountain Bindweed
<i>Polygonum setaceum</i> var. <i>interjectum</i> .....	Bristly Smartweed
<i>Populus balsamifera</i> .....	Balsam Poplar
<i>Potamogeton friesii</i> .....	Fries' Pondweed
<i>Potamogeton gramineus</i> .....	Grass-like Pondweed
<i>Potamogeton hillii</i> .....	Hill's Pondweed
<i>Potamogeton praelongus</i> .....	White-stemmed Pondweed
<i>Potamogeton pulcher</i> .....	Spotted Pondweed
<i>Potamogeton robbinsii</i> .....	Robbins' Pondweed
<i>Potamogeton tennesseensis</i> .....	Tennessee Pondweed
<i>Potentilla arguta</i> .....	Tall Cinquefoil
<i>Potentilla paradoxa</i> .....	Bushy Cinquefoil
<i>Prenanthes aspera</i> .....	Rough Rattlesnake-root
<i>Prenanthes trifoliolata</i> .....	Gall-of-the-earth
<i>Prunus mexicana</i> .....	Bigtree Plum
<i>Pteridium aquilinum</i> var. <i>pseudocaudatum</i> .....	Tailed Bracken
<i>Pycnanthemum verticillatum</i> var. <i>pilosum</i> .....	Hairy Mountain-mint
<i>Pyrola chlorantha</i> .....	Green-flowered Wintergreen
<i>Ramalina intermedia</i> .....	Rock Ramalina
<i>Ramalina pollinaria</i> .....	Chalky Ramalina
<i>Ranunculus pusillus</i> .....	Low Spearwort
<i>Rhododendron calendulaceum</i> .....	Flame Azalea
<i>Rhododendron nudiflorum</i> var. <i>nudiflorum</i> .....	Pinxter-flower
<i>Rhynchospora recognita</i> .....	Tall Grass-like Beak-rush
<i>Ribes triste</i> .....	Swamp Red Currant
<i>Rosa blanda</i> .....	Smooth Rose
<i>Saccharum alopecuroideum</i> .....	Silver Plume Grass
<i>Sagittaria graminea</i> .....	Grass-leaved Arrowhead
<i>Salix pedicellaris</i> .....	Bog Willow
<i>Salix petiolaris</i> .....	Slender Willow
<i>Scheuchzeria palustris</i> .....	Scheuchzeria
<i>Schizachne purpurascens</i> .....	False Melic
<i>Schizachyrium littorale</i> .....	Coastal Little Bluestem
<i>Schoenoplectus americanus</i> .....	Olney's Three-square

<i>Schoenoplectus smithii</i> .....	Smith's Bulrush
<i>Schoenoplectus subterminalis</i> .....	Swaying-rush
<i>Scleria oligantha</i> .....	Tubercled Nut-rush
<i>Silene caroliniana</i> var. <i>wherryi</i> .....	Wherry's Catchfly
<i>Silene nivea</i> .....	Snowy Campion
<i>Silphium laciniatum</i> .....	Compass-plant
<i>Sisyrinchium atlanticum</i> .....	Atlantic Blue-eyed-grass
<i>Sisyrinchium mucronatum</i> .....	Narrow-leaved Blue-eyed-grass
<i>Smilax pulverulenta</i> .....	Downy Carrion-flower
<i>Solidago puberula</i> .....	Dusty Goldenrod
<i>Solidago sphacelata</i> .....	False Goldenrod
<i>Sorbus decora</i> .....	Western Mountain-ash
<i>Sparganium emersum</i> .....	Small Bur-reed
<i>Spiraea virginiana</i> .....	Appalachian Spiraea
<i>Streptopus lanceolatus</i> .....	Rose Twisted-stalk
<i>Tortella inclinata</i> .....	Curved Tortella
<i>Toxicodendron rydbergii</i> .....	Northern Poison-ivy
<i>Triadenum walteri</i> .....	Walter's St. John's-wort
<i>Trichomanes boschianum</i> .....	Appalachian Filmy Fern
<i>Trichostema dichotomum</i> var. <i>lineare</i> .....	Narrow-leaved Bluecurls
<i>Trifolium reflexum</i> .....	Buffalo Clover
<i>Trifolium stoloniferum</i> .....	Running Buffalo Clover
<i>Trillium undulatum</i> .....	Painted Trillium
<i>Trollius laxus</i> .....	Spreading Globeflower
<i>Urtica chamaedryoides</i> .....	Spring Nettle
<i>Utricularia cornuta</i> .....	Horned Bladderwort
<i>Utricularia geminiscapa</i> .....	Two-scaped Bladderwort
<i>Vaccinium myrtilloides</i> .....	Velvet-leaved Blueberry
<i>Valeriana ciliata</i> .....	Prairie Valerian
<i>Verbesina occidentalis</i> .....	Yellow Crown-beard
<i>Vernonia missurica</i> .....	Missouri Ironweed
<i>Viburnum opulus</i> var. <i>americanum</i> .....	Highbush-cranberry
<i>Viola missouriensis</i> .....	Missouri Violet
<i>Viola nephrophylla</i> .....	Northern Bog Violet
<i>Viola pedatifida</i> .....	Prairie Violet
<i>Viola primulifolia</i> .....	Primrose-leaved Violet
<i>Viola tripartita</i> var. <i>glaberrima</i> .....	Wedge-leaved Violet
<i>Viola walteri</i> .....	Walter's Violet
<i>Xyris difformis</i> .....	Variable Yellow-eyed-grass

## **VASCULAR PLANTS**

### **Threatened**

<i>Acalypha virginica</i> var. <i>deamii</i> .....	Deam's Three-seeded Mercury
<i>Acorus americanus</i> .....	American Sweet-flag
<i>Actaea rubra</i> .....	Red Baneberry
<i>Adlumia fungosa</i> .....	Mountain-fringe
<i>Agalinis gattingeri</i> .....	Gattinger's-foxtglove
<i>Ammophila breviligulata</i> .....	American Beach Grass
<i>Androsace occidentalis</i> .....	Western Rock-jasmine
<i>Anemone cylindrica</i> .....	Prairie Thimbleweed
<i>Antennaria virginica</i> .....	Shale Barren Pussy-toes
<i>Apocynum sibiricum</i> .....	Clasping-leaved Dogbane
<i>Arabis lyrata</i> .....	Lyre-leaved Rock Cress
<i>Armoracia lacustris</i> .....	Lake Cress

<i>Asplenium bradleyi</i> .....	Bradley's Spleenwort
<i>Asplenium ruta-muraria</i> .....	Wall-rue
<i>Aster drummondii</i> .....	Drummond's Aster
<i>Aster dumosus</i> .....	Bushy Aster
<i>Aster oblongifolius</i> .....	Shale Barren Aster
<i>Aster ontarionis</i> .....	Bottomland Aster
<i>Aster solidagineus</i> .....	Narrow-leaved Aster
<i>Astragalus canadensis</i> .....	Canada Milk-vetch
<i>Betula pumila</i> .....	Swamp Birch
<i>Botrychium biternatum</i> .....	Sparse-lobed Grape Fern
<i>Botrychium multifidum</i> .....	Leathery Grape Fern
<i>Bromus nottowayanus</i> .....	Satin Brome
<i>Buchnera americana</i> .....	Bluehearts
<i>Calamintha arkansana</i> .....	Limestone Savory
<i>Calla palustris</i> .....	Wild Calla
<i>Callitriche verna</i> .....	Vernal Water-starwort
<i>Calopogon tuberosus</i> .....	Grass-pink
<i>Carex albolutescens</i> .....	Pale Straw Sedge
<i>Carex appalachica</i> .....	Appalachian Sedge
<i>Carex bicknellii</i> .....	Bicknell's Sedge
<i>Carex brevior</i> .....	Tufted Fescue Sedge
<i>Carex brunnescens</i> .....	Brownish Sedge
<i>Carex conoidea</i> .....	Field Sedge
<i>Carex crus-corvi</i> .....	Raven-foot Sedge
<i>Carex lupuliformis</i> .....	False Hop Sedge
<i>Carex mesochorea</i> .....	Midland Sedge
<i>Carex oligosperma</i> .....	Few-seeded Sedge
<i>Carex pallescens</i> .....	Pale Sedge
<i>Carex projecta</i> .....	Necklace Sedge
<i>Carex purpurifera</i> .....	Purple Wood Sedge
<i>Carex sprengei</i> .....	Sprengel's Sedge
<i>Celtis tenuifolia</i> .....	Dwarf Hackberry
<i>Chimaphila umbellata</i> .....	Pipsissewa
<i>Chionanthus virginicus</i> .....	Fringe-tree
<i>Chrysogonum virginianum</i> .....	Golden-knees
<i>Cirsium carolinianum</i> .....	Carolina Thistle
<i>Clintonia umbellulata</i> .....	Speckled Wood-lily
<i>Comptonia peregrina</i> .....	Sweet-fern
<i>Conyza ramosissima</i> .....	Bushy Horseweed
<i>Cornus canadensis</i> .....	Bunchberry
<i>Croton glandulosus</i> .....	Northern Croton
<i>Cuscuta glomerata</i> .....	Glomerate Dodder
<i>Cuscuta pentagona</i> .....	Five-angled Dodder
<i>Cyperus acuminatus</i> .....	Pale Umbrella-sedge
<i>Cyperus schweinitzii</i> .....	Schweinitz' Umbrella-sedge
<i>Cypripedium reginae</i> .....	Showy Lady's-slipper
<i>Dalibarda repens</i> .....	Robin-run-away
<i>Deschampsia flexuosa</i> .....	Crinkled Hair Grass
<i>Descurainia pinnata</i> .....	Tansy Mustard
<i>Draba cuneifolia</i> .....	Wedge-leaved Whitlow-grass
<i>Draba reptans</i> .....	Carolina Whitlow-grass
<i>Eleocharis compressa</i> .....	Flat-stemmed Spike-rush
<i>Eleocharis flavescens</i> .....	Green Spike-rush
<i>Elymus trachycaulus</i> .....	Bearded Wheat Grass
<i>Epilobium strictum</i> .....	Simple Willow-herb

<i>Eryngium yuccifolium</i>	Rattlesnake-master
<i>Eupatorium album</i>	White Thoroughwort
<i>Eupatorium aromaticum</i>	Small White Snakeroot
<i>Euthamia remota</i>	Great Lakes Goldenrod
<i>Galactia volubilis</i>	Milk-pea
<i>Gentiana alba</i>	Yellowish Gentian
<i>Glyceria acutiflora</i>	Sharp-glumed Manna Grass
<i>Gratiola virginiana</i>	Round-fruited Hedge-hyssop
<i>Gratiola viscidula</i>	Short's Hedge-hyssop
<i>Gymnocarpium dryopteris</i>	Common Oak Fern
<i>Helianthemum bicknellii</i>	Plains Frostweed
<i>Helianthemum canadense</i>	Canada Frostweed
<i>Helianthus mollis</i>	Ashy Sunflower
<i>Heuchera parviflora</i>	Small-flowered Alum-root
<i>Heuchera villosa</i>	Hairy Alum-root
<i>Hexalectris spicata</i>	Crested Coral-root
<i>Hieracium canadense</i>	Canada Hawkweed
<i>Hypericum boreale</i>	Northern St. John's-wort
<i>Hypericum ellipticum</i>	Few-flowered St. John's-wort
<i>Hypericum kalmianum</i>	Kalm's St. John's-wort
<i>Iris verna</i>	Dwarf Iris
<i>Juncus secundus</i>	One-sided Rush
<i>Krigia dandelion</i>	Potato-dandelion
<i>Krigia virginica</i>	Virginia Dwarf-dandelion
<i>Lathyrus japonicus</i>	Inland Beach Pea
<i>Lathyrus ochroleucus</i>	Yellow Vetchling
<i>Leavenworthia uniflora</i>	Michaux's Leavenworthia
<i>Lechea minor</i>	Thyme-leaved Pinweed
<i>Lechea pulchella</i>	Leggett's Pinweed
<i>Lechea tenuifolia</i>	Narrow-leaved Pinweed
<i>Liatris cylindracea</i>	Slender Blazing-star
<i>Lilium philadelphicum</i>	Wood Lily
<i>Lipocarpa micrantha</i>	Dwarf Bulrush
<i>Lithospermum carolinense</i>	Plains Puccoon
<i>Luzula bulbosa</i>	Southern Woodrush
<i>Manfreda virginica</i>	American Aloe
<i>Matelea obliqua</i>	Angle-pod
<i>Melampyrum lineare</i>	Cow-wheat
<i>Melanthium virginicum</i>	Bunchflower
<i>Melanthium woodii</i>	Wood's-hellebore
<i>Melica nitens</i>	Three-flowered Melic
<i>Menyanthes trifoliata</i>	Buckbean
<i>Myriophyllum sibiricum</i>	American Water-milfoil
<i>Nothoscordum bivalve</i>	False Garlic
<i>Oenothera oakesiana</i>	Oakes' Evening-primrose
<i>Oenothera parviflora</i>	Small-flowered Evening-primrose
<i>Oryzopsis racemosa</i>	Mountain-rice
<i>Panicum bicknellii</i>	Bicknell's Panic Grass
<i>Panicum boreale</i>	Northern Panic Grass
<i>Panicum leibergii</i>	Leiberg's Panic Grass
<i>Panicum meridionale</i>	Southern Hairy Panic Grass
<i>Panicum verrucosum</i>	Warty Panic Grass
<i>Passiflora incarnata</i>	Maypop
<i>Penstemon canescens</i>	Gray Beard-tongue
<i>Penstemon pallidus</i>	Downy White Beard-tongue

<i>Physalis virginiana</i> .....	Virginia Ground-cherry
<i>Plagiothecium latebricola</i> .....	Lurking Leskea
<i>Platanthera ciliaris</i> .....	Yellow Fringed Orchid
<i>Platanthera leucophaea</i> .....	Prairie Fringed Orchid
<i>Pleopeltis polypodioides</i> .....	Little Gray Polypody
<i>Poa paludigena</i> .....	Marsh Spear Grass
<i>Pogonia ophioglossoides</i> .....	Rose Pogonia
<i>Polygala incarnata</i> .....	Pink Milkwort
<i>Polygala polygama</i> .....	Racemed Milkwort
<i>Polygonum robustius</i> .....	Coarse Smartweed
<i>Prosartes maculata</i> .....	Nodding Mandarin
<i>Prunus pumila</i> var. <i>cuneata</i> .....	Sand Cherry
<i>Quercus falcate</i> .....	Spanish Oak
<i>Quercus marilandica</i> .....	Blackjack Oak
<i>Ramalina petrina</i> .....	Appalachian Trail Ramalina
<i>Rhododendron maximum</i> .....	Great Rhododendron
<i>Ribes missouriense</i> .....	Missouri Gooseberry
<i>Sagittaria cuneata</i> .....	Wapato
<i>Sagittaria rigida</i> .....	Deer's-tongue Arrowhead
<i>Salix candida</i> .....	Hoary Willow
<i>Scleria pauciflora</i> .....	Few-flowered Nut-rush
<i>Senecio pauperculus</i> .....	Balsam Squaw-weed
<i>Silene caroliniana</i> var. <i>pensylvanica</i> .....	Carolina Catchfly
<i>Silene regia</i> .....	Royal Catchfly
<i>Sisyrinchium montanum</i> .....	Northern Blue-eyed-grass
<i>Solidago odora</i> .....	Sweet Goldenrod
<i>Solidago squarrosa</i> .....	Leafy Goldenrod
<i>Sparganium androcladum</i> .....	Keeled Bur-reed
<i>Sphenopholis obtusata</i> var. <i>obtusata</i> .....	Prairie Wedge Grass
<i>Spiranthes romanzoffiana</i> .....	Hooded Ladies'-tresses
<i>Sporobolus heterolepis</i> .....	Prairie Dropseed
<i>Stipa spartea</i> .....	Porcupine Grass
<i>Tofieldia glutinosa</i> .....	False Asphodel
<i>Triadenum tubulosum</i> .....	Large Marsh St. John's-wort
<i>Triglochin maritimum</i> .....	Seaside Arrow-grass
<i>Triphora trianthophora</i> .....	Three-birds Orchid
<i>Ulmus thomasii</i> .....	Rock Elm
<i>Utricularia intermedia</i> .....	Flat-leaved Bladderwort
<i>Vaccinium oxycoccus</i> .....	Small Cranberry
<i>Viburnum molle</i> .....	Soft-leaved Arrow-wood
<i>Viola pedata</i> .....	Birdfoot Violet
<i>Wolffiella gladiata</i> .....	Wolffiella
<i>Xyris torta</i> .....	Twisted Yellow-eyed-grass
<i>Zizania aquatica</i> .....	Wild Rice

