DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R4–ES–2015–0014; FXES11130900000C2–167–FF09E32000]

RIN 1018–BA44

Endangered and Threatened Wildlife and Plants; Removal of the Louisiana Black Bear From the Federal List of Endangered and Threatened Wildlife and Removal of Similarity-of-Appearance Protections for the American Black Bear

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), are removing the Louisiana black bear (*Ursus americanus luteolus*) from the Federal List of Endangered and Threatened Wildlife (List). This action is based on a thorough review of the best available scientific and commercial information, which indicates that this subspecies has recovered and no longer meets the definition of an endangered or threatened species under the Endangered Species Act of 1973, as amended (Act). Our review of the status of this subspecies shows that the threats have been eliminated or reduced, adequate regulatory mechanisms exist, and populations are stable such that the species is not currently, and is not likely to again become, a threatened species within the foreseeable future in all or a significant portion of its range. This rule also removes from the List the American black bear, which is listed within the historical range of the Louisiana black bear due to similarity of appearance, and removes designated critical habitat for the

Louisiana black bear. Finally, this rule also announces the availability of a final post-delisting monitoring (PDM) plan for the Louisiana black bear.

DATES: This rule is effective on [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: This final rule and the post-delisting monitoring plan are available on the Internet at *http://www.regulations.gov* at Docket Number FWS–R4–ES–2015–0014. Comments and materials received, as well as supporting documentation used in the preparation of this rule, will be available for public inspection by appointment, during normal business hours, at the Service's Louisiana Ecological Services Field Office, 646 Cajundome Boulevard, Suite 400, Lafayette, LA 70506.

FOR FURTHER INFORMATION CONTACT: Brad Rieck, Acting Field Supervisor, U.S. Fish and Wildlife Service, Louisiana Ecological Services Field Office, 646 Cajundome Boulevard, Suite 400, Lafayette, LA 70506; telephone (337) 291–3100. Individuals who are hearing-impaired or speech-impaired may call the Federal Information Relay Service at (800) 877–8339 for TTY assistance 24 hours a day, 7 days a week.

SUPPLEMENTARY INFORMATION:

Executive Summary

This document contains: (1) A final rule to remove the Louisiana black bear from the Federal List of Endangered and Threatened Wildlife in part 17 of title 50 of the Code of Federal Regulations at 50 CFR 17.11(h) due to recovery, removal of regulatory provisions for the Louisiana black bear at 50 CFR 17.40(i), and removal of designated critical habitat for the Louisiana black bear at 50 CFR 17.95(a); (2) a final rule to remove

the similarity of appearance protections for the American black bear; and (3) a notice of availability of a final post-delisting monitoring plan.

Species addressed— The Louisiana black bear (*Ursus americanus luteolus*) is one of 16 subspecies of the American black bear (*Ursus americanus*). Historically, black bears were widely distributed in the forested areas of North America, including Mexico (Pelton 2003, p. 547). Today, the status and density of American black bears varies throughout their range with some areas having large populations and others with smaller populations and restricted numbers (Pelton 2003, p. 547). Hall (1981, pp. 948–951) recognized three black bear subspecies occurring in the southeastern United States; the Louisiana black bear historically occurred from eastern Texas, throughout Louisiana, and southwestern Mississippi (Hall 1981, pp. 950–951). The Louisiana black bear was listed as a threatened subspecies primarily because of the historical modification and reduction of habitat, the reduced quality of remaining habitat due to fragmentation, and the threat of future habitat conversion and human-related mortality (57 FR 588, January 7, 1992). To address one of those threats (human-related mortality), in the 1992 final rule we also listed the American black bear in § 17.11(h) due to similarity of appearance to the Louisiana black bear. At that time, the Louisiana black bear population consisted of three breeding subpopulations, the Tensas River, Upper Atchafalaya River, and Lower Atchafalaya River Basins (TRB, UARB, and LARB, respectively (see Figure 1 in the supporting documents section, in Docket Number FWS–R4–ES–2015–0014 at *http://www.regulations.gov*) in Louisiana. An indirect result of habitat fragmentation was isolation of the already small bear populations, subjecting them to threats from such factors as demographic stochasticity and inbreeding. Key demographic attributes (e.g.,

survival, fecundity, population growth rates, home ranges) for the Louisiana black bear were not known at the time of listing.

The Louisiana black bear population now consists of four main subpopulations in Louisiana and several additional satellite subpopulations in Louisiana and Mississippi. Research has documented that the four main Louisiana subpopulations (TRB, Three Rivers Complex (TRC), UARB, and LARB (see Figure 1, *http://www.regulations.gov* at Docket Number FWS–R4–ES–2015–0014) are stable or increasing (Hooker 2010, O'Connell 2013, Troxler 2013, Laufenberg and Clark 2014, entire documents respectively). Furthermore, results of our analyses indicate that sufficient restoration and protection of habitat supporting breeding subpopulations is in place and is expected to continue to expand in the future, and movement of individuals between those subpopulations has been achieved.

A large proportion of habitat (an increase of over 430 percent since the time of listing) that supports breeding subpopulations and interconnects those subpopulations has been protected and restored through management on publicly owned lands, or through private landowner restoration efforts with permanent non-developmental easements. The threat of significant habitat loss and conversion that was present at listing has been significantly reduced and in many cases reversed. These habitat restoration and protection activities are expected to continue due to their value to many other species. Since the listing of the Louisiana black bear in 1992, voluntary landowner-incentive-based habitat restoration programs and environmental regulations have not only stopped the net loss of forested lands in the Lower Mississippi River Alluvial Valley (LMRAV; a subset of the Lower Mississippi River Valley limited to Louisiana and Mississippi only),

but have also resulted in significant habitat gains within both the LMRAV and the Louisiana black bear habitat restoration planning area (HRPA) in Louisiana. A substantial portion of those restored habitats are protected with perpetual non-development easements (through the Natural Resources Conservation Service's [NRCS]' Wetland Reserve Program [WRP]) (see the Factor D evaluation). Public management areas such as National Wildlife Refuges (NWRs), Wildlife Management Areas (WMAs), and Corps of Engineers (Corps) lands supporting Louisiana black bear subpopulations are also protected and managed in a way that benefits the Louisiana black bear. Remnant and restored forested wetlands are provided protection through applicable conservation regulations (e.g., section 404 of the Clean Water Act of 1972 [CWA]).

Taking into consideration the current long-term viability of the Louisiana black bear metapopulation (TRB, TRC, and UARB), the protection of suitable habitat, and the lack of significant threats to the Louisiana black bear or its habitat, our conclusion is that this subspecies no longer meets the definition of a threatened species under the Act.

Purpose of the Regulatory Action—In 2015, we proposed to remove the Louisiana black bear from the Federal List of Endangered and Threatened Wildlife (80 FR 29394, May 21, 2015), based on recovery criteria in the recovery plan and the five-factor threats analysis required under section 4(a) of the Act. Threats to this subspecies have been largely ameliorated or reduced; therefore, the purpose of this action is to remove the Louisiana black bear and the American black bear, which is listed within the historical range of the Louisiana black bear due to only similarity of appearance, from the Federal List of Endangered and Threatened Wildlife. This rule also removes the critical habitat designation for the Louisiana black bear throughout its range.

Basis for the Regulatory Action—Under the Act, we may determine that a species is an endangered or threatened species based on any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We must consider the same factors in delisting a species. Further, we may delist a species (or subspecies) if the best scientific and commercial data indicate the species is neither endangered nor threatened for one or more of the following reasons: (1) The species is extinct; (2) the species has recovered and is no longer threatened or endangered; or (3) the original scientific data used at the time the species was classified were in error.

We reviewed all available scientific and commercial information pertaining to the five threat factors for the Louisiana black bear, and the results are summarized below.

- We consider the Louisiana black bear to be ‘‘recovered’’ because all substantial threats to this subspecies have been eliminated or reduced and adequate regulatory mechanisms exist.
- The subspecies is now viable over the next 100 years with sufficient protected habitat to support breeding and movement of individuals between subpopulations so that the subspecies is not currently, and is not likely to again become, a threatened species within the foreseeable future in all or a significant portion of its range.

Previous Federal Actions

Please refer to the proposed rule to remove the Louisiana black bear from the Federal List of Endangered and Threatened Wildlife (80 FR 29394, May 21, 2015) for a detailed description of previous Federal actions concerning this species.

Background

It is our intent to discuss in this final rule only those topics directly relevant to the removal of the Louisiana black bear from the Federal List of Endangered and Threatened Wildlife. A list of acronyms used in this rule may be found at *http://www.regulations.gov* at Docket Number FWS–R4–ES–2015–0014 under the Supporting Documents.

Species Information

The following section contains information updated from that presented in the proposed rule to remove Louisiana black bear from the Federal List of Endangered and Threatened Wildlife, which published in the **Federal Register** on May 21, 2015 (80 FR 29394).

Species Description and Life History— The Louisiana black bear is a large, bulky mammal with long, coarse black hair and a short, well-haired tail. The facial profile is blunt, the eyes small, and the nose pad broad with large nostrils. The muzzle is yellowish brown with a white patch sometimes present on the lower throat and chest. Black bear color varies between black, blonde, cinnamon, and brown; but in Louisiana, bears have only been documented as black (Davidson et al. 2015, p. 8). Louisiana black bears are not readily visually distinguishable from other black bear subspecies. Black bears have five toes with short, curved claws on the front and hind feet. The median estimated weight for male and female Louisiana black bears in north Louisiana is 292 lb (133 kg)

and 147 lb (67 kg), respectively (Weaver 1999, p. 26). These figures are similar to those reported for black bears throughout their range by Pelton (2003, p. 547).

Average age at first reproduction varies widely across black bear studies; however, most reports state that bears first reproduce between 3 and 5 years of age (Weaver et al. 1990a, p. 5). Weaver (1999, p. 28) reported that all adult females (greater than or equal to 4 years old) in the TRB subpopulation had evidence of previous lactation or were with cubs; however, reproduction may occur as early as 2 years of age for black bears in high-quality habitat and in poor or marginal habitat, reproduction may not occur until 7 years of age (Rogers 1987, pp. 51–52). Breeding occurs in summer and the gestation period for black bears is 7 to 8 months. Delayed implantation occurs in the black bear (blastocysts float free in the uterus and do not implant until late November or early December) (Pelton 2003, p. 547). Observations of Louisiana black bears indicate that they enter dens primarily from late November to early December and emerge in March and April (Weaver 1999, p. 125, Table 4.4). Adult Louisiana black bears generally den longer than subadults, and females longer than males (Weaver 1999, p. 123). Cubs are born in winter dens at the end of January or the beginning of February (Pelton 2003, p. 548). The normal litter sizes range from one to four cubs (Laufenberg and Clark 2014, p. 35), and occasionally litters of five have been documented (Davidson et al. 2015, p. 11). Cubs are altricial (helpless) at birth (Weaver et al. 1990a, p. 5; Pelton 2003, p. 547) and generally exit the den site with the female in April or May. Young bears stay with the female through summer and fall, and den with her the next winter (Pelton 2003, p. 548). The young disperse in their second spring or summer, prior to the female's becoming physiologically capable of reproducing again (Pelton 2003, p. 548).

Adult females normally breed every other year (Pelton 2003, p. 548). Not all females produce cubs every other winter; reproduction is related to physiological condition (i.e., female bears that do not reach an optimal weight or fat level may not reproduce in a given year) (Rogers 1987, p. 51). If a female's litter is lost prior to late summer, she may breed again, producing cubs in consecutive years (Young 2006, p. 16). An important factor affecting black bear populations appears to be variation in food supply and its effect on physiological status and reproduction (Rogers 1987, pp. 436–437). Nutrition may have an impact on the age of reproductive maturity and subsequent female fecundity (Pelton 2003, p. 547). Black bear cub survival and development are closely associated with the physical condition of the mother (Rogers 1987, p. 434). Cub mortality rates and female infertility are typically greater in years of poor mast (mast includes food sources such as acorns and pecans) production or failure (Rogers 1987, p. 53; Eiler et al. 1989, p. 357; Elowe and Dodge 1989, p. 964). Litter size may be affected by food availability prior to denning (Rogers 1987, p. 53).

Bear activity revolves primarily around the search for food, water, cover, and mates during the breeding season. Though classified as a carnivore by taxonomists, black bears are not active predators and prey on vertebrates only when the opportunity arises; most vertebrates are consumed as carrion (Pelton 2003, p. 551). Bears are best described as opportunistic feeders, as they eat almost anything that is available; thus, they are typically omnivorous. Their diet varies seasonally, and includes primarily succulent vegetation during spring, fruits and grains in summer and hard mast during fall. Bears utilize all levels of forest for feeding; they can gather foods from tree tops and vines, but also collect beetles and grubs in fallen logs and rotting wood.

Habitats used by the Louisiana black bear—Like other black bears, the Louisiana black bear is a habitat generalist. Large tracts of bottomland hardwood (BLH) forest communities having high species and age class diversity can provide for the black bear's life requisites (e.g., escape cover, denning sites, and hard and soft mast supplies) without intensive management (Pelton 2003, pp. 549–550). We use the term BLH forest community with no particular inference to hydrologic influence, but to mean forests within southeastern United States floodplains, which can consist of a number of woody species occupying positions of dominance and co-dominance (Black Bear Conservation Coalition [Committee] (BBCC) 1997, p. 15). Other habitat types may be used by Louisiana black bears including marsh, upland forested areas, forested spoil areas along bayous, brackish and freshwater marsh, salt domes, and agricultural fields (Nyland 1995, p. 48; Weaver 1999, p. 157). Bears have the ability to climb large-cavity trees (especially bald cypress (*Taxodium distichum*) or water tupelo gum (*Nyssa aquatic*)), that are commonly found along water courses and are important for denning; however, Louisiana black bears have been observed to use a variety of den types, including ground nests, cavities at the base and in the top of hollow trees, and brush piles (Crook and Chamberlain 2010, p. 1645).

Den trees may be an important component for female reproductive success in areas subject to flooding (Hellgren and Vaughan 1989, p. 352). Den trees located in cypress swamps would also appear to increase the security (e.g., decrease the susceptibility to disturbance) of bears utilizing these dens compared to ground dens; however, the availability of den trees does not appear to be a limiting factor in reproductive success as bears demonstrate flexibility in den use (Weaver and Pelton

1994, p. 431; Crook and Chamberlain 2010, p. 1644). For instance, bears typically excavate open ground/brushpile nests, or shallow depressions that are either bare or are lined with vegetation found in the vicinity of the nest (Weaver and Pelton 1994, p. 430). These nests are located in thick vegetation, usually in areas logged within the past 1 to 5 years (Crook and Chamberlain 2010, p. 1643) and are typically found within felled tops and other logging slash (Crook and Chamberlain 2010, p. 1646).

Home range and dispersal—The size of the area necessary to support black bears may differ depending on population density, habitat quality, conservation goals, and assumptions regarding minimum viable populations (Rudis and Tansey 1995, p. 172, Pelton 2003, p. 549). Maintaining and enhancing key habitat patches within breeding habitat is a critical conservation strategy for black bears (Hellgren and Vaughan 1994, p. 276). Areas should be large enough to maintain female survival rates above the minimum rate necessary to sustain a population (Hellgren and Vaughan 1994, p. 280). Weaver (1999, pp. 105–106) documented that bear home ranges and movements were centered in forested habitat and noted that actions to conserve, enhance, and restore that habitat would promote population recovery, although no recommendations on minimum requirements were provided. Hellgren and Vaughn (1994, p. 283) concluded that large, contiguous forests are a critical conservation need for black bears. The home ranges of Louisiana black bears appear to be closely linked to forest cover (Marchinton 1995, p. 48, Anderson 1997, p. 35).

Female range size may be partly determined by habitat quality (Amstrup and Beecham 1976, p. 345), while male home range size may be determined by the distribution of females (i.e., to allow for a male's efficient monitoring of a maximum

number of females) (Rogers 1987, p. 19). Male black bears commonly disperse, and adult male bears can be wide-ranging with home ranges generally three to eight times larger than those of adult females (Pelton 2003, p. 549) and that may encompass several female home ranges (Rogers 1987, p. 19). Dispersal by female black bears is uncommon and typically involves short distances (Rogers 1987, p. 43). In their studies of dispersal, Laufenberg and Clark (2014, p. 85) found no evidence of natural female dispersion in Louisiana black bears. Females without cubs generally had larger home ranges than females with newborn cubs (Benson 2005, p. 46), although this difference was observed to vary seasonally, with movements more restricted in the spring (Weaver 1999, p. 99). Following separation of the mother and yearling offspring, young female black bears commonly establish a home range partially within or adjacent to their mother's home range (Rogers 1987, p. 39). Young males, however, generally disperse from their maternal home range. Limited information suggests that subadult males may disperse up to 136 miles (219 kilometers) (Rogers 1987, p. 44).

Home range estimates, calculated as the minimum convex polygon (MCP), vary for the Louisiana black bear. The MCP is a way to represent animal movement data and is calculated as the smallest (convex) polygon that contains all the points a group of animals has visited. Mean MCP home range estimates for the Tensas River NWR subpopulation were 35,736 ac (14,462 ha) and 5,550 ac (2,426 ha) for males and females, respectively (Weaver 1999, p. 70). Male home ranges (MCP) in the UARB population may be as high as 80,000 ac (32,375 ha), while female home ranges are approximately 8,000 ac (3,237 ha) (Wagner 1995, p. 12). LARB population home ranges (MCP) were

estimated to be 10,477 ac (4,200 ha) for males, and 3,781 ac (1,530 ha) for females (Wagner 1995, p. 12).

Abundance and Distribution— Historically, the Louisiana black bear was believed to be common or numerous in BLH forests such as the Big Thicket area of Texas, the TRB, UARB, LARB, and LMRAV in Louisiana, and the Yazoo River Basin in Mississippi (St. Amant 1959, p. 32; Nowak 1986, p. 4). Exploitation of Louisiana black bears due to hunting and large-scale destruction of forests from the 1700s to the early 1800s resulted in low numbers of bears that were confined to the BLH forests of Madison and Tensas Parishes and the LARB BLH forests in Louisiana (St. Amant 1959, pp. 32, 44); black bears in Mississippi were similarly affected (Shropshire 1996, pp. 25–33). At the time of listing, additional extensive land clearing, mainly for agricultural purposes, had further reduced its habitat by more than 80 percent (Gosselink et al. 1990, p. 592), and the remaining habitat quality had been degraded by fragmentation. That fragmentation caused isolation of the already small subpopulations, subjecting them to threats from such factors as demographic stochasticity and inbreeding. Known breeding subpopulations occurred in fragmented BLH forest communities of the TRB, LARB, and UARB of Louisiana (Weaver et al. 1990a, p. 2; Service 1992, p. 2) (Figure 1, *http://www.regulations.gov* at Docket Number FWS–R4–ES–2015–0014), and were believed to be demographically isolated (BBCC 1997, p. 10). No reliable estimates of population numbers were available at the time of listing, but only 80 to 120 Louisiana black bears were estimated to remain in Louisiana in the 1950s (Nowak 1986, p. 4). Bears had occasionally been reported in Louisiana outside of these areas, but it was

unknown if those bears were reproducing females or only wandering subadult and adult males (Service 1992, p. 2).

