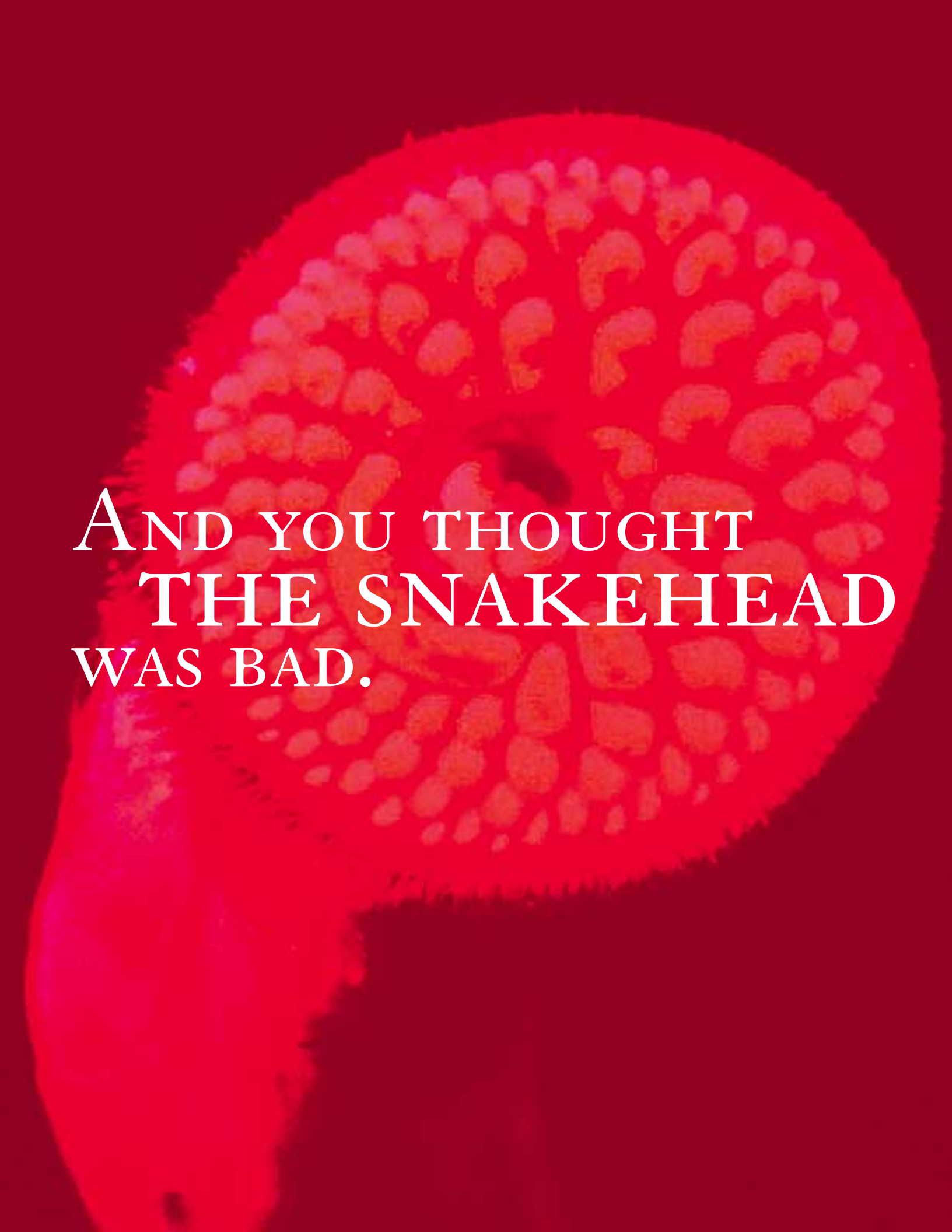
Audubon

cooling the HOT SPOTS

PROTECTING AMERICA'S BIRDS, WILDLIFE, AND NATURAL HERITAGE FROM INVASIVE SPECIES


And you thought
THE SNAKEHEAD
was bad.

INVASIVE, non-native species like the northern snakehead fish that choke out, devour, and destroy native wildlife and their habitat have infested more than 100 million acres of the American landscape. An additional 3 million acres of American land is lost each year to invasive weeds — an area equal to a strip of land nearly two miles wide stretching from coast to coast. Experts estimate that these fast-moving invaders are already causing $130 billion worth of damage annually to the American economy. Each year in America, more than 3 million acres are lost to invasive weeds – an area equal to a strip of land nearly two miles wide, stretching from coast to coast.