## **LICHENS**

### **Endangered**

<i>Collema bachmanianum</i> .....	Bachman's Jelly Lichen
<i>Collema coccophorum</i> .....	Tar Jelly Lichen
<i>Collema conglomeratum</i> .....	Dotted Jelly Lichen
<i>Collema fuscovirens</i> .....	Dusky Jelly Lichen
<i>Parmotrema madagascariaceum</i> .....	Madagascar Ruffle Lichen
<i>Punctelia perreticulata</i> .....	Reticulate Speckled Shield Lichen
<i>Sticta beauvoisii</i> .....	Fringed Moon Lichen

*Xanthoria elegans*.....Elegant Sunburst Lichen

**Threatened**

*Canoparmelia texana*.....Texas Shield Lichen

*Dibaeis absoluta*.....Pink Dot Lichen

**MOSSES**

**Endangered**

*Barbula indica* var. *indica*.....Twisted Teeth Moss

*Buxbaumia minakatae*.....Ethereal Elf Cap Moss

*Campylostelium saxicola*.....Rock-loving Swan-necked Moss

*Diphyscium cumberlandianum*.....Cumberland Grain o' Wheat Moss

*Lycopodiella margueritae*.....Northern Prostrate Club-moss

*Lycopodiella subappressa*.....Northern Appressed Club-moss

*Lycopodium lagopus*.....One-coned Club-moss

*Philonotis fontana* var. *caespitosa* .....Tufted Moisture-loving Moss

*Pohlia elongata* var. *elongata* .....Narrow-necked Pohl's Moss

*Sphagnum bartlettianum*.....Bartlett's Peat Moss

*Sphagnum riparium*.....Shore-growing Peat Moss

*Tomentypnum nitens*..... Fuzzy Hypnum Moss

*Weissia sharpii*.....Sharp's Green-cushioned Moss

**APPENDIX D**

**LOCATION AND SIZE OF DOUBLE-CRESTED CORMORANT BREEDING COLONIES IN THE STATE OF OHIO WITH  
INFORMATION ON CO-NESTING COLONIAL WATERBIRDS  
(ODNR, 2005)**

<b>Colony site name</b>	<b>Ohio County</b>	<b>Double- crested Cormorant # nests</b>	<b>Snowy Egret # nests</b>	<b>Great Blue Heron # nests</b>	<b>Great Egret # nests</b>	<b>Black- crowned Night-heron # nests</b>	<b>Herring Gull # nests</b>
<b>West Sister Island</b>	Ottawa	3,813	14	927	827	500	600
<b>Green Island</b>	Ottawa	857	0	91	4	0	40
<b>Turning Point Island</b>	Erie	409	0	0	41	47	3,000
<b>Grand Lakes St. Mary</b>	Mercer	80	0	40	0	0	0
<b>Portage Lakes</b>	Summit	6	0	0	0	0	0
<b>Total</b>		<b>5,165</b>	<b>14</b>	<b>1,058</b>	<b>872</b>	<b>547</b>	<b>3,640</b>

## APPENDIX E

### INTERACTION AMONG AGENCY DECISIONS

This appendix provides details on how the decisions made by one of the lead agencies would impact the actions and decisions available to the other lead agencies, cooperating agencies, and other individuals that may need CDM or wish to conduct CDM research. Information on the selection of Alternative 1 is not provided because selection of this alternative by any of the lead agencies would not restrict alternatives and actions available to any other entity.

**Table 1. Impacts of agency selection of Alternative 2 – Only Non-lethal CDM**

Agency Choosing Alternative 2 – Only Non-lethal CDM	Choices Available to Other DCCO Management Entities				
	Migratory Bird Office (MBO)	USFWS West Sister Island National Wildlife Refuge (WSINWR)	Wildlife Services (WS)	Ohio Division of Wildlife (ODW)	Others
USFWS Migratory Bird Office (MBO)	—	WSINWR can choose the same alternative as the MBO or it can choose to be more, but not less restrictive than the alternative selected by the MBO. Therefore, if the MBO selects Alternative 2, the WSINWR may select Alternatives 2,3 or 4.	WS could select any other alternative. However, the only entity that could receive WS assistance with lethal CDM is ODW because the only type of lethal CDM that could be conducted would be take of less than 10% of a local DCCO population under the PRDO. There could be no other types of lethal DCCO removal because it would require permits from the MBO.  A permit is not required for non-lethal CDM	ODW could take less than 10% of a local DCCO population under the PRDO because this action does not require approval or a permit from the MBO.  Non-lethal CDM does not require a permit from the MBO.	No lethal CDM could be conducted by any entity other than WS or ODW because the MBO office would not be issuing MBPs for take of DCCOs. WS and ODW would be able to take less than 10% of a local DCCO population under the PRDO because this action does not require approval or a permit from the MBO.  Non-lethal CDM does not require a permit

**Choices Available to Other DCCO Management Entities**

<b>Agency Choosing Alternative 2 – Only Non-lethal CDM</b>	<b>USFWS Migratory Bird Office (MBO)</b>	<b>USFWS West Sister Island National Wildlife Refuge (WSINWR)</b>	<b>Wildlife Services (WS)</b>	<b>Ohio Division of Wildlife (ODW)</b>	<b>Others</b>
<b>USFWS West Sister Island National Wildlife Refuge (WSINWR)</b>	No impact on decisions made by the MBO. WSINWR can only select alternatives that are more but not less restrictive than the MBO.	—	WS could select any alternative. However, it would only be able to assist WSI with non-lethal CDM. This decision would have no impact on WS CDM actions at any other location.	No impact on decisions available to state. However, selection of this alternative will likely have an impact on the need for action and the efficacy of CDM on nearby lands managed by the state.	Entities wishing to conduct research at WSINWR would not be able to use lethal methods.  Decision by WSINWR has no impact on availability of CDM alternatives at any other location.
<b>Wildlife Services (WS)</b>	No Impact	No impact on alternatives available to WSINWR. However, WSINWR would have to go to ODW for assistance with lethal take under the PRDO.  WS would only assist with research and CDM using non-lethal methods.	—	No impact on decisions available to state under the PRDO.  WS would not assist with consultation and Form 37 required for a depredation permit from the USFWS. ODW would not be able to obtain a depredation permit. State would be able to obtain research permits.  WS would only assist ODW with non-lethal CDM and research using non-lethal methods.	WS would not assist with consultation and form 37 required for a depredation permit from the USFWS. These entities would not be able to obtain a depredation permit.  These entities would be able to obtain research permits. WS would only assist with research using non-lethal methods.

Agency Choosing Alternative 2 – Only Non-lethal CDM	Choices Available to Other DCCO Management Entities				
	Migratory Bird Office (MBO)	USFWS West Sister Island National Wildlife Refuge (WSINWR)	Wildlife Services (WS)	Ohio Division of Wildlife (ODW)	Others
Ohio Division of Wildlife (ODW)	No impact on decisions made by the MBO.	No impact on alternatives available to WSINWR. WSINWR would have to work with WS for assistance with lethal CDM. Selection of this alternative will likely have an impact on the need for action and the efficacy of CDM at WSINWR.	WS could select any alternative. However, it would only be able to assist ODW with non- lethal CDM. This decision would have no impact on WS CDM actions on lands that are not owned or managed by the state.	—	Entities wishing to conduct research on lands owned or managed by the state would not be able to use lethal methods.  Decision by ODW has no impact on availability of CDM alternatives at any other location.

**Table 2. Impacts of agency selection of Alternative 3 – Only Technical Assistance.**

Agency Choosing Alternative 3 – Only Technical Assistance	Choices Available to Other DCCO Management Entities				
	Migratory Bird Office (MBO)	USFWS West Sister Island National Wildlife Refuge (WSINWR)	Wildlife Services (WS)	Ohio Division of Wildlife (ODW)	Others
<b>USFWS Migratory Bird Office (MBO)</b>	—	WSINWR can select alternatives that are the same or more restrictive than the MBO. Therefore, no CDM would be conducted at WSINWR.	Permitting and approval processes are a form of technical assistance so no impact on CDM alternatives available to WS	Permitting and approval processes are a form of technical assistance so no impact on CDM alternatives available to ODW.  Lack of CDM at WSINWR will likely have an impact on the need for action and the efficacy of CDM on lands near WSINWR that are managed by the state.	Permitting and approval processes are a form of technical assistance so no impact on availability of CDM and research alternatives
<b>USFWS West Sister Island National Wildlife Refuge (WSINWR)</b>	WSINWR can select alternatives that are the same or more restrictive than the MBO. No impact on decisions made by the MBO	—	WS could select any alternative. WSINWR would not request assistance with CDM from WS.	No impact on decisions available to state. However, selection of this alternative will likely have an impact on the efficacy and need for action on lands near WSINWR that are managed by the state.	Decision by WSINWR has no impact on availability of CDM alternatives at any other location.
<b>Wildlife Services (WS)</b>	No Impact	No impact on alternatives available to WSINWR. However, WSINWR would have to go to ODW for operational assistance with CDM under the PRDO.	—	No impact on decisions available to state.  WS would assist with consultation required for a depredation permit from the USFWS. ODW would be able to obtain	WS would assist with consultation and form 37 required for a depredation permit from the USFWS. These entities would be able to obtain a depredation permits.

**Choices Available to Other DCCO Management Entities**

<b>Agency Choosing Alternative 3 – Only Technical Assistance</b>	<b>Migratory Bird Office (MBO)</b>	<b>USFWS</b>	<b>West Sister Island National Wildlife Refuge (WSINWR)</b>	<b>Wildlife Services (WS)</b>	<b>Ohio Division of Wildlife (ODW)</b>	<b>Others</b>
<b>Ohio Division of Wildlife (ODW)</b>	No Impact	No impact on alternatives available to WSINWR. WSINWR would have to go to WS for operational assistance with CDM. Lack of CDM on state lands near WSINWR would likely have an impact on the need for action and the efficacy of CDM at WSINWR.		No impact on alternatives available to WS. WS would not assist ODW with CDM. This decision would have no impact on WS CDM actions on lands that are not owned or managed by the state.	depredation permits. State would be able to obtain research permits.  WS would only be able to provide technical assistance with CDM and research.	These entities would also be able to obtain research permits.  WS would only be able to provide technical assistance with CDM and research. Decision by ODW has no impact on availability of CDM alternatives at any other location.

**Table 3. Impacts of agency selection of Alternative 4 – No Federal CDM.**

Agency Choosing Alternative 4 – No Federal CDM	Choices Available to Other DCCO Management Entities				
	Migratory Bird Office (MBO)	USFWS West Sister Island National Wildlife Refuge (WSINWR)	Wildlife Services (WS)	Ohio Division of Wildlife (ODW)	Others
<b>USFWS Migratory Bird Office (MBO)</b>	—	WSINWR cannot select an alternative that is less restrictive than that selected by the MBO. Therefore, there would be no CDM on WSINWR.	WS could select any other alternative. However, the only entity that could receive WS assistance with lethal CDM would be ODW because the only type of lethal CDM that could be conducted would be take of less than 10% of a local DCCO population under the PRDO. There could be no other types of lethal DCCO removal because it would require permits from the MBO.  Non-lethal CDM does not require a permit from the MBO.	ODW could take less than 10% of local DCCO populations on non-Federal lands under the PRDO because this action does not require approval or a permit from the MBO.  Non-lethal CDM does not require a permit from the MBO.  Lack of CDM at WSINWR will likely have an impact on the need for action and the efficacy of CDM on lands near WSINWR that are managed by the state.	No lethal CDM could be conducted because the MBO office would not be issuing MBPs for take of DCCOs. WS and ODW are the only Ohio entities that can take DCCOs under the PRDO.  Non-lethal CDM does not require a permit from the MBO.
<b>USFWS West Sister Island National Wildlife Refuge (WSINWR)</b>	No impact on decisions made by the MBO	—	WS could select any alternative.  WSINWR would not request CDM assistance from WS.	No impact on decisions available to state. However, selection of this alternative will likely have an impact on the need for action and the efficacy of CDM on lands near WSINWR that are managed by the state.	Decision by WSINWR has no impact on availability of CDM alternatives or research at any other location.
<b>Wildlife Services (WS)</b>	No Impact	No impact on alternatives available to WSINWR.	—	No impact on decisions available to state under the	WS would not assist with consultation and

**Choices Available to Other DCCO Management Entities**

<b>Agency Choosing Alternative 4 – No Federal CDM</b>	<b>Migratory Bird Office (MBO)</b>	<b>USFWS West Sister Island National Wildlife Refuge (WSINWR)</b>	<b>Wildlife Services (WS)</b>	<b>Ohio Division of Wildlife (ODW)</b>	<b>Others</b>
<b>Ohio Division of Wildlife (ODW)</b>	No Impact	No impact on alternatives available to WSINWR. WSINWR would have to go to WS for operational assistance with CDM. Lack of CDM on state lands near WSINWR would likely have an impact on the need for action and the efficacy of CDM at WSINWR.	No impact on alternatives available to WS. WS would not assist ODW with CDM. This decision would have no impact on WS CDM actions on lands that are not owned or managed by the state.	PRDO.  WS would not assist with consultation and form 37 required for a depredation permit from the USFWS. ODW would not be able to obtain a depredation permit. State would be able to obtain research permits.  WS would not assist with CDM or research.  _____	Form 37 required for a depredation permit from the USFWS. These entities would not be able to obtain a depredation permit.  These entities would be able to obtain research permits.  WS would not assist with research.  Decision by ODW has no impact on availability of CDM alternatives at any other location.