Black bears were also known to exist in Mississippi along the Mississippi River and smaller areas in the Lower East Pearl River and Lower Pascagoula River Basins of southern Mississippi (Weaver et al. 1990a, p. 2). Fewer than 25 bears were estimated to reside in Mississippi at the time of listing (Shropshire 1996, p. 35 citing Jones 1984). The last known Mississippi breeding subpopulation occurred in Issaquena County in 1976 (Shropshire 1996, p. 38 citing Jones 1984). Similarly, black bears were exterminated from southeastern Texas during the period from 1900 to 1940 largely as a result of overhunting (Schmidley 1983, p. 1); and, except for wanderers, resident bear populations had not been observed in eastern Texas for many years (Nowak 1986, p. 7). Key demographic attributes (e.g., survival, fecundity, population growth rates, and home ranges) for the Louisiana black bear were not known at the time of listing.

Currently, the Louisiana black bear remains in the BLH forests of the LMRAV in Louisiana and western Mississippi. However, based on the number and distribution of confirmed sighting reports by the Louisiana Department of Wildlife and Fisheries (LDWF) and Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) (Simek et al. 2012, p. 165; Davidson et al. 2015, p. 22), the geographic distribution of bears has expanded; the number and size of resident breeding subpopulations and the habitat they occupy has also increased (Table 1; Figure 1,*http://www.regulations.gov* at Docket Number FWS–R4–ES–2015–0014). These changes have resulted in a more scattered distribution of breeding females between the original TRB and UARB subpopulation areas.

Table 1. Estimated area supporting Louisiana black bear breeding subpopulations (shown in acres (ac) and [hectares (ha)]) in 1993 and 2014. .

Breeding Habitat	Tensas River Basin[1]	Upper Atchafalaya River Basin[2]	Lower Atchafalaya River Basin[3]	Louisiana Total	Mississippi Total[3]	Total
1993	84,402 [34,156]	111,275 [45,031]	144,803 [58,600]	340,480 [137,787]	0	340,480 [137,787]
2014	1,002,750 [405,798]	290,263 [117,465]	130,839 [52,949]	1,423,853 [576,213]	382,703 [154,875]	1,806,556 [731,087]

[1] Includes the TRC subpopulation and the Louisiana black bear subpopulation in north-central Louisiana near the Arkansas State line.
[2] Includes the Louisiana black bear subpopulation found in the Florida parishes of Louisiana (east of the Mississippi River).
[3] Although the LARB subpopulation area appears to have decreased in acreage over time; the decrease is due to more detailed mapping in 2014 that excluded many non-habitat areas that were included in the more general 1993 boundary. In 1993, we did not have the data to support including breeding bears on Avery Island (at the western end of this area) even though we knew bears occurred there. We now have that data to support and delineate breeding habitat on Avery Island and, therefore, have included that area in the 2014 mapping updates. The actual area and spatial distribution of the LARB subpopulation has likely not changed over time.

The TRC is a new breeding subpopulation (i.e., it was not present at the time of listing) located at the confluence of the Mississippi and Red Rivers in Louisiana (formed as a result of a multi-year reintroduction project (2001–2009) (Figure 1, *http://www.regulations.gov* at Docket Number FWS–R4–ES–2015–0014), and serves to facilitate movement of bears from the UARB to the TRB (Laufenberg and Clark 2014, p. 85). Several additional new breeding subpopulations, indirectly resulting from those translocations (i.e., female dispersal), are forming in Louisiana and three new breeding subpopulations are forming in Mississippi, partially as an indirect effect of the Louisiana translocation project and from the immigration of bears from White River Basin (WRB; Figure 1, *http://www.regulations.gov* at Docket Number FWS–R4–ES–2015–0014). Demographic attributes including subpopulation abundance estimates, growth rates, and adult survival rates have been obtained for the three original Louisiana breeding

subpopulations (TRB, UARB, LARB) (Hooker 2010, pp. 26–27; Lowe 2011, pp. 28–30; Troxler 2013, pp. 30–37; Laufenberg and Clark 2014, pp. 76–82).

Based on the best available data, all three original breeding subpopulations appear to be stable or increasing, and emigration and immigration (i.e., gene flow) has been documented among several of the Louisiana and Mississippi subpopulations (Laufenberg and Clark 2014, pp. 91–94). The areas supporting Louisiana black bear breeding subpopulations have increased over 430 percent from an estimated 340,000 acres [ac] (138,000 hectares [ha]) in Louisiana in 1993, to the present estimated 1,424,000 ac (576,000 ha) and 382,703 ac (154,875 ha), in Louisiana and Mississippi, respectively, for a total of 1,806,556 ac (731,087 ha) (Table 1). In addition, approximately 148,400 ac (60,055 ha) of private lands have been restored and permanently protected in the Louisiana black bear HRPA since it was listed (Table 2, Figure 2, *http://www.regulations.gov* at Docket Number FWS–R4–ES–2015–0014; and see Factor A discussion).

Table 2. Private lands enrolled in the USDA Natural Resources Conservation Service Wetland Reserve Program (permanent easements) supporting breeding habitat and those lands enrolled within the Louisiana Black Bear Habitat Restoration Planning Areas (HRPA), LA (ac [ha]).

	Tensas River Basin[1]	Upper Atchafalaya River Basin	Lower Atchafalaya River Basin	Total
Breeding Habitat[2]	90,198 [36,502]	6,500 [2,630]	0 0	96,698 [39,132]
HRPA	136,870 [55,389]	11,530 [4,666]	0 0	148,400 [60,055]

[1] Includes the TRC subpopulation.
[2] Breeding habitat is primarily contained within the HRPA, but has expanded beyond it in some areas.

Tensas River Basin (TRB) Subpopulation

Demographics: The TRB subpopulation is the largest Louisiana black bear breeding subpopulation and occurs in the TRB of Louisiana. It consists of groups of bears located on lands north (privately owned tracts formerly known as the Deltic subpopulation/tracts) and south (Tensas River NWR, Big Lake WMA, Buckhorn WMA, and adjacent private lands) of I–20 and U.S. Highway 80 (Hwy 80). Population numbers of the Louisiana black bear have steadily increased since its listing as described below. Nowak (1986, p. 7) speculated that the TRB subpopulation consisted of 40 to 50 bears at that time. Subsequent population studies by Beausoleil (1999, p. 51) and Boersen et al. (2003, p. 202) estimated 119 bears in the Tensas River NWR, and 24 to 72 bears in the adjacent Deltic tracts, respectively.

At the time of listing, there was no evidence that interchange was occurring between the two TRB subgroups. They were thought to be isolated and disjunct from each other (BBCC 1997, p. 99) until Anderson (1997, p. 82) reported one of the first instances of a bear moving between these two areas. Evidence of that historical separation in the recent genetic history of sampled bears was detected by Laufenberg and Clark (2014, p. 54). Though the two subgroups are separated by I–20 and Hwy 80, a significant amount of habitat between those subgroups has been restored primarily within the last 10 years. Increased sightings and vehicular mortality of bears in the vicinity of I–20 indicate that bears are attempting to disperse (Benson 2005, p. 97) and current radio-collar data and genetic evidence support some successful interchange (Laufenberg 2015, personal communication; Murphy and Davidson 2015, p. 13). Furthermore, the current genetic structure of Louisiana black bear subpopulations groups bears in those two areas into one subpopulation (Laufenberg and Clark 2014, p. 60). Hooker (2010, p. 26)

estimated a population abundance (for both genders averaged across years) of 294 bears (standard error [SE] = 31) for the combined Tensas River NWR and nearby Deltic and State-owned tracts with an apparent annual survival rate of 0.91 (SE = 0.08), which did not differ by gender. The pooled population annual growth rate for both genders was 1.04 (SE = 0.18), and the mean realized population growth estimate ranged from 0.99 to 1.06 (Hooker 2010, p. 26), indicating a stable to increasing population. Hooker (2010, p. 26) estimated density to be 0.66 bears per square kilometer (km^2) (SE = 0.07). Similar results were obtained by Laufenberg and Clark (2014, p. 45) with mean realized population growth estimates ranging from 0.97 to 1.02.

According to the most recent study results (Laufenberg and Clark 2014, p. 31), the estimated mean annual survival rate for radio-collared adult female bears in the TRB subpopulation was 0.99 (95 percent confidence interval [CI] 0.96–1.00) when data for bears with unknown fates were censored (assumed alive) and was 0.97 (95 percent CI = 0.93–0.99) when unknown fates were treated as mortalities. Detection heterogeneity (differences in detectability among individuals from such things as size, behavior, etc.) is a well-known issue in estimating black bear vital rates. Mathematical models can be used to account for those differences; however, it is impossible to identify the appropriate group of distributions (a distribution describes the numbers of times each possible outcome occurs in a sample) to use in a model because the same distribution could result from several different sets of circumstances (Laufenberg and Clark (2014, p. 18). Therefore, Laufenberg and Clark (2014, pp. 18–19) used two models to estimate population numbers. Model 1 assumed that detection heterogeneity followed a logistic-normal distribution, and Model 2 assumed a 2-point finite mixture distribution. We will

report results for both models. The current estimated number of females from those two models ranged from 133 to 163 (Laufenberg and Clark 2014, p. 39). Assuming a one-to-one ratio of males to females and using the most conservative figures, we estimate that the current total population size ranges from 266 to 326 bears.

Mean cub and yearling litter size for the TRB subpopulation were an estimated 1.85 and 1.40 respectively, and fecundity and yearling recruitment for the TRB were 0.47 and 0.15, respectively (Laufenberg and Clark 2014, p. 35). Annual per-capita recruitment estimates ranged from 0.00 to 0.22, and estimates of female apparent survival rates (these included emigration) ranged from 0.87 to 0.93, based on capture-mark-recapture (CMR) data. The estimated mean of the population growth rate ranged from 0.97 (range = 0.88–1.06) to 1.02 (range = 0.98–1.09), depending on model assumptions (Laufenberg and Clark 2014, p. 45), which indicates a stable to increasing population.

Early studies suggested that the TRB subpopulation had low genetic diversity and low effective population size (N_e) as a result of isolation due to habitat fragmentation (Boersen et al. 2003, p. 204). They documented low genetic diversity and N_e to be as small as 32 individuals at that time, and recommended population augmentation be considered as a way to increase genetic diversity (Boersen et al. 2003, p. 204). Effective population size is "the number of individuals that would result in the same loss of genetic diversity, inbreeding, or genetic drift if they behaved in the manner of an idealized population" (Frankham et al. 2014, Appendix 1). It is frequently used to quantify how populations may be affected by genetic drift and generally is lower than the actual number of individuals in a population. Smaller breeding populations can be more susceptible to the effects of genetic drift, demographic stochasticity, and environmental

factors (e.g., isolation) than larger ones. Effective population size is sometimes used instead of demographic viability criteria (such as used in our analyses) to assess population viability.

Murphy and Davidson (2015) analyzed DNA data collected between 2006 and 2012 to reevaluate the genetic characteristics of the TRB subpopulation. They found that the genetic diversity and effective population size had increased in the TRB subpopulation since the 1999 study (Murphy and Davidson 2015, p. 17). They also documented gene flow within the TRB subpopulation (between the Deltic and the Tensas River NWR portions). Combined with gene flow into the TRB from other bear populations (see below), genetic diversity and effective population size had increased by 17 and 50 percent, respectively (Murphy and Davidson 2015, p. 17). Based on Frankham et al.'s recommendation that an effective population size is 100 bears or greater (2014, p. 62), we do not believe that inbreeding represents a concern based on our current population estimates for the Louisiana black bear. Restored habitat (as discussed in Factor A), along with connectivity studies, evidence of physical movement of bears (from GPS data) among subpopulations, and genetic evidence, all indicate that interchange is occurring among subpopulations within and adjacent to Louisiana subpopulations. This situation supports our belief that long-term genetic viability is not a significant concern.

The recent study by Laufenberg and Clark (2014, pp. 84–85) indicates that genetic exchange with other subpopulations has occurred at a level substantial enough to increase genetic diversity at TRB (Murphy and Davidson 2015, p. 16), primarily as a result of bear emigration from the WRB subpopulation of Arkansas into the TRB subpopulation. The results of recent population structure analyses show evidence of bear

emigration from the WRB subpopulation of Arkansas into the TRB subpopulation (Laufenberg and Clark 2014, p. 85). Nearly 30 bears sampled in the TRB had a probability greater than or equal to 0.10 of originating from the WRB subpopulation in Arkansas (6 bears were identified as WRB migrants), and one had a 0.48 probability of coming from the UARB (Laufenberg and Clark 2014, p. 63). Additionally, ten bears sampled in northwestern Mississippi were determined to have a probability greater than or equal to 0.90 of originating from the TRB. The analysis of genetic data identified five bears in the TRB as migrants from the WRB subpopulation (Laufenberg and Clark 2014, p. 67). Three males captured in the TRB had CMR histories that indicated they had dispersed from the TRC subpopulation, and an additional male was identified as a second generation migrant from the UARB subpopulation (Laufenberg and Clark 2014, p. 67). One male detected in the TRB subpopulation was subsequently live-captured in Mississippi (Laufenberg and Clark 2014, p. 67).

Laufenberg and Clark (2014, p. 85) suggested genetic interchange by bears from outside the range of the Louisiana black bear (that is, Arkansas) probably should be considered as a positive genetic and demographic contribution to the Louisiana black bear. Connectivity modeling analyses by Laufenberg and Clark (2014, p. 90) indicated that, without the presence of the TRC subpopulation, there was low potential for dispersal of either sex between TRB and UARB. Recent LDWF capture records (Davidson and Murphy 2015, pp. 13–14; USGS et al. 2014) have documented the presence of additional resident breeding females between the TRC and the TRB subpopulations, which may significantly increase the probabilities for interchange.

Laufenberg and Clark (2014, p. 90) suggested that the establishment of satellite populations of resident breeding bears between subpopulations may be a more effective measure to link populations than the establishment of continuous habitat corridors. Laufenberg and Clark 2014, pp. 22–24) developed a series of population persistence models to assess the long-term viability of Louisiana black bear subpopulations. Those models were developed using multiple methods to address the treatment of bears with unknown fates. Model 1 uses censored fates (assumed alive), and Model 2 assumes mortality occurred. In addition, because there is uncertainty (i.e., variation) in various model parameters that may affect the outcome, three population projections were analyzed using Model 1 and Model 2, resulting in 6 separate population projections (Laufenberg and Clark 2014, pp. 22–23) developed as follows. The first projection accounted for environmental variation for survival and recruitment and also included density dependence (process-only model). Process-only models produced the least conservative (i.e., protective) estimates. The second and third projection models (all-uncertainty projections and the most conservative) included the same sources of variation as the process-only projection, but also included an estimation of uncertainty for survival and recruitment; they differ only in the conservativeness (i.e., worst-case scenario for maximum protection of bears, with the 50 percent confidence interval being less conservative than the 95 percent confidence interval projection). We will report the range of values obtained for all models in the following discussions. Based on CMR estimates from Model 1, the estimated probability of persistence over 100 years for the TRB subpopulation ranged from 1.00 and 0.96 for process-only and all-uncertainty projections, respectively (Laufenberg and Clark 2014, p. 46, Table 4). Similarly, based

on the more conservative projections, the probability of persistence was 1.00 and 0.96 based on Model 2 estimates for process-only and all-uncertainty projections (Laufenberg and Clark 2014, p. 46, Table 4).

Habitat: We estimated there were approximately 400,000 to 500,000 ac (161,875 to 202,343 ha) of forested habitat in the TRB in the early 1990s (Service 2014, p. 33). Comparing the small-scale National Land Cover Database (NLCD) estimates of habitat for 2001 and 2011, there has been an increase of 1,312 ac (531 ha) of forested habitat in the TRB HRPA (see Table 8). Currently, based on ownership boundaries, there are 255,899 ac (103,559 ha) of State and Federal management areas, and approximately 136,870 ac (55,389 ha) of private lands that have been restored and permanently protected, in the TRB HRPA (Tables 2, 5). We estimated there were approximately 85,000 ac (34,398 ha) of forested habitat in the TRB HRPA at the time of listing (Service 2014, p. 74, Table 6). In 1993, we estimated that the breeding subpopulation occupied approximately 84,400 ac (34,156 ha). Today, an estimated 1,002,750 ac (405,798 ha) is occupied by the TRB breeding subpopulation, an increase of over 900,000 acres (see Table 1).

Upper Atchafalaya River Basin (UARB) Subpopulation

Demographics: Nowak (1986, p. 6) suggested that UARB population numbers were extremely low or bears in this location were believed to be nonexistent before the introduction of Minnesota bears to Louisiana in the 1960s (see the proposed rule (80 FR 29397, May 21, 2015) for more detail) and speculated that the population consisted of 30 to 40 individuals (based on a LDWF 1981 report). Pelton (1989, p. 9) speculated the

UARB subpopulation size ranged from 30 to 50 bears. Triant et al. (2004, p. 653) estimated 41 bears in the UARB population at that time. Lowe (2011, p. 28) estimated a UARB population of 56 bears with an annual survival rate of 0.91. More recently, O'Connell-Goode et al. (2014, p. 7) estimated a mean population abundance of 63 bears and mean average male and female survivorship to be 0.77 (SE = 0.08) and 0.89 (SE = 0.04), respectively. The most recent research (Laufenberg and Clark 2014, p. 46) estimated female abundance ranging from 25 to 44 during the study period (50 to 88 total population of males and females, combined), regardless of treatment of capture heterogeneity (or capture differences among individuals). Their estimated annual per-capita recruitment was between 0.00 and 0.41, and apparent female survival was between 0.88 and 0.99 during that time period (Laufenberg and Clark 2014, p. 46, Table 4). The estimated mean growth rate ranged from 1.08 (range = 0.93–1.29) to 1.09 (range = 0.90–1.35) indicating a stable to increasing population (Laufenberg and Clark 2014, p. 46). The estimated probabilities of the UARB subpopulation persistence (i.e., viability) over 100 years were greater than 0.99 for all process-only projections, and greater than 0.96 for model 1 all-uncertainty projections. Persistence probabilities were lowest for the most conservative estimation methods (Model 2, all uncertainty projections) at 0.93 and 0.85, respectively (Laufenberg and Clark 2014, p. 46, Table 4).

