

Neches River National Wildlife Refuge
Upland Pine–Hardwood Forest Management
(Commercial Tree Harvesting)
Draft Compatibility Determination

Title

Draft Compatibility Determination for Commercial Tree Harvesting, Neches River National Wildlife Refuge (NWR, refuge)

Refuge Use Category

Agriculture, Aquaculture, and Silviculture

Refuge Use Type

Tree Harvesting (Commercial)

Refuge

Neches River NWR

Refuge Purposes and Establishing and Acquisition Authority

The Migratory Bird Conservation Act of 1929, as amended, the Fish and Wildlife Act of 1956, and the Emergency Wetlands Resources Act of 1986.

REFUGE PURPOSE(S):

- “... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds”—Migratory Bird Conservation Act of 1929 (16 U.S.C. 715d)
- “... for the development, advancement, management, conservation, and protection of fish and wildlife resources”—Fish and Wildlife Act of 1956 (16 U.S.C. 742 f 4)
- for “... the conservation of the wetlands of the Nation in order to maintain the public benefits they provide”—16 U.S.C. sec. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986)

The refuge was established to fulfill the above purposes by:

- Protecting, restoring, and maintaining the bottomland hardwood forest plant community,
- Protecting and enhancing habitat for migratory bird use, and
- Protecting and enhancing habitat to sustain healthy populations of native fish and wildlife species.

This will be accomplished through an ecosystem approach that protects the bottomland hardwood habitat resources and the diversity of wildlife therein.

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System, otherwise known as Refuge System, is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (Pub. L. 105-57; 111 Stat. 1252).

Description of Use

Is this an existing use?

No.

What is the use?

Commercial timber harvest includes the cutting and removing of trees by various techniques, for sale or commercial. It is one of many refuge habitat management activities essential to supporting the NWRS mission, refuge purposes and habitat objectives identified in refuge plans.

Neches River NWR was established for:

- Protecting, restoring, and maintaining the bottomland hardwood forest plant community,
- Protecting and enhancing habitat for migratory bird use, and
- Protecting and enhancing habitat to sustain healthy populations of native fish and wildlife species.

Neches River NWR only uses tree harvesting as a management activity. Revenue from the sale of forest products is a byproduct of the essential forest habitat management, a fiscally responsible tool for conservation for the American people. This habitat management activity requires a compatibility determination because it also meets the definition of “refuge management economic activity.” Most forest management actions do not result in revenue generation as they are conducted at a cost to the agency, and they do not require a compatibility determination. Activities will consist of assessing habitat conditions, developing management prescriptions, and then issuing a Special Use Permit (SUP) to conduct commercial timber harvest operations on the refuge to accomplish forest and wildlife habitat management objectives specified in the Interim Habitat and Species Plan for Forested Habitats (HSP, USFWS, 2026). The North Neches River National Wildlife Refuge Establishment Proposal, Environmental Assessment, Conceptual Management Plan (CMP) and Land Protection Plan (USFWS, 2005) identifies step down plans, including the HSP, to guide management actions on the refuge. Selective timber harvest activities will help achieve forest conditions and habitat guidelines established in the Red-cockaded Woodpecker (*Picoides borealis*) Recovery Plan (USFWS, 2003), Shortleaf Pine Restoration Plan (Anderson et al., 2016), Biological Priorities for Neches River NWR (USFWS, 2020) and Open Pine Landbird Plan West Gulf Coastal Plain/Ouachitas (LMVJV, 2011), West Gulf Coastal Plain and Ouachitas Forested Wetland Plan, Version 1.0 (LMVJV, 2017), and Desired Forest Conditions for Wildlife in Bottomland Forests (LMVJV, 2025).

Is the use a priority public use?

No

Where would the use be conducted?

This use may occur anywhere on the Refuge outside of passively managed areas when forests are outside biologically established desired conditions and tree harvesting (commercial) for refuge resources of concern is deemed a necessary option to move habitats toward desired conditions. Many areas of the Refuge were harvested and replanted with a high density of pine trees prior to acquisition. Reducing the densities of the trees in these areas with silvicultural tree thinnings is a standard wildlife management practice that promotes maturation of these stands into potential habitat for species requiring mature forests such as the threatened red-cockaded woodpecker. In addition, other forested areas can be manipulated toward desired forest conditions of other priority species following regional frameworks (LMVJV, 2011; LMVJV, 2017; LMVJV, 2025). Neches River NWR consist of approximately 10,500 acres of fee title ownership and has been divided into 14 compartments (Figure 2). Compartment evaluation will follow a 14-year cycle. Upon inventory completion, each stand will be evaluated through the prescription process. As land is acquired within (and possibly outside) the acquisition boundary, it will be assigned a compartment, evaluated and treated if outside of desired forest conditions. Currently 23 compartments have been designated within the acquisition boundary; although the refuge owns fee title acres in 14 compartments at present.

Adaptive management strategies will be used to actively manage mixed upland pine-hardwood forests and restore shortleaf pine-hardwood forest on approximately 90% of the refuge. Approximately 10% of the mixed upland pine-hardwood is passively managed due to inaccessibility for logging operations (no legal access through private property), steep elevation gains, SMZ's surrounding permanent water bodies and archaeological sensitive areas prohibiting active management activities. In the bottomland hardwood forest on the refuge, approximately 80% will be actively managed and 20% passively managed. Compartment acres are designated in the HSP Area Summary Table (Table 1, USFWS, 2026).