**Table 4. Impacts of agency selection of Alternative 5 – Integrated CDM Program, Excluding Implementation of the PRDO (No Action)**

Agency Choosing Alternative 5 – Integrated CDM	Choices Available to Other DCCO Management Entities				
	Migratory Bird Office (MBO)	USFWS West Sister Island National Wildlife Refuge (WSINWR)	Wildlife Services (WS)	Ohio Division of Wildlife (ODW)	Others
<b>USFWS Migratory Bird Office (MBO)</b>	—	WSINWR can only select alternatives that are the same or more restrictive than the alternative selected by the MBO. CDM activities would be restricted to the protection of vegetation and wildlife (not public fishery resources) under MBPs from the MBO. WSINWR would not participate in actions to protect public fishery resources.	WS could select any other alternative. However, WS assistance with protection of public resources would be restricted to those activities permitted under MBPs, specifically the protection of wildlife and vegetation resources but not public fishery resources.  All other types of CDM and research would not be affected.	CDM activities would be restricted to the protection of vegetation and wildlife (not public fishery resources) as would be allowed under MBPs from the MBO.  All other types of CDM and research would not be affected.	No impact
<b>USFWS West Sister Island (WSI)</b>	No impact	—	WS could select any alternative. CDM assistance for WSI would be restricted to the protection of wildlife and vegetation (not public fishery resources) under MBPs  This decision would have no impact on WS CDM and research actions at any other location.	No impact on decisions available to state.  However, selection of this alternative would likely have an impact on the efficacy and need for action on nearby lands managed by the state if the need to protect public fishery resources is determining management objectives.	No impact
<b>Wildlife Services (WS)</b>	No Impact	No impact on alternatives available to WSI.	—	No impact on decisions available to state.	No impact

**Choices Available to Other DCCO Management Entities**

<b>Agency Choosing Alternative 5 – Integrated CDM</b>	<b>Migratory Bird Office (MBO)</b>	<b>USFWS West Sister Island National Wildlife Refuge (WSINWR)</b>	<b>Wildlife Services (WS)</b>	<b>Ohio Division of Wildlife (ODW)</b>	<b>Others</b>
<b>Ohio Division of Wildlife (ODW)</b>	No Impact	<p>However, WSI would have to go to ODW for assistance with lethal take for the protection of public fishery resources.</p> <p>WS could only assist with activities to protect public wildlife and vegetation resources as would be permitted under MBPs</p>	No Impact. ODW would not need WS' assistance with projects to protect public fishery resources.	<p>WS could only assist with activities to protect public wildlife and vegetation resources as would be permitted under MBPs.</p> <p>This decision would not restrict WS' ability to assist ODW with all other types of CDM and research.</p>	No Impact

## APPENDIX F

### LIST OF SCIENTIFIC NAMES

#### BIRDS

Bald eagle (*Haliaeetus leucocephalus*)  
Black-crowned night-heron (*Nycticorax nycticorax*)  
Caspian tern (*Sterna caspia*)  
Cattle egret (*Bubulcus ibis*)  
Double-crested cormorant (*Phalacrocorax auritus*)  
Great blue heron (*Ardea herodias*)  
Great egret (*Ardea alba*)  
Piping plover (*Charadrius melodus*)  
Snowy egret (*Egretta thula*)

#### FISH

Alewife (*Alosa pseudoharengus*)  
Bluegill (*Lepomis macrochirus*)  
Brown trout (*Salmo trutta*)  
Burbot (*Lota lota*)  
Channel catfish (*Ictalurus punctatus*)  
Crappie (*Pomoxis spp.*)  
Freshwater drum (*Aplodinotus grunniens*)  
Gizzard shad (*Dorosoma cepedianum*)  
Golden shiner (*Notemigonus crysoleucas*)  
Lake/northern chub (*Couesius plumbeus*)  
Largemouth bass (*Micropterus salmoides salmoides*)  
Muskellunge (*Esox masquinongy*)  
Rainbow trout (*Oncorhynchus mykiss*)  
Saugeye (*Sander vitreus* x *Sander canadense*)  
Smallmouth bass (*Micropterus dolomieu*)  
Stickleback (*Eucalia inconstans*)  
Striped bass (*Morone saxatilis* x *M. chrysops*)  
Walleye (*Sander vitreus*)  
Yellow perch (*Perca flavescens*)

#### MOLLUSKS

Zebra mussel (*Dreissena polymorpha*)

#### REPTILES

Lake Erie watersnake (*Nerodia sipedon insularum*)

#### PLANTS

Harebell (*Campanula rotundifolia*)

Northern bog violet (*Viola nephrophylla*)

Rock elm (*Ulmus thomasi*)

Sprengel's sedge (*Carex sprengelii*)

Tufted fescue sedge (*Carex brevior*)

#### **LICHENS**

Elegant sunburst lichen (*Xanthoria elegans*)

## APPENDIX G

### USFWS FINAL RULEMAKING AND RECORD OF DECISION ON DOUBLE-CRESTED CORMORANT MANAGEMENT

#### DEPARTMENT OF THE INTERIOR

#### Fish and Wildlife Service

#### 50 CFR Part 21

#### RIN 1018-AI39

#### Migratory Bird Permits; Regulations for Double-Crested Cormorant Management

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Final rule and notice of record of decision.

**SUMMARY:** Increasing populations of the double-crested cormorant have caused biological and socioeconomic resource conflicts. In November 2001, the U.S. Fish and Wildlife Service (Service or we) completed a Draft Environmental Impact Statement (DEIS) on double-crested cormorant management. In March 2003, a proposed rule was published to establish regulations to implement the DEIS proposed action, Alternative D. In August 2003, the notice of availability for a Final Environmental Impact Statement (FEIS) was published, followed by a 30-day comment period. This final rule sets forth regulations for implementing the FEIS preferred alternative, Alternative D (establishment of a public resource depredation order and revision of the aquaculture depredation order). It also provides responses to comments we received during the 60-day public comment period on the proposed rule. The Record of Decision (ROD) is also published here.

**DATES:** This final rule will go into effect on [insert date 30 days following date of publication in the Federal Register].

**ADDRESSES:** Comments can be mailed to the Division of Migratory Bird Management, U.S. Fish and Wildlife Service, 4401 North Fairfax Drive, MBSP-4107, Arlington, Virginia 22203; or emailed to [cormorants@fws.gov](mailto:cormorants@fws.gov); or faxed to 703/358-2272.

**FOR FURTHER INFORMATION CONTACT:** Brian Millsap, Chief, Division of Migratory Bird Management, U.S. Fish and Wildlife Service (see ADDRESSES).

#### SUPPLEMENTARY INFORMATION:

##### Background

The Service is the Federal agency with primary responsibility for managing migratory birds. Our authority is based on the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703 et seq.), which implements conventions with Great Britain (for Canada), Mexico, Japan, and Russia. The double-crested cormorant (DCCO) is Federally protected under the 1972 amendment to the Convention for the Protection of Migratory Birds and Game Mammals, February 7, 1936, United States–Mexico, as amended, 50 Stat. 1311, T.S. No. 912. The take of DCCOs is strictly prohibited except as authorized by regulations implementing the MBTA.

As we stated in the proposed rule published in the Federal Register in March 2003, the authority for the regulations set forth in this rule is the MBTA. The MBTA authorizes the Secretary, 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

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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 Service has 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 we 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. We note, therefore, that there is no conflict between our responsibility for managing migratory birds and our selected action.

Regulations governing the issuance of permits for migratory birds are contained in title 50, Code of Federal Regulations, parts 13 and 21. Regulations in subpart D of part 21 deal specifically with the control of depredating birds. Section 21.41 outlines procedures for issuing depredation permits. Sections 21.43 through 21.47 deal with special depredation orders for migratory birds to address particular problems in specific geographical areas. Section 21.47 addresses DCCOs at aquaculture facilities.

While the Service has the primary responsibility for regulating DCCO management, on-the-ground management activities are largely carried out by entities such as State fish and wildlife agencies, the Wildlife Services program of the U.S. Department of Agriculture Animal and Plant Health Inspection Service (APHIS/WS), and, in some cases, by private citizens. APHIS/WS was a cooperating agency in the development of the DEIS and FEIS. Additionally, States and Canadian provinces were involved through the International Association of Fish and Wildlife Agencies.

On March 17, 2003 we published a proposed rule in the Federal Register (68 FR 12653). We solicited comments on the proposed rule until May 16, 2003. During that time, we received approximately 9,700 letters, emails, and faxes. About 85 percent of these comments were opposed to the proposed action, the vast majority of which were driven by mass email/letter campaigns promoted by nongovernmental organizations.

This final rule reflects consideration of comments received on the proposed rule. The final rule promulgates regulations to implement the selected action described in the FEIS. We published the notice of availability for the FEIS in the Federal Register on August 11, 2003 (68 FR 47603). Copies of the FEIS may be obtained by writing us (see ADDRESSES) or by downloading it from our website at

<http://migratorybirds.fws.gov/issues/cormorant/cormorant.html>. The Wires et al. report "Status of the double-crested cormorant in North America," mentioned in a Federal Register notice of November 8, 1999 (64 FR 60828), may also be downloaded at <http://migratorybirds.fws.gov/issues/cormorant/status.pdf>.

The FEIS examined six management alternatives for addressing conflicts with DCCOs: (A) No Action, (B) Nonlethal Control, (C) Increased Local Damage Control, (D) Public Resource Depredation Order, (E) Regional Population Reduction, and (F) Regulated Hunting. The selected action in the FEIS is Alternative D, Public Resource Depredation Order. This alternative is intended to enhance the ability of resource agencies to deal with immediate, localized DCCO damages by giving them more management flexibility.

To address DCCO populations from a broader and more coordinated perspective, a population objectives approach will likely need to be considered over the long term. In the future, if supported by biological evidence and appropriate monitoring resources, the Service may authorize management that focuses on setting and achieving regional population goals. At that time, a cormorant management plan will be developed. Until then, our strategy will continue to focus on alleviating localized damages.

We acknowledge that there is a need for more information about DCCOs and their impacts on resources across a variety of ecological settings. We also recognize that more rigorous monitoring efforts would be helpful in thoroughly assessing the impacts of the selected action on DCCO populations. While DCCO populations are currently tracked by a number of regional and national surveys, the Service concurs with many reviewers of the proposed rule, and recognizes that better information on population status and trends is desirable. For this reason,

consistent with program, Service, and Department goals and priorities and subject to available funds, the Service intends to use all reasonable means to implement an improved DCCO population monitoring program of sufficient rigor to detect meaningful population changes subsequent to implementation of this action. The Service's objective will be to use available resources to collect data that can be used to reassess the population status of DCCOs by 2009, in advance of a decision whether or not to extend the depredation orders. This assessment may involve a Service-sponsored technical workshop, with various agency and non-governmental representatives, to discuss optimum survey methodologies. Also as part of that assessment, we will compile and evaluate available data on population trends of other species of birds that nest or roost communally with DCCOs to determine if negative impacts might be occurring to these species.

The Service has weighed these deficiencies against the costs of taking no action, and we believe it is prudent to move forward as outlined in this final rule. In making a decision about whether or not to extend the depredation orders, the Service will review and consider all additional research that has been conducted that evaluates the effects of the proposed action on fish stocks and other resources. The Service strongly encourages all stakeholders to assist in gathering the needed data through well-designed scientific research. Our expectation is that the annual reports in the depredation orders, especially the monitoring and evaluation data associated with the public resource depredation order, will provide substantive increases in scientific and management knowledge of DCCOs and their impacts. We urge States, Tribes, and Federal agencies involved in DCCO control to, wherever possible, design monitoring programs to provide useful information on the effects of DCCO control on public resources. We also urge all relevant governmental and nongovernmental entities to work together, whenever possible, to coordinate research and management activities at the local and regional scale. In particular, the following needs exist: greater demographic information (age-specific survival/mortality, age at first breeding, reproductive output, and philopatry) for use in modeling to help predict population responses to management scenarios; region-wide surveys of DCCOs to document changes in breeding populations; assessments of DCCO-caused fish mortality in relation to other mortality factors at the local level; studies to examine mechanisms within fish populations that may buffer the effects of DCCO predation, including investigation of whether different fish life-stages or species complexes are differentially affected by DCCOs; studies to quantify the impacts of DCCOs on vegetation and other waterbirds; studies to determine how DCCO population processes respond to changes in population density resulting from control activities; and studies to address human dimensions of DCCO conflicts and possible solutions through education and outreach.

The selected action establishes a public resource depredation order in 50 CFR 21.48 and amends 50 CFR 21.47, the aquaculture depredation order that was originally created in 1998. In the proposed rule, we presented draft regulations and opened a 60-day public comment period. Differences between this final rule and the proposed rule reflect both our attentiveness to public comments and our deference to agency expertise. The chart below highlights these changes.

<b>Proposed rule</b>	<b>Final rule</b>	<b>Justification</b>
ADO <sup>1</sup> : Winter roost control authorized from October to March	Winter roost control authorized from October to April [21.47(c)(2)]	Public and agency comments indicate that DCCOs continue to congregate in large numbers in April and these birds have a major impact on adjacent aquaculture facilities
Both DOs <sup>2</sup> : Statement that take of any species protected by the Endangered Species Act (ESA) is not authorized	Same, plus conservation measures added [21.47(d)(8); 21.48(d)(8)]	In accordance with Section 7 of the ESA, we completed informal consultation; this led to development of conservation measures to avoid adverse effects to any species protected by the ESA
Both DOs: General statement that authority under depredation orders can be revoked	Added specific suspension and revocation procedures [21.47(d)(10); 21.48(d)(13)]	For consistency's sake, we believe it is important to have a revocation/ suspension process outlined
Both DOs: OMB	Added OMB approval number	We received this number in May 2003,

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information collection control number not specified	of 1018-0121 and expiration date [21.47(e); 21.48(e)]	after publication of proposed rule and comment period
PRDO <sup>3</sup> : Recipients of donations of birds killed must have a scientific collecting permit	This requirement removed [21.48(d)(6)(i)]	The proposed rule would have been more stringent than what is currently allowed in 50 CFR 21.12(b) and we do not consider stricter rules necessary
PRDO: Agencies must provide a one-time notice of their intent to act under the order	Added an advance notification requirement for take of >10% of a breeding colony [21.48(d)(9)]	We wanted to address concerns about there being no opportunity for us to review, and even suspend, control actions before they take place
PRDO: Annual reporting period set at Sept. 1 to Aug. 31	Changed reporting period to Oct. 1 to Sept. 30 [21.48(d)(11)]	The State of New York requested this change to better accommodate fall harassment activities
PRDO: Monitoring requirements for population level activities	Changed the word “monitor” to “evaluate”; added requirement that data from this section be included in annual report; and removed (11)(iii) [21.48(d)(12)]	This section ensures that agencies will consider (and take action to avoid) impacts to nontarget species and will evaluate the effects of control actions at breeding colonies, without being cost-prohibitive

<sup>1</sup> Aquaculture Depredation Order

<sup>2</sup> Aquaculture and Public Resource Depredation Orders

<sup>3</sup> Public Resource Depredation Order

### Population Status of the Double-Crested Cormorant

The information in this section is derived from the FEIS (to obtain a copy, see ADDRESSES). DCCOs are native to North America and range widely there. There are essentially five different breeding populations, variously described by different authors as: Alaska, Pacific Coast, Interior, Atlantic, and Southern (Hatch and Weseloh 1999, Wires et al. 2001). The continental population is estimated at 2 million birds (including breeders and nonbreeders). For the United States as a whole, according to Breeding Bird Survey (BBS) data, the breeding population of DCCOs increased at a statistically significant rate of approximately 7.5 percent per year from 1975-2002 (Sauer et al. 2003). However, growth rates for the different breeding populations vary considerably from this average.