As discussed previously, Laufenberg and Clark's connectivity models (2014, p. 90) indicated there was no potential for dispersal of either sex between the TRB and UARB subpopulations without the current presence of the TRC subpopulation. The modeled potential for natural interchange between the UARB and TRC subpopulations is high based on the genetic and capture data (Laufenberg and Clark 2014, p. 85), and

genetics data show that gene flow has occurred. Twenty of the 35 TRC cubs showed evidence of having been sired by UARB males. A 2-year-old male tagged as a cub in the UARB was later captured at the TRC, and a second generation migrant from the UARB was later captured in the TRB subpopulation (Laufenberg and Clark 2014, p. 67). The step-selection model (see **Barriers to Movement**) predicted that dispersals between the LARB and UARB subpopulations were infrequent but possible for males, but nearly nonexistent for females (Laufenberg and Clark 2014, p. 85). Three cubs sampled in west central Mississippi, east of the TRC subpopulation, showed evidence of mixed ancestry between TRB and UARB (Laufenberg and Clark 2014, p. 63). No migrants from the UARB into the WRB or LARB were detected by Laufenberg and Clark (2014, p. 85). Recent LDWF capture records, however, verify the presence of at least one WRB migrant in the TRC subpopulation (M. Davidson, LDWF, undated, unpublished data). Finally, genetic diversity of the UARB subpopulation is the highest among the three original Louisiana black bear subpopulations, and second highest of all extant subpopulations. Results from Laufenberg and Clark (2014, pp. 53–54) indicated this increase may be the result of the persistence of genetic material from bears sourced from Minnesota during the 1960s.

Habitat: The Atchafalaya basin, located between the UARB and LARB, is currently believed to be too wet to support breeding females. Elevations within the Atchafalaya Basin are increasing due to sedimentation (Hupp et al. 2008, p. 139), and as a result, in the long term, habitat conditions between this subpopulation and the UARB subpopulation may improve over time (LeBlanc et al. 1981, p. 65). Historical reports do not break the Atchafalaya River Basin into the two areas that we use in terms of bear

recovery and habitat restoration planning (i.e., UARB and LARB) but make delineations based on the Corps' Atchafalaya Basin Floodway (Floodway) delineation. The Floodway is roughly equivalent to the UARB as we define it for bears. When the Louisiana black bear was listed, the estimated amount of forested habitat remaining north of U.S. 190 had been reduced 40 to 50 percent (100,000 to 128,000 ac [40,469–51,800 ha] (57 FR 588, January 7, 1992)). Based on the analyses used for listing, we estimated there were approximately 600,000 to 700,000 ac (242,812–283,280 ha) of forested habitat in the UARB area in the early 1990s (Service 2014, p. 33). Comparing small-scale NLCD estimates of habitat for 2001 and 2011, there has been an increase of 2,676 ac (1,083 ha) in the UARB HRPA (see Table 8). Currently, based on ownership boundaries, there are 226,037 ac (91,476 ha) of State and Federal management areas and approximately 11,530 ac (4,666 ha) of private lands that have been restored and permanently protected in the UARB HRPA (Tables 2, 5). We estimated that there were approximately 141,000 ac (57,060 ha) of protected lands in the UARB HRPA at the time of listing (Service 2014, p. 74, Table 6). Today, an estimated 130,839 ac (52,949 ha) is occupied by the UARB breeding subpopulation (see Table 1), an increase over the 111,275 ac (45,031 ha) estimated around the time of listing.

Lower Atchafalaya River Basin (LARB) Subpopulation

Demographics: In 1986, Nowak (1986, p. 7) speculated that there were approximately 30 bears in the LARB subpopulation. Until recently, the only quantitative estimate for this subpopulation was Triant et al.'s (2004, p. 653) population estimate of 77 bears (95 percent CI = 68–86). Similar to their UARB population estimate, the

authors felt this may underestimate the actual population number (Triant et al. 2004, p. 655). Troxler (2013, p. 30) estimated a population of 138 bears (95 percent CI = 118.9–157.9) (which represents a substantial increase over Triant's estimate) and an estimated growth rate of 1.08 indicating that the subpopulation is growing. Laufenberg and Clark's (2014, p. 43) recent LARB population abundance estimate ranged between 78 (95 percent CI = 69–103) and 97 females (95 percent CI = 85–128) from 2010 to 2012 based on Model 1; and between 68 (95 percent CI = 64–80) and 84 (95 percent CI = 79–104) based on Model 2 (we estimate the total combined population of 156–194 or 136–168, respectively). Estimates of apparent female survival ranged from 0.81 to 0.84 (Laufenberg and Clark 2014, p. 43), which are the lowest of all the subpopulations. One reason for this situation is that this area is experiencing a high degree of mortality associated with vehicular collision and nuisance-related removals (Troxler 2013, pp. 37–38; Davidson et al. 2015, pp. 29–30). In spite of this relatively high rate of adult female mortality (which has persisted for decades), the LARB subpopulation remains the second largest Louisiana black bear subpopulation, and has approximately doubled in size in just the last 10 years. The overall size of that subpopulation, coupled with the current positive growth rate (Laufenberg and Clark 2014, p. 46), strongly suggests that anthropogenic and natural sources of LARB mortality, existing dispersal barriers, and other threats to the LARB have not resulted in long-term negative effects to that subpopulation.

Although the LARB subpopulation has occasionally been characterized as a genetically unique subpopulation, recent research (Csiki et al. 2003; Troxler 2013; Laufenberg and Clark 2014) has identified a genetic bottleneck (i.e., isolation resulting in

restricted gene flow and genetic drift) as a cause of that uniqueness rather than a true genetic difference. That genetic bottleneck likely resulted from low immigration potential that is restricted by the poor habitat quality found along the northern periphery of the LARB subpopulation. U.S. Highway 90 serves as an additional barrier to movement. The genetic structure analyses found evidence of historical genetic isolation associated with Highway 317 within this subpopulation (Troxler 2013, p. 33; Laufenberg and Clark 2014, p. 54). However, recent data indicate that this has been alleviated and movement of individuals has been occurring within the LARB on both sides of Highway 317 (Troxler 2013, p. 39). As discussed previously, based on the step selection models, the current potential for interchange between this and other subpopulations is low (nonexistent for female bears), and immigration into this subpopulation has not been documented (Laufenberg and Clark 2014, p. 85).

Currently, bears have been observed on the higher portions (levees and ridges) of the Atchafalaya Basin (Figure 1 in Davidson et al. 2015, p. 23), between the UARB and LARB subpopulations, but the Basin is believed to be too wet to support breeding females. However, LeBlanc et al. (1981, p. 65) projected that by 2030, over 35,000 ac (14,000 ha) of lakes and cypress–tupelo (*Taxodium distichum*–Nyssa aquatic) swamps would be converted to cypress swamp and early successional hardwood; habitat types more suitable for black bear use. Studies by Hupp et al. (2008, p. 139) confirm the continued sedimentation (filling in) of wet areas within the Atchafalaya Basin. Such changes could ultimately expand the acreage of suitable habitat for the LARB and UARB subpopulations, and improve habitat linkages and genetic exchange between those groups.

Habitat: We were not able to estimate the amount of forested Louisiana black bear habitat in the LARB at the time of listing based on internal maps and reports, nor were we able to determine it from the above-mentioned studies. Nyland (1995, p. 58), based on his trapping data, estimated that bears occupied approximately 140,000 ac (56,656 ha) in Iberia and St. Mary Parishes. This is probably a slight underestimate of forested and occupied habitat at that time because it was based primarily on trapping data and did not include Avery Island to the west, a forested salt dome known to be used by bears (Service 2014, p. 34). Comparing NLCD estimates of habitat for 2001 and 2011, there has been an increase of 3,685 ac (1,491 ha) in the LARB HRPA (see Table 8). We estimated that there were approximately 9,921 ac (4,015 ha) of conservation lands (permanently protected) in the LARB HRPA at the time of listing (Service 2014, p. 73, Table 4). Currently, based on ownership boundaries, there are an estimated 11,573 ac (4,683 ha) of conservation lands in the LARB HRPA (Table 3).

In 1993, we estimated approximately 144,803 ac (58,600 ha) supported the LARB breeding population (see Table 1). Today, we estimate 130,839 ac (52,949 ha) are occupied by the LARB breeding subpopulation (see Table 1). The LARB breeding area appears to have decreased in acreage over time; however, the apparent decrease is due to more detailed mapping in 2014 that excluded many non-habitat areas that were included in the more general 1993 boundary. In fact, spatially, there is an apparent increase in distribution over time (see Figure 1, *http://www.regulations.gov* at Docket Number FWS–R4–ES–2015–0014)) because we did not have the data in 1993 to support the inclusion of breeding bears at the western edge on Avery Island, even though we knew bears were present. We now have the data and, therefore, included those bears in the

2014 mapping. Based on the inclusion of the Avery island area and exclusion of non-habitat, the actual area and spatial distribution of this breeding population has likely not changed significantly over time.

Table 3. Total area (NWRs, WMAs, WRPs, Corps lands, Farmers Home Administration [FmHA] easement tracts, and wetland mitigation banks) within Louisiana black bear breeding habitat and the Louisiana Black Bear HRPA in Louisiana (ac [ha]).

	Tensas River Basin[1]	Upper Atchafalaya River Basin[3]	Lower Atchafalaya River Basin[3]	Total[3]
Louisiana black bear breeding habitat	1,002,750 [405,799]	290,263 [117,465]	130,839 [52,949]	1,423,853 [576,213]
Permanently protected Louisiana black bear breeding habitat[2]	493,639 [199,769]	91,880 [37,182]	7,614 [3,081]	593,133 [240,032]
Percent of Louisiana black bear breeding habitat that is permanently protected[2]	49.2	31.7	5.8	41.7
Louisiana black bear HRPA	2,054,811 [831,553]	1,200,844 [485,964]	366,001 [148,115]	3,621,656 [1,465,632]
Permanently protected habitat within the Louisiana black bear HRPA	408,400 [165,274]	217,936 [88,195]	11,573 [4,683]	637,909 [258,152]
Percent of the Louisiana black bear HRPA that is permanently protected	19.9	18.1	3.2	17.6

[1] Includes the TRC subpopulation.
[2] Breeding habitat is primarily contained within the HRPA but has expanded beyond it in some areas.
[3] Figures shown in this table are based on currently available spatial data and represent the most accurate estimates to date. Certain protected habitat estimations presented here are lower than the figures provided in the Louisiana black bear 5-year status review document due to improved data availability and associated methodology, and not to actual reductions in protected habitat.

Three Rivers Complex (TRC) Subpopulation

Demographics: A new breeding subpopulation, not present at the time of listing, currently exists in Louisiana as a result of reintroduction efforts (Benson and Chamberlain 2007, pp. 2,393–2,403; Davidson et al. 2015, pp. 27–28). The subpopulation occurs in the TRC located primarily on the Richard K. Yancey WMA. Until 2001, recovery actions had focused on habitat restoration and protections; reduction of illegal poaching; conflict management; research on Louisiana black bear biology and habitat requirements; and educating the public. No actions had been taken to expedite expansion into unoccupied habitats. Initiated in 2001, the objective of the reintroduction was to establish a new group of reproducing Louisiana black bears in east-central Louisiana (primarily in Avoyelles and Concordia Parishes) that would facilitate the interchange of individuals between the subpopulations currently existing within the Tensas and Atchafalaya River Basins. This area of east-central Louisiana is within the historical range of the Louisiana black bear, but was not known to be occupied by reproducing females when this effort began.

Range expansion of breeding females is a slow process even when bear habitat is in large contiguous blocks because females typically disperse only very short distances. In 1995, when the recovery plan was written, translocations (i.e., capture and release) of adult bears, termed a "hard" release, were not deemed to be effective, as evidenced with the wide dispersals of the Minnesota reintroductions (Taylor 1971, p. 79). The method of winter translocations of adult females and their young (termed "soft" release), however, proved to be successful in Arkansas and was recommended as the preferred method for translocations (Eastridge 2000, p. 100). The site chosen for the Louisiana releases was at the Richard K. Yancy WMA (formerly known as the Red River and Three Rivers

WMAs), located about 80 miles south of the TRB and 30 to 40 miles north of the UARB. In addition to the geographic location, the amount of publicly owned land and potential habitat in that area (179,604 ac (72,714 ha)) encompassing several NWRs, WMAs, and more than 12,000 ac (4,858 ha) of privately owned land in WRP made it the logical site for establishment of an additional breeding subpopulation.

The success of those translocations in the formation of the TRC breeding subpopulation represents a significant improvement in Louisiana black bear population demographic conditions since listing. Abundance estimates for the TRC subpopulation are currently unknown. The mean annual estimated female survival rate (2002–2012) for the TRC subpopulation ranged from 0.93 (95 percent CI = 0.85–0.97) to 0.97 (95 percent CI = 0.91–0.99) (Laufenberg and Clark 2014, p. 31). Mean cub and yearling litter size for the same time period were 2.15 and 1.84 in the TRC subpopulation, respectively (Laufenberg and Clark 2014, p. 35). Fecundity and yearling recruitment for the TRC subpopulation were 0.37 and 0.18 (Laufenberg and Clark 2014, p. 31), low compared to the TRB subpopulation, but possibly an artifact of small sample size. The estimated asymptotic growth rates (growth rate estimates calculated from population matrix models) for the TRC ranged from 0.99 to 1.02, for Model 1 and Model 2 respectively (Laufenberg and Clark 204, p. 45). As male cubs born at TRC reach maturity and more males emigrate from the UARB, growth rates of this subpopulation may increase (Laufenberg ad Clark 2014, pp. 70–80). TRC persistence probabilities ranged from 0.295 to 0.999 depending on estimated carrying capacity, the strength of the density dependence, level of uncertainty, and the treatment of unresolved fates (i.e., deaths or lost collars) (Laufenberg and Clark 2014, p. 47). Using the telemetry and reproductive data

from the TRC, probabilities of persistence were greater than or equal to 0.95 only for projections based on the most optimistic set of assumptions (i.e., Models 1 and 2, process only) and under the most conservative model (i.e., unresolved fates were assumed dead and more uncertainty was included in model variable estimates), probabilities ranged from 0.34 to 0.90 (Laufenberg and Clark 2014, pp. 48–49, Tables 5 and 6).

Based on step selection function modeling, the least potential for interchange was between the TRB and TRC subpopulations, and the greatest proportion of successful projections was between the UARB and the TRC (Laufenberg and Clark 2014, p. 74). As discussed previously, the TRC has experienced and possibly facilitated gene flow with other subpopulations (Laufenberg and Clark 2014, p. 84). Three males were captured in the TRB that had dispersed from the TRC, and 20 of 35 cubs sampled in the TRC showed evidence of having been sired by UARB males (Laufenberg and Clark 2014, p. 67). One TRC female dispersed to a location southwest of the TRB subpopulation and apparently bred with an Arkansas bear (Laufenberg and Clark 2014, p. 63). Laufenberg and Clark (2014, p. 83) detected direct evidence of interchange by bears from the UARB to the TRB subpopulation via the TRC subpopulation; however, they did not have any direct evidence of reverse movements. A male bear with UARB ancestry (possibly a second generation migrant) was captured within the TRB, indicating gene flow likely facilitated by the presence of the TRC subpopulation (Laufenberg and Clark 2014, p. 84). Recent LDWF capture records verify the presence of at least one WRB migrant in the TRC subpopulation (Laufenberg and Clark 2014, p. 83).

Habitat: The TRC contains some of the largest contiguous blocks of publicly owned land in Louisiana. It encompasses approximately 179,600 ac (72,700 ha) of

potential bear habitat and roughly 100,000 ac (40,500 ha) of publicly owned, forested land (Richard K. Yancey, Grassy Lake, Pomme de Terre and Spring Bayou WMAs, and Lake Ophelia NWR). The location of this population and its surrounding patchwork of habitat are essential in maintaining connectivity and movement of individuals between the existing TRB and UARB populations.

Mississippi Subpopulations

Demographics: Black bear numbers are increasing in Mississippi (Simek et al. 2012, p. 165). Shropshire indicated that the most reliable bear sighting reports occurred in nine Mississippi counties (Bolivar, Coahoma, Issaquena, Warren, Adams, Wilkinson, Hancock, Stone, and Jackson (Shropshire 1996, page 55, Table 4.1; see Figure 2, *http://www.regulations.gov* at Docket Number FWS–R4–ES–2015–0014)), and bear sightings are concentrated in three physiographic regions of Mississippi: Southern Mississippi Valley Alluvium [Delta], the Lower Coastal Plain, and the Coastal Flatwoods (Shropshire 1996, p. 57, Table 4.2). The Mississippi population is currently estimated to be about 120 bears, with approximately 75 percent occurring within Louisiana black bear range (Young 2013, personal communication). Most of the sightings occur along the Mississippi River and in the lower East Pearl River and lower Pascagoula River basins (Simek et al. 2012). Three new resident breeding populations have formed (first documented in 2005) in north west-central (Sharkey-Issaquena Counties), west-central (Warren County) and south west-central (Wilkinson County) Mississippi (Figure 1, *http://www.regulations.gov* at Docket Number FWS–R4–ES–2015–0014)). Genetic studies and LDWF CMR studies have documented bear immigration from the WRB and

TRB to the northern Mississippi breeding subpopulation and from TRC to the southern Mississippi breeding subpopulation (Laufenberg and Clark 2014, p. 67). Six bears from northwestern Mississippi (sampled east of the TRB and across the Mississippi River) had mixed ancestry between WRB and TRB (Laufenberg and Clark 2014, p. 63). Genetic studies and LDWF CMR studies have documented bear emigration from the WRB and TRB to the Sharkey-Issaquena and Warren County, Mississippi, subpopulations and from TRC to the Wilkinson County, Mississippi, subpopulation (Laufenberg and Clark 2014, pp. 63–67).

Habitat: Shropshire (1996, p. 64) found that Adams County contained the most suitable habitat in Mississippi and that Delta National Forest was comparable in habitat quality to Tensas River NWR. Habitat suitability models based on landscape characteristics, human attitudes, and habitat quality found the highest habitat suitability was in southern Mississippi and the lowest was in the Delta region (Bowman 1999, p. 180).