Commercial harvest operations will manipulate 2,860 acres of upland pine stands by treating one compartment per year (approximately 500-600 acres annually) of the 10,500 acres currently owned. Basal area would be usually reduced to 60 – 70 square feet per acre depending on stand objectives. This will allow the stands to be treated possibly twice over the life of the plan. Commercial harvest operations in bottomland hardwoods will occur in legally accessible stands with habitat parameters falling outside of DFC guidelines. Harvest operations in bottomland hardwood stands create one (1) to two (2) acres regeneration openings (removing all merchantable stems) where advanced oak regeneration or switch cane is present at a rate of one opening per ten (10) acres for each entry cycle, and to thin the overstory and midstory trees to attain the desired effects (overstory, midstory, understory, and ground cover percentages) specified in desired forest conditions. Hardwood bottoms with high elevation gain will be passively managed to minimize erosion control issues. Buffers will be implemented around refuge lakes, including Deadwater and Twin, to minimize siltation, erosion and snag removal.

When would the use be conducted?

Every species has unique habitat requirement and habitat is ephemeral. Because forests are dynamic, management is often required to restore and maintain desired habitat conditions for refuge resources of conservation concern as identified in the Neches River NWR HSP. Due to the dynamic nature of habitats, the specific locations and acreages are identified via habitat assessments used to develop Forest Management Prescriptions. These prescriptions receive comprehensive review and regional approval prior to any commercial tree harvesting activity. Prior to approval, the refuge will complete any necessary Endangered Species Act Section 7 intra-service consultation and cultural resource review per section 106 of the National Historic Preservation Act. Tree harvesting may occur daily throughout the year, but most harvest operations optimally occur between August 1-November 15. Disturbance should be minimized during the peak-breeding season for birds and for bats between March 1 and July 31. Thus, forest management that improves habitat may be under-taken between March 1 and July 31 when the alternative is undertaking no habitat improvement actions.

A refuge Special Use Permit (SUP) will identify specific temporal constraints and other appropriate conservation measures essential to meeting refuge objectives. Specific silvicultural techniques will be identified in the forest habitat management prescriptions developed and approved prior to implementation. Equipment varies by objective, site and condition and is typically identified in a bid prospectus and/or in the SUP. The Permittee is normally identified via competitive bid and implements habitat project per forest management prescription and SUP with oversight from refuge staff. Please refer to the HSP (USFWS, 2026) for additional specifics on desired habitat conditions and forest habitat assessments beyond details necessary for the refuge manager to make an informed decision on this compatibility determination.

How would the use be conducted?

Commercial timber harvest will be the preferred means of achieving habitat improvement. Logging equipment typically consists of skidders, feller bunchers, loaders, bulldozers, road graders, transport trucks and log trucks for hauling material. Compartments scheduled for entry that are cruised and determined not feasible to support a commercial harvest can be postponed until another entry. Existing roads will be used when feasible during commercial timber harvest operations; however, temporary roads will be used throughout the sale area and restored with vegetation (approved by the refuge) following harvest operations. When harvesting is complete, the refuge forester or designated refuge staff will inspect the site for compliance with all requirements of the contract. If full compliance is achieved, the Permittee's performance deposit will be returned in full, otherwise damages will be deducted from the performance deposit and the remaining amount returned.

The HSP (USFWS, 2026) includes specific information that is not mentioned in this CD but should be considered an integral part of this CD. Forest management prescriptions will be prepared at the refuge and undergo a review and approval process. Before a silviculture prescription is implemented on the refuge, several issues need to be addressed. An Intra-service Section 7 form, Clean Water Act Section 404 silvicultural exemption concurrence through the U.S. Army Corps of Engineers and archaeological clearance all need to be obtained, completed and approved before any activities are implemented. Concurrence is obtained from the Arlington Ecological Services Field Office before

harvest activities commence.

Why is this use being proposed or reevaluated?

Commercial tree harvesting is being proposed as a management tool to manage forests and improve habitat conditions on this Refuge for its' biological priority wildlife species (USFWS, 2020) as prescribed in Service policy (603 FW 2.11 H, USFWS, 2000). Centuries of anthropogenic impacts have significantly altered forest structure, composition, and function such that active management is essential to restore and maintain desired habitat conditions.

Late successional stage pine savannahs throughout the south provide a habitat for a suite of regionally declining, early successional and disturbance-associated bird species that respond positively to management practices that open the structure in shortleaf pine forests. These priority species include red-headed woodpecker (*Melanerpes erythrocephalus*), red-cockaded woodpecker, brown-headed nuthatch (*Sitta pusilla*), prairie warbler (*Derulroica discolor*), pine warbler (*Setophaga pinus*) and wild turkey (*Meleagris gallopavo*) (USFWS, 2020).

Restoring the open understory/mid-story in the upland forest will provide pine savannah habitat with patches of overstory hardwood trees through the landscape for diversity. With the use of prescribed fire and timber harvesting, the upland communities will transcend back to pine savannahs. While the exact acreage of shortleaf pine dominant forests at the time of European settlement and westward migration is difficult to estimate, available information suggests the historic acreage of shortleaf-dominated forests may have been between 70 and 80 million acres. Recent data estimate that only 6 million acres of shortleaf pine dominated forests exist today and that this acreage has declined by more than 50% since 1980. (McRee et al., 2016)

Most upland pine communities at Neches River NWR are mature and overstocked. This provides options for habitat manipulations to develop and maintain the pine forests in a pine savannah. When the basal area of a pine dominated stand exceeds 100 square feet to the acre, it becomes very susceptible to southern pine beetle attacks. Favoring shortleaf pine during silvicultural actions and implementing an aggressive prescribed fire program will promote the historic species diversity in the pine community. Removal of the hardwood understory and mid-story by both harvesting activities and fire management will promote fire dependent species in the ground cover.