These weeds and non-native animals like rats and feral pigs are not just wrecking vacant lots and dusty roads inhabited only by tumbleweed. Invasive species are choking out and destroying some of America's most valuable bird and wildlife habitat. For example, invasive species rank as the number-one threat to the 95-million acre National Wildlife Refuge System. These federal lands are set aside for the purpose of bird and wildlife conservation and are particularly valuable as stopovers, breeding grounds, and wintering areas for migrating birds.

Invasive weeds and non-native animals also present one of the most critical threats to the nation's declining bird populations; more than one-third of the birds on Audubon's WatchList are threatened by invasive species. Migratory shorebirds like the Short-billed Dowitcher, grassland-dependent birds like the Short-eared Owl, and wetland-specialized species like the Black Rail are all experiencing population declines while much of their remaining habitat is being lost to invasive species.

Because addressing a problem of this scope and magnitude could require decades of work and hundreds of millions of taxpayer dollars, it is critical that federal public policy be targeted to the areas that will yield the most meaningful conservation results.

Audubon recommends a strategic, science-based approach to managing the threat invasive species pose to America's birds and wildlife. Federal public policy and funding should focus not only on cost-effective prevention measures, but also on controlling and containing invasive species "Hot Spots," where the nation's most valuable bird and wildlife habitat is at risk and America's most imperiled bird populations are declining.

This report identifies ten such Hot Spots across America, focusing on lands within the National Wildlife Refuge System. With its primary mission of conserving birds and wildlife, its professional scientific and management staff, and its successful track record protecting birds for 100 years, the Refuge System holds great potential to act as a model for efforts to control invasive species and conserve native wildlife throughout America.

INVASIVE SPECIES THREATEN AMERICA'S MOST IMPERILED BIRD POPULATIONS

MORE THAN ONE-QUARTER OF NORTH AMERICAN BIRD SPECIES ARE IN TROUBLE OR DECLINE.

Using a data-driven, science-based process, Audubon has identified more than 200 species of birds in America that are in trouble or decline. These Audubon WatchList species include the California Thrasher and the southeast's Painted Bunting, both of which show declines in excess of 50 percent over the past 30 years, and the Cerulean Warbler of the eastern U.S., which has declined by more than 70 percent.

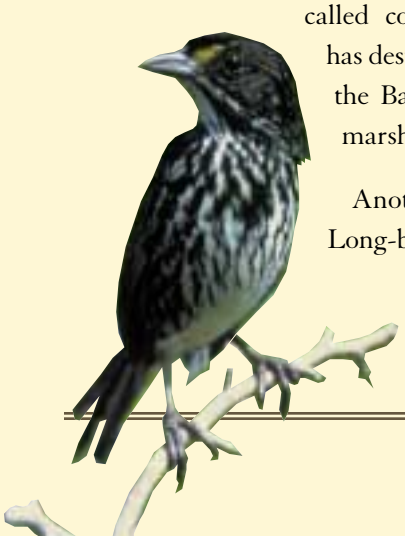
INVASIVE SPECIES ARE ONE OF THE MOST CRITICAL THREATS TO OUR NATION'S DECLINING BIRDS.

Invasive species threaten more than one-third of the birds on Audubon's WatchList. WatchList species are those that face population declines, are threatened by habitat loss on their breeding or wintering grounds, or have limited geographic ranges that heighten their vulnerability to isolated disasters like severe weather or oil spills.

Invasive plants like bufflegrass, Phragmites, and saltcedar are destroying habitat needed by many of America's fastest-declining birds, including Costa's Hummingbird, Seaside Sparrow, Abert's Towhee, and the Elf Owl.

The Willapa Bay area along the southwestern coast of Washington contains rich intertidal mudflats and native salt marsh habitats that make it one of the most important stopover sites on the West Coast for Dunlins, Short-billed Dowitchers, and other shorebirds. In the past decade, an invasive weed called cordgrass (Spartina alterniflora) has destroyed more than 11,000 acres of the Bay's intertidal mudflats and salt marshes.

Another WatchList species, the Long-billed Curlew, has been declining significantly over the past 150 years largely due to the disappearance of much its prairie and meadow habitat. On San Luis National Wildlife Refuge in California, an invasive plant called yellow starthistle is wiping out grasslands and rendering the area unusable for breeding by the curlews.



