
Ivory-billed Woodpecker

Campephilus principalis

Federal Status:	Endangered (March 11, 1967)
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Critical Habitat:	None Designated
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Florida Status:	Endangered
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Recovery Plan Status :	Not Applicable
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Geographic Coverage:	South Florida
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Ivory-billed woodpeckers once inhabited the old-growth forests of southeastern North America and Cuba. As these forests were cleared late in the 19th century, the ivory-billed woodpecker began its decline toward extinction, a decline that was helped by hunters who relished the flavor of this bird's meat. For years, ornithologists and other conservationists have hoped to discover ivory-billed woodpeckers in remote swamps and pine forests in South Florida, South Carolina, Louisiana, or Cuba. After several surveys in North America and Cuba failed to locate ivory-billed woodpeckers, this hope has diminished.

Description

The ivory-billed woodpecker is the largest woodpecker in North America. Its body-length averages about 50.8 cm. The wing length averages 237 to 264 mm (Short 1982). Jackson (1996) identified the only recorded weight as 453g. The ivory-billed woodpecker has glossy, black plumage with a purplish cast. A white stripe started on each cheek and continues down each side of their necks to their back, where the two stripes curved to meet in the middle of their backs. The outer halves of their secondaries are white, along with the ends of their inner, primary feathers. The white feathers on the trailing edge of their wings are visible even when their wings are folded. This white wing bar is the best characteristic for identifying the ivory-billed woodpecker in the field and distinguishing it from species like pileated woodpeckers.

Male ivory-billed woodpeckers has a prominent, scarlet crest; the crest of female ivory-billed woodpeckers is completely black. Their bills are large and ivory-white.

Taxonomy

The ivory-billed woodpecker (*Campephilus principalis*) is the northernmost of 11 species contained in the neotropical genus *Campephilus*. It is most closely related to the imperial woodpecker (*C. imperialis*), another endangered

woodpecker that occurs in the mountains of western Mexico. Two races of ivory-billed woodpeckers have been recognized: *C. p. principalis* of the U.S. and *C. p. bairdi* of Cuba (AOU 1983).

Distribution

In the United States, the ivory-billed woodpecker occur in old-growth, lowland, deciduous forests and pinelands in eastern Texas, Oklahoma, Arkansas, Missouri, Illinois, Indiana, Kentucky, North Carolina, South Carolina, Louisiana, Mississippi, Alabama, Georgia, and Florida. In Cuba, the ivory-billed woodpecker occurred in lowland deciduous forests and montane pine forests.

In Florida, the ivory-billed woodpecker occurred throughout the Florida peninsula and the Florida panhandle east of the Appalachicola River. In peninsular Florida, the ivory-billed woodpecker occurred in portions of the Upper St. John's River, Kissimmee River, Peace River, Caloosahatchee River, and Big Cypress drainages. Highlands Hammock State Park is identified several times in the literature as having ivory-billed woodpeckers present in the 1960s and 1970s (Robertson and Woolfenden 1992, Jackson 1996).

Habitat

The habitat of ivory-billed woodpeckers has been described as mature (old-growth), forested wetlands (Tanner 1942). However, Jackson (1996) argued that the ivory-billed woodpecker may have retreated to the swamps as mature, upland forests were destroyed. As evidence, he noted that in Cuba, ivory-billed woodpeckers retreated to montane pine forests as mature, low-elevation forests were destroyed.

Nevertheless, Tanner's (1942) studies provide the most extensive information on the habitats used by the remnant populations of ivory-billed woodpecker in the U.S. In Florida, the ivory-billed woodpecker occurred in or adjacent to swamps and hardwood hammocks. In Florida, bald cypress (*Taxodium distichum*) dominated all of these habitats, but black gum (*Nyssa sylvatica*), red maple (*Acer rubrum*), red bay (*Persea borbonia*), sweet bay (*Magnolia virginiana*), laurel oak (*Quercus laurifolia*), American elm (*Ulmus americana*), and palmetto (*Sabal palmetto*) were associated species. Jackson (1996) and Tanner (1942) included longleaf (*Pinus palustris*) and slash pines (*P. elliotii*) to the list of ivory-billed woodpecker habitat. In addition to ivory-billed woodpeckers nesting in the pines, information indicates that the woodpeckers regularly fed on beetles from recently-dead pines (Jackson 1996).