Multiple disturbance-associated, priority bird species require a mosaic of mature bottomland hardwood forests with tiered canopy layers (USFWS, 2025). Silvicultural decisions will be based upon priority species and their habitat requirements as it relates to desired forest conditions outlined in the HSP (USFWS, 2026). Commercial timber harvest can increase the mid-story component and understory vegetation providing a more complex habitat type.

Hetzel and Leberg (2006) found that Swainson's (*Limnothlypis swainsonii*), Kentucky (*Geothlypis formosa*) and hooded warblers (*Setophaga citrina*) increased by 200% in bottomland hardwood forest where selective timber harvest had occurred. Swainson's, hooded, and Kentucky warblers require dense understory growth (Rich et al., 2004) that is often associated with treefall gaps (Pashley and Barrow, 1993) in forests with large block sizes (>5,200 acres) in a largely forested landscape (>60%) (LMVJV Forest Resource Conservation Working Group, 2007).

The matrix of recently treated areas with early successional habitat adjacent to untreated areas with later successional growth for high priority species increases species diversity by providing alternative habitat needs (Twedt and Somershoe, 2009). Staggering harvest amongst years and actively managing multiple forest stands will ensure a matrix of early successional habitats for species that rapidly exploit treated stands (e.g., yellow-breasted chat [*Icteria virens*], eastern wood-pewee [*Contopus virens*] and Kentucky warblers) as well as later successional growth for high-priority species such as Acadian flycatcher (*Empidonax virescens*), yellow-throated warbler (*Setophaga dominica*) and Swainson's warbler. Passively managed areas (including SMZ's, steep elevation and inaccessible logging areas) will provide additional late successional growth habitat

Although not priority species, popular game species such as white-tailed deer (*Odocoileus virginianus*) and American woodcock (*Scolopax minor*) respond well to active forest management. American woodcock prefer early successional habitat interspersed with hardwood forests lacking midstory and containing dense understory thickets (Dickson and Whiting, 2001).

Availability of Resources

Forest management is integral to successful habitat conservation programs and may be conducted by Service staff and/or professional contractors. Current staffing at Neches River NWR consists of a refuge manager and a maintenance worker which is currently vacant. One FTE forester position previously stationed at Caddo Lake NWR was transferred to Neches River NWR and is currently vacant. Until the vacant forester position is filled, silvicultural activities will be supervised by the Caddo Lake NWR administrative forester. Although the Neches River Comprehensive Conservation Plan has not been completed, it needs to include these positions to implement the HSP: a fire management officer, biologist, biological technician, equipment operator and a forestry technician. However, private contract foresters may be used for project implementation and oversight. Commercial timber harvests are primarily conducted by private contractors (loggers) identified via a competitive bid process and operating under refuge SUP. Project scope and scale may vary by location, resources of concern, current conditions, and desired future habitat conditions. Assuming the FWS fully uses existing authorities, the net fiscal impact to the refuge should be nil as the Refuge Revenue Sharing Regulation (16 USC 715S) authorizes the Service to offset all costs associated with refuge revenue generation and sharing activities. Additionally, costs may be incorporated into a timber sale prospectus and SUP, and these will be the responsibility of the SUP permittee. Refuge administrative and monitoring costs are accounted for in personnel salaries.

The analysis of cost for administering and managing each use will only include the incremental increase above general operational costs that we can show as being directly caused by the proposed use. Existing refuge resources are adequate to properly administer commercial tree harvesting in a way that will not materially interfere with or detract from fulfillment of the refuge purposes and the System mission.

One-time costs:

- There are no one-time costs associated with this use.

Annual/recurring expenses:

- Administration and Management – Neches River NWR currently has one full-time equivalent (FTE) refuge manager, one vacant FTE engineering equipment operator and one vacant FTE forester position. Management of the forest habitat to meet the objectives in the HSP will require additional staff and equipment from other refuges within the Little River NWR Complex. The administrative forester for the complex assists with all aspects of the administration and management of commercial timber operations including inventory, marking, bid solicitation and logging operation oversight. A total of 650 hours of refuge staff days cumulatively is needed to meet specified objectives identified in the HSP. Habitat objectives specified in the HSP cannot be met without using Service employees from within the complex or private contractors to accomplish habitat objectives.
- Monitoring – An FTE administrative forester spends 80 hours annually (\$3,700) monitoring timber harvest operations.
- Maintenance– All maintenance activities associated with commercial timber harvest, including road maintenance, will be carried out by the logger. While this will reduce the payment to the government for the value of the timber, no additional costs will be incurred by the refuge.

Offsetting Revenue:

Fair market value of standing timber is obtained through a competitive bidding process. Successful bidders are issued a SUP following full payment of timber sale bid amount. Receipts generated from the sale of forest products removed from the refuge are deposited into the Refuge Revenue Sharing Account. The funds collected annually from all refuges are distributed to the counties on a prorated basis (acreage of refuge land within each county and appraised value of this land) as an “in-lieu-taxes” payment as directed by the Refuge Revenue Sharing Act. Other revenue above amounts owed to counties is used to support forest management activities across the SE Region wildlife refuges.