Similar to the trend for the TRB area, in the Lower Mississippi River Valley of Mississippi, the total forested area increased by 11 percent between 1987 and 1994, and reforestation of former agricultural lands accounted for nearly 40 percent of that increase (King and Keeland 1999, p. 350). Approximately 110,000 ac (41,000 ha) of private land in Mississippi counties adjacent to the Mississippi River have been enrolled in WRP 99-year and permanent easements within the Mississippi Alluvial Valley Black Bear Priority Units (MAVU). Combining WRP permanent easement lands with the habitat protected on Federal and State NWRs or WMAs, other Federal- and State-protected lands, and privately owned protected lands, approximately 868,000 ac (440,000 ha) have been

permanently protected and/or restored within the MAVU in Mississippi. Although not permanently protected, approximately 328,000 ac (132,737 ha) were enrolled in the Conservation Reserve Program (CRP) within the MAVU. Approximately 68 percent of breeding habitat in the MAVU is under permanent protection.

East Texas

Demographics: At the time the bear was listed, populations had not been reported in east Texas for many years, with the exception of the occasional wandering animal (Nowak 1986, p. 7). Keul (2007, p. 1) reviewed historical literature on the black bear in East Texas and concluded that while habitat loss did occur, the primary reason for loss of bears was due to aggressive and uncontrolled sport hunting. The last known areas supporting bears in east Texas was the Big Thicket area of Hardin County and forested areas in Matagorda County, which may have supported a few individuals up to the mid-1940s (Barker et al. 2005, p. 6; Schmidley 1983. p. 1). There were black bear sightings in east Texas in the 1960s following the reintroduction of Minnesota bears into Louisiana, but by 1983 Schmidley (1983, p. 1) stated there were no resident bears remaining in east Texas. Sightings of bears in east Texas have gradually increased since 1977, when the Texas Parks and Wildlife Department (TPWD) started collecting data (Chappell 2011, p. 11). Most of those sightings were believed to be juvenile or sub-adult males that had wandered into the northeastern part of the listed range from expanding populations in Oklahoma, Arkansas, and Louisiana (Barker et al. 2005, p. 7). Observations in the 1990s indicate the return of a few black bears to the remote forests of east Texas, primarily transient, solitary males that are believed to be dispersing from

Arkansas and Oklahoma (Holdermann 2014, personal communication). There is currently no evidence of a resident breeding population of black bears in east Texas. Kaminski (2011, entire document) conducted a region-wide hair snare survey in east and southeast Texas in areas assumed to have the highest likelihood of bear occurrence and where sightings had been reported. According to the genetic analysis and based on the estimated effectiveness of their sampling method, it was determined it was highly unlikely there were established black bear populations in the region (Kaminski 2011, p. 34). Since 1990, there have been 37 verified black bear sightings in 13 east Texas counties, and preliminary examination of these data suggest that some observations may represent duplicate sightings of individual bears (Holdermann 2014, personal communication).

Habitat: The TPWD field analyses of remaining potential black bear habitats within east Texas (using habitat suitability models) found that the Sulphur River Bottom, Middle and Lower Neches River Corridors, and Big Thicket National Preserve areas in east Texas were all suitable for black bears and that the Middle Neches River Corridor provided the most suitable location for any bear restoration or management efforts in east Texas (Garner and Willis 1998, p. 5). Kaminski (2011, p. 50) used Habitat Suitability Indices (HSI) for black bears in east and southeast Texas to identify 4 recovery units (ranging in size from 74,043 to 183,562 ac (31,583 to 74,285 ha)) capable of sustaining viable back bear populations. Estimated HSI scores for each were comparable to other estimates for the occupied range of black bears in the southeast, and the estimated acreage of suitable habitat for all units exceeded those estimated to support existing Louisiana black bear populations (Kaminski 2011). Approximately 11.8 million ac

(477,530 ha) of the Pineywoods area of east Texas is classified as forest, of which approximately 61 percent is non-industrial private timberland (Barker et al. 2005, pp. 25–26). Recent studies by Kaminski and Comer (2013, p. 4), Kaminski et al. (2013, p. 10), and Siegmund (2104, pp. 1–2) have documented large, contiguous forested areas in East Texas capable of supporting viable black bear populations. Currently there are approximately 1,115,443 ac (451,404 ha) of Federal and State lands (NWRs, U.S. Forest Service and WMAs) within the historical range of the Louisiana black bear in east-central Texas. Black bear recovery and range expansion in bordering Louisiana, Arkansas, and Oklahoma may increase bear occurrence and activity in east Texas in future years.

Louisiana Black Bear Population Summary

Recent population studies for the Louisiana black bear have focused on vital statistics for individual subpopulations such as abundance, reproduction, and survival (e.g., Hooker 2010; Lowe 2011, O'Connell 2013, Troxler 2013). Laufenberg and Clark (2014, entire document) expanded the results of those studies and also conducted genetic structure connectivity studies to examine the viability and connectivity of the Louisiana black bear.

In summary, considering Laufenberg and Clark's recent work (2014, entire document) and prior research, the following conditions exist for the Louisiana black bear population:

(1) The population sizes of the TRB, UARB, and LARB subpopulations have increased since listing, their average population growth rates are stable to increasing, and the probability of long-term persistence for the TRB and UARB subpopulations (except

for one UARB modeling scenario) is greater than 95 percent. The probability of long-term persistence for the LARB is unknown.

(2) The habitat occupied by the TRB, UARB, and LARB breeding subpopulations has increased; there is a more scattered distribution of breeding females between the original TRB and UARB subpopulation areas; and new satellite breeding populations are forming in Louisiana (see Figure 1 in the supporting documents section, *http://www.regulations.gov* at Docket Number FWS–R4–ES–2015–0014)).

(3) A new breeding subpopulation, the TRC, that was not present at listing, now exists between the TRB and UARB subpopulations and facilitates interchange between those subpopulations.

(4) There is evidence that TRB and UARB bears have emigrated to Mississippi and have contributed to the formation of three resident breeding subpopulations that were not present at listing.

(5) There is evidence of interchange of bears between the TRB, UARB, TRC, WRB, and Mississippi subpopulations; however, the current potential for interchange between the LARB and other subpopulations is low.

(6) The overall probability of persistence for the Louisiana black bear metapopulation comprised of the TRB, TRC, and UARB subpopulations is estimated to be 0.996, assuming dynamics of those subpopulations were independent and using the most conservative population-specific persistence probabilities (i.e., 0.958, 0.295, and 0.849, respectively) (Laufenberg and Clark 2014, p. 47). If subpopulations are not independent (some environmental processes would affect all populations similarly), the long-term viability of the metapopulation could be reduced. However, the high

persistence probabilities for the TRB and UARB subpopulations would offset that reduction because the probability that at least one subpopulation would persist would be as great as that for the subpopulation with the greater probability of persistence (which was greater than 95 percent) (Laufenberg and Clark 2014, p. 80).

Recovery and Recovery Plan Implementation

Background—Section 4(f) of the Act (16 U.S.C. 1531 et seq.) directs us to develop and implement recovery plans for the conservation and survival of endangered and threatened species unless we determine that such a plan will not promote the conservation of the species. Under section 4(f)(1)(B)(ii), recovery plans must, to the maximum extent practicable, include: "Objective, measurable criteria which, when met, would result in a determination, in accordance with the provisions of [section 4 of the Act], that the species be removed from the list." However, revisions to the list (adding, removing, or reclassifying a species) must reflect determinations made in accordance with sections 4(a)(1) and 4(b) of the Act. Section 4(a)(1) requires that the Secretary determine whether a species is endangered or threatened (or not) because of one or more of five threat factors. Section 4(b) of the Act requires that the determination be made "solely on the basis of the best scientific and commercial data available." Therefore, recovery criteria should help indicate when we would anticipate that an analysis of the five threat factors under section 4(a)(1) would result in a determination that the species is no longer an endangered species or threatened species because of any of the five statutory factors (see **Summary of Factors Affecting the Species** section**)**.

While recovery plans provide important guidance to the Service, States, and other partners on methods of minimizing threats to listed species and measurable criteria against which to measure progress towards recovery, they are not regulatory documents and cannot substitute for the determinations and promulgation of regulations required under section 4(a)(1) of the Act. A decision to revise the status of or remove a species from the Federal List of Endangered and Threatened Wildlife (50 CFR 17.11) is ultimately based on an analysis of the best scientific and commercial data available to determine whether a species is no longer an endangered or threatened species, regardless of whether that information differs from the recovery plan.

Recovery plans may be revised to address continuing or new threats to the species, as new, substantive information becomes available. The recovery plan identifies site-specific management actions that will achieve recovery of the species, measurable criteria that set a trigger for review of the species' status, and methods for monitoring recovery progress. Recovery plans are intended to establish goals for long-term conservation of listed species and define criteria that are designed to indicate when the substantial threats facing a species have been removed or reduced to such an extent that the species may no longer need the protections of the Act.

There are many paths to accomplishing recovery of a species, and recovery may be achieved without all criteria being fully met. For example, one or more criteria may be exceeded while other criteria may not yet be accomplished. In that instance, we may determine that the threats are minimized sufficiently and the species is robust enough to delist. In other cases, recovery opportunities may be discovered that were not known when the recovery plan was finalized. These opportunities may be used instead of

methods identified in the recovery plan. Likewise, information on the species may be discovered that was not known at the time the recovery plan was finalized. The new information may change the extent to which criteria need to be met for recognizing recovery of the species. Recovery of a species is a dynamic process requiring adaptive management that may, or may not, fully follow the guidance provided in a recovery plan.

Recovery Planning and Implementation— The Louisiana Black Bear Recovery Plan was approved by the Service on September 27, 1995 (Service 1995, 59 pp.). It was developed in coordination with the BBCC and its Black Bear Restoration Plan (BBCC 1997, entire document). The objective of the recovery plan is to sufficiently alleviate the threats to the Louisiana black bear metapopulation, and the habitat that supports it, so that the protection afforded by the Endangered Species Act is no longer warranted.

The four primary recovery actions outlined in the Louisiana black bear recovery plan are:

(1) Restoring and protecting bear habitat;

(2) developing and implementing information and education programs;

(3) protecting and managing bear populations; and

(4) conducting research on population viability, corridors, and bear biology.

Significant accomplishments have been made on all of the primary actions for this subspecies (Service 2014, entire document). Below are examples:

Habitat Restoration and Protection: Habitat Restoration Planning Area maps have been used to focus our conservation efforts resulting in approximately 148,400 ac

(60,055 ha) of privately owned lands being restored and protected under the Service's Partners for Fish and Wildlife program and the WRP program. Approximately 480,836 ac (194,588 ha) have been permanently protected, including 126,417 ac (51,159 ha) that have been purchased or put under non-development easements in the Atchafalaya Basin (see the Summary of the Factors below for additional details).

Information and Education Programs: The BBCC, which implemented the first public education efforts, developed a landowner habitat management guide and continues to present informational and educational materials about bears and how to live in areas where they occur. The Bear Education and Restoration (BEaR) group of Mississippi, and the East Texas Black Bear Task Force, are additional organizations that actively conduct public education activities through events such as workshops, public talks, and brochures. There are two annual black bear festivals, one each in Mississippi and Louisiana, to promote public education and awareness of bears. Louisiana, Mississippi, and Texas have all developed and are distributing public education and safety informational material. LDWF regularly sponsors hunter safety and teacher workshops.

Protecting and Managing Bear Populations: The BBCC developed the black bear restoration plan in 1994 and updated it in 1997. The 1995 Louisiana black bear recovery plan, prepared by the Service in coordination with the BBCC, relies heavily upon that restoration plan. The BBCC restoration plan has additional goals focused on moving beyond recovery and into restoration throughout its range. All three States (LA, MS, TX) now have black bear management plans in place that guide their restoration and

management activities. The LDWF and MDWFP have nuisance response protocols in place and actively manage human–bear conflicts in coordination with the U.S. Department of Agriculture's (USDA) Wildlife Services program. The LDWF initiated a program with St. Mary Parish to reduce bear–human conflict in the LARB by providing an employee dedicated to reduce bear access to anthropogenic food sources (e.g. garbage, pet foods) in conjunction with purchasing and deploying bear-resistant waste cans (Davidson et al. 2015, p. 51). The LDWF continues to provide financial support for the Parish to maintain this program and has worked with adjacent parishes to implement similar programs. The LDWF and Service have worked with the Louisiana Department of Transportation and Development (LDOTD) to provide bear crossing signs on Hwy 90 in the LARB subpopulation and to focus habitat restoration and protection efforts for future bear crossings (i.e., underpasses). Similar efforts are underway to address the same concern along I–20 in the TRB subpopulation. The LDWF, in coordination with the Service and U.S. Geological Survey (USGS), has developed a database that is used to track bear occurrences, captures, and mortalities to better understand and manage subpopulations. A multi-partner effort to conduct a translocation program (based on new methodology of being able to use soft releases) from 2001 through 2009 resulted in the successful formation of the TRC breeding subpopulation.

Conduct Research on Population Viability, Corridors, and Bear Biology: More than 25 research studies on Louisiana black bear biology and habitat requirements, subpopulation vital statistics, taxonomy and genetics, and public attitudes in Louisiana, Mississippi, and Texas have been conducted (see Laufenberg and Clark 2014, p. 5 for a

partial listing). The LDWF will continue monitoring (using hair snare and mark-recapture efforts) the TRB, UARB, TRC, and LARB subpopulations (Davidson et al. 2015, p. 33, Table 3.1). Data from these studies are being used to monitor and manage the bear population.

Additionally, all four of these recovery actions have been identified for continued implementation in the LDWF Black Bear Management Plan (LDWF Plan; Davidson et al. 2015), the Mississippi Conservation and Management of Black Bears in Mississippi Plan (Young 2006, Appendix A), and the East Texas Black Bear Conservation and Management Plan (Barker et al. 2005, pp. 30–41).

Substantial progress has been achieved in alleviating known threats to the Louisiana black bear through increased habitat protection and restoration, improved population demographics by reduction of habitat fragmentations, increased knowledge of key population attributes (e.g., survival, fecundity, population growth rates, home ranges) necessary to manage this species, responsive conflict management, and increased public education. Many public and private partners have contributed to the current improved status of the Louisiana black bear population by implementing these recovery actions.

Recovery Criteria

Recovery Criterion 1: At least two viable subpopulations, one each in the Tensas and Atchafalaya River Basins. This criterion has been met. Based on Shaffer's discussion (1981, p. 133), the requirement for two viable Louisiana black bear subpopulations (one each in the Tensas and Atchafalaya River Basins) with exchange of individuals (see Criterion 2) to form a metapopulation would increase the likelihood of two or more subpopulations persisting for 100 years (BBCC 1997, p. 54). In terms of

achieving recovery criteria, the UARB subpopulation is located approximately 110 miles south of the TRB and, thus, the Louisiana black bear breeding subpopulation nearest the one in Tensas River Basin. The LARB subpopulation is located approximately 70 miles south of the UARB (therefore, approximately 180 miles south of TRB). When these recovery criteria were developed, there were no successful methods for establishing new breeding subpopulations other than relying on habitat restoration and natural population expansion. Thus, habitat restoration was and still is focused on surrounding all breeding subpopulations. Currently, there is one new breeding subpopulation, the TRC (formed in Louisiana as a result of reintroductions), between the TRB and UARB. This location was chosen for reintroductions in order to facilitate movement of individuals between the UARB and TRB subpopulations. Recent documentation of bear movement between the TRC and UARB and between the UARB and TRB via the TRC subpopulation demonstrates the success of this effort. In addition, several smaller breeding areas indirectly resulting from those reintroductions are forming in Louisiana. Additionally, three naturally forming (and indirectly resulting from the Louisiana reintroductions) breeding populations are establishing themselves in Mississippi, all evidence of increased interchange of bears.

The estimated probability of persistence over 100 years for the TRB subpopulation was 1.00 and 0.96 for Model 1 process-only and 95 percent confidence interval estimates and was 1.00 and 0.96 for Model 2 process-only and 95 percent confidence interval estimates (Laufenberg and Clark 2014, p. 46). The probability of persistence of the UARB subpopulation met the 95 percent probability of long-term persistence except under the two most conservative sets of assumptions (Model 2, all

uncertainty) (Laufenberg and Clark 2014. p. 82). The estimated asymptotic growth rates for the TRC ranged from 0.99 to 1.02, for Model 1 and Model 2, respectively (Laufenberg and Clark 2014, p. 45). TRC persistence probabilities ranged from 0.29 to 0.99 depending on carrying capacity, the strength of the density dependence, level of uncertainty, and the treatment of unresolved fates (i.e., deaths or lost collars) (Laufenberg and Clark 2014, p. 47). Using the telemetry and reproductive data from the TRC, probabilities of persistence were greater than or equal to 0.95 only for projections based on the most optimistic set of assumptions (Laufenberg and Clark 2014, p. 47).

Estimates of long-term viability of the TRB and the UARB subpopulations were greater than 95 percent except for the two most conservative models for the UARB (long-term viability estimates of 85 percent and 92 percent). Taken together as a system, and assuming that those subpopulations were independent, the combined viability analysis of the TRB, UARB, and TRC (using the most conservative estimates obtained for all three subpopulations) indicated that the Louisiana black bear metapopulation (TRB, TRC, and UARB) has an overall long-term probability of persistence of approximately 100 percent (0.996) (Laufenberg and Clark 2014, p. 92). The current movement of individuals between the additional subpopulations elsewhere in Louisiana and Mississippi would only improve the metapopulation's chance for persistence (Laufenberg and Clark 2014, p. 94). The opportunity for movement of individuals between the TRB-TRC-UARB metapopulation and the LARB subpopulation is currently low; however, the presence of the relatively large LARB subpopulation and projections for improving habitat conditions (refer to Factor A and D discussions) between it and the more northerly UARB

subpopulation contributes to the persistence of the Louisiana black bear population as a whole.

This recovery criterion, as described in the recovery plan, calls for two viable subpopulations, one each in the Tensas and Atchafalaya River Basins. The overall goal of the recovery plan was to protect the Louisiana black bear metapopulation and the habitat that supports it so that the protection afforded by the Act is no longer warranted. Based on the above analysis, we believe the Tensas subpopulation is viable and we believe the UARB subpopulation is viable based on three model scenarios. We have high confidence in these three model scenarios. The long-term persistence of the Louisiana black bear metapopulation (TRB, TRC, and UARB) is estimated to be at least 0.996 under the most conservative (i.e., using the lowest estimates of viability) model assumptions; therefore, we believe this criterion to be met. We believe that these conservative assumptions identified in these scenarios will likely be present post-delisting as the Louisiana black bear PDM plan is implemented. Additionally, we will pay close attention to UARB and LARB subpopulation parameters as post-delisting monitoring progresses. The TRC subpopulation located between TRB and UARB provides a mechanism for exchange between the TRB and UARB subpopulations. In addition, this recovery plan criterion did not include the possibility of other populations forming on the landscape because female range expansion is very slow and there was no acceptable methodology at the time to expedite that expansion (e.g., soft release translocations). However, this assumption was proven wrong. In addition to the populations described above, we have documented new breeding populations established in Louisiana and

Mississippi (Figure 1, *http://www.regulations.gov* at Docket Number FWS–R4–ES–2015–0014).

