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Public Comments Processing
Attn: FWS–R4–ES–2022–0099, U.S. Fish and Wildlife Service
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Falls Church, VA 22041–3803

RE: Audubon Florida comments on the proposed rule to delist the Wood Stork

To Whom It May Concern:

Audubon Florida submits the following comments regarding US Fish and Wildlife Service's (USFWS) proposed rule to delist the Wood Stork (WOST) from protection under the Endangered Species Act. Audubon's science staff participate on the Recovery Team and conduct monitoring and research on this species, with data going back substantively to 1958 and anecdotally to the late 19th Century. Audubon's 13,450-acre Corkscrew Swamp Sanctuary was historically the largest nesting colony for this species in the United States, estimated to support up to one-third of the US population for this species until the 1980s and 1990s when colony size and success began to wane. Audubon Florida does not support the adoption of this proposed rule at this time for many specific reasons, based on our data and review of other agencies' data, including USFWS' information cited in the Federal Register notice for the proposed delisting rule.

Criteria for Delisting: There are five factors under the Endangered Species Act for listing species under Section 4:

(1) There is present or threatened destruction, modification, or curtailment of its habitat or range.
(2) There is over-utilization of the species for commercial, recreational, scientific, or educational purposes.
(3) There is disease or predation of the species.
(4) There is an inadequacy of existing regulatory mechanisms to protect the species.
(5) There are other natural or manmade factors affecting its continued existence.

When a species no longer meets the criteria for the above five factors, it may be delisted. All listing and delisting decisions are subject to the best available science and peer review standards. Audubon scientists have reviewed the data against these criteria and believe the first, fourth, and fifth criteria have not been met.

In assessing these listing criteria, and also Recovery Criteria from the Recovery Plan, against the species' current status, Audubon scientists have organized our Wood Stork recovery discussion

within the three principles of conservation biology of Representation, Resiliency, and Redundancy.

The specific recovery criteria for the Wood Stork include:

Recovery Criterion 1: An average of 10,000 nesting pairs (which constitutes 50 percent of the historical population) calculated over 5 years, beginning at the time of reclassification (2014).

Recovery Criterion 2: Annual regional productivity (in each of four breeding regions) greater than 1.5 chicks per nest per year, calculated over a 5-year average.

Recovery Criterion 3: As a subset of the 10,000 nesting pairs calculated over 5 years, a minimum of 2,500 successful nesting pairs must occur in the Everglades and Big Cypress systems, (*i.e.,* the South Breeding Region).

Audubon review of USFWS data presented in the draft rule proposal and 2021 Species Status Assessment reveal the species has not met Recovery Criteria Two and Three. Additionally, we detail below the reasons we are concerned the increased nesting and range expansion for this species may not be sustainable, raising doubts about the advisability of delisting Wood Storks from all Endangered Species Act protections and recovery tools.

REPRESENTATION: the ability to disperse and colonize new areas, track suitable habitat and climate, and ecological diversity.

- **South Breeding Region may currently be functioning as an ecological trap:** If we are counting on Everglades restoration to continue to draw/produce more WOST, we cannot overlook or discount the low nest success in the South Breeding Region, despite higher nest success in other parts of their range. Seasonal range fidelity (Picardi et al. 2020) and increased WOST nesting numbers in the South Breeding Region (Recovery Criterion 3) coupled with low productivity (Recovery Criterion 2) suggests the South Breeding Region, historically the core of this population, may have become an ecological trap (Hale & Swearer 2016). Productivity in the South Breeding Region, which can be increased with a shift to earlier nesting, is a primary measure of success of the Comprehensive Everglades Restoration Plan (CERP)/REstoration COordination, and VERification (RECOVER) must increase before species protections are removed to overcome this effect. Further, the Corkscrew-Big Cypress Area has always been far more important than the Southern Everglades and coastal areas in supporting this region's Wood Stork nesting. Therefore, earlier nesting than is currently occurring is critical to achieving the productivity necessary for true Wood Stork recovery (Kushlan and Frohring 1986).

- **USFWS' determination of recovery has overemphasized the value of WOST ability to successfully nest in urban areas of South Florida:** In most years, natural and Everglades marshes now provide *less* desirable foraging habitat for WOST than created/urban wetlands do (Evans, Klassen, Gawlik & Gottlieb 2023). Degraded foraging conditions in the Everglades is driving nesting in urban South Florida. When hydrologic conditions in natural wetlands are favorable, WOST reproduction is higher in natural wetlands than in urban environments (Evans & Gawlik 2020).