Anticipated Impacts of the Use

Centuries of anthropogenic impacts have altered every major forested ecosystem in the southeast such that desired habitat conditions cannot be restored or maintained in the absence of active forest habitat management. The Service uses commercial tree harvest contracts that emulate natural processes and provide ecologically appropriate wildlife habitats. NEPA analyses and a decision document address the direct, indirect, short-term, long-term, and cumulative impacts associated with upland pine-hardwood forest management on Neches River NWR, as listed.

- 2026 Neches River NWR HSP /CatEx/EAS/ESA Section 7 (USFWS, 2026)

Because of the dynamic nature of ecosystems, the impacts of all habitat management, including all forest management, are variable and depend upon a huge range of factors including the complex interaction of biotics and abiotic factors unique to the site at the specific time of treatment and the silvics of the species on site. Consequently, it is impossible to identify exact short-term, long-term, or cumulative impact of any habitat practice. Many aspects and impacts of commercial tree harvests are very similar to other habitat practices not requiring compatibility determination. However, commercial tree harvest is different from many other silvicultural practices in that varying amounts of wood fiber are removed from the site, and this does yield different impacts. The impacts are summarized below.

Short-term impacts

1. Short term impacts are to be expected during commercial forest habitat management. The Neches River NWR HSP promotes ecological forestry concepts that focus treatment operations on what is being retained within the forest as opposed to traditional production harvest that is focused on what is being removed. As forest succession progresses, desired habitat conditions for a broad range of priority wildlife will occur. Careful forest prescription planning and implementation of appropriate conservation measures mitigates many short-term impacts. Many short-term impacts during and following timber harvest are positive for refuge resources. Sunlight is immediately introduced to the forest floor, stimulating herbaceous plant growth and tree regeneration. The avian community shifts towards species such as indigo buntings (*Passerina cyanea*) and yellow-breasted chats that prefer early successional habitat types. American woodcock prefer habitat with hardwood regeneration areas interspersed with stands of sawtimber-size trees (Dickson and Whiting, 2001). Forest management strategies that create more diverse forests, increase the availability of understory vegetation, and maintain consistent availability of early successional forest communities benefit breeding birds. Silvicultural prescriptions that include large canopy gaps benefit foraging bats by providing uninhibited foraging areas. Thinning of dense regrowth within these gaps to reduce small diameter stem growth (i.e., clutter) will increase bat access for foraging in forests below the canopy (Ketzler et al., 2018). Other potential impacts include a direct effect to harvested trees that are either killed, or for some species simply top killed with almost immediate resprouting from stump and/or root systems.
2. The density or volume of wood in America's forests have increased by nearly 50% in less than 70 years (Oswalt et al., 2019) and volumes continue to grow 2.5 times faster than removals. Increasingly dense forests have resulted in degraded habitat for many wildlife resources of concern and a forest management objective is often to reduce the amount of biomass to improve habitat. Post harvest forests are more open, creating conditions that favor increased groundcover and promotes an increase in diversity and retention of legacy promotes a more complex forest structure (Fedrowitz et al., 2014).
3. Soil disturbance will occur during commercial forestry operations. Scarification frequently stimulates germination of various grasses and forbs. Potential negative impacts including erosion, sedimentation and compaction are minimized by abiding by state Best Management Practice (BMP) guidelines (www.stateforesters.org/bmps/).

The extensive use and positive impacts of forestry BMPs is well documented (Schilling et al., 2021). Forest management prescriptions, timber bid prospectus and special use permits identify constraints on equipment, timing and techniques to minimize negative impacts.

4. Wildlife utilizing forest habitats may be temporarily displaced during commercial forestry operations and some individuals could be harmed as trees are removed.
5. Commercial forestry operations cause a temporary increase in noise disturbance, and in emissions from equipment and vehicles. This will not have a significant, long-term impact on the local habitat or priority wildlife populations.
6. Commercial forestry operations impact on the distribution of woody debris on the habitat. Some merchantable material is moved off site while some biomass (tops, small trees, etc.) will be redistributed on the site in the form of dead and down woody material. The removal of trees will have an impact on hazardous fuels from a fire planning perspective. Proper harvest management oversight will ensure that there is no excessive buildup of woody debris. Logging debris becomes an important component of dead wood habitat, and the retention of dead wood contributes to an important habitat component for many wildlife species.
7. Commercial forestry operations may temporarily impact public use of forested areas. Due to the danger associated with timber harvesting, public access may be restricted around harvest operations to ensure safety. Post-harvest ingress/egress may be impacted in specific locations due to residual woody material on site or resulting changes in forest structure. Finally, hauling of wood has potential to degrade refuge infrastructure but costs associated with restoring sites including road repairs can be offset from revenue generated via sale of forest products.
8. Aesthetics are often significantly impacted, especially in the short-term and particularly associated with haul roads, landings (log decks), skid trails and tree felling (Jones, 1993). Foresters integrate many avoidance and minimization measures to minimize impacts including closing temporary roads after harvest operations, removing all merchantable material from felled trees, cutting stumps as low as possible, and scattering slash across the stand rather than in large piles.

Potential negative short-term impacts exist with this use but are minimized through stipulations specified in the SUP including seasons, location of loader sets, and operations during dry ground conditions. This use could potentially remove cavity trees, but adherence to harvest stipulations and Desired Forest Conditions guidelines will ensure that a suitable number of cavity trees remain on the landscape.