Ivory-billed woodpeckers require large tracts of undisturbed, mature forest. They need mature trees to excavate their cavities and a continuous supply of large, dead trees to provide the wood-boring beetles that form their primary food source.

Behavior

The most comprehensive information on the distribution, biology, ecology, and behavior of the ivory-billed woodpecker is derived from the 1937-1939 study conducted by Tanner (1942). Additional, anecdotal information is presented in

Howell (1932) and Sprunt (1954). Most of the information in the following treatment comes from Tanner's study.

Foraging

Ivory-billed woodpeckers feed mostly on wood-boring larvae burrowed between the bark and sapwood of dead trees; but fruits, nuts, and seeds were occasionally eaten. Most of these foraging trees were recently dead, so recently that the bark is still tight against the tree and light branches have not fallen. They feed on those portions of the trees that supported shallow-wood borers and moved from tree branches to tree trunks as borers attacked the dead tree. They feed primarily on the larger trees of a forest; 87 percent of the trees they forage have diameters greater than 30 centimeters (Tanner 1942).

Ivory-billed woodpeckers scaled the bark of these trees loose with blows from their bills. When they dig into a tree, they chisel into the sap wood and heartwood like other woodpeckers. Most of the preferred larvae are larval Coleoptera—Scolytids, Buprestids, and Cerambycids—which are the first species to attack a tree or tree-limb after the tree dies (Tanner 1942).

Reproduction

Ivory-billed woodpeckers are not social birds. They do not travel in flocks, although they remain as a family group between breeding seasons. The basic social organization of the ivory-billed woodpecker is the breeding pair, which is a strong, apparently monogamous, life-long pair-bond. The mated pair probably requires extensive stands of mature, lowland hardwood forest without disturbance from forestry practices. An area of 6.5 to 8 km² has been estimated to be the minimum size for a home range for these birds. Ivory-billed woodpecker pairs travel together, following each other through the forest. If they are separated, they will call to one another; if the separation continues both birds will become nervous until they reunite.

Ivory-billed woodpeckers usually nest at a distance from one another, although Tanner (1942) did not find them defending particular territories. Nevertheless, Tanner found several pairs of ivory-billed woodpeckers that used the same nesting area repeatedly; one pair used the same nesting area for 5 consecutive years, another pair used the same nesting area for 4 consecutive years.

Ivory-billed woodpeckers initiate courtship at different times throughout their range. In Florida, they begin courtship in December and nest-building in late January. Generally, the breeding season extends from January to May. In Florida, ivory-billed woodpeckers built their nest cavities in living or dead bald cypresses. Elsewhere in their range, in the Mississippi River Delta for example, ivory-billed woodpeckers nest exclusively in hardwood trees. Occasionally, they nest in dead pines, bay, and cabbage palms. In Florida, ivory-billed woodpeckers excavate their nest cavities about 15 m from the ground; the lowest was 8 m, the highest was 20 m. The cavities ivory-billed woodpeckers excavate range between 50 and 70 cm in depth in dead or partially dead trees.

Ivory-billed woodpeckers lay between one and four eggs, with an average of 2.9 eggs. The incubation period is uncertain, although Tanner (1942) believed they required about 20 days. Incubation, brooding, and feeding requirements are handled by both parents, with the males incubating or brooding at night.