- **USFWS evaluation ignores the importance of nesting failures in the Western Everglades:** While the USFWS cites the value of the South Breeding Population of five existing nesting colonies throughout the Everglades, they do not account for the continuing lack of any replacement for the impaired Corkscrew colony. This colony produced 48-98% of the region's Wood Stork nests each decade from the 1960s to 1990s but abruptly began failing in most years, concurrent with hydrologic disruption in the mid-2000s. The most recent South Florida Water Management District Wading Bird Report (2021) demonstrated a continued trend of minimal nesting throughout the Western Everglades, a region that is critical to the recovery of the species throughout the Greater Everglades. This region's topography and its ability to support foraging early in the nesting season differentiates it from other Everglades regions which typically still have deep water early in the season.

RESILIENCY: genetic health, connectivity, habitat quantity/quality, demography, etc.

- **Newer coastal sites resulting from range expansion have uncertain futures in the face of sea level rise:** The risks to the Georgia and South Carolina colonies from climate change are not well understood and have not been well explored in the SSA. The tidal salt marshes that currently support foraging for Wood Storks nesting at these new colonies are a habitat particularly vulnerable to impacts from sea level rise (SLR). Predictions of the fate of East Coast tidal wetlands with SLR continue to emerge (e.g., Weston et al. 2023), while deleterious sea-level induced changes in salt marsh ecology are already being seen in this region (e.g., Crotty et al., 2020, Windom & Palmer 2022) in addition to Wood Storks' historic range (Dessu et al. 2018, 2021). Variation in salinity is well documented as a primary factor influencing the distribution of prey fish in estuarine systems (Dunson & Travis 1991, Lorenz 1999, Lorenz & Serafy 2006), and the potential threat SLR may pose to Wood Stork foraging must be better understood before these new colonies are relied upon to support the U.S. population.

- **Shift to private lands nesting makes colony sites more vulnerable to loss of regulatory protection:** Many of the newer Georgia colonies, and South Carolina to a lesser extent, lie on private property in regions that have already experienced some localized lowered water tables and other overdrainage effects. The SSA does not provide any analysis or breakdown of what percentage of occupied breeding and foraging habitat in storks' expanded range is privately owned or dependent on managed hydrology (pumps/gates vs. tides and seasonal rainfall). This is a significant vulnerability to the sustainability of the population that has not been explored.

- **Loss of regulatory nexus triggered by ESA listed status will eliminate consideration for Wood Storks not only in Clean Water Act 404 permitting, but also in state wetlands permitting. As a result, the USFWS cannot assume that the status quo of habitat availability will remain:** State and federal regulatory protections for wetlands in the Southeastern US have been demonstrated to slow but not halt the continuing loss of wetland acreages and functions (Dahl 2011). Recent regulatory erosions in protections for shallow, seasonal wetlands that are critical for early dry season foraging by Wood Storks

in Everglades watersheds could undermine the sustainability of all nesting colonies with core foraging areas in development-vulnerable private ownership. In many states, permit applications that would impact listed species are given additional consideration—and among these listed species, Wood Stork is one of the most easily documented (e.g. Florida's Environmental Resource Permitting Applicant's Handbook Vol. 1, Section 10.2.7, implementing Ch. 373, F.S.). Because this consideration is tied to listed status, the delisting of Wood Storks will not just mean the loss of direct ESA protection, but also the special consideration given to wood stork habitat in land use permitting.

- **Overdrainage has reached a tipping point in Southwest Florida, and foreshadows outlook for other Wood Stork breeding regions:** Hydrologic modeling at Corkscrew Swamp Sanctuary in 2021 revealed watershed scale overdrainage by flood control infrastructure, impacts from agricultural irrigation withdrawals, and public water supply withdrawals, reducing hydroperiods by as much as 40%. These changes affect the persistence of water beneath nesting colonies as well as the availability of favorable foraging habitat. Increasing population trends from the Florida Bureau of Economic and Business Research Center forecast almost 5 million more permanent residents in Florida by 2040, and over 12 million more by 2070 (BEBR Vol. 56, Bulletin 195, April 2023). Even if wetlands themselves are protected from conversion, this human population growth will drive flood control and groundwater withdrawals affecting the hydroperiods of remaining wetlands. The 2021 WOST Species Status Assessment (SSA) offers no accounting for the proportion of nesting sites or core foraging areas vulnerable to hydrologic impacts from land use changes or changes to impounded water management strategies.

- **Increasing evapotranspiration rates driven by climate change threaten to impact foraging conditions in South Florida freshwater wetlands:** As temperatures rise, evapotranspiration (ET) increases- the impacts of which are uncertain for South Florida Wood Storks and a factor that was not considered thoroughly in the WOST SSA. While steady dry season recession rates are an important factor driving Wood Stork success in the Everglades, unusually high recession rates dry wetlands more quickly and may eliminate water under nest trees and foraging patches too rapidly. Unusually high recession rates have already been seen in many parts of the Greater Everglades (e.g., South Florida Wading Bird Report 2019 and 2020), with the long-term impacts on Wood Stork nest success uncertain. Additionally, new modeling by the Coastal and Heartland National Estuary Partnership (CHNEP) predicts a significant decrease in wetland hydroperiod due to increased ET, impacts that would reduce prey available for foraging Wood Storks and make nest sites less appealing and more vulnerable to mammalian predators (Gabel et al. 2021).