Long-term impacts

Timber harvest activities are a long-term habitat management action with long-term impacts, many of them beneficial. Recognizing that all forest management on Neches River NWR is solely to enhance habitats for wildlife resources of concern, the most significant long-term impact is enhanced desired forest conditions and habitats for priority wildlife. Impacts vary significantly depending upon subsequent management or disturbance and often include a decrease in stand density, an increase in forest structure, an increase in forest composition and an increase in

groundcover. The ecological approach to forestry often used by the NWRS emulates the normal range of variation within healthy, fully functional forest ecosystems. Management generally moves simplified or degraded forest habitats towards more complex ecosystems typical of older growth forests (Bauhus et al., 2009).

- Desired forest conditions are identified in refuge planning documents (HMPs and Forest Management Prescriptions) and supported by scientific literature (e.g. Restoration, Management and Monitoring of Forest Resources in the Mississippi Alluvial Valley: Recommendations for Enhancing Wildlife Habitat (LMVJV, 2007/2025) and is based upon professional expertise. For the long-term, forests are moved closer to desired habitat conditions.
- Habitat management including commercial tree removal changes environmental conditions such that some species benefit more than other species. Twedt and Wilson (2016) identified bird responses to wildlife friendly forestry and concluded that habitat conditions markedly changed in treated stands over time, often reverting to pre-treatment state within 20 years.
- Because tree removal is an intentionally significant disturbance and is conducted using equipment that moves to many different sites, it may create conditions to favor introduction of invasive or noxious species. This risk is mitigated by including SUP conditions on cleaning equipment prior to contractors arriving on-site. Additionally, silviculture is often used in the management of invasive or noxious species to restore habitats (Muzika, RM 2017).
- Forest function has become highly degraded across the southeastern United States and forests are very dynamic. Forest management is not a one-time activity but rather is a long-term process and reaching conservation success, towards Refuge purpose and objectives, depends upon ongoing management.

Red cockaded woodpeckers use mature, open pine forest that have a relative hardwood free midstory. These pine trees are usually over 60 years old and 14 inches in diameter. Commercial timber harvest in conjunction with prescribed burning will improve habitat for RCW's; although the habitat may not be suitable for 30-40 years. The brown headed nuthatch is another priority species which commercial timber harvest will benefit in a shorter time frame than RCW's (~10 years). Prairie warblers need low shrubby vegetation for nesting and foraging; therefore populations can increase rapidly following a timber harvest. Wild turkey reproduction is closely tied to providing adequate nesting and brood habitat (Dickson, 1992). Increased sunlight through timber harvest and rotational prescribed burning can provide these necessary habitat types in proximity to one another.

As with any habitat enhancement, wildlife responses are variable and ephemeral. Passerine response to habitat modifications has been documented in numerous publications. Three species of concern (Swainson's warbler, hooded and Kentucky warblers) responded favorably to

selectively thinned timber harvests 12-18 years post-harvest versus untreated stands >30 years, while other species, such as Acadian flycatchers, red-eyed vireos, prothonotary warblers (*Protonotaria citrea*) and summer tanagers, that breed on the refuge declined temporarily in treated stands (Twedt & Somershoe, 2009; Heltzel & Leberg, 2006) then populations increased later. Prothonotary warblers are cavity nesters and timber harvest may temporarily remove cavity trees. DFC guidelines specify cavity retention to minimize negative impacts to this species.

Priority bat species identified on Neches River NWR include: Rafinesque's big-eared bat (*Corynorhinus rafinesquii*), southeastern myotis (*Myotis austroriparius*), and tricolored bat (*Perimyotis subflavus*) (USFWS, 2020). White Nose Syndrome has been the foremost stressor on northern long-eared and tricolored bats, and the current impact of habitat enhancement is considered "Low" because the severity of population-level declines is slight. (USFWS 2021, p. 43). Many studies of cavity roosting bats have concluded that retention and maintenance of potential roost trees, particularly snags, is important for bats (Campbell et al., 1996; Jung et al., 1999; Gooding & Langford, 2004, Silvis et al., 2016). The tricolored bat (TCB) is proposed for listing as proposed endangered. Documentation of this species has occurred during mobile acoustical bat surveys on the refuge during 2014 and 2015 (USFWS, 2015). Mitigation measures such as implementing buffers around known roost sites (150 feet radius) and snag retention (especially snags larger than 8 inches in diameter) will be utilized to minimize potential impacts. Rafinesque big-eared bat is known to use large, hollow trees on Neches River NWR for roosting and for brood/nursery chambers. Subject experts have visited the refuge to view existing habitat conditions and provided some minimal management recommendations. These recommendations included retention of all suitable den trees (>24" DBH with full length cavities - hollow trunks - throughout the entire forest) and retention of a significant old age class component (75 years old +) throughout the area for development of future den trees. Presence of adequate numbers of suitable den trees is viewed as a major limiting factor for this species, range wide. Refuge staff was encouraged to protect bald cypress, sycamore and blackgum along/in stream courses since these species in these site conditions tend to have the best chance of developing suitable cavities. Study proposals to examine on-site habitat utilization, population status and habitat requirements for this elusive and relatively unknown species were discussed and efforts made to procure needed funding. Consultation (formal or informal) with Ecological Services will occur prior to any timber harvest activities taking place on the refuge. Ketzler et al., 2018 concluded that management towards desired forest conditions is likely to maintain or increase bat activity as compared to unmanaged forests. While evaluating actively versus passively managed timber stands, Ketzler found little evidence that silvicultural activities proposed by the LMVJV for managing bottomland hardwood forests negatively impacted bat communities. Detection of acoustic recordings of bats was similar in stands silviculturally treated to enhance habitat for wildlife and reference stands, though the proportion of acoustic recordings was higher in treated stands for most bat species.