Recovery Criterion 2: Immigration and emigration corridors between the two viable subpopulations. This criterion has been met. To reach an accurate conclusion regarding the achievement of this criterion, it is essential to fully understand the term "corridor" in light of the advances in Louisiana black bear research methodology (and the knowledge gained regarding Louisiana black bear dispersal and interchange) that has occurred since the listing of the Louisiana black bear more than 20 years ago. Although the Louisiana black bear Recovery Plan does not specifically define the term "corridor," it does present the future objective of developing corridor requirements and guidelines from available research studies and incorporating pertinent findings and knowledge into practical management guidelines (Service 1995, p. 18).

The BBCC Black Bear Restoration Plan states that little was known about Louisiana black bear corridor use and requirements at that time (BBCC 1997, p. 58). Research studies conducted near the time of the Louisiana black bear listing were primarily inconclusive regarding the identification and function of corridors. Weaver et al. (1990b, p. 347) determined that the Louisiana black bear will use tree-lined drainages in agricultural areas to travel between larger forested tracts. They also stated, however, that "research is needed to document the characteristics a corridor must possess to make it suitable for use by bears as a habitat link." Marchinton (1995, pp. 53, 64) speculated that male Louisiana black bear movements, though influenced by habitat fragmentation patterns, were not inhibited by the level of fragmentation within his study area (which was typical of the landscape throughout the range of the Louisiana black bear). He also

discussed anecdotal evidence which suggested that "adult male bears would cross open fields" (Marchinton 1995, p. 59). We believe those early studies not only challenged the continuous-habitat-linkage perception of a corridor, but also described the need for additional research to clearly characterize the qualities and functions of such corridors.

The Black Bear Restoration Plan states that "the criteria for measuring corridor effectiveness should also consider corridor function" and "research is urgently needed to determine the corridor functions, their size and shape, and their actual effectiveness" (BBCC 1997, p. 58). To assess the function and role of corridors in Louisiana black bear dispersal and genetic exchange, Laufenberg and Clark (2014, pp. 24–31) conducted a movement, or step selection, study throughout a large portion of the range of the Louisiana black bear. Their findings indicated that, while contiguous forested habitat linkages can be beneficial to bears moving through a fragmented landscape, hypothetical forested corridors "were not more effective than the broken habitat matrix that surrounded many of the subpopulations" (Laufenberg and Clark 2014, p. 85). Their study also documented interchange occurring "from the UARB to the TRB by way of the TRC" (Laufenberg and Clark 2014, pp. 2, 84). Such interchange supports the assertion by Laufenberg and Clark (2014, p. 90) that the presence of multiple satellite populations of breeding bears on the landscape may be more effective in establishing and/or maintaining connectivity between the larger subpopulations than the presence of contiguous forested linkages. Based on their results and that of other pertinent studies (Laufenberg and Clark 2014, p. 90; Hilty et al. 2006, p. 192–193; Stratman et al. 2001, p. 57; Hellgren and Vaughn 1994, p. 279; Maehr et al. 1988, p. 4), we define "Louisiana black bear corridor" as a landscape that consists of "stepping stones" of habitat such as

large forested tracts that support reproducing subpopulations, smaller forested blocks that support one or more reproductive-aged females, and the matrix of riparian corridors, agricultural fields, and other undeveloped lands that are sufficiently permeable to allow interchange between the existing subpopulations.

Most satellite populations exist today as a result of the multi-agency project undertaken specifically to reduce demographic isolation of the existing TRB and UARB subpopulations (see discussion under TRC). That translocation project, initiated in 2001, was based on the assumptions that relocated females with cubs would remain at a new location (not currently supporting a Louisiana black bear subpopulation) and that adult females would be discovered by males traveling through the area. From 2001 through 2009, 48 females and 104 cubs were moved (primarily from the TRB) to a complex of public lands located between the TRB and the UARB subpopulations. Though most relocated females and their offspring remained within the vicinity of their release site (creating a new subpopulation that reduced the distance between existing subpopulations), a few dispersed to various habitat patches creating the satellite populations that now facilitate interchange between the larger subpopulations.

As part of the recovery process, HRPA maps were developed by a collaborative multi-agency and organization group (Federal, State, local government partners, and nonprofit organizations including but not limited to the Natural Resources Conservation Service (NRCS), LDWF, BBCC, Louisiana State University, the Louisiana Nature Conservancy, and the Service) to design and create landscape features to support the habitat-block/satellite-population corridor concept that facilitates such interchange. The Louisiana black bear HRPA maps are regularly updated; the most recent update was in

the spring of 2011. Those maps are designed for use with conservation programs administered by NRCS (e.g., WRP) and the Service (e.g., Partners for Fish and Wildlife (PFW)), which primarily encourage reforestation of marginal and nonproductive cropland in Louisiana. The maps, using a 3-tiered point system, establish higher point zones (indicating higher importance for bear recovery and thus providing landowners competing for this conservation funding with a higher ranking) around breeding bear habitat, large forested areas, and various habitat patches that may facilitate interchange between Louisiana black bear subpopulations. Areas that would benefit breeding subpopulations and corridors thus receive the highest priority, and landowners competing for WRP enrollment would receive higher rankings in those areas. Most WRP tracts are encumbered by permanent easements that protect the land from future conversion or development (refer to discussion in Factor D).

Similar conservation priority maps have been developed and are currently in use in Mississippi (Ginger et al. 2007). The TPWD and its partners have developed Land Conservation Priority Maps for East Texas and a Hardwood Habitat Cooperative that offers a cost-share program to landowners seeking to restore or enhance hardwood habitat on their lands. In East Texas, more than 500 ac (200 ha) have been restored and 1,550 ac (630 ha) were enhanced via the Hardwood Habitat Cooperative program between 2008 and 2011.

The Louisiana Black Bear Recovery Plan states that corridors providing cover may facilitate the movement of bears between highly fragmented forest tracts. It also states, however, that the Louisiana black bear has been known to cross open agricultural fields even when forested corridors were available, and that "habitat blocks (large blocks

of land) may provide more effective corridors" (Service 1995, p. 6). This type of habitat-block/satellite-population corridor occurs throughout the range of the Louisiana black bear in the form of remnant forested patches and tracts of restored habitat (on private and public lands), and has been augmented by the relocation of bears into east-central Louisiana. Laufenberg and Clark (2014, p. 90) concluded, based on the result of their work, that a patchwork of natural land cover between Louisiana black bear breeding subpopulations may be sufficient for movement of individuals between subpopulations (at least for males).

Laufenberg and Clark (2014, p. 85) postulated that, while such corridors may be important, they were not more effective than the presence of a broken-habitat matrix such as what is surrounding current Louisiana black bear subpopulations. As described above, research supports this corridor concept and the documented evidence of interchange between the UARB and the TRB subpopulations (and additional interchange with subpopulations in Arkansas and Mississippi) provides further validation. The Louisiana Black Bear Recovery Plan indicates "key corridors or habitat blocks need to be identified and will be required to ease fragmentation within and between occupied habitat for the Louisiana black bear." We have clearly documented evidence of interchange between the TRB and UARB subpopulations by way of the TRC, and, therefore, we have met this criterion.

Recovery Criterion 3: Long-term protection of the habitat and interconnecting corridors that support each of the two viable subpopulations used as justification for delisting. The recovery plan states that long-term protection is defined as having

sufficient voluntary conservation agreements with private landowners and public land managers in the Tensas and Atchafalaya River Basins so that habitat degradation is unlikely to occur over 100 years (Service 1995, p. 14). Additionally, the Black Bear Restoration Plan states that criteria for determining whether long-term habitat and corridor protection has been achieved could include "data projecting future habitat trend according to historical trend in acreage and habitat type/quality" (BBCC 1997, p. 58). It further states that other metrics to consider may include the extent of cooperating private landowners and the nature of their respective conservation agreements, as well as "federal legislation restricting agricultural conversion of wetlands, and the nature of conservation easements such as those being obtained from private landowners by the Corps in the Atchafalaya Floodway" (BBCC 1997, p. 58). Employing those criteria, and based on the genetic and connectivity studies by Laufenberg and Clark (2014), it is evident that not only are corridors between the UARB and the TRB subpopulations present and functional, they are afforded long-term protection through a combination of conservation easements and environmental regulations.

Habitat Protection Through Ownership or Permanent Easements: An estimated 450,000 to 550,000 ac (182,000 to 222,000 ha) of BLH forest habitat were restored in the LMRAV within 12 years of the Louisiana black bear being listed as a threatened species (Haynes 2004, p. 173). Since 1992, more than 148,000 ac (60,000 ha) of land has been permanently protected and/or restored in the HRPA via the WRP program (mostly in the TRB and UARB areas) (Table 2). It should also be noted that, in Louisiana, there are approximately 480,000 ac (195,000 ha) of public lands within the HRPA that are

managed or maintained in a manner that provides benefits to bears (Table 5). Approximately 460,000 ac (186,000 ha) of public lands in Louisiana and Mississippi directly support Louisiana black bear breeding populations (see Table 6, and Figure 2, *http://www.regulations.gov* at Docket Number FWS–R4–ES–2015–0014)).

Habitat Protection Through Regulations and Mitigation: A large proportion of the remaining forested habitat that is not encumbered by perpetual conservation servitudes or public ownership and management are occasionally to frequently flooded and would not be suitable for conversion to agriculture or development without the construction of significant flood control features. The construction of such features or similar activities that would eliminate or reduce existing wetland habitat (including forested wetlands) would be regulated via the Food Security Act of 1985 and/or section 404 of the CWA. Although the CWA was initially considered insufficient to ensure the long-term protection of Louisiana black bear corridors, significant changes have occurred in the legal interpretation and authoritative limits of the CWA (Houck 2012, pp. 1473–1525). As the result of multiple court cases and revised legal interpretations, the regulatory scope and enforcement authority of the Corps and the Environmental Protection Agency (EPA) under the CWA was substantially broadened (see Factor D for additional information). With the institution of those regulatory changes, BLH forest loss in the LMRAV has reversed. This trend reversal is heavily supported by published accounts (Haynes 2004, p. 173), natural resource management agency records (Table 2), and our analysis of classified imagery within the Louisiana black bear HRPA (Tables 7 and 8). The habitat loss trend reversal is further supported by an analysis of data

obtained from the Corps' wetland regulatory program, which demonstrates that substantially more forested habitat is restored through compensatory wetland mitigation than is eliminated via permitted wetland development projects (Table 10). Furthermore, the Corps' wetland regulatory program data indicate that the ratio of wetland habitat gains from compensatory mitigation to wetland habitat losses attributed to permitted projects is 6:1 (Stewart 2014, personal communication).

Based on our review of the Louisiana black bear recovery plan, we conclude that the status of the species has improved due to implementation of recovery activities and the criteria of the recovery plan have been met. Our analysis of whether the species has achieved recovery and thus no longer requires the protections of the Act because it is no longer an endangered or threatened species is based on the five statutory threat factors identified in section 4 of the Act, and is discussed below in the Summary of Factors Affecting the Species.

Summary of Changes from the Proposed Rule

We have not made any substantive changes in this final rule based on the comments that we received during the public comment period. We received some additional information, which has been incorporated, and text has been added to better present our decision. For example, State agencies provided additional updated data on mortalities that we have incorporated.

Summary of Comments and Recommendations

In the proposed rule published May 21, 2015 (80 FR 29394), we requested that all interested parties submit written comments on the proposal by July 20, 2015. We also contacted appropriate Federal and State agencies, scientific experts and organizations, and other interested parties and invited them to comment on the proposal. Legal notices were published in the Advocate and News Star (Louisiana), Clarion Ledger (Mississippi), and Longview News Journal (Texas) newspapers. We held two public hearings, one in Tallulah, LA, on June 23, 2015, and one in Baton Rouge, LA, on June 25, 2015. Those hearings were announced with the proposed listing and legal notices, and again in a June 12, 2015, media advisory, shortly before the hearings.

During the comment period for the proposed rule, we received 126 comment letters or statements (some individuals commented more than once) directly addressing the proposed action. Three comments were received from peer reviewers, two from State agencies, and 114 from the public (including 54 form letters) posted on the Federal docket, and 7 were presented at the hearings. We did not receive any comments from Tribes. Three additional comment letters were submitted after the close of the comment period. We reviewed those three letters in accordance with the requirements of the Act and Administrative Procedure Act. They did not provide any significant new information but were similar to other comments received by the close of the comment period, and thus are addressed through our response to those comments that were received by the closing date.

We received several comments providing editorial corrections (e.g., defining acronyms, adding additional tables) and suggestions regarding formatting, and requests for clarification. We have made those corrections and changes as appropriate. All

substantive information provided during the comment period is either incorporated directly into this final determination or is addressed in our responses below. Several comments and questions were not explicitly addressed in the respective comment sections below because the information was already included in the proposed delisting rule and thus is carried forward in the body of this final rule (involving topics such as educational programs, increased sightings, nuisance bear protocols, habitat restoration and protection efforts, status of legal protection for bears, subpopulation-specific demographics, and the geographic extent of breeding subpopulations).

Several commenters simply expressed opposition to or support for the proposed delisting of the Louisiana black bear without providing any additional supporting information. We have noted those responses but, as stated in our proposed rule, submissions merely stating support for or opposition to the action under consideration without providing supporting information, although noted, will not be considered in making a determination, as section 4(b)(1)(A) of the Act directs that a determination as to whether any species is a threatened or endangered species must be made "solely on the basis of the best scientific and commercial data available."

State and Peer Review Comments

Section 4(b)(5)(A)(ii) of the Act states that the Secretary must give actual notice of a proposed regulation under section 4(a) to the State agency in each State in which the species is believed to occur, and invite the comments of such agency. Section 4(i) of the Act states, "the Secretary shall submit to the State agency a written justification for his failure to adopt regulations consistent with the agency's comments or petition." The

Service submitted the proposed regulation to the States of Louisiana, Mississippi, and Texas. We received formal written comments from Louisiana, including a substantive comment addressed below. The State of Texas' Parks and Wildlife Department was supportive of our proposed rule and agreed with our findings; they did not have substantive comments. We appreciate the support from Texas for the action we are working on together and the State's ongoing commitment to protect black bears. The MDWFP provided support for this action in a telephone call and did not have substantive comments. Issues and information provided by the State agencies are summarized in the State Comments section, and where they overlap with similar issues identified by the public, they are included in the Public Comments section.

In accordance with our peer review policy, which was published on July 1, 1994 (59 FR 34270), we solicited expert opinion on the proposed rule and the draft post-delisting monitoring plan from three knowledgeable, independent individuals with scientific expertise that included familiarity with the Louisiana black bear (and other black bears) and its habitat, biological needs, threats, recovery efforts, and current research methodologies. We received responses from all three peer reviewers. Issues and information provided by the peer reviewers are summarized in the Peer Reviewer Comments section, and where they overlap with similar issues identified by the public, they are included in the Public Comments section. All peer reviewers supported our conclusions and provided additional information, clarifications, and suggestions to improve the final rule.

State Comments

Comment (1): The LDWF was supportive of our proposed rule and concurred with our findings. The LDWF added that it is "prepared to accept full responsibility for the management of bears in Louisiana, and that regulations are in place that protect all bears, regardless of sub-specific designation within Louisiana." The LDWF also stated that its Black Bear Management Plan was presented to and reviewed by the Louisiana Wildlife and Fisheries Commission (LWFC), had undergone a 30-day public review and comment period, and was published on the LDWF website (www.wlf.louisiana.gov) immediately thereafter. LDWF also provided supplementary information from a genetics study of the TRB Louisiana black bear subpopulation and asked us to contact the agency regarding additional data and reports on updated sightings and mortalities entered into its BearTrak database.

Our response: We appreciate LDWF's commitment to continued black bear conservation. We understand that, upon delisting, LDWF will accept full responsibility for the care, conservation, and management of the Louisiana black bear. We look forward to working together with LDWF on post-delisting monitoring and have incorporated the additional information provided by LDWF into this document and the PDM plan.

Peer Reviewer Comments

Comment (2): One reviewer suggested we add a discussion of effective population size (N_e) to our discussion of genetic diversity. The reviewer suggested this addition because estimates of effective population size are sometimes used in lieu of demographic viability criteria when discussing genetic diversity. In the reviewer's

opinion, for this action, exclusive use of effective population size would be misguided. The reviewer also commented that, based on the data presented in the proposal and supporting documentation, there is no indication that genetic viability is a concern.

Our response: We have added a discussion of N_e to the rule (see Species Information section).

Comment (3): All peer reviewers stated that the PDM plan was sound, had no major deficiencies, and that the categories of response scenarios and corresponding triggers were appropriate. One peer reviewer suggested we use "stable or positive growth rate" as a metric in our post-delisting monitoring plan.

Our response: We appreciate the comments by all peer reviewers and their assessment of soundness of our approach. We agree that stable or positive growth rates are desirable goals; however, that metric can be affected by the carrying capacity of an area. For example, in areas where carrying capacity is being approached, has been met, or has been exceeded, the growth rates may not be increasing and that is not necessarily an indication that a population is experiencing stress. We believe the demographic monitoring parameters we have chosen (e.g., adult survival and fecundity) allow us to accurately assess the status of bear subpopulations; those metrics and the other data we are collecting will give us the ability to examine population growth; however, for the reason stated above, we chose not to specifically use population growth rate as an identified monitoring parameter.

Comment (4): One reviewer suggested adding a component to the PDM [plan] that involves recording of public bear sightings as a means to examine changes in the overall area of occupation as well as possible changes in public sentiment.

Our response: We agree with the reviewer that maintaining and monitoring public sightings provide useful information regarding bear population distribution and public sentiment. The LDWF currently maintains a database of all significant bear sightings with geographic coordinates (e.g., sightings, mortalities). Credible reports of bears outside of the current known range are recorded for the purpose recommended by the reviewer; public reports of bears within currently known areas are not always recorded unless the call is to report nuisance activity (Davidson et al. 2015, p. 32). The purposes of this database are to monitor bear range expansion and recolonization, monitor anthropogenic mortality locations and frequency, and human–bear conflict abatement (Davidson et al. 2015, p. 52). We have included a statement in the final PDM plan that indicates information in that database may be considered in post-delisting monitoring.

Comment (5): One reviewer stated that our use of "no new or increasing threats" as a criterion seemed to be vague.