*Atlantic.* Approximately 23 percent of the DCCO breeding population is found in the Atlantic region (Tyson et al. 1999), which extends along the Atlantic coast from southern Newfoundland to New York City and Long Island (Wires et al. 2001). Atlantic DCCOs are migratory and occur with smaller numbers of great cormorants. From the early 1970s to the early 1990s, the Atlantic population increased from about 25,000 pairs to 96,000 pairs (Hatch 1995). While this population declined by 6.5 percent overall in the early to mid-1990s, some colonies were still increasing during this period. The most recent estimate of the Atlantic population is at least 85,510 breeding pairs (Tyson et al. 1999).

*Interior.* Nearly 70 percent of the DCCO breeding population is found in the Interior region (Tyson et al. 1999), which reaches across the prairie provinces of Canada, includes the Canadian and U.S. Great Lakes, and extends west of Ohio to southwestern Idaho (Wires et al. 2001). Interior DCCOs are strongly migratory and, in the breeding months, are concentrated in the northern prairies, with the Canadian province of Manitoba hosting the largest number of breeding DCCOs in North America (Wires et al. 2001). Additionally, large numbers of Interior DCCOs nest on or around the Great Lakes (Hatch 1995, Wires et al. 2001). Since 1970, when 89 nests were counted during a severe pesticide-induced population decline (Weseloh et al. 1995), DCCO numbers have increased rapidly in the Great Lakes, with breeding surveys in 2000 estimating 115,000 nests there (Weseloh et al. 2002). From 1990 to 1997, the overall growth rate in the Interior region was estimated at 6 percent with the most dramatic increases occurring in Ontario, Ohio, and Wisconsin. The Interior population (including Canada) numbers is at least 256,212 breeding pairs (Tyson et al. 1999).

*Southern.* The Southern region includes Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas (Wires et al. 2001). Most DCCOs in this region are winter migrants from the Interior and Atlantic regions; the number of these wintering birds has increased dramatically in recent years (Dolbeer 1991, Glahn and Stickley 1995, Jackson and Jackson 1995, Glahn et al. 2000). Surveys conducted by APHIS/WS biologists suggest that winter numbers in the delta region of Mississippi have increased by nearly 225 percent since the early 1990s (over 73,000 DCCOs were counted in the 2001-2002 winter surveys; G. Ellis, unpubl. data). Breeding DCCOs in this region are also on the rise, with some nesting occurrences representing first records and others recolonizations (Wires et al. 2001). Today, approximately 4 percent of the DCCO breeding population occurs in this region, numbering at least 13,604 breeding pairs (Tyson et al. 1999).

*Pacific Coast and Alaska.* Approximately 5-7 percent of North America's DCCOs are found in this population, which has approximately 27,500 nesting pairs (including Mexico) according to Carter et al. (1995b) or at least 17,084 pairs (not including Mexico) according to Tyson et al. (1999). Carter et al. (1995) documented recent increases in California and Oregon, and declines in British Columbia, Washington, and Baja California. Tyson et al. (1999) did not consider Mexican populations and calculated a decline for the entire West Coast-Alaska region. In the past 20 years, the largest increases in the region have taken place in the Columbia River Estuary, where East Sand Island supports the largest active colony along the coast with 6,390 pairs in 2000 (Carter et al. 1995b, Collis et al. 2000, Wires et al. 2001). Increases at East Sand Island coincided with declines in British Columbia, Washington, and locations in interior Oregon, and the rapid increase undoubtedly reflected some immigration from these other areas (Carter et al. 1995).

#### **Impacts of Double-crested Cormorants on Public Resources**

*Fish.* In order to fully understand fisheries impacts related to predation, DCCO diet must be evaluated in terms of the number of DCCOs in the area, the length of their residence in the area, and the size of the fish population of concern (Weseloh et al. 2002). While most, but not all, studies of cormorant diet have indicated that sport or other human-valued fish species do not make up high percentages of DCCO diet, conclusions about actual fisheries impacts cannot be based on diet studies alone. Nisbet (1995) referred to this as the "body-count" approach (i.e., counting the numbers of prey taken rather than examining the effects on prey populations) and noted that it is necessary to also "consider functional relationships between predation and output parameters." Stapanian (2002) observed that "Rigorous, quantitative studies suggest that the effects of cormorants on specific fisheries appear to be due in part to scale and stocks of available prey." Indeed, negative impacts are typically very site-specific and thus DCCO-fish conflicts are most likely to occur on a localized scale. Even early cormorant researcher H.F. Lewis recognized that cormorants could be a local problem at some fishing areas (Milton et al. 1995). In sum, the following statements about DCCO feeding habits and fisheries impacts can be concluded with confidence from the available science: (1) DCCOs are generalist predators whose diet varies considerably between seasons and locations and tends to reflect fish species composition; (2) The present composition of cormorant diet appears to have been strongly influenced by human-induced changes in the natural balance of fish stocks; (3) "Impact" can occur at different scales, such that ecological effects on fish populations are not necessarily the same as effects on recreational or commercial catches, or vice versa; (4) Cormorant impact is generally most significant in artificial, highly managed situations; and (5) Because environmental and other conditions vary locally, the degree of conflicts with cormorants will vary locally.

Research in New York's Oneida Lake and eastern Lake Ontario has examined data on DCCO diets and fish populations (walleye and yellow perch in Oneida Lake and smallmouth bass in Lake Ontario) and concluded that cormorant predation is likely a significant source of fish mortality that is negatively impacting recreational catch (Adams 1999, Rudstam 2000, Lantry et al. 1999). Based on these studies, the Service will allow the authorized agencies and Tribes acting under the public resource depredation order to determine whether a similar situation exists in their location, and undertake appropriate control actions to mitigate negative effects, if applicable.

*Other Birds.* Weseloh et al. (2002) observed that nesting DCCOs could impact other colonial waterbirds in at least three ways: by DCCO presence limiting nest site availability, by DCCOs directly taking over nest sites, or by falling guano and nesting material from DCCO nests leading to the abandonment of nests below. Habitat destruction is another concern reported by biologists (USFWS 2001). The significance of DCCO-related effects on other birds

varies with scale. While large-scale impacts on regional or continental bird populations have not been documented (Cuthbert et al. 2002), there is evidence that species such as black-crowned night-herons, common terns, and great egrets can be negatively impacted by DCCOs at a site-specific level (Jarvie et al. 1999, Shieldcastle and Martin 1999, USFWS 2001, Weseloh et al. 2002). Biologists from several States and provinces have reported or expressed concern about impacts to other bird species in relation to increased cormorant abundance (Wires et al. 2001, USFWS 2001). Some biologists have also expressed concern about incidental impacts to co-nesting species caused by DCCO control efforts (both lethal and nonlethal). We believe that such impacts are preventable and easily mitigated to a level of insignificance. For example, New York biologists conducting DCCO control work in eastern Lake Ontario have successfully managed to avoid negative impacts to other species such as Caspian terns, herring gulls, and ring-billed gulls (USFWS 2003).

*Vegetation and Habitat.* Cormorants destroy their nest trees by both chemical and physical means. Cormorant guano, or excrement, is highly acidic and kills ground vegetation and eventually the nest trees. In addition, cormorants damage vegetation by stripping leaves for nesting material and by breaking branches due to the combined weight of the birds and their nests. Vegetation and habitat destruction problems tend to be localized in nature. For example, resource professionals from the Great Lakes region are concerned about loss of plant diversity associated with increasing cormorant numbers at some breeding sites (Weseloh and Ewins 1994, Moore et al. 1995, Lemmon et al. 1994, Bédard et al. 1995, Shieldcastle and Martin 1999).

*Aquaculture.* Cormorant depredation at commercial aquaculture facilities, particularly those in the southern catfish-producing region, remains economically significant. DCCOs move extensively within the lower Mississippi valley during the winter months (Dolbeer 1990). In the delta region of Mississippi, cormorants have been found to forage relatively close to their night roosting locations with most birds traveling an average distance of less than 20 km from their night roosting locations to their day roosts (King et al. 1995). Cormorants that use day roosts within the catfish-producing regions of the delta typically forage at aquaculture facilities, and USDA researchers have found that as much as 75 percent of the diet of DCCOs in these areas consists of catfish (Glahn et al. 1999). Losses from cormorant predation on fingerling catfish in the delta region of Mississippi have been estimated at approximately 49 million fingerlings each winter, valued at \$5 million. Researchers have estimated the value of catfish at harvest to be about 5 times more than the replacement cost of fingerlings, placing the total value of catfish consumed by DCCOs at approximately \$25 million (Glahn et al. 2000). Total sales of catfish growers in Mississippi amounted to \$261 million in 2001 (USDA-NASS 2002).

*Hatcheries.* DCCO impacts to hatcheries are related to predation, stress, disease, and financial losses to both hatcheries and recipients of hatchery stock. Hatchery fish may be stressed by the presence of DCCOs, wounds caused by unsuccessful attacks, and noisemakers used to scare away DCCOs. This stress can lead to a decrease in growth factors as feeding intensity decreases. Additionally, disease and parasites can be spread more easily by the presence of fish-eating birds. State and Federal hatchery managers, particularly in the upper Midwest (e.g., Wisconsin, Ohio) and the south (e.g., Arizona, Louisiana, Oklahoma, Texas), have reported significant depredation problems at hatcheries (USFWS 2001). Currently, Director's Order No. 27, "Issuance of Permits to Kill Depredating Migratory Birds at Fish Cultural Facilities," dictates that "kill permits [for fish-eating birds] will be issued for use at public facilities only when it has been demonstrated that an emergency or near emergency exists and an [APHIS/WS] official certifies that all other deterrence devices and management practices have failed." The two depredation orders that we are proposing would supersede this Director's Order (for DCCOs only) by giving managers at State, Federal, and Tribal fish hatcheries more authority to control DCCOs to protect fish stock.

### **Environmental Consequences of Action**

We analyzed our action in the FEIS. Our environmental analysis indicates that the action will cause the estimated take of <160,000 DCCOs, which is not predicted to have a significant negative impact on regional or continental DCCO populations; will cause localized disturbances to other birds but these can be minimized by taking preventive measures, leading to the action having beneficial effects overall; will help reduce localized fishery and vegetation impacts; will not adversely affect any Federally listed species; is likely to help reduce localized water quality impacts; will help reduce depredation of aquaculture and hatchery stock; is not likely to significantly benefit

recreational fishing economies or commercial fishing; may indirectly reduce property damages; and will have variable effects on existence and aesthetic values, depending on perspective.

### **References**

A complete list of citation references is available upon request from the Division of Migratory Bird Management (see ADDRESSES).

### **Responses to Significant Comments**

During the public comment period on the proposed rule, we received approximately 9,700 emails, letters, and faxes. We provide our responses to significant comments here.

Comment 1: The Service should protect, not kill, DCCOs.

Service Response: In the wildlife management field, the control of birds through the use of humane, but lethal, techniques can be an effective means of alleviating resource damages, preventing further damages, and/or enhancing nonlethal techniques. It would be unrealistic and overly restrictive to limit a resource manager's damage management methods to nonlethal techniques, even if "nonlethal" included nest destruction and/or egg oiling. Lethal control techniques are an important, and in many cases necessary, part of a resource manager's "tool box."

Comment 2: States and other agencies don't have sufficient resources to effectively control DCCOs.

Service Response: Agencies will need to decide whether or not cormorant management is a high enough priority for them to justify committing resources to it. We have tried to keep reporting and evaluation requirements such that they are unlikely to be cost prohibitive. We have also allowed agencies to designate "agents" to act under the orders. Our budget does not currently allow us to provide financial assistance to States and other agencies for cormorant control.

Comment 3: The Service needs to manage DCCOs through a coordinated, regional population objectives approach.

Service Response: The selected action, Alternative D, in no way precludes regional coordination or consideration of population objectives, despite being chiefly a localized damage control approach. We are keeping the option open of taking this approach in the future, given greater biological information and the necessary funding.

Comment 4: The Service needs to reduce overall DCCO populations.

Service Response: At this time, we believe that the evidence better supports Alternative D, a localized damage control strategy rather than Alternative E, a large-scale population reduction strategy. While many stakeholders portray cormorant conflicts as being a simple overabundance problem whose solution is population reduction, that is not clearly the case. That is, it is unclear whether fewer cormorants would actually mean fewer problems (since sometimes distribution is as important as number in determining impacts), what the necessary scale of control would be, and whether or not that scale of control is biologically, socially, and economically feasible.

Comment 5: States should be granted full authority to control DCCOs as needed.

Service Response: Under the MBTA, we have the ultimate responsibility for cormorant management. While we can grant States and other agencies increased authority, giving them "full authority" without any limitations and requirements would abdicate our responsibilities.

Comment 6: The final rule should authorize the use of all effective DCCO control methods at aquaculture facilities.

Service Response: The final rule authorizes shooting, which is considered very effective, to be used at aquaculture facilities. There is no evidence of the need for other techniques to be used.

Comment 7: The Service needs to more fully address other causes of fish depletion.

Service Response: We recognize that factors other than DCCOs contribute to resource impacts such as fishery declines. However, an exhaustive and comprehensive analysis of these myriad factors is outside the scope of the EIS. Our focus is chiefly on addressing conflicts caused by cormorants and then attempting to manage DCCOs, or the resources themselves, to alleviate those conflicts.

Comment 8: There should be a hunting season on DCCOs.

Service Response: While we recognize the validity of hunting as a wildlife management tool, we believe that the risks associated with it outweigh any potential benefits. We are gravely concerned about the negative public perception that would arise from authorizing hunting of a bird with little consumptive (or “table”) value. While it is true that this has been done in the past for other species (e.g., crows), public attitudes are different today than they were 30 years ago when those decisions were made. Additionally, a number of hunters commented that they did not support hunting as a means of cormorant control. Therefore, it is our position that hunting is not, on the whole, a suitable technique for reducing cormorant damages.

Comment 9: The Service should add Montana and New Hampshire to the public resource depredation order.

Service Response: We determined that the most crucial States to include in the public resource depredation order were those States with DCCOs from the increasing Interior and Southern populations or States affected by those populations (e.g., those with high numbers of migrating birds). Other States with cormorant conflicts are not precluded from cormorant control but would have to obtain depredation permits.

Comment 10: The Service should remove DCCOs from MBTA protection.

Service Response: In our view, this is not a “reasonable alternative.” DCCOs have been protected under the MBTA since 1972. Removing DCCOs from MBTA protection would not only be contrary to the intent and purpose of the original treaty, but would require amending it, a process involving lengthy negotiations and approval of the U.S. Senate and President. Since DCCOs are protected by family (*Phalacrocoracidae*) rather than by species, the end result could be the loss of protection for all North American cormorant species in addition to that of DCCOs. At this time, there is adequate authority for managing cormorant conflicts within the context of their MBTA protection and, thus, we believe the suggestion to remove DCCOs from MBTA protection is not practical, necessary, or in the best interest of the migratory bird resource.