Monarch butterflies have been listed as proposed threatened and utilize herbaceous ground cover, particularly milkweeds, for foraging. This species does not winter on the refuge but may be present during the spring breeding period. Timber harvest could improve habitat for this species by creating earlier successional habitat including blooming nectar plants. The Louisiana

pigtoe mussel has been proposed threatened and critical habitat has been proposed on the refuge. The Texas heelsplitter and associated critical habitat has been proposed endangered on the refuge. The alligator snapping turtle has recently been proposed threatened and occurs on the refuge (Hardy, 1994). Inclusion of forestry BMP's mitigates risks to aquatic ecosystems including erosion, sedimentation and soil compaction which could impact these species.

The threatened plant *Geocarpon minimum* occurs in Compartment 16 on the refuge. *Geocarpon* can occur in sandstone glades and saline prairies/barrens. Neches River rose-mallow (*Hibiscus dasycalyx*) occurs at the edge of woodlands in intermittently inundated soils of marshy habitats like sloughs, oxbows, river terraces and sand bars (TPWD, 2021). This species has been documented on land within the refuge acquisition boundary, but not currently on the refuge (Stephens and Mueller, personal communication). Negligible impacts to these species will occur due to their presence in SMZ's and sandy glades where mature timber is not present.

Long-term impacts to habitat are expected to be beneficial. Switch cane or river cane (*Arundinaria gigantea*) is considered a rare and declining habitat type, and remaining examples are small and fragmented. This type is listed as a "critically endangered ecosystem," meaning that it has declined more than 98% from its original extent (Noss et al., 1995). Canebrake restoration is possible when cane is already present. At least partial sunlight is critical for development of cane thickets. Cane is somewhat shade tolerant and on a favorable site, it can grow into high-density patches in the forest gaps commonly left by uneven aged silviculture (LMVJV Forest Resource Conservation Working Group, 2007). Foresters implement 1-to-3-acre targeted patch cuts where existing cane is present during timber harvest operations.

Cumulative Impacts

Cumulative impacts may result from sequential actions on a given area, ecosystem or species. Significant cumulative impacts can result from individually minor but collectively important actions taking place over time. Spatial and temporal considerations may influence cumulative or indirect impacts. As example, deforestation around a refuge may influence wildlife response to forest management treatments within the refuge. Recolonization of improved habitats may be influenced by an off-site barrier such as an urban development.

- The diversity of seral stages across a landscape can be a consideration influencing cumulative impacts. Enhancements towards desired conditions at a landscape scale often have better wildlife response than stand level enhancements when the broader landscape remains in relatively poor condition for wildlife resources of concern.
- Prescription planning considers cumulative disturbance including tree removal from other actions on and off-refuge, and combined effects of other management actions (e.g. prescribed fire, mechanical or herbicide treatments, plantings) or natural events (wildfire, pest and disease) impact wildlife responses.
- Silviculture is the art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands to meet the diverse needs and values of

landowners and society on a sustainable basis. The ongoing interaction of the range of practices is ultimately what restores and maintains desired habitat conditions. For example, a single tree removal operation only provides a temporary impact. However, when sustained at appropriate frequency and intensity, forest management restores and maintains desired habitat conditions.

- The effects of additive tree mortality are taken into consideration as a cumulative impact when evaluating tree stocking and structure. Following a timber harvest operation there could be subsequent mortality, both direct or indirect, from modified wind dynamics, subsequent wildfires or prescribed burns, and from pests or diseases. Conversely, these same risks occur in the absence of tree harvests and may even be elevated as fuels are greater and higher stand density increase risks of pest outbreaks.

Public Review and Comment

This draft CD will be available for public review and comment for 15 days, from July 1st, 2026 to July 15th, 2026. The public will be made aware of this comment opportunity electronically on the refuge website: <https://www.fws.gov/refuge/neches-river>. Robust public outreach and coordination with Native American Tribes and other federal agencies, state agencies, and local governments was conducted during the development of the CMP and Land Protection Plan (USFWS, 2005) and HSP, which included upland pine-hardwood forest management (commercial tree harvest) (USFWS, 2026). A hard copy of this document will be posted at the Refuge Headquarters (262 W Highway 79 Jacksonville, TX 75766). Please let us know if you need the documents in an alternative format. Concerns expressed during the public comment period will be addressed in the final CD.

Determination

Is the use compatible?

Yes

Stipulations Necessary to Ensure Compatibility

Prior to implementation of a commercial tree harvest, a step-down forest management prescription will be developed that minimally identifies refuge resource of concern, describes current condition, describes desired future condition and identifies process and treatment(s) to move forest toward desired condition. Additionally, Section 106 (cultural resources) and Section 7 (ESA intra-service consultation) is completed before the prescription is approved for implementation. Finally, the refuge SUP identifies necessary stipulations to meet refuge objectives. Ensuring project implementation specifically supports refuge plans (e.g. CMP and Land Protection Plan, HSP, Forest Management Prescription) and includes appropriate conservation measures and BMPs to support refuge habitat objectives ensures compatibility.

Justification

This use is compatible with the establishing purposes of the refuge:

- The conservation and enhancement of migratory birds including neotropical migrants;

- The conservation of Ramsar wetlands and other wetlands at the refuge;
- The development, advancement, management, conservation and protection of all native fish and wildlife resources, including those listed as threatened and endangered.