Seaside Sparrow

INVASIVE SPECIES ARE THE LEADING CAUSE OF BIRD EXTINCTIONS.

Invasive species have entirely or partially caused the majority of all bird extinctions since 1800. Many of these extinctions were of island birds lacking natural defenses against introduced predators. For example, invasive brown tree snakes, which arrived in Guam after World War II as stowaways on cargo ships, have decimated Guam's native forest birds. The birds of Guam evolved in the absence of snake predators, making them easy prey for the tree snakes, which are skilled climbers with a voracious appetite for eggs, chicks, and small birds. Because of the brown tree snake, nine of the 11 species of native forest-dwelling birds have been extirpated on Guam. Five subspecies of forest birds were driven to extinction, such as the Rufous Fantail and Guam Flycatcher.

Brown Tree Snake

Long-Billed Curlews

INVASIVE SPECIES THREATEN AMERICA'S MOST VALUABLE WILDLIFE HABITAT

THE NATIONAL WILDLIFE REFUGE SYSTEM CONTAINS SOME OF THE NATION'S MOST VALUABLE BIRD AND WILDLIFE HABITAT.

The National Wildlife Refuge System includes 539 land units spanning a vast geographic range encompassing more than 95 million acres. Within this area can be found nearly every major habitat type or biome in America: deserts, forests, tundra, great rivers, vast marshes, swamps, prairies, estuaries, coral reefs, and remote islands.

More than 700 species of birds can be found nesting, breeding, and wintering within the protected confines of the Refuge System. Particularly important to migratory birds is the System's extensive wetlands habitat, located strategically along the four major North American migratory flyways. These refuges are used as stepping-stones for millions of migrating birds each year as they fly thousands of miles south for the winter and return on their northern migration in spring.

St. Marks National Wildlife Refuge in Florida, for example, protects 40 miles of coastline along the Gulf of Mexico supporting significant populations of a great variety of aquatic birds, including wading birds, shorebirds, and waterfowl. The coastal hammocks and upland forests of the refuge support Neotropical migrant songbirds. Longleaf pine flatwoods support breeding populations of endangered Red-cockaded Woodpeckers and wintering populations of the imperiled Henslow's Sparrow.

Dozens of wildlife refuges were established expressly for the conservation of threatened and endangered birds, such as the California Condor, Golden-cheeked Warbler, Attwater's Prairie Chicken, Masked Bobwhite Quail, and Bald Eagle.

California Condor

Wood Storks

INVASIVE SPECIES ARE THE SINGLE GREATEST THREAT TO WILDLIFE REFUGES.

According to the Fish and Wildlife Service, invasive species have become the single greatest threat to the Refuge System, causing "widespread habitat destruction" and "contributing significantly to the decline of trust species."

More than 250 wildlife refuges have been infested by invasive species that choke out, devour, and destroy native birds, wildlife, and their habitat.

More than 8 million acres of habitat within the Refuge System are infested with invasive weeds, including some of the System's most valuable habitat for birds and wildlife.

For example, the highly invasive Chinese tallow tree, which shades out native grasses and transforms grasslands, prairies and brushlands into tallow woodlands, has destroyed more than 55,000 acres of bird and wildlife habitat on Aransas National Wildlife Refuge in Texas. Millions of birds representing nearly 400 species funnel through this major migratory pathway. The open grasslands being destroyed by Chinese tallow are particularly important as wintering habitat for the WatchListed Short-eared Owl.

RECOMMENDATION: CONTROL AND CONTAIN INVASIVE SPECIES "HOT SPOTS"

Invasive species threaten America's most imperiled bird populations as well as some of the most important bird and wildlife habitat remaining throughout the country. Because addressing a problem of this scope and magnitude could require decades of work and hundreds of millions of taxpayer dollars, it is critical that federal public policy be targeted to the areas that will yield the most meaningful conservation results.

Audubon recommends a strategic, science-based approach to controlling and containing the threat invasive species pose to America's birds and wildlife. Federal efforts should focus on invasive species "Hot Spots," which represent areas where the nation's most valuable bird and wildlife habitat is threatened and America's most imperiled bird populations are at risk.