Comment 11: Private landowners should be allowed to control DCCOs on their lands.

Service Response: The take of DCCOs and other migratory birds is regulated by the MBTA and, in most cases, requires a Federal permit. Under the aquaculture depredation order, private commercial aquaculture producers in 13 States are allowed to control DCCOs on their fish farms without a Federal permit. However, all other individuals who experience damages to private resources must contact the appropriate Service Regional Migratory Bird Permit Office for a depredation permit. There is not sufficient justification for authorizing “private landowners” in general to take DCCOs without a Federal permit.

Comment 12: The proposed action will be more effective if agencies coordinate with each other.

Service Response: Yes, this is true. While agencies are not required under the public resource depredation order to coordinate with each other, they are entirely free to do so.

Comment 13: Humaneness and the use of nonlethal methods should be emphasized.

Service Response: Wherever feasible, we have required the use of nonlethal methods before killing is allowed. All authorized control techniques for killing birds outside of the egg are approved by the American Veterinary Medical Association as being humane for the euthanization of birds.

Comment 14: The Service needs to better educate the public about DCCOs.

Service Response: We have prepared fact sheets for public distribution. Information about DCCOs is available at our website <http://migratorybirds.fws.gov/issues/cormorant/cormorant.html>. Our intention is to distribute fact sheets on the depredation orders in the near future. Beyond DCCOs, we participate in numerous outreach activities around the nation to increase public awareness about the importance of migratory birds and other Federal trust species.

Comment 15: The Service needs to issue permits to allow DCCOs to be shot legally at anytime.

Service Response: The authorization of virtually unregulated shooting of DCCOs would clearly not be a fulfillment of our responsibilities under the MBTA, since it could lead to extermination of the species. We can only allow take under appropriately adopted regulations that are consistent with our obligations and the relevant treaties. The depredation orders issued in this rulemaking only authorize take of DCCOs in certain locations and timeframes, and by certain agencies, to ensure this take is consistent with the purpose for which the depredation order was established.

Comment 16: DCCOs are being scapegoated for fishery declines.

Service Response: The Service recognizes that many factors other than DCCOs can contribute to fishery declines. However, studies have shown that in some cases cormorants are a significant contributing factor to these declines and therefore we believe that DCCO management, where there is evidence of real conflicts, is likely to have beneficial impacts.

Comment 17: The Service is dumping the burden of DCCO control on the States; the Service should take care of the DCCO problem since they created it.

Service Response: The public resource depredation order is not a requirement being forced upon the States (or any other agency). The decision ultimately lies with individual agencies to choose whether or not to use the authority granted to them by the public resource depredation order. As we were considering options for addressing DCCO conflicts more effectively, it became clear that, since many conflicts tend to be localized in nature, a sensible and flexible solution was to allow local agencies more authority in deciding when to control cormorants. The Service did not “create” the cormorant problem. Their population increases are due to many factors, most of which are entirely out of our control.

Comment 18: The Service should provide financial support for DCCO control.

Service Response: We are currently unable to provide funding to other agencies under the public resource depredation order. However, in our Congressional budget request, we have asked for increased financial resources to implement the DCCO selected action. This figure specifically includes money that could be used in cooperative efforts with States and other agencies to conduct cormorant monitoring, research, and management.

Comment 19: California and Wisconsin should be added to the aquaculture depredation order.

Service Response: We do not believe that adding States to the aquaculture depredation order is necessary at this time. Private, commercial, freshwater aquaculture producers can obtain depredation permits to take DCCOs at their fish farms.

Comment 20: The final rule should allow proactive measures to be taken so problems can be dealt with before they become serious.

Service Response: The rule does allow for proactive measures to a certain extent. Both depredation orders allow DCCOs to be taken when “committing or *about to commit* depredations.” The public resource depredation order takes this a step further by allowing for take of DCCOs to *prevent* depredations on public resources.

Comment 21: Expansion of the aquaculture depredation order to authorize winter roost control should not be allowed.

Service Response: The USDA report, “A Science-Based Initiative to Manage Double-Crested Cormorant Damage to Southern Aquaculture” notes that “Coordinated and simultaneous harassment of cormorants can disperse them from night roosts and reduce damage at nearby catfish farms” and cites three scientific studies that support this claim. It then concludes that shooting at roosts “might enable farmers to reduce the number of birds on their farms significantly....” Part of the logic behind this is that studies in the Mississippi Delta have shown that, while DCCOs move widely in general, they tend to exhibit high roost fidelity. This implies that shooting birds at roosts (where turnover is lower) is likely to be more effective at alleviating damages than shooting birds just at ponds (where turnover is higher).

Comment 22: Actions in the proposed rule should not be allowed to take place.

Service Response: Clearly, we and our cooperators, APHIS Wildlife Services disagree with this statement. The Record of Decision below explains our rationale.

Comment 23: Hatcheries and fish farms should only be allowed to use nonlethal methods.

Service Response: Shooting is a legitimate and effective technique for scaring away or killing depredating birds that, when done in a controlled manner, has no adverse impact on populations.

Comment 24: Habitat damage caused by DCCOs has not been quantified or confirmed.

Service Response: This statement is incorrect. Vegetation/habitat damage has been both confirmed and quantified. See the FEIS, section 4.2.4, for more details.

Comment 25: APHIS Wildlife Services should be granted full authority to manage migratory birds.

Service Response: Under the MBTA and other laws, the Service has been delegated full responsibility for authorizing the take of and management of migratory bird populations. It would require an act of Congress to grant APHIS this authority. We do not support such action.

Comment 26: The Service should take the lead in DCCO research.

Service Response: The Migratory Bird Management Program monitors over 800 bird species in North America, including cormorants. However, we are not specifically a research agency. Our involvement in research consists mainly of providing financial assistance to researchers. In fewer cases, we are involved in direct research activities (such as color banding work being done in Lake Ohio by the USFWS Green Bay Field Office). We recognize that we have a leadership role to play in encouraging DCCO research.

Comment 27: The proposed rule is not based on “sound science.”

Service Response: The Service recognizes the importance of resource management being science-based, and we will always defer to well-designed scientific studies when such information is available. In this case, the Service relied on scientific studies as well as the best available biological knowledge to make its decision. Additionally, social, political, and economic factors contribute to the Service’s decisions regarding whether or not to address a problem. Our position is that there is sufficient biological and socioeconomic justification to pursue a solution and sufficient biological information to meet the requirements of the MBTA and to support this rulemaking action.

Comment 28: The Service is caving in to “political pressure” and “special interests.”

Service Response: Given the fact that DCCO populations are not at risk in the areas where the depredation orders are authorized, and the Service is granted management flexibility under the MBTA, we believe it is appropriate to permit control of local DCCO populations. We have considered input from all stakeholders and believe that our decision reflects an appropriate balance of the public interest. Our goal in this and every other issue under our jurisdiction is to make informed, impartial decisions based on scientific and other considerations.

Comment 29: The Service should stay with the No Action alternative.

Service Response: In recent years, it has become clear from public and professional feedback that the status quo is not adequately resolving DCCO conflicts for many stakeholders. Furthermore, our environmental analysis indicated that conflicts were more likely to be resolved under other options than under Alternative A.

Comment 30: The proposed rule is a wrongful abdication of the Service’s MBTA responsibilities.

Service Response: We disagree. Rather than an abdication of our responsibilities, this rule is an exercise of them. The public resource depredation order by no means puts an end to the Federal role in migratory bird management. The conservation of migratory bird populations is and will remain the Service’s responsibility. Second, while the MBTA gives the Federal Government (as opposed to individual States) the chief responsibility for ensuring the conservation of migratory birds, this role does not preclude State involvement in management efforts. Bean (1983) described the Federal/State relationship as such (emphases added):

“It is clear that the Constitution, in its treaty, property, and commerce clauses, contains ample support for the development of a comprehensive body of federal wildlife law and that, to the extent such law conflicts with state law, it takes precedence over the latter. *That narrow conclusion, however, does not automatically divest the states of any role in the regulation of wildlife or imply any preference for a particular allocation of responsibilities between the states and the federal government.* It does affirm, however, that such an allocation can be designed without serious fear of constitutional hindrance. In designing such a system, for reasons of policy, pragmatism, and political comity, *it is clear that the states will continue to play an important role either as a result of federal forbearance or through the creation of opportunities to share in the implementation of federal wildlife programs.*”

Nowhere in the MBTA is the implementation of migratory bird management activities limited to the Federal Government. In fact, the statute specifically gives the Secretary of Interior the authority to determine when take of migratory birds may be allowed and to adopt regulations for this purpose. Additionally, we’ve ensured that this rule does not conflict with the Convention for the Protection of Migratory Birds and Game Mammals between the U.S. and Mexico (under which cormorants are protected). Finally, the depredation orders specifically limit the authority of non-Federal entities through the terms and conditions, including suspension and revocation procedures, advance notification requirements, and other restrictions. We would also note that we have the authority to amend this rule in the future if DCCO population status or other conditions demand it.

Comment 31: The Service should more fully consider the economic value of DCCOs and activities associated with them such as birding and photography.

Service Response: Assigning economic value to any wildlife species is difficult, and it is made all the more so when that species (such as the DCCO) is of little direct use to humans. However, this should not be read to imply that we have no regard for the indirect and intangible values of cormorants as a native part of the North American avifauna. As such, we stated clearly in the FEIS (p. 6) that DCCOs “have inherent value regardless of their direct use to humans.” A quantitative analysis of the economic benefits associated with DCCO was not possible at this time due to lack of studies in this area. The Service welcomes submission of such studies and will consider them in its analysis of future depredation orders, if applicable.

Comment 32: In addition to the Service, States and APHIS Wildlife Service should have a say in revoking authority under the depredation orders.

Service Response: Since, under the MBTA, the Service is the chief agency responsible for migratory bird management, it is our responsibility to decide when to revoke an agency's or individual's authority under the depredation orders. We do, however, give agencies a chance to appeal any revocation decisions.

Comment 33: The public resource depredation order has no sound biological underpinning.

Service Response: We have analyzed the available biological information in the FEIS. We believe our decision is supported by the information available at this time.

Comment 34: Proposed rule contains too much "red tape."

Service Response: We can understand that some people see the rule as having too many mandatory terms and conditions but these are necessary to ensure that the depredation orders are used for their stated purposes and to safeguard cormorant populations and other Federal trust species (e.g., other migratory birds and ESA-protected species). We tried to make the final rule as flexible as we could without compromising these factors.

Comment 35: The public resource depredation order should be expanded to include damages to private property as well.

Service Response: The public resource depredation order does not provide direct relief to private landowners experiencing DCCO conflicts. This is partly because such conflicts have not been well-documented and partly because our practice is not to allow the take of migratory birds, a public resource, to alleviate *minor* damages to private resources (a similar example would be hawks that take privately owned game birds). While the biological and other justification for implementing the aquaculture and public resource depredation orders is strong, this is not necessarily the case for impacts to private resources. In cases of significant economic damage caused by DCCOs, private landowners may request a depredation permit from the appropriate Service Regional Migratory Bird Permit Office.

Comment 36: Requiring monitoring at all control sites is too much of a burden; agencies should be able to use best available information.

Service Response: We understand that strict monitoring requirements (i.e., population surveys) can be cost prohibitive and that, to a certain degree such monitoring is the Service's responsibility. It is important that agencies thoroughly evaluate the impacts of their management actions on DCCOs and, in some cases, on other resources, but we don't want these requirements to be so cost prohibitive that agencies are unable to take any action. Thus, in the final rule, we changed slightly the wording in §21.48(d)(12) to account for this.

Comment 37: Monitoring should be required no less than once every 3 years.

Service Response: The Service currently surveys or sponsors surveys of colonial waterbirds every 5-10 years. We believe that such frequency is adequate to ensure the long-term conservation of populations of DCCOs and other migratory birds.

Comment 38: The winter roost control season should be extended to include April.

Service Response: Since numbers of DCCOs at fish farms in the southern United States are known to peak in March and April, and to cause the most damage at that time, we added April to the months in which roost control can occur.

Comment 39: Monitoring requirements under the public resource depredation order are too vague.

Service Response: We may provide future guidelines for monitoring and evaluation for the benefit of other agencies. Until such guidelines are issued, the Service intends to rely on States, Tribes, and APHIS Wildlife Services to develop and implement protocols for evaluation of the effects of control actions.

Comment 40: The proposal is likely to inflame relations between tribal and nontribal interests.

Service Response: We have not seen sufficient evidence to evaluate whether or not this is indeed likely to occur.

Comment 41: The aquaculture depredation order should be expanded to include all 48 States.

Service Response: At this time, we do not believe the available evidence indicates that expansion beyond 13 States is necessary to further protect commercial aquaculture stock. The issuance of depredation permits for damage at private fish farms is a high priority and, therefore, it is generally a quick process for aquaculture producers to obtain a depredation permit through their Regional Migratory Bird Permit Office.

Comment 42: Under the public resource depredation order, nonlethal techniques (e.g., harassment) should not be prescribed as a mandatory first step at multispecies breeding colonies because of the risk of disturbance.

Service Response: We understand that harassment efforts can have secondary impacts on other colonially nesting birds and that is precisely why we did not require such efforts to be used first but rather stated that they be used “when these are considered effective and practicable by the responsible Agency.” We have since changed it to read that agencies “should first utilize nonlethal control methods such as harassment and exclusion devices when these are considered effective and practicable and *not harmful to other nesting birds.*”

Comment 43: The Service should issue guidelines making it clear what constitutes depredation on a public resource.

Service Response: In developing the rule, USFWS wanted to maximize the flexibility of other agencies in determining what constitutes a public resource depredation. We understand that there are concerns about all of the “what ifs” that could conceivably take place in the absence of guidelines. We have made the purpose of the depredation orders clear, and we trust that our agency partners will not abuse their authority. If they do, we have the option to suspend or revoke their authority under the depredation order or to amend this rule.

Comment 44: In the proposed rule, the only advanced requirement for agencies to initiate a control program is to submit a one-time notice to the Service. The rule does not require evaluation of potential impacts before control actions occur.

Service Response: In the final rule, under the public resource depredation order, we have added a clause for advance notification of control actions that would take 10% or more of the birds in a breeding colony. This will allow us to review such actions for compliance with the purpose of the order and for impacts on overall cormorant populations. Inherent in the idea of this public resource depredation order is the Service’s trust in the professionalism and conservation expertise of the States, Tribes, and APHIS Wildlife Services. At the same time, we will continue our role of providing oversight to ensure that the cumulative effects of activities under the depredation orders do not threaten the long-term conservation of DCCO populations.

Comment 45: There is no process outlined for disputing control at a particular site. Control activities might come into conflict with ongoing research activities.

Service Response: We do not intend to establish guidelines for dispute resolution or public notice of proposed control efforts. In some cases, NEPA analysis will be necessary and this will open the door for limited public input regarding specific management actions. We cannot guarantee that conflicts won’t occur between control and research activities. Researchers will need to coordinate with local resource agencies (as, presumably, they are already doing) on this issue.