This use benefits multiple wildlife species that require a mosaic of mature mixed upland pine-hardwood forests with tiered canopy layers of newer growth and result in a long term transition to a historic shortleaf pine-hardwood forest. Game species, including white-tailed deer and turkeys, respond positively to active forest management as well. Silvicultural treatments provided by commercial timber harvest modify habitat to benefit refuge resources and help achieve the desired forest conditions outlined in the HSP. These treatments can increase the mid-story component and understory vegetation providing a more complex habitat type. Due to the large-scale decline of late seral stage mixed pine-hardwood forest habitat, silvicultural manipulations on a localized level rapidly produce forest conditions that optimize habitat for refuge resources of concern. Long term conversion to shortleaf pine savannahs will benefit species requiring this unique and declining habitat type.

Based on available science and best professional judgement, the Service has determined that Tree Harvesting (commercial), as outlined in this compatibility determination, supports the NWRS mission and Neches River NWR purposes and habitat objectives. The Code of Federal Regulations states, "We may only authorize public or private economic use of the natural resources of any national wildlife refuge ... where we determine that the use contributes to the achievement of the national wildlife refuge purposes or the National Wildlife Refuge System mission" (50 CFR 29.1). It is anticipated habitat for priority resources of concern will increase from commercial tree harvest and other non-commercial forest habitat management and wildlife populations will positively respond to habitat enhancements.

The new use of commercial tree harvest on Neches River NWR is a compatible use based on sound professional judgment. At the current and proposed levels, upland pine-hardwood forest management does not conflict with the national policy to maintain the biological diversity, integrity, and environmental health of the refuge. In contrast, this use benefits the refuge's natural resources. Based on available science and best professional judgement, the Service has determined that upland pine-hardwood forest management on Neches River NWR as outlined in the refuge HSP, and in accordance with the stipulations provided here, will not materially interfere with or detract from the fulfillment of the Refuge System mission or the purposes of Neches River NWR.

This CD can be categorically excluded from further National Environmental Policy Act (NEPA) analysis under 40 CFR 1508.4 (definition of categorical exclusion) and 516 DM 8.5 B (7,9):

8.5 B(7) Minor changes in the amounts or types of public use on Service or State-managed lands, in accordance with existing regulations, management plans, and procedures.

8.5 B(9) Minor changes in existing master plans, comprehensive conservation plans, or operations, when no or minor effects are anticipated. Examples could include minor changes in the type and location of compatible public use activities and land management practices.

Further, this action does not trigger an extraordinary circumstance as outlined under

43CFR§46.215. This use is consistent with the HSP for Neches River NWR (USFWS, 2026). The environmental conditions and use have not changed substantially since the previous NEPA analysis.

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Figure 1. Neches River National Wildlife Refuge Boundary Map