- **The Spread of invasive Asian swamp eels in the Everglades is harming the available wading bird prey base in the Everglades:** The increase in Asian swamp eels (*Monopterus* spp.) in the Everglades is quite troubling for Wood Storks and further research is needed to quantify the current and potential future impact. Expansion of this invasive species is associated with a near collapse of key Wood Stork prey species in Taylor Slough (Pintar et al. 2023), and the eels have been detected in Shark River Slough,

western Broward County, and Lee County (EDDMapsS 2023, available at: https://www.eddmaps.org/distribution/viewmap.cfm?sub=12245).

- **Storks in their expanded range rely disproportionately on smaller colony sizes limited by habitat availability. Audubon monitoring suggests these smaller, frequently urban colonies are more vulnerable to abandonment resulting from disturbance or mammalian predation and limit Wood Stork capacity for 'boom' years:** Audubon's staffed monitoring of wading bird populations in the Greater Tampa Bay region dates to the 1950s and has documented the return to and expansion of storks in this region. The range expansion on which USFWS predicates its delisting evaluation isn't just a geographic expansion, but also a shift in the types of locations where storks are choosing to nest. In a departure from the large colonies in Wood Storks' historic Everglades range, many of these newer colonies are size limited by nesting and foraging habitat availability and are increasingly in more urban areas which makes them more vulnerable to breeding failure due to disturbance (Bouton et al. 2005, Ogden 1990), a threat inadequately contemplated in the SSA. Further, colonies in urban areas or within impoundments are limited for nesting sites, unable to provide the same capacity for 'boom' nesting years that Wood Storks have in extensive wetland systems like their native Everglades.

REDUNDANCY: number and distribution of populations/regions, cumulative risk of catastrophes.

- **USFWS overstates potential effects of CERP-driven Everglades Restoration to eventual recovery in South Florida breeding unit:** WOST biologists among Audubon and other agencies agree that species recovery in the South Breeding Population is not just dependent on the 68 components of the Comprehensive Everglades Restoration Plan (CERP) Yellow Book. In fact, it may be even more reliant upon improved foraging and nesting conditions in wetlands that lie outside the CERP footprint, with the consensus that the Western Everglades/Big Cypress region is critical. As a result, consideration for WOST in CERP implementation and evaluation alone will be insufficient to ensure recovery in this unit. Telemetry data demonstrate Wood Stork fall migration brings them to the Western Everglades/Big Cypress region during the critical early nest initiation months (Picardi et al. 2020), a time when the ridge-and-slough Everglades wetlands have too much water. Achieving the timing of historic early nesting depended on the Western Everglades whose short-hydroperiod wetlands provide late-fall foraging that allow Wood Storks to get into breeding condition. In order to meet early nesting targets and re-create historic patterns, there must be a greater focus on Western Everglades restoration beyond existing/planned CERP restoration projects. The USFWS SSA places too much stock in the potential for CERP alone to recover storks in the South Florida Breeding Population, and relies disproportionately on CERP as consolation for proposing the delisting of storks despite the ongoing failure of the population to recover in the Greater Everglades.

Conclusion

Audubon Florida does not agree that delisting criteria have been met to support USFWS' proposed rule to delist the Wood Stork from protection under the Endangered Species Act. It is premature, despite documented nesting gains in new regions of the species' range, because those new gains have potentially serious threats to their sustainability and because the South Florida Breeding Population—the historic core for this iconic species-- has not achieved the restoration and recovery criteria necessary for delisting. This is not to say such achievements will not happen, are not planned, or are being undertaken. However, it is premature to say they have been fully achieved, and the lack of any replacement for the Corkscrew colony in particular is indicative of a fundamental lack of sustainable full recovery throughout the Everglades.

Audubon will continue its efforts, in collaboration with USFWS and many other partners, to advance the recovery and restoration work essential to Wood Stork recovery in the wetlands of the greater Everglades and the southeastern United States. The likelihood of success in these efforts would be gravely harmed by the loss of the vital regulatory and recovery tools of the Endangered Species Act as well as the regulatory nexus it provides for land use regulations at the state level. We look forward to celebrating the achieved recovery alongside the USFWS when the science fully supports it but firmly believe that the USFWS' own recovery assessment has not satisfactorily demonstrated that storks have reached that milestone.

Sincerely,

Julie Wraithmell
Vice President and Executive Director
Audubon Florida

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