Comment 46: The public resource depredation order should have a requirement for agencies to formally assess a control site before control is carried out to determine potential impacts to other species.

Service Response: We do not intend to require formal assessment of control sites before control is conducted. The final rule requires that agencies must provide advance notification for certain actions, including information on the location and a description of the proposed control activity, specifying what public resources are being impacted, how many birds are likely to be taken and what approximate percentage they are of total DCCOs present, and which species of other birds are present. Additionally, in their annual reports, agencies must provide us with detailed information on why they're conducting control actions, including what they're doing to minimize effects on other species. Agencies don't have to report this information until after control actions have occurred, but we believe this process is sufficient.

Comment 47: The proposed rule seems to violate the Service's mission to "conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people."

Service Response: We do not in any way believe that the rule interferes with our conservation mission. Our responsibility is to ensure the long-term conservation of DCCO populations, and we will do so. A mission is a general statement of an agency's vision that, by its very nature, cannot encompass every potential management responsibility. We believe that managing certain species to address economic or social concerns, while ensuring the long-term conservation of such species is consistent with our mission.

Comment 48: The Service has not established a process by which other agencies could set population goals.

Service Response: At some point in the future, we may initiate a process for setting population goals. States and other agencies are fully capable of doing this on their own in local situations (DCCO management efforts on Little Galloo Island in New York are a good example). The public resource depredation order does not authorize regional population management, and, therefore, regional goals are not yet necessary.

Comment 49: The return of an extirpated species to its former breeding range is a positive ecological event.

Service Response: Weseloh et al. (1995, p48) wrote that DCCO population increases in North America "have involved more than just a re-occupation of areas which experienced severe population declines or extirpations...previously unoccupied breeding and wintering areas have now been colonized" and gave three citations supporting this hypothesis. Regardless of whether or not DCCOs had previously occurred in some parts of their range, we have to manage and conserve them by today's standards, not those of a hundred (or more) years ago. Our intent under the final rule is not to eliminate cormorants on a regional or national level but to manage them, even to the point of reducing local populations, so that there are fewer impacts to natural and human resources. We fully understand that fish-eating birds are a natural part of the ecosystem and that, within limits prescribed by the need to consider the bigger picture than "ecological" factors alone, population recovery is a positive event.

Comment 50: Only State wildlife agencies should be allowed to take or permit the take of DCCOs at nesting colonies in their State.

Service Response: Under the public resource depredation order, any agency that takes DCCOs must have landowner permission and, if required, a State permit to take DCCOs. We believe that these clauses are sufficient to avoid compromising State oversight.

Comment 51: Issuing a resource depredation order for DCCOs under the proposed rule would set a dangerous precedent for fish-eating birds in the United States and in other nations to our south.

Service Response: We do not agree with the statement that the depredation orders are a "dangerous" precedent. Each conflict must be evaluated on its own merits. If problems with other fish-eating birds arise in the future, we will give full and fair consideration to these issues.

Comment 52: The Service should require safe management practices when DCCO control is conducted to protect birders.

Service Response: Conducting DCCO control in a manner that does not threaten human health or safety is the responsibility of the agencies and individuals carrying out the actions.

Comment 53: The scientific and public outcry against the Service's proposed rule should be convincing. Sound science is being supplanted by perceptions fueling political cries for substantial lethal population controls.

Service Response: We would note that there is also public outcry against the status quo and in support of the final rule. We believe that our decision is supported by the available data. Furthermore, the rule requires that agencies who act under the public resource depredation order have sound reasoning for doing so.

Comment 54: The Service must publish a Final EIS, Record of Decision, and appropriate Section 7 consultation documents prior to engaging in the rulemaking process.

Service Response: This is not a correct statement of the requirements of either the National Environmental Policy Act or the Endangered Species Act. Issuance of these regulations is in compliance with both of these laws.

Comment 55: The Service cannot establish depredation orders for DCCOs because they are not a "migratory game bird" pursuant to 50 CFR 21.42.

Service Response: This is incorrect because our authority for issuing a depredation order comes from the MBTA, not 50 CFR 21.42. Section 21.42 is a regulation adopted by the Service that allows the Director to issue depredation orders under certain circumstances. This new regulation is in addition to 21.42.

Comment 56: The Service needs to specify how the depredation orders will be enforced.

Service Response: We have law enforcement agents in every State who investigate violations of Federal wildlife laws. Providing the details of how they work is neither necessary nor sensible since such details could prevent the prosecution of those who violate the terms and conditions of the orders.

Comment 57: The requirement to report unauthorized take of migratory birds or threatened and endangered species requires individuals to incriminate themselves and thus violates the Fifth Amendment to the Constitution.

Service Response: While any take, unless permitted, is prohibited by statute, the Service directs its enforcement efforts on those individuals or companies that take migratory bird species outside the scope of the depredation orders. It is incumbent on those who will be working under the orders to have a working knowledge of what is authorized and to properly act under its terms and conditions. Failure to report would be grounds to revoke authorization. The Service sees the reporting requirements not as an attempt to identify the unlawful take of migratory birds but as a management tool to reduce unauthorized take.

### **Cormorant Regulations Under the Rule**

This final rule implements the FEIS selected action in the following ways: (1) it revises the 1998 aquaculture depredation order that allows APHIS/WS to protect public and private aquacultural stock in the 13 States listed in 50 CFR 21.47 by also allowing the take of DCCOs at winter roost sites and at State and Federal fish hatcheries; and (2) it establishes a new depredation order authorizing State fish and wildlife agencies, Federally recognized Tribes, and APHIS/WS to take DCCOs without a Federal permit to protect public resources on public and private lands and freshwaters in 24 States (the 13 States listed in 50 CFR 21.47 and 11 additional States). Both of the actions revise subpart D of 50 CFR 21.

### **NEPA Considerations**

In compliance with the requirements of section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(C)), and the Council on Environmental Quality's regulation for implementing NEPA (40 CFR 1500-1508), we published a DEIS in December 2001, followed by a 100-day public comment period. In August 2003,

Ohio Cormorant Environmental Assessment

both the Service and the Environmental Protection Agency published notices of availability for the FEIS in the Federal Register. This FEIS is available to the public (see ADDRESSES).

### **Endangered Species Act Considerations**

Section 7(a)(2) of the Endangered Species Act, as amended (16 U.S.C. 1531-1543; 87 Stat. 884) provides that “Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out...is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical] habitat...” We completed a biological evaluation and informal consultation (both available upon request; see ADDRESSES) under Section 7 of the ESA for the action described in this final rule. In the letter of concurrence between the Division of Migratory Bird Management and the Division of Endangered Species, we concluded that the inclusion of specific conservation measures in the final rule satisfies concerns about the four species (piping plover, interior least tern, bald eagle, and wood stork) and therefore the proposed action is not likely to adversely affect any threatened, endangered, or candidate species.

### **Executive Order 12866**

In accordance with the criteria in Executive Order 12866, this action is a significant regulatory action subject to Office of Management and Budget review. OMB has made this determination of significance under the Executive Order. OMB has determined that this action raises novel legal or policy issues. This rule will not have an annual economic effect of \$100 million or more or adversely affect any economic sector, productivity, competition, jobs, the environment, or other units of government. The purpose of this rule is to help reduce adverse effects caused by cormorants, thereby providing economic relief. The total estimated economic impact of DCCOs is less than \$50 million per year. Assuming that landowners (e.g., aquaculture producers) and other stakeholders utilize, informally or formally, some degree of cost-benefit analysis, the financial expenses to control cormorant problems should not exceed the damages incurred. Thus we can assume that the total annual economic effect of this rule will be less than \$50 million.

This rulemaking action will not create inconsistencies with other agencies’ actions or otherwise interfere with an action taken or planned by another agency. The selected action is consistent with the policies and guidelines of other Department of the Interior bureaus. This action will not materially affect entitlements, grants, user fees, loan programs, or the rights and obligations of their recipients.

### **Regulatory Flexibility Act**

The Regulatory Flexibility Act of 1980 (5 U.S.C. 601 et seq.) requires the preparation of flexibility analyses for actions that will have a significant economic effect on a substantial number of small entities, which includes small businesses, organizations, or governmental jurisdictions. Because of the structure of wildlife damage management, the economic impacts of our action will fall primarily on State governments and APHIS/WS. These do not qualify as “small governmental jurisdictions” under the Act’s definition. Effects on other small entities, such as aquacultural producers, will be positive but are not predicted to be significant. Thus, we have determined that a Regulatory Flexibility Act analysis is not required.

### **Small Business Regulatory Enforcement Fairness Act**

This rule is not a major rule under 5 U.S.C. 804(2), the Small Business Regulatory Enforcement Fairness Act. It will not have an annual effect on the economy of \$100 million or more, nor will it cause a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. It will not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of U.S.-based enterprises to compete with foreign-based enterprises.

### **Paperwork Reduction Act and Information Collection**

In accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)), the Office of Management and Budget (OMB) has approved the information collection requirements included in this final rule under OMB control number 1018-0121, which expires on May 31, 2006. Agencies may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

We will collect information from State, Tribal, and Federal agencies and private aquaculture producers who conduct DCCO management under the authority of the depredation orders. The specific monitoring and reporting requirements associated with this rule are listed below. The information collected will help us to determine how many DCCOs are being taken and for what purposes.

In response to public comments on the proposed rule (68 FR 12653, March 17, 2003), we added one new information collection requirement in this final rule that was not included in the proposed rule. That new requirement is advance notification to the Service of any control actions that would take more than 10 percent of a breeding DCCO population. This new requirement is located in § 21.48 (d)(9) and adds 165 hours to the total annual hour burden of these information collection requirements.

The information collections associated with this final rule are in §§ 21.47(d)(7), (d)(8), and (d)(9) and 21.48(d)(7), (d)(8), (d)(9), (d)(10) and (d)(12) and are listed below in the amendments to 50 CFR part 21. The breakdown of the information collection burden is as follows: We estimate that §§ 21.47(d)(7) and (d)(8) will have 50 annual responses at an estimated .5 burden hours per response; we estimate that § 21.47(d)(9) will have 900 annual responses at an estimated 2 burden hours per response; we estimate that §§ 21.48(d)(7) and (d)(8) will have 10 annual responses at an estimated .5 burden hours per response; we estimate that § 21.48(d)(9) will have 75 annual responses at an estimated average of 3 burden hours per response; we estimate that § 21.48(d)(10) will have 60 annual responses at an estimated 20 burden hours per response; and we estimate that § 21.48(d)(12) will have 10 annual responses at an estimated 80 burden hours per response. Overall, we estimate that a total of 960 respondents will annually submit a total of 1,105 responses to the recordkeeping and reporting requirements associated with these depredation orders. Each response will require an average of 3.67 hours to complete, for a total of 4,055 hours per year for all of the information collection and recordkeeping requirements in this final rule.

OMB regulations at 5 CFR part 1320 require that interested members of the public and affected agencies have an opportunity to comment on information collection and record keeping activities. If you have any comments on this information collection at any time, please contact the Service Information Collection Officer, 4401 N. Fairfax Drive, Suite 222, Arlington, VA 22203.

#### **Unfunded Mandates Reform Act**

The Unfunded Mandates Reform Act of 1995 requires agencies to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. We have determined, in compliance with the requirements of the Unfunded Mandates Reform Act, 2 U.S.C. 1502 et seq., that the selected action would not “significantly or uniquely” affect small governments, and will not produce a Federal mandate of \$100 million or more in any given year on local or State government or private entities. Therefore, this action is not a “significant regulatory action” under the Unfunded Mandates Reform Act.

#### **Takings Implication Assessment**

In accordance with Executive Order 12630, this action does not have significant takings implications and does not affect any constitutionally protected property rights. This action will not result in the physical occupancy of property, the physical invasion of property, or the regulatory taking of any property. In fact, this action will help alleviate private and public property damage and allow the exercise of otherwise unavailable privileges.

#### **Federalism Effects**

Due to the migratory nature of certain species of birds, the Federal Government has been given statutory responsibility over these species by the MBTA. While legally this responsibility rests solely with the Federal Government, in the best interest of the migratory bird resource we work cooperatively with States and other relevant agencies to develop and implement the various migratory bird management plans and strategies. This action does not have a substantial direct effect on fiscal capacity, change the roles or responsibilities of Federal or State governments, or intrude on State policy or administration. It will allow, but will not require, States to develop and implement their own DCCO management programs. Therefore, in accordance with Executive Order 13132, this action does not have significant federalism effects and does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

### **Civil Justice Reform**

Under Executive Order 12988, the Office of the Solicitor has determined that this policy does not unduly burden the judicial system and meets the requirements of Sections 3(a) and 3(b)(2) of the Order.

### **Government-to-Government Relationship With Tribes**

In accordance with the President's memorandum of April 29, 1994, "Government-to-Government Relations with Native American Tribal Governments" (59 FR 22951) and Executive Order 13175, we have determined that this action has no significant effects on Federally recognized Indian Tribes. In order to promote consultation with Tribes, a copy of the DEIS was mailed to all Federally recognized Tribes in the continental United States.

### **Energy Effects—Executive Order 13211**

On May 18, 2001, the President issued Executive Order 13211 on regulations that significantly affect energy supply, distribution, and use. Executive Order 13211 requires agencies to prepare Statements of Energy Effects when undertaking certain actions. As the selected action is not expected to significantly affect energy supplies, distribution, or use, this action is not a significant energy action and no Statement of Energy Effects is required.

## **RECORD OF DECISION**

The Record of Decision for management of double-crested cormorants in the United States, prepared pursuant to National Environmental Policy Act (NEPA) regulations at 40 CFR 1505.2, is herein published in its entirety.

This Record of Decision (ROD) has been developed by the U.S. Fish and Wildlife Service (Service) in compliance with the agency decision-making requirements of NEPA. The purpose of this ROD is to document the Service's decision for the selection of an alternative for managing resource damages associated with the double-crested cormorant (DCCO). Alternatives have been fully described and evaluated in the August 2003 Final Environmental Impact Statement (FEIS) on DCCO management in the United States.

This ROD is intended to: (a) state the Service's decision, present the rationale for its selection, and describe its implementation; (b) identify the alternatives considered in reaching the decision; and (c) state whether all means to avoid or minimize environmental harm from implementation of the selected alternative have been adopted (40 CFR 1505.2).

## **PROJECT DESCRIPTION**

Increases in DCCO populations over the past 25 years, combined with other environmental and social factors, have led to greater occurrences of both real and perceived conflicts with human and natural resources. In 1999, in response to urgings from the public and from State and Federal wildlife agencies, the Service decided to prepare a programmatic EIS, in cooperation with the Wildlife Services program of the U.S. Department of Agriculture Animal and Plant Health Inspection Service (APHIS/WS), to evaluate the significance of, and consider alternatives to address, conflicts associated with DCCOs.