Our response: In our review of the best available and commercial data, we did not identify any factors that are likely to reach a magnitude that threatens the continued existence of the species. The PDM is designed to monitor the threats that caused this species to be listed. We included the term "new or increasing threats" in our response category triggers to allow for consideration of any currently unknown factors we could not reasonably predict but that may appear during the post-delisting monitoring period (e.g., a new disease that could affect the Louisiana black bear or its habitat). In that sense, we believe that this needs to be a general category. However, we agree with the reviewer that our use of the term "no new or increasing threats" in our Category I

response trigger is vague in terms of defining what level of impact would require consideration. In Categories II and III, we used the term "new and increasing threats that are considered to be of a magnitude and imminence that may threaten the continued existence of the Louisiana black bear within the foreseeable future." We added the language regarding magnitude and imminence to our Category I response triggers.

Comment (6): One reviewer suggested that using 2013 as a reference year for our PDM demographic monitoring, instead of 2006, was a more logical choice because 2006 may not have represented the current population conditions at delisting. In addition, using 2013 would be more comparable to the habitat data, which uses 2013 as a baseline.

Our response: We agree with the reviewer that the 2006 data do not represent the population's conditions at delisting. The latest demographic data used in Laufenberg and Clark were collected in 2012; therefore, we chose to use 2012, instead of 2013, to more accurately reflect a baseline or reference year.

Comment (7): One reviewer noted that it was unclear to what degree female survival and per-capita recruitment, as used in the triggers, would be calculated and assessed. He noted that assessment on an annual basis could create the risk of over-reaction and suggested incorporating a "sliding scale," based on timeframes, into the three categories may help determine the level of response needed and thus increase the effectiveness of management responses.

Our response: We have clarified our explanation of the demographic measures to indicate our evaluation will be based on 3-year averages. We will still have the data collected and summarized annually in the event something unusual is detected within subpopulations.

Comment (8): One reviewer suggested a grammatical correction and that it was not clear whether a single condition or all conditions need to be met for each of the trigger criteria categories. He noted a particular concern with Trigger Category III but suggested clarifying the decisions for all three triggers.

Our response: We have re-worded our definitions (for all three Category triggers) to include the terms "and" and "or" after each condition so that the combination of conditions necessary to activate a trigger is clearly defined. We also re-worded our final paragraph for the Category II trigger to include the term "If any of these conditions…" in order to clarify the necessary conditions to address this reviewer's comments (see Post Delisting Monitoring Plan section).

Public Comments

Comment (9): Several commenters stated that the Service did a poor job in advertising public meetings. One commenter stated that time restrictions placed on public hearing speakers were improper. One commenter requested that the Service extend the comment period, citing the example of the Service extending the comment period for listing.

Our response: We proactively scheduled public hearings and published the dates, times, and locations for those public hearings in the proposal to delist the Louisiana black bear on May 21, 2015 (80 FR 29396), well before the hearing dates (June 23 and 25, 2015) in order to provide the public opportunities to provide comments. The dates, times, and locations for those public hearings were also included in news releases provided to appropriate Federal and State agencies, scientific experts and organizations,

and other interested parties in Texas, Louisiana, and Mississippi at the time of the proposal. Additionally, the news releases were posted on the Service's national and regional websites. Legal notices for the hearings were published in the Advocate (Baton Rouge, LA) and News Star (Monroe, LA) on June 2, 2015, Clarion Ledger (Mississippi) on June 2, 2015, and Longview News Journal (Texas) on June 3, 2015. Finally, the Service issued a June 12, 2015, media advisory shortly before the hearings.

We conducted public hearings in a manner we believed would be productive and fair to all attendees, including placing time limits on speakers. We hold hearings to solicit public input; as such, they are organized in a way that allows us to hear as many comments as possible to help inform our decision. We included an open house before the hearings in order to provide time for participants to ask questions and have discussions regarding our proposal. We notified all hearing participants of the several ways to contribute any additional comments (e.g., in writing at the public hearing, in writing via the U.S. postal service, and in writing on www.regulations.gov).

A 60-day comment period is the Service's standard comment period for substantive decisions. Based on the comments presented at the public hearings and during the comment period, we concluded that it was not necessary to reopen the comment period.

Comment (10): Several commenters noted that the BBCC has played a significant role in the recovery of the Louisiana black bear.

Our response: We agree that the BBCC and its large and varied membership (Federal and State agencies, landowners, and the public) have played an important role in Louisiana black bear recovery. BBCC provided a common forum from which to develop

a path forward in recovery (e.g., the Louisiana black bear recovery plan was a subset of the broader BBCC Restoration Plan) at listing and for subsequent recovery implementation. In addition to the numerous contributions by BBCC members, we acknowledge that many individuals and agencies have made substantial contributions to the recovery of this species. We celebrate all partners involved with this recovery success.

Comment (11): One commenter stated that we had never defined the term Lower Mississippi River Alluvial Valley (LMRAV) and requested we correct the statement indicating that Louisiana and Mississippi black bear breeding populations occur in the LMRAV.

Our response: We regret the confusion resulting from failing to describe the LMRAV as we used it. We have added a geographic description to better define our use of the term LMRAV.

Comment (12): One commenter disagreed with the Service's determination that to be considered a significant portion of the range, the portion of the range must be so important that the species cannot survive without it.

Our response: For our analysis, we followed the Service's final policy on "Significant Portion of its Range" (SPR) (79 FR 37578; July 1, 2014). Based on our evaluation of the biology and current and potential threats to the Louisiana black bear that have been sufficiently ameliorated, it is not reasonable to conclude that any portion of the range has a different status than any other portion. See the Significant Portion of the Range discussion.

Comment (13): One commenter, referencing several imperiled species on the Service's candidate list, questioned why the Service would pursue a complex action like delisting of the Louisiana black bear (an action apparently not planned until completion of the 5-year review and availability of Laufenberg and Clark's (2014) research) over listing more imperiled species. He asked if the Service is using funds appropriated by Congress for specifically delisting the Louisiana black bear and, if not, requested the Service to explain why we pursued delisting instead of providing protection to other species long known to be in imminent danger.

Our response: Both preventing extinction and achieving recovery have been and will continue to be among the Service's highest priorities. Activities providing protection for species on the Service's candidate list are funded from separate budget activities than those relating to recovery and delisting actions. In other words, not producing this rule would not have provided additional funding for efforts to list imperiled species. Recovery funds support efforts to protect and improve a listed species' status and also to remove a species from the list once we have determined a species no longer requires the protection provided by the Act. By promptly removing "recovered" species from no-longer-needed protection of the Act, we can then direct that funding to recover other listed species or improve their status.

Efforts for recovering and delisting the Louisiana black bear have been ongoing. Since the bear was listed in 1992, the Service and many partners have actively worked towards its recovery (see response to Comment 14).

Comment (14): Several commenters stated that the delisting proposal and draft post-delisting monitoring were "fast-tracked" as a result of political pressures. They also

stated that, as a result, scientific evidence has been edited to show only documents supporting the delisting proposal.

Our response: Many partners have been actively working on Louisiana black bear recovery since its listing in 1992 (see Recovery Plan and Recovery Plan Implementation). Specifically, in August 2008, the Service, as part of the Service's Endangered Species Program Strategic Plan, designed a framework for achieving conservation of listed species and clearly articulating accomplishments (Service 2009c). As part of this plan, more than 100 Spotlight Species (including the Louisiana black bear) were identified across the United States to receive increased attention from the Endangered Species Program (including funding) and, based on a 5-Year Action Plan, demonstrate results toward species conservation goals. The goal of the 5-Year Action Plan (fiscal year 2009 through fiscal year 2013) for the Louisiana black bear was to improve the bear's status to the point where it no longer required protection of the Act (Service 2009d). The plan identified conservation actions including continued habitat protection, conflict management, and public education. It also prioritized population viability studies in the Tensas and Atchafalaya River Basin studies of population interchange and corridor assessments. The work published by Laufenberg and Clark (2014) represents many years work and largely addresses those goals.

The development of a post-delisting monitoring (PDM) plan is typically an iterative process that is incorporated into recovery planning and refined during the later stages of recovery so that it is ready to be released at the time a species is proposed for delisting (Service 2008b, p. 3-1). Preliminary development of the PDM plan for the Louisiana black bear began in 2011 to ensure that it would be built upon established data

sets collected during recovery in order to document "baseline" conditions prior to delisting so that changes post-delisting could be adequately assessed.

All of the available scientific data has been considered to evaluate the recovery progress of the Louisiana black bear. We did not edit documents to show only results favorable towards delisting. This final action was supported by the peer reviewers, who were all highly familiar with literature on the black bear in general and the Louisiana black bear as well.

Comment (15): Several commenters questioned the quality of the science that the Service used as a basis for our delisting proposal or stated that the research results were inconclusive. One commenter claimed that we had presented only the research that supported our proposal.

Our response: We believe that the data we used in our proposal to delist the Louisiana black bear are credible. We did not receive any data during the comment period that would change our determination. Peer review evaluation of our proposal by recognized experts in black bear biology and research confirmed our determination, finding our reliance on the analyses of Laufenberg and Clark (2014) to be appropriate because that work represents the best available science regarding Louisiana black bear population dynamics (see Peer Review Comments). Peer reviewers did not note any major oversights, omissions, or inconsistencies in our proposed rule, but agreed that our proposal accurately reflected the interpretation of current science.

Comment (16): One commenter stated that the Service and the public did not have access to the best available scientific and commercial data because we had

eliminated significant and substantial data by failing to conduct section 7(a)(1) consultations for the section 4(d) rule providing protection of den or candidate den trees.

Our response: We have used the best available and pertinent scientific data in our decision to delist the Louisiana black bear. We also requested that the public submit relevant data and information during the 60-day comment period that followed our delisting proposal (80 FR 29394). Section 7(a)(1) of the Act states that all Federal agencies shall proactively utilize their authorities, in consultation with the Secretary (Service), to develop and carry out programs to conserve species listed under the Act; as such, there is no consultation. Section 7(a)(2) states that Federal agencies shall ensure that their actions are not likely to jeopardize the continued existence of listed species and/or destroy or adverse modify their designated critical habitat while implementing their actions. That latter section authorizes the Service to consult with Federal agencies on proposed actions that may affect federally listed species; for the Louisiana black bear, this authority includes those actions potentially impacting actual and candidate Louisiana black bear den trees (57 FR 588, January 7, 1992). Since listing in 1992, we have consulted on all projects within our regulatory authority (i.e., with a Federal nexus) that could have potentially impacted such trees, including a federally authorized timber harvest.

Comment (17): One commenter stated that the public did not have access to the best available data because the Service eliminated significant and substantial data for several reasons addressed here (e.g., failure to conduct required 5-, 10-, and 15-year reviews and failure to include long-time partners in the 2014 5-year review, halting a black bear vulnerability analysis by the Gulf Coastal Plain and Ozarks Landscape

Conservation Cooperative (GCPO LCC) and excluding long-time partners from the development of the post-delisting monitoring plan (see response to Comment 56). The commenter further asserts that the Service conducted non-public revisions of the recovery plan based on the Service's failure to produce a map of occupied and potential bear habitat (see response to Comment 40), eliminating the multi-State, multi-agency conflict resolution plan and team, eliminating the use and support for the BBCC Black Bear Management Handbook, eliminating the multi-agency, multi-State USGS-generated mortality database, and the Service's determining that the recovery actions, 3.4–3.6, directed at developing and implementing Bear Management Units (BMUs), are obsolete. The commenter stated that, prior to making a final decision on whether to delist the Louisiana black bear, the Service should: (1) complete a new 5-year review following notice and opportunity for public comment; (2) complete a formal public revision of the Louisiana black bear recovery plan and provide public notice and an opportunity for public review; and (3) complete a new draft post-delisting monitoring plan in accordance with the 2008 Service guidance.

Our response: The Service is required under section 4(c)(2) of the Act to conduct reviews of each federally listed species every 5 years. These 5-year reviews are conducted to evaluate the status of a federally listed species and determine if the species should be delisted, reclassified from endangered to threatened status or from threatened to endangered status, or the status of the species should remain the same. The public notice initiating the first Louisiana black bear 5-year review was published in 2007 (72 FR 42425, August 2, 2007); stakeholders and the public were also notified via press releases and individual letters via the U.S. postal service, and the review was completed

in 2014. Prior to that time, because of budget constraints and higher priority workload issues (e.g., Deepwater Horizon), the Service had not been able to complete a review for the bear. We did not receive any information from the public for that review. Even though delayed, the 5-year review was comprehensive and included all research and recovery activities for the Louisiana black bear since its listing in 1992 through early 2014. In that review, we stated that we anticipated making additional progress with partners and we believed delisting could be considered for this subspecies in the near future. In December 2014, we received a final report from Laufenberg and Clark regarding long-term population viability for the Louisiana black bear and, based on our assessment of those results and our studies of habitat trends, we began to work on a delisting proposal.

The Service did not halt a GCPO LCC black bear vulnerability analysis; however, we did participate in a BBCC meeting where that analysis was presented and discussed. The GCPO LCC functions as a self-directed applied conservation partnership among Federal, State, university, and nongovernmental organizations who are collaboratively seeking to understand and improve conservation actions at the very large or landscape, scale. It spans 12 States in the south central United States. The Service provides funding to help support the coordination of science staff of the GCPO LCC partnerships and some science projects. The Service is represented on the Steering Committee and other GCPO LCC subteams (science teams, working groups, etc.) as an equal partner—one voice and one vote. Our participation as a partner is to identify shared conservation priorities.

With regard to the commenter's assertion that we have conducted non-public revisions of the Louisiana black bear recovery plan, all tracking of implementation of the

recovery plan is reported annually in the Service's publicly available Recovery Plans module. Additionally, no changes were made to the approach outlined in the original recovery plan, but some implementation methods did differ from what was originally planned.

When the commenter states the Service eliminated the USGS database, he is referring to Recovery Plan Task 3.2 related to Coordination of Record Keeping for bear deaths. No USGS database existed until 2010, at which time the Service provided USGS 3 years of funding to develop a digital bear reporting database. That database, referred to as BearTrak, is still in use and is regularly updated.

When the commenter asserts that the Service eliminated the Conflict Resolution Team, he is referring to recovery Task 2.3. That Team originally functioned within the framework of the BBCC according to a 1994 Contingency Plan and voluntarily provided much-needed rapid responses to the limited number of bear–human conflicts that occurred shortly after the bear's listing. In 1999, as the number of human–bear conflicts increased, State agencies such as the LDWF and the MDWFP took the lead for conflict management and had appropriately trained staff assigned to regularly respond to those situations. The Service did not eliminate the Conflict Resolution team; instead, the State agencies assumed responsibility for those actions as the bears' numbers and resulting conflicts increased, which required the skills of the State agencies. The task identified in the Recovery Plan is still being implemented, just in a different manner than originally conceived.

When the commenter asserts that the Service had declared certain recovery tasks as obsolete, we believe that he is referring to recovery tasks 3.4 through 3.6 to develop,

implement, and monitor Bear Management Units (BMUs). The Service had noted in the Recovery Plans module that these tasks were obsolete. We made that assessment based on the 2006 revision to the 1997 BBCC Restoration Plan (BBCC 2006), which stated "*The BMU concept met with little success [and] will not be pursued further. As with many volunteer organizations, this became a daunting task that ultimately led to state agencies taking the lead in bear restoration activities for their respective states. Those restoration activities include many of the actions contained in the Bear Management Unit Plan Outline (Table 4) with a focus on habitat restoration, population monitoring, and reintroduction*" BBCC (2006, p. 2). The commenter asserts that the changes in BBCC Restoration do not apply to the recovery plan; however, the responsible parties for those tasks include the Service, BBCC, and State agencies. Based on the restoration plan revisions, it was logical to assume that those tasks were obsolete. Recovery plans are guidance documents. As such, some methods originally identified in plans may not work, just as other methods, not available at the plan's initial development may become available based on best available information or partnerships. The Service did not actively eliminate BMUs; we merely reported the status of those efforts in the Recovery Plans module. The assumption by State agencies of the recovery activities (e.g., population and habitat conditions, conflict management) addresses the recovery plan tasks intended by BMUs (BBCC 1997, pp. 73–90).

The commenter incorrectly asserts that the Service eliminated the use of and support for the BBCC Black Bear Management Handbook. We continue to support its use as evidenced in the Service's 2015 update to Recovery Task 1.23, in ROAR, "this task is accomplished … through the use of the BBCC Black Bear Management

Handbook (completed in 1992 and periodically updated) as a guide for private landowners."

As discussed in our Response to Comment 56, we believe we correctly followed Service guidance when we developed the post-delisting monitoring plan.

Therefore, we believe that we have based this decision on the best available data and have made those data available to the public for comment and review. Given the status review conducted as part of the proposed rule, we do not believe conducting a formal update of the recovery plan or re-drafting the post-delisting monitoring plan would provide any new significant information or data that would affect our assessment of the Louisiana black bear's recovery.

Comment (18): One commenter questioned the scientific criteria for designation of main and satellite subpopulations.

Our response: The term "satellite population" was taken from a Louisiana black bear population viability and connectivity study by Laufenberg and Clark (2014). Though not explicitly defined, satellite populations were generally described as "populations of resident breeding bears between the subpopulations to be linked." (Laufenberg and Clark 2014, p. 90). The subpopulations referenced (which may also be termed "main" or "core" populations) in that statement include those that were present at the time of listing, as well as the one more recently established through the relocation of bears on, and in the vicinity of, the Richard K. Yancey WMA. We refer to the isolated individuals or small groups of bears residing in habitat patches between those larger subpopulations as satellite populations, which is consistent with the description provided by Laufenberg and Clark (2014).

Comment (19): Several commenters stated that the public was not provided access to Louisiana black bear mortality data. In addition, they felt the data we cited regarding black bear mortality were erroneous.

Our response: We stated in our proposed rule that all data and reports used for the proposed rule were available for inspection at the Service's Lafayette Louisiana Office; however, no one requested to see that data. This included bear mortality data for Louisiana from the LDWF and for Mississippi from the MDWFP. In its comments on the proposed rule, the LDWF stated it had updated mortality data and could provide them to the Service. Based on concerns raised at the public hearing and during the comment period, we contacted the LDWF for that data and have revised the mortality estimates cited in this rule to reflect this most recent data (see Summary of Factors Affecting the Species). As with the proposed rule, we will also provide this information to anyone who requests it.

Comment (20): One group stated that bears play an important role in the ecology of forests, and they must continue to be protected. Another commenter stated we should give consideration to the effect that delisting the black bear will have on wildlife and education.

Our response: The Service is delisting the Louisiana black bear because threats present at the time of listing no longer exist or have been reduced to a point where the Louisiana black bear no longer requires protection under the Act. The Act specifically requires that the status of a species is determined based the five factors described in the Summary of Factors Affecting the Species section.