Fledgling birds probably stay in the nest for five weeks, during which they are fed regularly by both parents. Male ivory-billed woodpeckers brood the young overnight and do most of the brooding during the daytime. Male ivory-billed woodpeckers also clean the nest. After they fledge, young birds are fed by their parents for 2 months or more. Sometimes, these birds will stay with their parents through their first summer and may remain with them until the following nesting season.

Relationship to Other Species

The mature forests that provide habitat for the ivory-billed woodpecker support a large variety of other species. Many of those species, like their forests habitats, have become extinct; these include the Carolina parakeet (*Conuropsis carolinensis*, extinct in 1918) and Passenger pigeon (*Ectopistes migratorius*, extinct in 1914). Others, like the Florida panther (*Puma* (= *Felis*) *concolor coryi*) survive as endangered species on the federal list of threatened and endangered species.

Status and Trends

Although they were once common in some geographic areas, ivory-billed woodpeckers began their decline toward extinction by the late 1800s (Jackson 1996, Tanner 1942). Ivory-billed woodpeckers were hunted for food and overhunting was responsible for the initial declines of this endangered bird. By the late 1880s, ornithologists raised concerns about the status and trends of the ivory-billed woodpecker (Howell 1932). The other major threat to this species was the destruction of mature (old growth) forests throughout the southeastern U.S. which continued until the 1920s.

Chapman (1907) wrote that the range of the ivory-billed woodpecker had contracted to encompass the states bordering the Gulf of Mexico and the lower Mississippi River valley; even within this range, he wrote that it was only locally distributed. By 1913, the ivory-billed woodpecker had been extirpated from Indiana, Missouri, North Carolina, South Carolina, and Texas (Hornaday 1913). The same report concluded that the ivory-billed woodpecker was threatened with extinction in Florida and Louisiana. By 1926, many thought the ivory-billed woodpecker was already extinct.

Tanner's studies between 1937 and 1939 demonstrated that the ivory-billed woodpecker still existed, but in only a fraction of its original range. By the time of Tanner's study, the ivory-billed woodpecker only survived in the Madison Parish region of Louisiana, the Santee Swamp of South Carolina, and the Suwanee River and Big Cypress regions of Florida. The last verified observation of an ivory-billed woodpecker in the United States was in 1969. Jackson (1996) conducted an extensive survey of potential refugia for the ivory-billed woodpecker between 1987 and 1992. He discounted most reports as pileated or red-headed woodpeckers (*Dryocopus pileatus* and *Melanerpes erythrocephalus*, respectively); however, a sighting in Jonathan Dickinson State Park in 1985 seemed authentic. Overall, though, his surveys found no evidence of ivory-billed woodpeckers in the U.S. If ivory-billed woodpeckers continue to exist in the U.S.,

Jackson believes Florida is one of the most likely areas they may be found.

The ivory-billed woodpecker may have survived in the lowland forests of Cuba (Jackson 1996). Most of the lowland, old-growth, deciduous forests in Cuba had been cleared by the beginning of the twentieth century, restricting the ivory-billed woodpecker to the pine forests in eastern Cuba. In 1948 and 1956, a population of ivory-billed woodpeckers remained in the Cuchillas de Moa mountain range.

A proposal to protect the most threatened area of Cuba, Bandolero, near the lumber and mining town of Moa was made. However, after the Cuban revolution in 1959, most foreign contacts were broken off and the status of *C. principalis* in Cuba became unclear, as well as the status of the Bandolero area.

The area was re-surveyed in 1985 (Lammertink 1995). The investigators did not observe woodpeckers, but they found fresh marks of a foraging ivory-billed woodpecker. Most of the forest that was surveyed in 1956 had been logged, except for portions of the Ojito de Agua region; a single ivory-billed woodpecker was seen in 1986 (Lammertink 1995). Three other ivory-billed woodpeckers were seen during the same year. The last, verified observation of an ivory-billed woodpecker in the region was in 1987. The region was re-surveyed in 1988 and 1991, but researchers did not observe ivory-billed woodpeckers or signs of them; worse, these surveys did not locate suitable habitat that could support ivory-billed woodpeckers.