Three bills in the 108th Congress would authorize funding and provide strategic frameworks for addressing invasive species Hot Spots such as those Audubon has identified. Each of these bills represents an opportunity to address the invasive species threat with broad bipartisan support:

- **The Species Protection and Conservation of the Environment Act** (SPACE Act), sponsored by Representative Nick Rahall (D-WV) and cosponsored by Rep. Wayne Gilchrest (R-MD) and Rep. Robert Underwood (Del.-GU);
- **The Noxious Weed Control Act**, sponsored in the Senate by Senator Larry Craig (R-ID) and cosponsored by a bipartisan coalition of 12 senators including Minority Leader Tom Daschle (D-SD), and sponsored in the House by Rep. Joel Hefley (R-CO) and cosponsored by Rep. Jim Gibbons (R-NV) and Rep. Mark Udall (D-CO); and
- **The Nutria Eradication and Control Act**, sponsored by Rep. Wayne Gilchrest (R-MD) and cosponsored by Rep. W.J. Tauzin (R-LA)

In addition to legislative changes, new funding is needed to fight this threat to America's natural heritage. Immediate investments in invasive species control in the following critical areas represent real opportunities to yield meaningful conservation results:

1. **Loxahatchee NWR** in Florida, where Wood Storks and Snail Kites are threatened by invasive Melaleuca and Old World climbing fern

2. **Willapa NWR** in Washington, where Short-billed Dowitchers are threatened by invasive cordgrass (Spartina alterniflora)

3. **Wertheim NWR** in New York, where American Black Ducks are threatened by invasive Phragmites

4. **Aransas NWR** in Texas, where Short-eared Owls are threatened by invasive Chinese tallow

5. **San Luis NWR** in California, where Long-billed Curlews are threatened by invasive yellow starthistle

6. **Browns Park NWR** in Colorado, where Northern Harriers are threatened by invasive perennial pepperweed

7. **Waubay NWR** in South Dakota, where Dickcissels are threatened by invasive Canada thistle

8. **Bosque del Apache NWR** in New Mexico, where Southwestern Willow Flycatchers and Yellow-billed Cuckoos are threatened by invasive saltcedar

9. **Blackwater NWR** in Maryland, where Black Rails are threatened by invasive nutria

10. **Mississippi Sandhill Crane NWR** in Mississippi, where Sandhill Cranes are threatened by invasive cogon grass and fire ants

1 Arthur R. Marshall Loxahatchee National Wildlife Refuge, FL

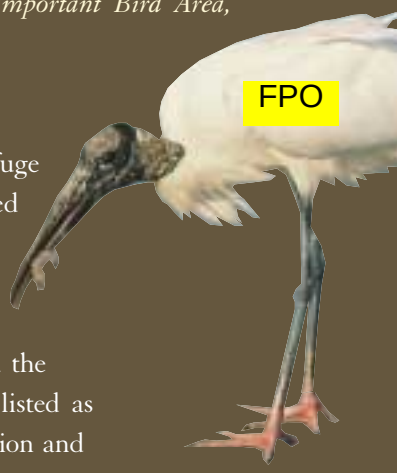
The Arthur R. Marshall Loxahatchee National Wildlife Refuge encompasses more than 147,000 acres of remnant northern Everglades habitat, including wet prairie, slough, sawgrass marsh, and thousands of tree islands. An Audubon Important Bird Area, Loxahatchee Refuge is home to more than 270 bird species.

THE INVADERS:

Melaleuca **and Old World climbing fern** infest more than 80 percent of the habitat area within Loxahatchee Refuge. At 100,000 acres, it is the worst infestation of these invasive plants in southern Florida. *Melaleuca* trees grow rapidly, produce tremendous quantities of seeds, and eventually form dense forests that alter native plant community composition and structure, and degrade and destroy bird and wildlife habitat. *Melaleuca* also uses more water than native Everglades vegetation, which can dry out native wetlands. Similarly, Old World climbing fern grows and spreads rapidly by producing millions of spores that are easily transported by winds, wildfires, and wildlife. The resulting invasive weeds smother native vegetation and deprive it of sunlight. *Melaleuca* and Old World climbing fern are estimated to be spreading at the alarming rate of 10 and 18 acres per day across south Florida, respectively.