After delisting, the LDWF will continue to monitor and actively manage the Louisiana black bear. The LDWF Plan has the stated objective of maintaining a sustainable black bear population in suitable habitat even after the bear is delisted. Additionally, Louisiana, Mississippi, and Texas have developed and are distributing public education and bear safety informational material. LDWF regularly sponsors and will continue to provide public education and outreach as described in the Plan.

Comment (21): One commenter questioned whether the genetic analyses presented by Laufenberg and Clark (2014) require the Service to revisit the current Louisiana black bear taxonomy.

Our response: Laufenberg and Clark (2014, p. 85), in discussing the results of the population structure and migrant analyses and affinities of Louisiana bears to Minnesota and WRB bears, stated that they did not believe that the level of genetic affinity or differentiation they detected between populations was sufficient to determine taxonomic status. Numerous other studies of both morphometric and genetic characters have also found evidence of affinities among bears in Louisiana, Arkansas, and Minnesota producing differing interpretations of the taxonomy and distribution of bears in Louisiana with no definitive determination or conclusion that has been widely accepted. Therefore, although we recognize that there are still questions around the taxonomy, we still consider the Louisiana black bear to be a distinct subspecies described by Hall (1981, pp. 948–951).

Comment (22): One commenter questioned the process by which the Service evaluates the validity of the scientific research used in the rule. One commenter wanted to know if the peer reviewers would receive copies of public comments to consider prior

to submission of their comments and whether the names of peer reviewers would be made available to the public.

Our response: The research presented by Laufenberg and Clark (2014) was peer reviewed before the final publication was released to the Service in 2014. Additionally, in accordance with our 1994 peer review policy, we solicited independent scientific peer review of our delisting proposal, which included a review of the data we used and our interpretation and use of that data. Peer review was conducted by recognized experts in black bear biology. All peer reviewers indicated that we had correctly interpreted the results (see Peer Review Comments). All public comments and peer review comments (including commenter names for both public comments and peer reviewers) were made available for public review in the docket (http://www.regulations.gov at Docket Number FWS–R4–ES–2015–0014). Although peer reviewers were able to look at comments on the docket, the Service did not provide them with copies prior to completion of their peer review.

Comment (23): One commenter questioned whether our reliance on the research by Laufenberg and Clark (2014) set a precedent for a methodology to be used under the Act regarding continued viability analyses.

Our response: There are several approaches that can be used to assess a population's viability, and the availability of the best available data and subsequent analyses will vary by species. In the case of the Louisiana black bear, the demographic, viability, and connectivity analyses conducted by Laufenberg and Clark (2014) represent the best available science (based on extensive data) and, as noted by a peer reviewer, are the currently most advanced or sophisticated analyses for the Louisiana black bear. We

do not view use of this methodology as precedent setting for viability analyses in general, but consider our approach to satisfy section 4(b) of the Act, which requires that the determination to add or remove a species from the list be made "solely on the basis of the best scientific and commercial data available." This determination is made on a species-by-species basis.

Comment (24): One group suggested we should structure our delisting decision and the post-delisting monitoring plan on the basis of Louisiana black bear subpopulations and not on a "one size fits all" metapopulation approach.

Our response: We do not believe that our approach to this rule is "one size fits all." As described in the Recovery and Recovery Plan Implementation section of the proposed rule, the metapopulation analysis was only one aspect of our assessment of Louisiana black bear recovery. We began by looking at individual subpopulation numbers and habitat conditions, and then we examined recovery criteria for TRB and UARB subpopulation viabilities. Finally, based on the overall objective of the recovery plan (i.e., "sufficiently alleviate threats to the metapopulation"), we assessed metapopulation viability. Although the recovery plan addresses metapopulations, the decision to revise the status of or remove a species from the Federal List of Endangered and Threatened Wildlife (50 CFR 17.11) is ultimately based on an analysis of the best scientific and commercial data that are available to determine whether a species is no longer an endangered species or a threatened species based on the evaluation of the five factors in section 4 of the Act.

The purpose of the PDM plan is to detect any declines in Louisiana black bear populations (at extremely early stages) upon delisting, and the PDM plan includes

threshold triggers that would allow for corrective actions to be taken before the species would require protection of the Act. The PDM plan focuses on the subpopulations and habitat features that we relied on to demonstrate the black bear's recovery. Only in Category III of the PDM plan's "Definition of Response Triggers for Potential Monitoring Outcomes" (Service 2016c, p. 33) is metapopulation reassessed, in the event of individual subpopulation declines or habitat loss, as part of a decision to reassess the bear's status.

Comment (25): Several commenters stated that they did not believe the data we presented indicated that the species had recovered, and requested we ensure that all delisting criteria had been met and that a long-range conservation plan had been established. Other commenters claimed that the Service had not followed the recovery plan, and requested that protection be maintained for American black bears (due to similarity of appearance) within the range of *U. a. luteolus* because the Louisiana black bear was not recovered.

Our response: Recovery plans include criteria to assist in evaluating the status of a listed species; recovery plans are not regulatory documents. Species recovery may be accomplished via multiple avenues and may be achieved without all criteria being fully met. For the Louisiana black bear, however, the Service has determined that all recovery criteria have been met (see the discussion for Recovery Criteria). Additionally, our analysis of pertinent data and best available science confirms that the Louisiana black bear is fully recovered based on the absence of threats that were present at listing and the lack of new threats. Providing protection of the Act for this subspecies or other American black bear subspecies within its range based on similarity of appearance is,

therefore, no longer warranted. The Service is not required under the Act to establish a long-range conservation plan. However, as we have discussed in our rule, all three States within Louisiana black bear range have management plans that we have evaluated and have determined provide for the long-term conservation of this species (see the discussion in Factor D). Additionally, we did get valuable comments on our post-delisting monitoring plan to ensure it is protective of the Louisiana black bear.

Comment (26): Numerous commenters asserted that there are still active threats to the Louisiana black bear population, such as habitat loss, pollution, and human-induced mortality, and cited a lack of adequate regulatory mechanisms to prevent such occurrences. Numerous commenters identified vehicular collisions as an important source of mortality that should be addressed before delisting.

Our response: The Service reviews the best scientific and commercial information available when conducting a threats analysis. In considering what factors might constitute a threat, we must look beyond the mere exposure of individuals of the species to the factor to determine whether the exposure causes actual impacts to the entire species. The mere identification of factors that could negatively impact a species is not sufficient to compel a finding that listing (or maintaining a currently listed species on the Federal Lists of Endangered and Threatened Wildlife and Plants) is appropriate. We require evidence that these factors are operative threats currently acting on the species to the point that the species meets the definition of endangered or of threatened under the Act. In this case, we reviewed all known activities that could potentially threaten the Louisiana black bear (see Factors A–E discussion). While many of the anthropogenic sources of mortality (e.g., poaching, vehicle strikes, and nuisance bear management) have

impacted individual animals, we determined that, based on the analyses of population viabilities and the level of occurrences, they do not represent significant threats to the Louisiana black bear population (see Summary of Factor E).

Comment (27): One commenter suggested that the evaluation of future trends in human population growth should not be compared to data from 2015. Rather, data from 1900 should be considered baseline.

Our response: While historical population trends may provide an opportunity to track the effect of human population growth on Louisiana black bear habitat and demographics throughout history, we question the relevance of such data for assessing future threats to that species. Nonetheless, to ensure that we have fully considered potential threats associated with future human population growth, we evaluated the data referenced by the commenter. We found that, from 1900 to 2010 (using known population figures rather than projections), only 4 of the 17 parishes evaluated (which are those included within the Louisiana black bear HRPA) had their peak human population at the end of that evaluation period (i.e., 2010). In contrast, the 13 remaining parishes experienced their highest populations prior to 2010, including 9 that peaked prior to 1950, and 4 that experienced a peak population in 1900 (http://louisiana.gov/Explore/Historical_Census/; downloaded on December 3, 2015). Such figures are not unexpected as population-influencing factors of the early 1900s may no longer exist, or may have changed dramatically over the last century (e.g., educational opportunities, employment prospects, and discovery/utilization of natural resources such as hydrocarbons or agricultural crops). Accordingly, we defer to expert analysts at the Louisiana State Census Data Center to properly account for historical and current trends

(and associated influences) in developing human population projections for the State. Therefore, we anticipate minimal threats to the Louisiana black bear from future population growth based on projections provided by that agency (using the longest-range population forecast data currently available, which predict population declines from current levels in 15 of the 17 parishes within the Louisiana black bear HRPA).

Comment (28): One commenter mentioned recent bear mortalities resulting from incidental capture in snares and asserted that this new source of mortality constituted a demonstrable threat.

Our response: Available data demonstrate that the extent of Louisiana black bear mortality attributable to incidental capture in snares (intended for such species as feral hogs or coyotes) is minimal. In their comprehensive review of mortality data collected over the 23-year period since the bear was listed, Davidson and Murphy (2015, p. 9) found that a total of four bears have been killed in Louisiana from incidental capture in snares. This equates to approximately one percent of all known bear mortalities in the State. To our knowledge, the most comprehensive snaring effort within the range of the Louisiana black bear is associated with the feral swine damage management program administered by USDA–Wildlife Services. According to their data (USDA 2013, p. B-1), in approximately 6,000 snare days spanning over 8 years, no Louisiana black bears have been caught by their personnel. Accordingly, based on the best available scientific data, we do not believe that the incidental snaring of Louisiana black bears constitutes a threat to the subspecies.

Comment (29): Several public commenters asserted that the effects of climate change and the potential reduction in habitat resulting from changes in sea level posed a threat to the LARB subpopulation.

Our response: As stated in our response to Comment 26, simply identifying factors that could negatively impact a species is not sufficient to compel a finding that protection under the Act is necessary; we require evidence that these factors are operative threats that act on the species to the point that the species meets the definition of endangered or threatened under the Act. In the case of the effects of climate change, we reviewed the best available scientific and commercial information available that examined its potential effects (e.g., tropical storms, sea level rise, increased flooding) on black bear habitat, including research on the habitat needs of Louisiana black bears and their ability to adapt to potential habitat changes. Regarding sea level rise threats, more than 90 percent of Louisiana black bear breeding habitat and 70 percent of the Louisiana black bear population occur outside of the Louisiana Coastal Zone. Furthermore, the Louisiana black bear is extremely adaptable, highly mobile, and has the ability to successfully traverse large expanses of terrain that may include unsuitable or hostile landscape features. A recent study of the effects of the 2011 emergency opening of the Morganza Flood Control Structure verified the resiliency of the Louisiana black bear when faced with extreme environmental challenges, and concluded that adult Louisiana black bears experienced no negative biological effects from the extensive flooding that occurred during the operation of that structure (O'Connell-Goode et al. 2014, p. 483). Therefore, we continue to believe that it is highly unlikely that currently projected effects of climate change would impact Louisiana black bear habitat to the extent that it would

represent a substantial threat to this species. A more detailed discussion of the ability of the Louisiana black bear (including the LARB subpopulation) to survive the effects of global climate change and sea level rise is presented under Factor E.

Comment (30): One group recommended that we consider social tolerance, as was discussed in the proposed rule and PDM for the gray wolf populations. They provided several references for us to consider.

Our response: The Act specifically requires that the status of a species is determined based on the five factors as described in the Summary of Factors Affecting the Species section. The lack of social tolerance for listed species that may cause property damage (such as black bears) may translate into a lack of public support or even opposition to the recovery of such species. We considered social tolerance in the sense that it may also result in increased mortality via illegal killings. These concerns have been recognized since the black bear was listed and have been and will continue to be addressed and managed through rapid State agency responses to human–bear conflicts (see Recovery Implementation–Protecting and Managing Bear Populations). We have added information to the rule explaining the need for rapid response to potential conflict situations in order to maintain social tolerance. Part of the post-delisting monitoring activities and the ongoing management efforts by the LDWF is the maintenance of the existing database of reliable public sightings to aid research and management, to monitor bear range expansion and recolonization, to monitor anthropogenic mortality locations and frequency, and to help with human–bear conflict abatement. We have included a statement in the final PDM plan that information in the LDWF database may be considered in post-delisting monitoring.

Comment (31): One commenter made reference to Murrow and Clark's (2012) statements that the Louisiana black bear comprises three small, geographically isolated subpopulations that are vulnerable to extinction.

Our response: Murrow and Clark made the referenced statement in the abstract of their paper and also in discussing the small population size and vulnerability as reason the Louisiana black bear was listed as a threatened species under the Act in 1992, but the statement was not in reference to its current status (Murrow and Clark 2012 p. 192). Our reliance on the more recent and best available research by Laufenberg and Clark (2014) is appropriate.

Comment (32): Several commenters stated that the estimated total number of Louisiana black bears was too small, the populations not stable enough, or we lacked sufficient information about populations to support delisting. Another commenter referenced the discussion regarding minimum population sizes needed for viability in the BBCC Restoration Plan (1997). This commenter also questioned our statement that the recovery criteria had been met for the Louisiana black bear based on the Lowe (2011) UARB population size estimates. One commenter indicated that we should not proceed with delisting until there is a self-sustaining population.

Our response: The best available information supports delisting the Louisiana black bear. Population size, while an important component in a species' status, is not the only factor that should be assessed when evaluating a species' long-term survival. Environmental and other species-specific factors (e.g., mortality, fecundity, genetic diversity, isolation) must also be considered. Estimating a "minimum viable population size" is one way to estimate a species' probability for long-term persistence. Another

approach is to utilize existing data to conduct stochastic population modeling and extinction risk assessment, such as that conducted by Laufenberg and Clark (2014). Laufenberg and Clark's (2014) approach represents the best science and provides sound estimates of Louisiana black bear numbers and long-term viability over the next 100 years. Our peer reviewers agreed with our assessment, stating the data and analyses methods of Laufenberg and Clark (2014) were extensive and rigorous and the results highly credible (see Peer Review Comments).

Comment (33): One commenter, using multiple data sources, provided an estimate of historical population numbers of Louisiana black bears in order to assess the degree of "recovery." This commenter estimated 80,000 individual *U.a. luteolus* bears within this species' range prior to human colonization. The comment questions whether this subspecies can be considered to have recovered in light of these estimates.

Our response: The assumption that historical habitats would have supported a density of bears comparable to that currently observed under existing landscape conditions is not well supported. The relatively recent creation of a forest-patch/agriculture-field habitat matrix within the historical range of the Louisiana black bear, although partly responsible for an overall population decline, may be directly responsible for formation of multiple high-density subpopulations. Because the extent of reduced and highly fragmented habitat was likely not the case historically, it is unlikely that subpopulations occurred at these high densities and use of these numbers to extrapolate back to historically population numbers is unreliable. We believe that it is probable, therefore, that the historical Louisiana black bear population density and overall abundance was significantly lower than the estimates provided by the commenter.

Regardless of the method used to estimate historical population numbers, it is important to note that the recovery status of the Louisiana black bear is not contingent upon such figures. We determined that the Louisiana black bear has reached recovery because its metapopulation has long-term viability, there is adequate long-term protection of its habitat; and it no longer faces long-term threats to its viability.

Comment (34): One commenter questions the recovery criterion that a population should have a probability of persistence for only 100 years.

Our response: The criterion describing viable subpopulations as those that have a 95 percent or better chance of persistence over 100 years was developed for the 1995 Louisiana Black Bear Recovery Plan (Service 1995, p. 14). At that time, data were insufficient to reliably extend persistence probabilities beyond 100 years. That said, we continue to believe that a population capable of maintaining viability for 100 years (where significant threats to the species have been removed, as in the present case) is considered recovered and no longer requires the protections of the Act. Although current Louisiana black bear population data far exceed that available in 1995, and modeling techniques have become much more sophisticated, the reliability of Louisiana black bear population models that extend beyond 100 years remains highly questionable in light of the long-term effects of, and prediction uncertainty for, potential stochastic influences (environmental, demographic, genetic, and/or natural unknowns). For that reason, we do not believe that extending the timeline of such analyses would prove beneficial given the reduction in confidence in the outcome.

Comment (35): One commenter, though supportive of the delisting overall, raised concerns regarding the LARB stating it should remain listed as a threatened "Unique

Population Segment" due to: unknown long-term viability, the relatively high rate of adult female mortality, its genetic uniqueness (i.e., more representative of the Louisiana black bear subspecies), and vulnerability of habitat supporting this subpopulation due to the effects of climate change. Another commenter asserted the LARB is the most isolated population and that it faces an additional risk from hybridization with UARB (Minnesota) bears (if the Atchafalaya River Basin, as projected, becomes more suitable as bear habitat and facilitates exchange between those subpopulations).

Our response: We will first address the perceived threats raised by the commenter. We do not currently have an estimate on the long-term viability of the LARB; however, in spite of the relatively high female mortality, population numbers in the LARB subpopulation have nearly doubled since the Louisiana black bear was listed. We discussed the potential effects of climate change on the LARB (see Factor E) and determined they do not pose a threat based on the Louisiana black bears' adaptability, mobility, and demonstrated resiliency to extreme climatic events. We agree with the commenters that LARB is the most isolated subpopulation; however we also presented evidence that the intervening habitat between the LARB and the UARB (currently too wet to support breeding populations) is projected to convert to cypress swamp and early successional hardwood; habitat types more suitable for black bear use by 2030 (LeBlanc et al. 1981, pp. 55–57). Such changes could ultimately expand the acreage of suitable habitat for the LARB and UARB subpopulations, and improve habitat linkages and genetic exchange between those groups. In response to the comment that the resulting exchange would cause hybridization between the UARB and LARB and threaten this subpopulation, we do not agree with the assertion that the UARB consists primarily of

bears descended from Minnesota bears (see Comment 37). We have addressed this point in the Summary of Factors (see revised discussion under Factor E). Finally, although the LARB subpopulation has occasionally been characterized by some as a genetically unique subpopulation, recent research (Csiki et al. 2003; Troxler 2013; Laufenberg and Clark 2014) has identified a genetic bottleneck (i.e., isolation resulting in restricted gene flow and genetic drift) as a cause of that uniqueness rather than a true genetic difference. In that sense, exchange of genetic material between the two subpopulations would likely be beneficial for the LARB subpopulation.

We believe that the commenter intended to recommend that the LARB subpopulation be listed as a "Distinct Population Segment (DPS)." Under the Act, a listable entity is a species, subspecies, or a DPS of a vertebrate species. The DPS Policy (61 FR 4722, February 7, 1996), requires the Service first to determine whether a vertebrate population is discrete and, if the population is discrete, then to determine whether the population is significant. Lastly, if the population is determined to be both discrete and significant, then the DPS Policy requires the Service to evaluate the conservation status of the population to determine whether or not the DPS falls within the Act's definition of an ''endangered species'' or a "threatened species." Due to the mobility of Louisiana black bears, their ability to disperse long distances, and existing genetic and GPS studies (Laufenberg and Clark 2014), we do not believe this factor is met. As such, the LARB does not qualify as a DPS.