All evidence leads to the conclusion that the ivory-billed woodpecker has been extirpated in the U.S. The failure of recent surveys in Cuba to locate either ivory-billed woodpeckers or suitable habitat strongly suggests that the ivory-billed woodpeckers has been extirpated there as well.

Management

For many years, surveys have been the only management action that has been taken for the ivory-billed woodpecker. These surveys have focused on determining if the ivory-billed woodpecker still exists. Between 1987 and 1989, Jackson (1996) surveyed potential habitats in the southeastern U.S. in the hope of locating ivory-billed woodpeckers, to no avail. Similarly, surveys in Cuba between 1985 and 1991 failed to locate ivory-billed woodpeckers or suitable habitat for them. Although large tracts of land in areas formerly occupied by ivory-billed woodpeckers have been placed in public ownership, Jackson (1996) feels the efforts to conserve this species may be “too little, too late.” All of the available evidence suggests that the ivory-billed woodpecker has been extirpated from North America and probably has been extirpated in Cuba. If the latter is true, the ivory-billed woodpecker is extinct.

Literature Cited

- Agey, H.N. and G.M. Heinzmann. 1971. The ivory-billed woodpecker found in central Florida. *Florida Naturalist* 44: 46-47, 64.
- American Ornithologists' Union. 1983. Checklist of North American birds. Sixth Edition. Allen Press; Lawrence, Kansas.
- Chapman, F.M. 1907. *Birds of eastern North America*. D. Appleton and Company; New York, New York.
- Ehrlich, P.R., D.S. Dobkin, and D. Wheye. 1992. *Birds in jeopardy*. Stanford University Press; Stanford, California.
- Hornaday, W.T. 1913. *Our vanishing wildlife*. The New York Zoological Society; New York, New York.
- Howell, A.H. 1932. *Florida bird life*. Coward-McCann, Inc.; New York, New York.
- Jackson, J.A. 1996. Ivory-billed woodpecker. Pages 103-112 in J.A. Rodgers, H.W. Kale, and H.T. Smith, eds. *Rare and endangered biota of Florida, Volume V: Birds*. University Press of Florida; Gainesville, Florida.
- Lammertink, M. 1995. No more hope for the ivory-billed woodpecker. *Cotinga* 3, February.
- Robertson, W.B. Jr. and G.E. Woolfenden. 1992. *Florida bird species: an annotated list*. Florida Ornithological Society Special Publication No. 6. Florida Ornithological Society; Gainesville, Florida.
- Short, L.L. 1982. *Woodpeckers of the world*. Delaware Museum of Natural History. Monogram series no. 4.
- Sprunt, A. Jr. 1954. *Florida bird life*. Coward-McCann, Inc. and the National Audubon Society; New York, New York.
- Stevenson, H.M. and B.H. Anderson. 1994. *The birdlife of Florida*. University Press of Florida; Gainesville, Florida.
- Tanner, J.T. 1942. *The ivory-billed woodpecker*. National Audubon Society Research Report No. 1. National Audubon Society; New York, New York.

Recovery for the Ivory-billed Woodpecker

Campephilus principalis

Recovery Objective: NOT AVAILABLE (no recovery plan for this species)

South Florida Contribution: CONDUCT SURVEYS

Recovery Criteria

The best scientific information available argues that the ivory-billed woodpecker no longer exists in South Florida. Unless new information demonstrates that ivory-billed woodpeckers persist in South Florida or that they could be re-introduced into South Florida, no recovery criteria will be developed or proposed.

Species-level Recovery Actions

- S1. Determine the distribution and status of the ivory-billed woodpecker in South Florida.**
 - S1.1. Conduct surveys** for the ivory-billed woodpecker after identifying potentially suitable habitat. Surveys should focus on the Big Cypress Drainage in Collier and Monroe counties to determine if sufficient area with large enough trees exists in the region.