THREAT TO BIRDS:

Invasive species on Loxahatchee Refuge affect threatened and endangered species such as the **Wood Stork** and the **Snail Kite** by destroying nesting habitat and reducing forage for prey species. The Wood Stork and the Snail Kite are state and federally listed as endangered mainly due to destruction and drainage of their wetland habitats. *Melaleuca* directly threatens both species by degrading and destroying the wet prairies and sloughs that are the birds' preferred feeding locations. Old World climbing fern is rapidly invading and colonizing tree islands, the preferred nesting habitat of the endangered Wood Stork.



Wood Stork

Wood Stork chicks

Melaleuca

Spartina Infested Mudflat.

two

2 Willapa National Wildlife Refuge, WA

The Willapa Bay estuary contains more than 80,000 acres of valuable intertidal mudflats and native salt marsh habitat. Nestled within this important estuary is 14,000-acre Willapa National Wildlife Refuge, which is home to more than 250 bird species and annually hosts some of the largest populations of shorebirds on the West Coast. Audubon Important Bird Areas located partly or entirely within the boundaries of Willapa Refuge include Shoalwater Bay (also known as South Willapa Bay) and Ledbetter Point.

THE INVADER:

The refuge is threatened by an invasive **cordgrass**, *Spartina alterniflora*, which rapidly infests intertidal mudflats and salt marshes. The cordgrass forms dense monospecific stands that trap sediments and alter hydrologic processes. Mudflats are crucial habitat for shorebirds, waterfowl, clams, crabs, and oysters. In the past decade alone, *Spartina* has taken over 11,000 acres of the Willapa Bay estuary, and is expanding at the alarming rate of 20 percent per year. Already, Willapa Bay has the largest *Spartina* infestation of any estuary on the Pacific coast.

Short-billed Dowitcher

THREAT TO BIRDS:

Conversion of intertidal mudflats and native saltmarsh habitats to stands of *Spartina* threatens to devastate imperiled shorebird populations that rely on the increasingly rare coastal mudflats as their last remaining habitat. The *Spartina* infestation represents a particularly acute threat to already-declining populations of the **Short-billed Dowitcher**, an Audubon WatchList species. Other WatchList species harmed by the *Spartina* infestations in Willapa Bay include Pacific Golden-Plover, American Golden-Plover, Whimbrel, Marbled Godwit, and Red Knot.

Red Knot

3 Wertheim National Wildlife Refuge, NY

Wertheim National Wildlife Refuge, located on the southern shore of Long Island, is home to more than 240 species of birds. Wertheim Refuge is the core federally protected area in the Carmens River Estuary. The estuary is recognized as an Audubon Important Bird Area in the state of New York. The federally protected refuge is a crucial stopover for migrating shorebirds, raptors, and songbirds.

THE INVADER:

Phragmites, also known as the common reed, has infested and degraded more than half of the refuge's valuable marshes. Thriving in habitat disturbed by human activities, *Phragmites* outcompetes native plants and replaces them with dense, mono-specific stands unusable as nesting and feeding sites for many bird species.

Common Reed

THREAT TO BIRDS:

Wertheim Refuge was established to protect migratory birds like the **American Black Duck**, which is included on Audubon's nationwide WatchList of birds of conservation concern. American Black Duck populations have declined dramatically in recent years, mainly due to habitat loss. On Wertheim Refuge, invasive *Phragmites* is stripping the American Black Duck of the open water marshes it needs for feeding.

American Black Duck

Chinese Tallow

4 Aransas National Wildlife Refuge, TX

Aransas National Wildlife Refuge encompasses 110,000 acres of grasslands and prairies along the southern Gulf Coast of Texas. Each year, millions of birds representing nearly 400 species funnel through this area at the base of the Mississippi Flyway.

THE INVADER:

The highly invasive **Chinese tallow tree** shades out native grasses and transforms grasslands, prairies and brushlands into tallow woodlands. The tallow trees grow virtually anywhere there is moisture in the ground, including dikes, the edges of impoundments, and fields. Chinese tallow has infested about 55,000 acres on Aransas Refuge, rendering half of the refuge unusable for a range of bird species, including many grassland birds.

THREAT TO BIRDS:

Short-eared Owls are declining due to the loss of open grassland habitat from agriculture, grazing, housing development, and the reforestation of grasslands following the abandonment of farming. Short-eared Owls require open grasslands for hunting prey. At Aransas National Wildlife Refuge, Chinese tallow woodlands are destroying the open grasslands the imperiled owls need to survive.