## **KEY ISSUES**

Public involvement occurred throughout the EIS and rulemaking process. From 1999 to 2003, we held 22 public meetings over the course of more than 10 months of total public comment. Through public scoping (the first stage of public comment) and agency discussions, key issues were identified. Key issues can be placed into two general categories: (1) impacts caused by DCCOs (including impacts to other birds, fish, vegetation, aquaculture, Federally listed species, water quality, hatcheries, recreational fishing economies, and commercial fishing); and (2) impacts caused by control actions (including impacts to DCCO populations, other birds, Federally listed species, and existence and aesthetic values). In the EIS environmental analysis, these issues made up the environmental categories for which effects of the different alternatives were considered.

The alternatives were also considered in terms of their ability to fulfill the purpose of the proposed action: to reduce resource conflicts associated with DCCOs in the contiguous United States, to enhance the flexibility of natural resource agencies in dealing with DCCO-related resource conflicts, and to ensure the long-term conservation of DCCO populations.

## ALTERNATIVES

Since the FEIS is a programmatic document, the alternatives reflect general management approaches to the alleviation of DCCO resource damages. Six alternatives were examined in the EIS: (A) No Action, (B) Nonlethal, (C) Increased Local Damage Control, (D) Public Resource Depredation Order, (E) Regional Population Reduction, and (F) Regulated Hunting.

### Alternative A

Alternative A is essentially the no change, or status quo, alternative. The main features of this alternative are the issuance of a small number of depredation permits to address DCCO conflicts; an aquaculture depredation order that allows commercial, freshwater aquaculture producers in 13 States to shoot DCCOs without a permit; unregulated nonlethal harassment of DCCOs; and Director's Order No. 27, which prevents most public fish hatcheries from conducting lethal take of DCCOs.

### Alternative B

Alternative B would not allow the take of DCCOs or their eggs. Only harassment methods and physical exclusion devices would be used to prevent or control DCCO damages.

### Alternative C

Alternative C would allow for increased take of DCCOs, through a revision of our cormorant damage management practices, but agencies and individuals would still have to obtain a depredation permit. It would also revise the aquaculture depredation order to allow winter roost control.

### Alternative D

Alternative D, the selected action, creates a public resource depredation order to authorize State fish and wildlife agencies, Federally recognized Tribes, and APHIS/WS to take DCCOs found committing or about to commit, and to prevent, depredations on the public resources of fish (including hatchery stock at Federal, State, and Tribal facilities), wildlife, plants, and their habitats. This authority applies to all lands and freshwaters (with appropriate landowner permission) in 24 States (Alabama, Arkansas, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Ohio, Ohio, Mississippi, Missouri, New York, North Carolina, Ohio, Oklahoma, South Carolina, Tennessee, Texas, Vermont, West Virginia, and Wisconsin). This alternative also revises the aquaculture depredation order by specifying that it is applicable to commercial freshwater facilities and State and Federal fish hatcheries, and by authorizing APHIS/WS employees to take DCCOs at roost sites in the vicinity of aquaculture facilities during the months of October, November, December, January, February, March, and April. Depredation permits would continue to be used to address conflicts outside the authority of the depredation orders.

### Alternative E

Alternative E would reduce regional DCCO populations to pre-determined levels. Population objectives would be developed on an interdisciplinary, interagency basis and would be based on the best available data, while giving consideration to other values. Control would be carried out at nesting, roosting, wintering, and all other sites in order to achieve those objectives as rapidly as possible without adversely affecting other protected migratory birds or threatened and endangered species.

## Alternative F

Under Alternative F, frameworks to develop seasons and bag limits for hunting DCCOs would be established jointly by Federal and State wildlife agencies. These seasons would coincide with those for waterfowl hunting.

## DECISION

The Service's decision is to implement the preferred alternative, Alternative D, as it is presented in the final rule. This decision is based on a thorough review of the alternatives and their environmental consequences.

## Other Agency Decisions

A Record of Decision will be produced by APHIS/WS. The responsible officials at APHIS/WS will adopt the FEIS. RATIONALE FOR DECISION

As stated in the CEQ regulations, "the agency's preferred alternative is the alternative which the agency believes would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical and other factors." The preferred alternative has been selected for implementation based on consideration of a number of environmental, regulatory, and social factors. Based on our analysis, the preferred alternative would be more effective than the current program; is environmentally sound, cost effective, and flexible enough to meet different management needs around the country; and does not threaten the long-term sustainability of DCCO populations or populations of any other natural resource.

Alternative D was selected because it allows greater responsiveness in addressing localized resource damages (and will therefore be more effective at reducing or preventing them) than the No Action Alternative. It will provide a net benefit to fish, wildlife, and plants by allowing agencies to control DCCOs to protect these resources from damages. It will also alleviate economic damages to aquaculture. Through successful implementation of mitigation measures, it will not result in negative impacts to DCCO populations, other migratory birds, or Federally listed species. As such, this alternative represents the environmentally preferable alternative.

The No Action Alternative (A) was not selected for implementation because by itself it would not adequately address resource damages caused by DCCOs. The Nonlethal Management Alternative (B) was not selected because it severely limits the scope of allowable control techniques and would not adequately address resource damages caused by DCCOs. The Increased Local Damage Control Alternative (C) was not selected because it does not provide other agencies with the flexibility needed to adequately address resource damages caused by DCCOs. The Regional Population Reduction Alternative (E) was not selected because of uncertainty about the actual relationship between cormorant numbers and distribution and subsequent damages. The Regulated Hunting Alternative (F) was not selected because hunting is not a biologically or socially acceptable means of reducing DCCO damages.

## **List of Subjects in 50 CFR Part 21**

Exports, Hunting, Imports, Reporting and recordkeeping requirements, Transportation, Wildlife.

For the reasons stated in the preamble, we hereby propose to amend part 21, of subchapter B, chapter I, title 50 of the Code of Federal Regulations, as set forth below:

## **PART 21--[AMENDED]**

1. The authority citation for part 21 is revised to read as follows:

**Authority:** Pub. L. 95-616; 92 Stat. 3112 (16 U.S.C. 712(2)); Pub. L. 106-108; Section 3 of the Migratory Bird Treaty Act (16 U.S.C. 704), 40 Stat. 755.

2. In Subpart D, revise § 21.47 to read as follows:

Ohio Cormorant Environmental Assessment

**§ 21.47 Depredation order for double-crested cormorants at aquaculture facilities.**

**(a) What is the purpose of this depredation order?**

The purpose of this depredation order is to help reduce depredation of aquacultural stock by double-crested cormorants at private fish farms and State and Federal fish hatcheries.

**(b) In what areas can this depredation order be implemented?**

This depredation order applies to commercial freshwater aquaculture facilities and to State and Federal fish hatcheries in the States of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Ohio, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas.

**(c) What does this depredation order allow and who can participate?**

(1) This depredation order authorizes landowners, operators, and tenants (or their employees or agents) actually engaged in the commercial, Federal, or State production of freshwater aquaculture stocks to take, without a Federal permit, double-crested cormorants when they are found committing or about to commit depredations to aquaculture stocks. This authority is applicable only during daylight hours and only within the boundaries of freshwater commercial aquaculture facilities or State and Federal hatcheries.

(2) This depredation order authorizes employees of the Wildlife Services program of the U.S. Department of Agriculture Animal and Plant Health Inspection Service to take double-crested cormorants, with appropriate landowner permission, at roost sites in the vicinity of aquaculture facilities, at any time, day or night, during the months of October, November, December, January, February, March, and April.

(3) Authorized employees of the Wildlife Services program of the U.S. Department of Agriculture Animal and Plant Health Inspection Service may designate agents to carry out control, provided these individuals act under the conditions of the order.

**(d) What are the terms and conditions of this order?**

(1) Persons operating under paragraph (c)(1) of this section may only do so in conjunction with an established nonlethal harassment program as certified by officials of the Wildlife Services program of the U.S. Department of Agriculture Animal and Plant Health Inspection Service. Wildlife Services directive 2.330 outlines this certification process.

(2) Double-crested cormorants may be taken only by shooting with firearms, including rifles. Persons using shotguns are required to use nontoxic shot as listed in 50 CFR 20.21(j).

(3) Persons operating under this depredation order may use decoys, taped calls, or other devices to lure within gun range birds committing or about to commit depredations.

(4) Persons operating under this depredation order must obtain appropriate landowner permission before implementing activities authorized by the order.

(5) Double-crested cormorants may not be killed contrary to the laws or regulations of any State, and none of the privileges of this section may be exercised unless the person possesses the appropriate State or other permits, if required.

(6) Persons operating under this depredation order must properly dispose of double-crested cormorants killed in control efforts:

(i) Individuals may donate birds killed under authority of this order to museums or other such scientific and educational institutions for the purposes of scientific or educational exhibition;

(ii) Individuals may also bury or incinerate birds taken; and

(iii) Individuals may not allow birds taken under this order, or their plumage, to be sold, offered for sale, bartered, or shipped for purpose of sale or barter.

(7) Nothing in this depredation order authorizes the take of any migratory bird species other than double-crested cormorants. Two look-alike species co-occur with double-crested cormorants in the southeastern States: the anhinga, which occurs across the southeastern United States, and the neotropic cormorant, which is found in varying numbers in Texas, Louisiana, and Oklahoma. Both species can be mistaken for double-crested cormorants, but take of these two species is not authorized under this depredation order. Persons operating under this order must immediately report the take of a migratory bird species other than double-crested cormorants to the appropriate Service Regional Migratory Bird Permit Office.

(8) Nothing in this depredation order authorizes the take of any species protected by the Endangered Species Act. Persons operating under this order must immediately report the take of species protected under the Endangered Species Act to the Service.

(i) To protect wood storks and bald eagles, the following conservation measures must be observed within any geographic area where Endangered Species Act protection applies to these species: All control activities are allowed if the activities occur more than 1,500 feet from active wood stork nesting colonies, more than 1,000 feet from active wood stork roost sites, and more than 750 feet from feeding wood storks, and if they occur more than 750 feet from active bald eagle nests.

(ii) At their discretion, landowners, operators, and tenants may contact the Regional Migratory Bird Permit Office to request modification of the measures listed above in paragraph (d)(8)(i) of this section. Such modification can occur only if the Regional Director determines, on the basis of coordination between the Regional Migratory Bird Permit Office and the Endangered Species Field Office, that wood storks and bald eagles will not be adversely affected.

(iii) If adverse effects are anticipated from the control activities in a geographical area where Endangered Species Act protection applies to wood storks or bald eagles, either during the intra-Service coordination discussions described above or at any other time, the Regional Migratory Bird Permit Office will initiate consultation with the Endangered Species Field Offices.

(9) Persons operating under this depredation order must:

(i) Keep a log recording the date, number, and location of all birds killed each year under this authorization;

(ii) Maintain this log for a period of 3 years (and maintain records for 3 previous years of takings at all times thereafter); and

(iii) Each year, provide the previous year's log to the appropriate Service Regional Migratory Bird Permit Office. Regional Office addresses are found in § 2.2 of subchapter A of this chapter.

(10) We reserve the right to suspend or revoke the authority of any Agency or individual granted by this order if we find that the specified purpose, terms, and conditions have not been adhered to by that Agency or individual or if the long-term sustainability of double-crested cormorant populations is threatened by that Agency's or individual's action(s). The criteria and procedures for suspension, revocation, reconsideration, and appeal are outlined in §§ 13.27 through 13.29 of this subchapter. For the purposes of this rule, "issuing officer" means the Regional Director and "permit" means the authority to act under this depredation order. For purposes of § 13.29(e), appeals shall be made to the Director.

(e) Does this rule contain information collection requirements?

Yes. The information collection requirements in this section are approved by the Office of Management and Budget (OMB) under OMB control number 1018-0121. Federal agencies may not conduct or sponsor, and you are not required to respond to, a collection of information unless it displays a currently valid OMB control number.

(f) When does this depredation order expire?

This depredation order will automatically expire on April 30, 2009, unless revoked or extended prior to that date.

3. In Subpart D, add § 21.48 to read as follows:

**§ 21.48 Depredation order for double-crested cormorants to protect public resources.**

Ohio Cormorant Environmental Assessment

(a) What is the purpose of this depredation order?

The purpose of this depredation order is to reduce the occurrence and/or minimize the risk of adverse impacts to public resources (fish, wildlife, plants, and their habitats) caused by double-crested cormorants.

(b) In what areas can this depredation order be implemented?

This depredation order applies to all lands and freshwaters in the States of Alabama, Arkansas, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Ohio, Ohio, Mississippi, Missouri, New York, North Carolina, Ohio, Oklahoma, South Carolina, Tennessee, Texas, Vermont, West Virginia, and Wisconsin.

(c) What does this depredation order allow and who can participate?

(1) This depredation order authorizes State fish and wildlife agencies, Federally recognized Tribes, and State Directors of the Wildlife Services program of the U.S. Department of Agriculture Animal and Plant Health Inspection Service (collectively termed “Agencies”) to prevent depredations on the public resources of fish (including hatchery stock at Federal, State, and Tribal facilities), wildlife, plants, and their habitats by taking without a permit double-crested cormorants found committing or about to commit, such depredations.

(2) Agencies may designate agents to carry out control, provided those individuals act under the conditions of the order.

(3) Federally recognized Tribes and their agents may carry out control only on reservation lands or ceded lands within their jurisdiction.

(d) What are the terms and conditions of this order?

(1) Persons operating under this order should first utilize nonlethal control methods such as harassment and exclusion devices when these are considered effective and practicable and not harmful to other nesting birds by the responsible Agency.

(2) Double-crested cormorants may be taken only by means of egg oiling, egg and nest destruction, cervical dislocation, firearms, and CO<sub>2</sub> asphyxiation. Persons using shotguns must use nontoxic shot, as listed in 50 CFR 20.21(j). Persons using egg oiling must use 100 percent corn oil, a substance exempted from regulation by the U.S. Environmental Protection Agency under the Federal Insecticide, Fungicide, and Rodenticide Act.

(3) Persons operating under this depredation order may use decoys, taped calls, or other devices to lure within gun range birds committing or about to commit depredation of public resources.

(4) Persons operating under this depredation order must obtain appropriate landowner permission before implementing activities authorized by the order.

(5) Persons operating under this depredation order may not take double-crested cormorants contrary to the laws or regulations of any State, and none of the privileges of this section may be exercised unless the person possesses the appropriate State or other permits, if required.

(6) Persons operating under this depredation order must properly dispose of double-crested cormorants killed in control efforts:

(i) Individuals may donate birds killed under authority of this order to museums or other such scientific and educational institutions for the purposes of scientific or educational exhibition;

(ii) Individuals may also bury or incinerate birds taken; and

(iii) Individuals may not allow birds taken under this order, or their plumage, to be sold, offered for sale, bartered, or shipped for purpose of sale or barter.

(7) Nothing in this depredation order authorizes the take of any migratory bird species other than double-crested cormorants. Two look-alike species co-occur with double-crested cormorants in the southeastern States: the anhinga, which occurs across the southeastern United States, and the neotropic cormorant, which is found in varying numbers in Texas, Louisiana, Kansas, and Oklahoma. Both species can be mistaken for double-crested cormorants,

but take of these two species is not authorized under this depredation order. Persons operating under this order must immediately report the take of a migratory bird species other than double-crested cormorants to the appropriate Service Regional Migratory Bird Permit Office.