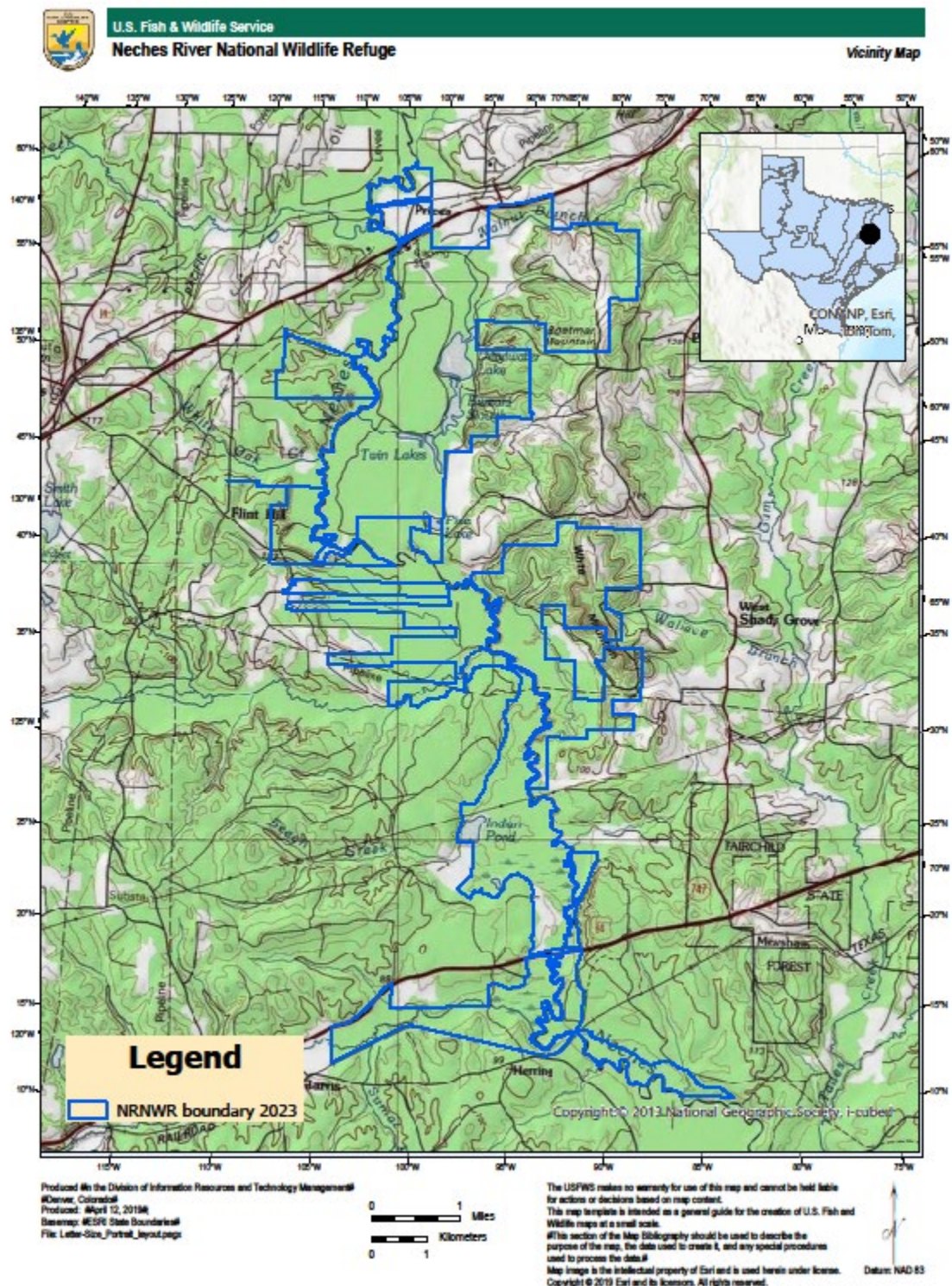
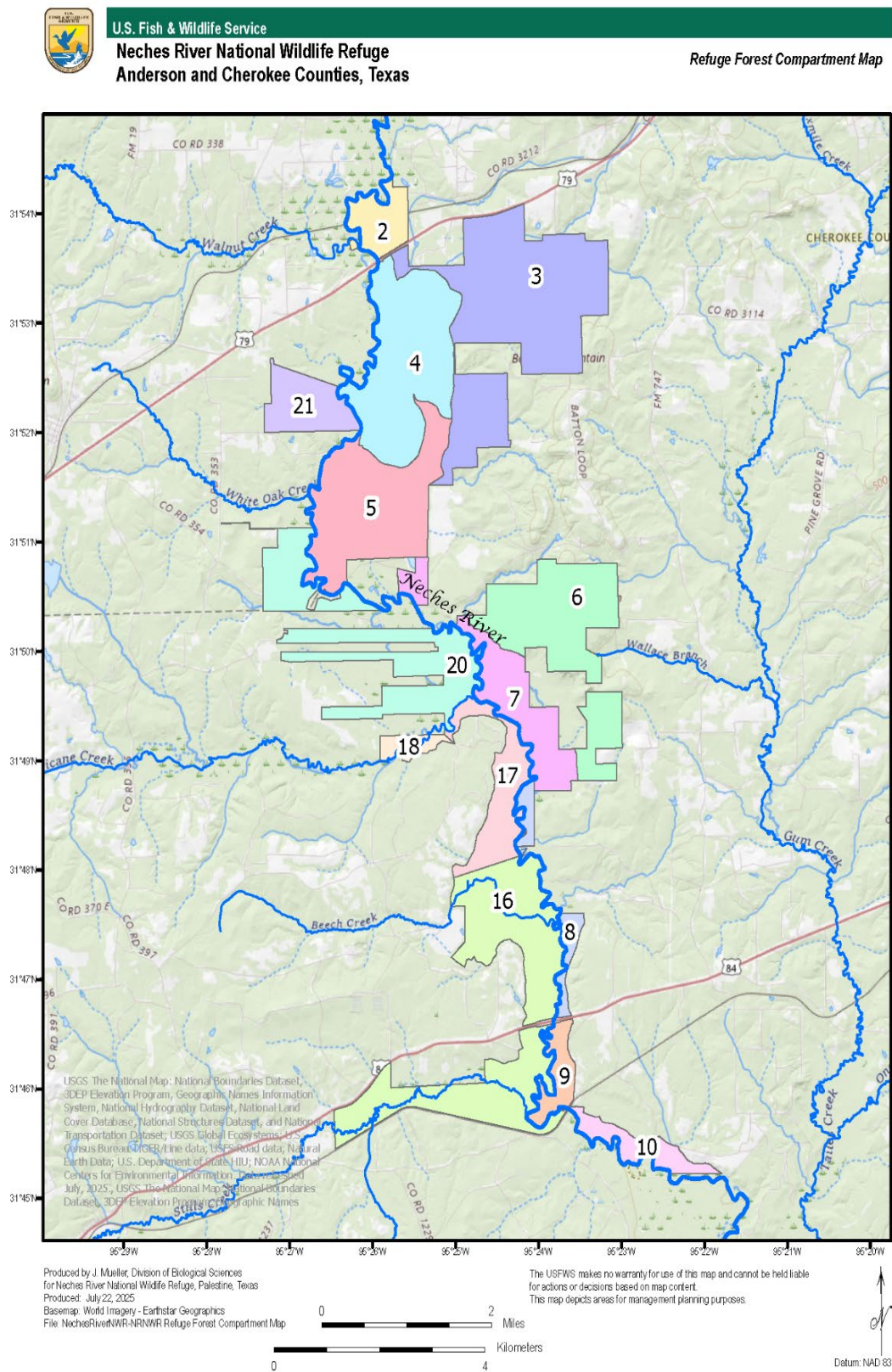


Figure 2. Neches River National Wildlife Refuge Compartment Map



Signature of Determination

Refuge Manager Signature and Date

Signature of Concurrence

Assistant Regional Director Signature and Date

Mandatory Reevaluation Date