Short-eared Owl

Yellow Starthistle

Issue 5 San Luis National Wildlife Refuge Complex, CA

San Luis National Wildlife Refuge Complex, which consists of three National Wildlife Refuges, is recognized as both an Audubon Important Bird Area and a Western Hemisphere Shorebird Reserve Network site. The 42,000 acres of the San Luis Complex are internationally acclaimed as significant shorebird habitat. The refuges are the primary wintering ground for the largest populations of Ross's Geese and 'Lesser' Sandhill Crane in the Pacific Flyway.

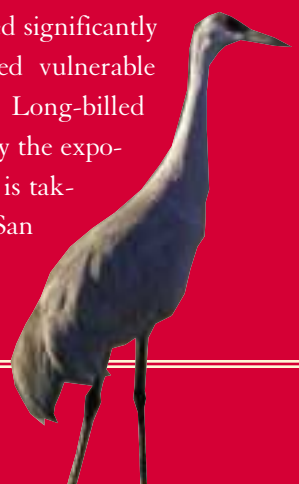
THE INVADER:

Invasive **yellow starthistle** rapidly forms dense impenetrable stands, particularly in disturbed areas. Yellow starthistle is best adapted to open grasslands, and able to complete its life cycle earlier than native perennials, allowing it to use up available water and outcompete native plants. As a result, yellow starthistle has eliminated thousands of acres of native habitat within the San Luis Refuge Complex.

Long-billed Curlew

THREAT TO BIRDS:

The **Long-billed Curlew** is threatened by the loss and degradation of prairies and meadows, which are needed for winter habitat. Long-billed Curlews have declined significantly in the past 150 years and are considered vulnerable throughout their range. The declining Long-billed Curlew population is further threatened by the exponential spread of yellow starthistle, which is taking over valuable wintering habitat on the San Luis Refuges.



Sandhill Crane

6 Browns Park National Wildlife Refuge, CO

Recognized as an Audubon Important Bird Area, the 13,455-acre Browns Park National Wildlife Refuge is home to more than 200 bird species, and hosts upwards of 20,000 waterbirds in the spring and fall. Established by Congress to provide sanctuary for migratory birds and threatened and endangered species, Browns Park Refuge provides the only significant wetland, riparian, and grassland habitat for miles around.

THE INVADER:

The aggressive **perennial pepperweed** has invaded about 1,100 acres of the refuge's wetland, riparian, and grassland habitats. Perennial pepperweed forms a thick blanket over the ground that shuts out sunlight, which reduces native species' ability to survive. It spreads mainly by underground roots at a rate of several feet per year. Pepperweed infestations degrade and eliminate the plant diversity that many birds and wildlife depend upon for food, cover, and nesting.

EFFECTS ON BIRDS:

The **Northern Harrier**, a ground nesting raptor, faces population declines throughout the Intermountain West, largely due to the loss of wet meadow grassland habitat. Northern Harriers depend on lush wet meadow grasslands for nesting. Perennial pepperweed can wipe out this habitat in a few years, thus reducing plant diversity and available nesting habitat for the Northern Harrier and many other ground nesting birds.

Northern Harrier

7 Waubay National Wildlife Refuge, SD

Waubay is a Sioux word meaning "a nesting place for birds." Waubay National Wildlife Refuge lives up to its name. Its 4,650 acres of lakes, marshes, grasslands, and woodlands, and an additional 40,000 acres of waterfowl habitat in Waubay Wetland Management District, make the Waubay Complex one of the largest duck production areas in the continental United States.

THE INVADER:

Canada thistle, a long-recognized noxious weed that represents a serious threat to American agriculture, has been spreading rapidly in recent years. Canada thistle thrives in non-forested plant communities such as prairies, barrens, glades, sand dunes, fields and meadows that have been impacted by disturbance. It crowds out native plants by shading, competing for soil resources, and releasing chemical toxins that inhibit the growth of other plants' seedlings. On the Waubay Complex, Canada thistle is rapidly infesting wetlands, grasslands, and riparian zones, threatening important bird and wildlife habitats.

Canada Thistle

THREAT TO BIRDS:

Listed on Audubon's WatchList, **Dickcissel**, which is a stocky, sparrow-sized songbird, nests in grasslands, meadows, savannahs, and fields. Although Dickcissels once nested as far east as the Atlantic Coast, they are now primarily a bird of the American Midwest. The species has recently experienced population declines due to threats to its breeding habitat as well as its wintering habitat in Venezuela. On the Waubay Complex, Canada thistle threatens important breeding habitat needed to protect this declining songbird.