(8) Nothing in this depredation order authorizes the take of any species protected by the Endangered Species Act. Persons operating under this order must immediately report the take of species protected under the Endangered Species Act to the Service.

(i) To protect piping plovers, interior least terns, wood storks, and bald eagles, the following conservation measures must be observed within any geographic area where Endangered Species Act protection applies to these species:

(A) The 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 1,000 feet from active piping plover or interior least tern nests or colonies; occur more than 1,500 feet from active wood stork nesting colonies, more than 1,000 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;

(B) 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 1,500 feet from active wood stork nesting colonies, more than 1,000 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;

(C) To ensure adequate protection of piping plovers, any Agency or its agents who plan to implement control activities that may affect areas designated as piping plover critical habitat in the Great Lakes Region are to obtain prior approval from the appropriate Regional Director. Requests for approval of activities in these areas must be submitted to the Regional Migratory Bird Permit Office. The Regional Migratory Bird Permit Office will then coordinate with the Endangered Species Field Office staff to assess whether the measures in paragraph (B) are adequate.

(ii) At their discretion, Agencies or their agents may contact the Regional Migratory Bird Permit Office to request modification of the above measures. Such modification can occur only if the Regional Director determines, on the basis of coordination between the Regional Migratory Bird Permit Office and the Endangered Species Field Office, that the species listed in (8)(i) will not be adversely affected.

(iii) If adverse effects are anticipated from the control activities in a geographical area where Endangered Species Act protection applies to any of the four species listed in (8)(i), either during the intra-Service coordination discussions described above or at any other time, the Regional Migratory Bird Permit Office will initiate consultation with the Endangered Species Field Offices.

(9) Responsible Agencies must, before they initiate any control activities in a given year, provide a one-time written notice to the appropriate Service Regional Migratory Bird Permit Office indicating that they intend to act under this order.

(i) Additionally, if any Agency plans a single control action that would individually, or a succession of such actions that would cumulatively, kill more than 10 percent of the double-crested cormorants in a breeding colony, it must first provide written notification to the appropriate Service Regional Migratory Bird Permit Office. This letter must be received no later than 30 days in advance of the activity and must provide:

(A) the location (indicating specific colonies, if applicable) of the proposed control activity;

(B) a description of the proposed control activity, specifying what public resources are being impacted, how many birds are likely to be taken and what approximate percentage they are of total DCCOs present, and which species of other birds are present; and

(C) contact information for the person in charge of the control action.

(ii) The Regional Director may prevent any such activity by notifying the agency in writing if the Regional Director deems the activity a threat to the long-term sustainability of double-crested cormorants or any other migratory bird species.

(10) Persons operating under this order must keep records of all activities, including those of designated agents, carried out under this order. On an annual basis, Agencies must provide the Service Regional Migratory Bird Permit Office with a report detailing activities conducted under the authority of this order, including:

- (i) By date and location, a summary of the number of double-crested cormorants killed and/or number of nests in which eggs were oiled;
- (ii) A statement of efforts being made to minimize incidental take of nontarget species and a report of the number and species of migratory birds involved in such take, if any;
- (iii) A description of the impacts or anticipated impacts to public resources by double-crested cormorants and a statement of the management objectives for the area in question;
- (iv) A description of the evidence supporting the conclusion that double-crested cormorants are causing or will cause these impacts;
- (v) A discussion of other limiting factors affecting the resource (e.g., biological, environmental, and socioeconomic); and
- (vi) A discussion of how control efforts are expected to, or actually did, alleviate resource impacts.

(11) Agencies must provide annual reports to the appropriate Service Regional Migratory Bird Permit Office, as described above, by December 31 for the reporting period October 1 of the previous year to September 30 of the same year. For example, reports for the period October 1, 2003, to September 30, 2004, would be due on or before December 31, 2004. The Service will regularly review Agency reports and will periodically assess the overall impact of this program to ensure compatibility with the long-term conservation of double-crested cormorants and other resources.

(12) In some situations, Agencies may deem it necessary to reduce or eliminate local breeding populations of double-crested cormorants to reduce the occurrence of resource impacts.

(i) For such actions, Agencies must:

- (A) Comply with paragraph 9 of this subsection;
- (B) Carefully plan activities to avoid disturbance of nontarget species;
- (C) Evaluate effects of management activities on cormorants at the control site;
- (D) Evaluate, by means of collecting data or using best available information, effects of management activities on the public resources being protected and on nontarget species; and
- (E) Include this information in the report described above in paragraph (d)(10) of this subsection.

(ii) Agencies may coordinate with the appropriate Service Regional Migratory Bird Permit Office in the preparation of this information to attain technical or other assistance.

(13) We reserve the right to suspend or revoke the authority of any Agency, Tribe, or State Director granted by this order if we find that the specified purpose, terms, and conditions have not been adhered to or if the long-term sustainability of double-crested cormorant populations is threatened by the action(s) of that Agency, Tribe, or State Director. The criteria and procedures for suspension, revocation, reconsideration, and appeal are outlined in §§13.27 through 13.29 of this subchapter. For the purposes of this rule, “issuing officer” means the Regional Director and “permit” means the authority to act under this depredation order. For purposes of §13.29(e), appeals shall be made to the Director.

(e) Does this rule contain information collection requirements?

Yes. The information collection requirements in this section are approved by the Office of Management and Budget (OMB) under OMB control number 1018-0121. Federal agencies may not conduct or sponsor, and you are not required to respond to, a collection of information unless it displays a currently valid OMB control number.

(f) When does this depredation order expire?

This depredation order will automatically expire on April 30, 2009, unless revoked or extended prior to that date.

Date: September 25, 2003

Ohio Cormorant Environmental Assessment

## APPENDIX H

### U.S. FISH AND WILDLIFE SERVICE LAKE ERIE WATERSNAKE MANAGEMENT GUIDELINES FOR CONSTRUCTION, DEVELOPMENT, AND LAND MANAGEMENT ACTIVITIES

May 2, 2003

The Lake Erie watersnake is a federally-listed threatened species that occurs on the islands in the western basin of Lake Erie. When an agency or individual is involved in Lake Erie island development activities, the U.S. Fish and Wildlife Service (Service) encourages the use of caution to avoid take of Lake Erie watersnakes. "Take" is defined as to pursue, harm, harass, hunt, wound, kill, trap, capture, collect, or to attempt to engage in any of these activities. "Harm" is further defined as any action that injures or disrupts the normal behavior patterns of the snake. Section 9(a)(1)(B) of the Endangered Species Act states that "it is unlawful for any person subject to the jurisdiction of the United States to take any such species within the United States or the territorial sea of the United States." The Service recommends that anyone planning a development project on the Lake Erie islands should contact us early in the planning stages for project design assistance.

The Service has developed the following guidelines to assist in avoiding take of Lake Erie watersnakes. These season-based guidelines utilize the most current scientific information available and present a general overview of watersnake habitat. The guidelines may change as new information becomes available. Although implementation of these guidelines does not remove legal liability associated with take of a Federally threatened species, the Service believes that if you follow these guidelines, you are not likely to incidentally take Lake Erie watersnakes. Furthermore, these guidelines discuss the area of habitat used by 90% of the Lake Erie watersnake population, however all Lake Erie watersnakes are protected from take, no matter where they occur.

#### Winter Hibernation Habitat Guidelines

Lake Erie watersnakes enter hibernation in September and October, and emerge in April and May. The watersnakes hibernate in suitable sites located above water level on both the island shoreline and island interior. Research indicates that 90% of Lake Erie watersnakes hibernate within 528 feet (161 m) of the shoreline. Suitable winter hibernation sites include the following locations: cracks and crevices in bedrock; rock piles; animal burrows; tree root masses and cavities; and human-made structures such as rock walls, erosion barriers, foundations, drainage tiles, building pads, and piled debris on the ground surface. During hibernation, Lake Erie watersnakes are unable to move and are vulnerable to any disturbance of their hibernation sites. Any excavation activity, removal of suitable tree roots, destruction of human-made structures (walls, etc.) or disturbance of other suitable hibernation habitat sites may cause take of Lake Erie watersnakes.

At island sites where suitable winter hibernation habitat exists, excavation activity should not occur during the hibernation season. Activities to be avoided include, but are not limited to, digging foundations, burying utility lines, removing suitable tree roots or hollow tree bases, and destroying suitable human-made structures (walls, foundations, etc.). If such activities must occur during the winter months, excavators should contact us early to seek our technical assistance in exploring methods to avoid take of Lake Erie watersnakes. Contacting us early allows us to review a proposed project, discuss options, address species needs, and find solutions while avoiding project delays. If take is unavoidable, early planning also will help to ensure compliance with Sections 7 and 10 of the Endangered Species Act, while avoiding project delays.

In order to avoid taking Lake Erie watersnakes, excavation of any kind in potential suitable winter hibernation habitat within 528 ft (161 m) of shore should be avoided between October 15 and April 15. Hibernating snakes cannot move at all during low winter temperatures, and are sensitive to disturbance. Excavation activities occurring between April 16 and May 31, or between September 15 and October 14 should only be conducted when air temperatures are above 60 degrees Fahrenheit. When the air temperature is less than 60 degrees Fahrenheit, the watersnakes are sluggish and experience difficulty in moving away from excavation equipment. The construction site should be actively monitored for snakes before and during construction by an individual that can identify a Lake Erie watersnake. If Lake Erie watersnakes are encountered during excavation, operations should cease immediately and the monitoring individual should contact us promptly at our Reynoldsburg, Ohio, Field Office (614-469-6923 extensions 12, 15, 16, or 22). Exercising these precautions will help avoid injuring or killing hibernating Lake Erie watersnakes.

In locations that do not contain suitable hibernation habitat (e.g., locations composed purely of topsoil covered by short grasses and forbs with no cracks or crevices present), ground disturbing activities during the hibernation period (i.e., after October 15 and before April 15) are not likely to cause take of Lake Erie watersnakes. Anyone uncertain about whether or not a site contains suitable winter hibernation habitat should contact our Reynoldsburg office.

### Summer Habitat Guidelines

During warm months (i.e., from June through September), 90% of Lake Erie watersnakes are found within 69 feet (21 m) of the Lake Erie island shoreline, and within the same distance of ponds, inlets, bays, and marinas within the interior of the islands. Cliffs with crevices, rocky shorelines, and rock-filled structures such as docks, breakwater rocks, and shoreline erosion barriers provide important shelter, breeding and foraging habitat for Lake Erie watersnakes. The watersnakes forage for small fish and amphibians near these locations and use spaces among rocks in the structures and along the shoreline for rest, reproduction, and protection from predators.

The shoreline/vegetation interface on the islands, as well as interior island ponds, inlets, bays, and marinas are vital to both the summer and winter survival of Lake Erie watersnakes. Any kind of excavation or removal of shrubs, standing or downed trees, root masses, animal burrows, piled rock, cliffs, or bedrock within 69 feet (21 m) of the shoreline, ponds, inlets, bays, and marinas may cause take of the Lake Erie watersnake. For this reason, if you plan to conduct such activities, you should contact the Service early to seek technical assistance in exploring alternatives that avoid take. Contacting us early allows us to review a proposed project, discuss options, address species needs, and find solutions while avoiding project delays. If take is unavoidable, early planning also will help to ensure compliance with Sections 7 and 10 of the Endangered Species Act, while avoiding project delays.

Summary of habitat management practices, timing, and location where applicable.

<b>Time</b>	<b>Location</b>	<b>Recommendation</b>
Oct 15- April 15	Within 528 feet (161 m) of shore	No Excavation.
April 16- May 31	Within 528 feet (161 m) of shore	Excavation only when temperature above 60° F. Mow at dusk, on high setting.
June 1- Sept 14	Within 69 feet (21 m) of shore	Coordinate all construction and excavation projects along shoreline with Service.
Sept 15- Oct 14	Within 528 feet (161 m) of shore	Excavation only when temperature above 60° F. Mow at dusk, on high setting.

The Service encourages preservation or construction of structures with designs beneficial to watersnakes (e.g., certain rock walls, rock-filled crib docks, and rock erosion barriers, etc.) because such structures may provide shelter for the snake. When building or replacing a dock, the Service recommends that you refer to the Ohio Department of Natural Resources (ODNR) Coastal Guidance Sheet No. 9. This can be obtained by contacting ODNR at 419-626-7980, or online at <http://www.dnr.state.oh.us/water/coastal/pubs/cmguide9.pdf>. When conducting such activities, you should also contact us early for technical assistance in exploring alternatives or pursuing necessary compliance with Sections 7 and 10 of the Endangered Species Act. Furthermore, any project that will impact the shoreline or waters of Lake Erie (including marinas, wetlands, and natural ponds), for example the installation of a new dock or shoreline erosion protection structure, must be coordinated with the U.S. Army Corps of Engineers (Corps) to ensure compliance with the Clean Water Act. The Buffalo District of the Corps can be contacted at (716) 879-4330.

In addition to contacting us early in the project planning process, construction projects during warm months (i.e., from June through September) in suitable summer habitat should be actively monitored for Lake Erie watersnakes. The monitoring should be conducted before and during construction by a person that can identify a Lake Erie watersnake. If watersnakes are encountered within the project area during construction, operations should cease and the monitoring person should contact us immediately in our Reynoldsburg, Ohio, office (614-469-

6923 extensions 12, 15, 16, or 22). Finally, any holes or trenches that are dug should be filled in as soon as possible to prevent watersnakes from inadvertently falling into them and becoming trapped. Holes or trenches should be inspected for Lake Erie watersnakes before being filled.

## Land Management Guidelines

### Tree Removal

Tree root masses may provide suitable hibernation habitat for the Lake Erie watersnake. If you are planning on removing trees on your property, the Service recommends that only the above-ground portion of the tree be removed. The root mass should be left underground, so as not to disturb hibernation locations. Within 69 feet (21 m) of shore, heavy machinery should be limited to paved roads, ramps, etc. so as not to harm watersnakes that may have retreated under rocks, logs, and other material.

### Mowing

Shoreline vegetation is an important component of Lake Erie watersnake summer habitat. Vegetation provides resting, basking, cover, and mating locations for the snake, while it also provides habitat for native birds, fish, amphibians, and mammals, helps to stabilize banks and prevent erosion, and helps to promote improved water quality. Landowners are encouraged to avoid mowing within 69 feet (21 m) of the shoreline to protect these important habitat and water quality features. During late April and May as Lake Erie watersnakes are emerging from hibernation, and during late September and early October as Lake Erie watersnakes are entering into hibernation, lawn mowing within 69 feet (21 m) of the shore should be completed at dusk, when the snakes will have taken cover for the night. Mowing during these time frames should utilize a high setting, and the area to be mowed should be actively monitored for Lake Erie watersnakes.

### Questions

Three people are available in the Service's Reynoldsburg, Ohio office to answer any questions you may have about the Lake Erie watersnake. You may contact our office Monday through Friday, 8am-4pm by dialing 614-469-6923. For questions about U.S. Army Corps of Engineers permits, contact wildlife biologist Megan Seymour (ext.16). For questions about Lake Erie watersnake biology or about the Endangered Species Act, contact endangered species biologist Angela Zimmerman (ext. 22). All questions may also be directed to the office's Supervisor, Dr. Mary Knapp (ext. 12).