Dickcissel

8 Bosque del Apache National Wildlife Refuge, NM

Bosque del Apache National Wildlife Refuge encompasses more than 57,000 acres of riparian habitat and arid uplands along the Rio Grande River. Tens of thousands of birds winter on the refuge annually, leading to its designation as an Audubon Important Bird Area.

THE INVADER:

Saltcedar, an invasive tree species, has taken over approximately 6,000 acres of the 15,000-acre riparian floodplain in Bosque del Apache, and is threatening large tracts of riparian floodplain throughout the Southwest.

THREAT TO BIRDS:

The **Southwestern Willow Flycatcher**, listed as endangered with Critical Habitat in New Mexico, Arizona, and California, and the **Yellow-billed Cuckoo**, a federal candidate species, benefit from habitat mosaics characteristic of southwestern riparian areas. The Southwestern Willow Flycatcher prefers moist, dense, shrubby areas adjacent to water, while the Yellow-billed Cuckoo uses more mature native riparian woodlands. Both birds are vulnerable to a variety of threats to their riparian habitat, including damming, dredging, and channelization. Control of invasive saltcedar on Bosque del Apache Refuge, along with restoration of native riparian woodlands, is needed to sustain and recover these imperiled species.

Willow Flycatcher

9 Blackwater National Wildlife Refuge, MD

Protecting more than 27,000 acres of rich tidal marshes, mixed evergreen and deciduous forests, and freshwater ponds, Blackwater National Wildlife Refuge provides sanctuary to 13 threatened and endangered species including the Bald Eagle.

THE INVADER:

Nutria, beaver-like rodents native to South America, devastate marshes by digging underneath and overturning marsh plants to feed on their roots. The combined impact of nutria damage with a rising sea level is the rapid conversion of emergent marsh to open water, wiping out habitat needed by more than 250 bird species. Over 7,000 of the 17,000 acres of marsh within Blackwater Refuge have been lost, and the refuge continues to lose between 500 and 1,000 acres of marsh each year to nutria damage.

Nutria

THREAT TO BIRDS:

Due to a downward population trend and increasing threats to its habitat, the **Black Rail** is listed on Audubon's nationwide WatchList. Due to dredging and filling of wetlands across much of the Black Rail's habitat, this species is in serious decline. At Blackwater Refuge, one of the last bastions of the imperiled Black Rail, invasive nutria are damaging and destroying marshlands needed to sustain and recover the species.

Black Rail

10 Mississippi Sandhill Crane National Wildlife Refuge, MS

Mississippi Sandhill Crane National Wildlife Refuge was established in 1975 to safeguard the critically endangered Mississippi Sandhill Crane and its unique disappearing habitat. The 19,000-acre refuge protects forested swamps, pine scrub, tidal marshes, and the wet pine savannahs that are critical to the survival of Sandhill Cranes.

THE INVADER:

Mississippi Sandhill Crane National Wildlife Refuge is threatened by an invasion of nonnative **fire ants**, as well as a rapidly spreading nonnative weed called **cogon grass**. Cogon grass is degrading and destroying the last remaining savannah habitat, which is the last bastion of the Mississippi Sandhill Crane. Cogon grass spreads especially quickly in roadsides and areas where there have been fires or other soil disturbances, a problem exacerbated by a major drought in 2000. With their voracious appetites, fire ants invade drier long-leaf pine savannah habitat where Mississippi Sandhill Cranes nest. The fire ants also represent a direct predatory threat; they devour the freshly hatched young of the imperiled cranes.

THREAT TO BIRDS:

Listed by the federal government and the state of Mississippi as endangered, the Mississippi subspecies of **Sandhill Cranes** is limited to about 110-120 birds, with only 25 breeding pairs. Nesting effort and success, as well as survival of young, relies on the availability of quality savannah habitat for nesting. By destroying native savannah habitat, invasive cogon grass represents a profound threat to the Mississippi Sandhill Crane. The loss of chicks to invasive fire ants is particularly alarming given the low annual fledging rates characteristic of Sandhill Cranes; each crane rarely raises more than one young to fledgling in a given year, even in the absence of such threats. This low fledging rate limits the ability of Mississippi Sandhill Cranes to recover from population declines.

Cogon Grass

Mississippi Sandhill Crane

For more information
www.stopinvasives.org

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