Comment (36): One commenter questioned why the Service had not discussed the population studies of the Upper Atchafalaya River Basin subpopulations conducted by Lowe (2011), in particular the statement "*the ARB population remains vulnerable to*

environmental and demographic stochasticity because of its small size and isolation " and suggested that omission affected the scientific accuracy of our statements regarding that subpopulation.

Our response: We presented Lowe's (2011) population annual survival rate estimates in our proposal (80 FR 29394, May 21, 2015, p. 29400). The long-term viability of the ARB had not been determined in 2011. That work was subsequently updated with additional field studies in order to obtain better estimates of the effects of environmental variation on population vital rates (O'Connell 2013, p. 5; Laufenberg and Clark 2014, p. 46) to provide more current estimates of population parameters, and to ultimately provide data for use by Laufenberg and Clark (2014) in estimating that population's long-term viability. Therefore, because we based our analyses on the Laufenberg and Clark (2014) research results, we believe our presentation of data regarding that subpopulation and our statements about it are accurate.

Comment (37): One commenter (supported by two other commenters who re-submitted a letter) does not believe the UARB subpopulation consists of true Louisiana black bears and, therefore, cannot be used to assess Louisiana black bear recovery. The commenter, in referencing the 1960s reintroduction of American black bears from Minnesota into the area now occupied by the UARB breeding subpopulation, described that area as a "*bear free*" zone at the time of the introductions and contended that the UARB bears do not represent a population that has been influenced by admixture (populations that were previously isolated begin interbreeding) but consists "*largely, probably, entirely*" from the introduced Minnesota bears (*U.a. americanus*). In addition, the commenter stated that the Louisiana black bear should retain its classification as

threatened or possibly be reclassified as endangered under the Act, because we should not include the UARB subpopulation in our assessment of recovery. This commenter also asserted that the subsequent reintroduction of bears resulting in the formation of the TRC breeding subpopulation between the TRB and UARB subpopulations now facilitates introgression (gene flow from one species into the gene pool of another) of genetic material from the American black bears in the UARB subpopulation into the TRB subpopulation. The commenter stated that the TRB subpopulation may have been the population that best maintained the genetic purity of the Louisiana black bear (*U.a. luteolus*) and should not be considered for any change in legal status except for reclassification as endangered. The commenter also suggested that the way to recover and preserve the Louisiana black bear is to continue protection for the TRB and LARB subpopulations, allow hunting to proceed on the UARB subpopulation, and remove bears in the TRC.

Our response: We disagree with the commenter's statement that the UARB subpopulation consists primarily or entirely of Minnesota bears. The commenter raised one of the same questions that we had considered before the Louisiana black bear was listed. At listing, we stated that expecting to preserve *U.a. luteolus* as is presupposed a static condition that does not exist. The greatest likelihood was that the bears inhabiting the Tensas and Atchafalaya River Basins were probably interspecifically hybridized and that, biologically, hybridization at this taxonomic level would not be a significant cause for concern (Service 1992, p. 592). At that time, the genetic studies did not show significant differences between the subspecies. However, because it is difficult to distinguish between the two black bear subspecies based on outward appearance, we

listed the Louisiana black bear as a "practical means available for protecting any possibly remaining unique genetic material belonging to *U.a. luteolus*" (Service 1992, p. 592).

The commenter referenced Figure 15A in Laufenberg and Clark (2014, p. 54) as providing evidence that the UARB subpopulation is largely or entirely descended from Minnesota bears. We agree that these data indicate an affinity of UARB bears with Minnesota bears; however, the commenter did not acknowledge the additional all-population and the WRB–TRB clustering analyses that indicated at least five genetically distinct subpopulations (Laufenberg and Clark 2014, pp. 60–63). Under that scenario, the UARB subpopulation is distinguishable from the Minnesota population. The commenter describes the UARB area as a bear-free zone at the time of the Minnesota releases (all released bears were tagged) but Taylor (1971, p. 66) observed a large untagged male bear in that area after the releases. The commenter contends that this individual was an offspring of a released bear; however, the presence of suitable bear habitat in the area, and the documented wide-ranging habits of male black bears support the possibility that this was a bear "native" to the area.

Prior to listing, Pelton (1989, p. 5) argued there was considerable evidence that a pure strain of *U. a. luteolus* subspecies no longer existed because: (1) There was a broad continuum of habitat between the TRB and UARB populations (based on Weaver's [1990] maps) of Minnesota bears; (2) habitat corridors still existed [1989] between those areas allowing for continued dispersal; (3) bear releases in Arkansas resulted in widespread dispersals; (4) the presence of narrow dispersal corridors through Arkansas following such rivers as the Ouachita and Saline Rivers were still being used by transplant offspring and evidence of use had been observed all the way to the Louisiana

border; and (5) long-distance natural movements of bears had been documented. Based on historical descriptions of the UARB release area, we believe it is very likely there was no known breeding population in that area at the time of the releases; however, it is not determinable whether that area was "bear-free" as supposed by the commenter. Our knowledge of bear behavior coupled with the habitat in existence at that time would support the presence of males in or traveling through that area. This, in combination with the findings presented by Laufenberg and Clark (2014, pp. 60–63), would support our assumption that the UARB is not strictly composed of Minnesota bears and our inclusion of that subpopulation in our recovery assessment.

The commenter suggested that the TRB subpopulation maintained the best genetic purity of the Louisiana black bear and is at risk from genetic introgression; however, the data shows that this subpopulation was experiencing immigration of Arkansas bears at the time of listing. At that time, questions regarding interchange between WRB bears and the TRB subpopulation generated considerable discussion about whether or not the WRB bears should be considered Louisiana black bears. Subsequently, Miller et al. (1998, p. 337) found a high level of genetic similarity between WRB and TRB populations and suggested it indicated gene flow had occurred between those populations. Most recently, Laufenberg and Clark (2014, p. 63) documented numerous bears with evidence of WRB ancestry in the TRB subpopulation and some Mississippi populations. Therefore, we stand by our assertion that the introduction of gene flow among the TRB, WRB, TRC, and UARB subpopulations benefits the Louisiana black bear and has improved its population health. This assertion is supported by our peer reviewers. However, this position does not mean that we have dismissed concerns

regarding the matter of hybridization and the Louisiana black bear as suggested by the commenter.

In the final listing rule (57 FR 588, January 7, 1992), we acknowledged that the Louisiana black bear was not a geographic isolate. Numerous studies (many funded by the Service) have produced differing and sometime conflicting results with no definitive, widely accepted conclusion. We listed the taxonomic entity defined as the Louisiana black bear in 1992 to be protective of the subspecies in recognition of those concerns, and we and our many partners have worked to recover this entity. We have determined that the threats to the taxonomic entity currently classified as Louisiana black bear have been eliminated or reduced. In acknowledgment of interchange that is occurring at the contact zone between the Louisiana and American black bear subspecies, we are not aware of threats to the American black bear population. Interest in the correct classification of black bear subspecies continues. Recent analyses by Puckett et al. (2015 p. 9) provide yet another interpretation and suggest that previously identified American black bear (*Ursus americanus*) subspecies differentiation may be the result of genetic drift due to population size (Puckett et al. 2015, pp. 2343–2346). The authors used both nuclear and mitochondrial range-wide data from 94 black bear samples in order to study genetic lineages and species divergence patterns of the American black bear. The results of their study suggests the three subspecies in the southeast (*U.a. americanus, U.a. floridanus*, and *U.a. luteolus*) represent a single genetic cluster. Combined with the results for other geographic areas, they suggest that *U.a. americanus* may be the most accurate subspecies designation for bears in the eastern range of black bears. This would support our original

supposition at the time of listing that hybridization at this taxonomic level would not be a significant cause for concern.

Comment (38): One commenter raised multiple questions regarding our treatment of several breeding bear subpopulations located in Mississippi, northern Louisiana (west of the TRB subpopulation), and southern Arkansas. Specific questions raised by the commenter included why the Service did not: (1) extend protection of the Act to Arkansas bears located within the historical range as described by Hall (1981); (2) conduct research on the Arkansas reintroductions; (3) include the Felsenthal NWR (FNWR), Upper Ouachita National Wildlife Refuge (UONWR), and the TRC populations in the original population research that included only TRB, UARB, and LARB subpopulations, and revise the Louisiana black bear recovery plan to include the FNWR, UONWR, and TRC bears in the metapopulation and recovery criteria; and (4) include all subpopulations in the metapopulation (including FNWR and UONWR subpopulations) on the basis of documented interchange.

Our response: As background, when the Service listed the Louisiana black bear, it primarily relied on Hall's (1981) depiction of the historical distribution; however, Hall (1981) included the southernmost counties of Arkansas as part of the historical range. The Service, while acknowledging that the Louisiana black bear was not a geographic isolate, did not include those Arkansas counties as part of the historical range for protection under the Act because there were no specimens to support doing so (57 FR 588, January 7, 1992). Since listing, there have been numerous studies relevant to the subspecies, many focusing on the relationship of the southern Arkansas WRB black bear subpopulation (*U.a. americanus*) to the Louisiana black bear. For a more detailed

summary of those studies, see the 5-year review (Service 2014, pp. 21–27). Those studies (both morphometric and genetic) have produced differing interpretations of the subspecies distribution; however, no all-inclusive, generally accepted, definitive determination or conclusion has been reached.

Current observations support the fact that the Louisiana black bear is not geographically isolated from the American black bear (see Comment 37). Kennedy (2006, p. 23) suggested that WRB bears probably consisted of individuals with some genetic and morphometric combination of both subspecies as well as some individuals sharing similarities in those characters with both subspecies. He suggested this finding could be taken to support Hall's (1981) delineation of southern Arkansas as a zone of contact between the two subspecies. Kennedy was reluctant to assign the WRB bears to a subspecific status, suggesting they occur in a zone of intergradation between the two subspecies where populations may contain characteristics of both subspecies (2006, pp. 26–27). Given the difficulties in determining subspecific status where two subspecies meet (Pelton 1989, p. 23; Hall 1981, pp. viii–vix), documentation of intergradation between the two subspecies, and the amount of uncertainty remaining regarding taxonomy of bears in this zone, we continued to base our delineation of Louisiana black bear range as described by Hall (1981). We have determined that the threats to the taxonomic entity currently classified as Louisiana black bear have been eliminated or reduced.

With respect to the FNWR, it is located in southern Arkansas just north of the Louisiana border and the UONWR is located directly south, in Louisiana. From 2000 through 2003, the Arkansas Fish and Game Commission (AFGC) in cooperation with

FNWR staff reintroduced 46 adult black bear females and 112 cubs from the native population at WRB to the FNWR (Wear et al. 2005, p. 1,367) in order to restore black bears to that area. Additional bears were moved through 2007, resulting in a total of 55 adult females and 116 cubs being released at the FNWR (Service 2015, p. 71). Research was conducted on the factors related to the population establishment of black bears on FNWR and reported by Wear et al. (2005).

Numerous bears were documented as moving from FNWR into Louisiana. For example, females were known to move to the UONWR and elsewhere and establish recently documented breeding subpopulations referred to here as satellite subpopulations (it is unknown if these bears bred with bears from Arkansas, Louisiana, or Mississippi). One male bear, released as a cub at FNWR, was subsequently recaptured in the WRB population in Arkansas, and one year later was documented as traveling to Lake Ophelia NWR in central Louisiana. Due to the logistical difficulty in conducting detailed long-term population studies on a species with individuals with large home ranges that have the potential to disperse long distances, such studies have focused on the original subpopulations identified in the recovery plan as important to recovery. This circumstance does not mean that other subpopulations were not protected by the Act; and research and habitat restoration efforts were focused on the Louisiana black bear within its entire listed range.

We have not included the Arkansas FNWR subpopulations in the Louisiana Black Bear Recovery Plan for the reasons described above, nor did we feel it necessary to modify the recovery plan to specifically include the TRC subpopulation. Recovery opportunities not available when a recovery plan is finalized can contribute significantly

to recovery without necessitating plan revisions. This situation is the case for the efforts that established the TRC subpopulation, using a "soft release" methodology not previously tested. The exchange between existing subpopulations fostered by the TRC subpopulation contributes directly to achieving the recovery criteria. We mention other satellite populations in Louisiana and Mississippi for which we have known but limited data (i.e., telemetry or captures of a few individuals) as evidence supporting the overall recovery of the Louisiana black bear (e.g., breeding range expansion, improved demographics among subpopulations); however, in order to be conservative, we have based our assessment of recovery primarily on the extensive studies of the TRB and UARB subpopulations.

Comment (39): One commenter noted that our statement "*The habitat occupied by the TRB, UARB, and LARB breeding subpopulations has increased*" (80 FR 29394, p. 29400) contradicts the following statement we made "*Based on the inclusion of the Avery island area and exclusion of non-habitat, the actual area and spatial distribution of this breeding population has likely not changed significantly over time*" (80 FR 29394, p. 29404).

Our response: We do not find these two statements to be contradictory. The first statement accurately references the overall increase in habitat occupied by all three breeding subpopulations whereas the latter statement (which is also accurate) is specific to the LARB subpopulation.

Comment (40): One commenter alleged the Service has refused to produce a map of occupied and potential habitat as required in the Louisiana Black Bear Recovery Plan

(Service 1995, p. 14) or if produced, the Service has refused to provide the maps upon request.

Our response: The maps we refer to as the Habitat Restoration and Planning Area (HRPA) maps depict "occupied" (we now use the term "breeding") and potential habitat for the Louisiana black bear. The first versions of those maps were developed in the early to mid-1990s (almost concurrent with the bear's listing) by the Service, LDWF, The Nature Conservancy (TNC), and BBCC working with USDA NRCS State Technical Committees to establish ranking systems for most Farm Bill conservation programs. In 1999, the initial planning group expanded into a multi-agency collaboration to produce the "Louisiana Black Bear Habitat Restoration and Planning Area Maps." The result was a version of the HRPA maps in use today consisting of delineation of breeding and potential habitat and overlain with the ranking criteria zones (including a new ranking for potential corridor habitat). The HRPA maps were revised in 2005, 2011, and 2015 to incorporate updated conservation program databases, to account for the expansion of occupied bear habitat, and to consider new bear telemetry data (see Figure 2, *http://www.regulations.gov* at Docket Number FWS–R4–ES–2015–0014 which is a simplified version of those maps). We regularly provide copies of these maps upon request.

Comment (41): Several commenters claimed that the Service did not provide a clear definition of a corridor.

Our response: Various definitions of the term "corridor" have been proposed over time (Hilty et al. 2006, p. 89), and the physical attributes of functional corridors vary by species. Defining those attributes for a particular species is challenging due to the fact

that humans perceive connectivity differently than the organisms that use them (Hilty et al. 2006, p. 190). We are aware of the sentiment held by some that corridors must always consist of a contiguous, linear vegetative landscape feature that connects larger vegetated tracts. Hellgren and Vaughn (1994, p. 279) stated that maintaining such large, contiguous forested tracts, however, "is difficult to impossible, especially in areas with human densities as high as the southeastern United States." Regarding black bears in the southeastern United States, they also state that "disjunct populations may not be as effectively isolated as previously believed" (Hellgren and Vaughn 1994, p. 283). Further, Maehr et al. (1988, p. 4) argued that "for black bears, well-defined travel corridors are not necessary so long as the areas separating population fragments do not impede movements" and "that low levels of human habitation or disturbance may not be a hindrance for dispersing or wide ranging bears." Stratman et al. (2001, p. 57) state that their study of long-distance movements of black bears in the southeastern United States "may raise questions about the need for connective corridors between disjunct populations." Additionally, Laufenberg and Clark (2014, p. 85) found in their study documenting interchange among Louisiana black bear subpopulations, that hypothetical forested corridors "were not more effective than the broken habitat matrix that surrounded many of the subpopulations." Because of that documented interchange, Laufenberg and Clark (2014, p. 90) assert that the presence of multiple satellite populations of breeding bears on the landscape may be more effective in establishing and/or maintaining connectivity between the larger subpopulations than the presence of contiguous forested linkages.

Consistent with this published research, we define "Louisiana black bear corridor" as a landscape that consists of "stepping stones" of habitat such as large forested tracts that support reproducing subpopulations, smaller forested blocks that support one or more reproductive-aged females, and the matrix of riparian corridors, agricultural fields, and other undeveloped lands that are located to allow interchange between the existing subpopulations. In addition to all of the above-referenced research findings, Hilty et al. (2006, pp. 192–193), in their book on corridor ecology, support this definition stating that "functional connectivity for some biota may not require a connection of relatively intact natural habitat but could involve stepping stones of habitat or protected areas that are not physically connected" and that "stepping-stone connectivity might be better than continuous corridors given the life history of some species." Additional discussion of corridors is provided in the section entitled Delisting Criterion 2**.**

Comment (42): Several commenters provided recent reports on black bear habitat studies in East Texas (which we had not included in our proposed rule or draft post-delisting monitoring plan) and requested we acknowledge that East Texas currently has enough forested bear habitat to support a viable black bear population in the future.

Our response: We have reviewed the information provided by the commenters and have included it in this rule along with a brief discussion of bear habitat in East Texas. We agree with the commenters that there appears to be sufficient habitat in East Texas to support a Louisiana black bear population as this population continues to grow and disperse.

Comment (43): Several commenters questioned whether there is enough habitat to support delisting the Louisiana black bear, including one group that stated that the Louisiana black bear continues to be threatened by habitat loss. One commenter questioned the information we presented on the threat of future habitat loss in light of continuing development, suggesting that more protection is needed for den sites, and that reproduction monitoring and viability analyses are needed to ensure that the Louisiana black bear subpopulations are self-sustaining.

Our response: Louisiana black bear breeding range in Louisiana and Mississippi has increased by over 500 percent since the time of listing (see Table 1 and Figure 1, *http://www.regulations.gov* at Docket Number FWS–R4–ES–2015–0014), as described in the section *Habitat Protection Through Ownership or Permanent Easements*. Within the last 15 years, the extent of forested habitat coverage has increased within the Louisiana black bear HRPA by 7.5 to 11.4 percent depending on geographic region (see Table 7), and within that HRPA there are currently more than a half-million acres of permanently protected lands. Nearly 90 percent of the parishes included within our Louisiana black bear HRPA were projected to experience human population declines, including several that may experience substantial reductions (population declines of 10–23 percent). These data support our finding that habitat loss threats that were present at the time of listing for the Louisiana black bear no longer exist, and habitat loss trends that contributed to that listing have been reversed. Therefore, the legal protection to candidate and actual den trees in breeding habitat provided in the final Louisiana black bear listing rule (57 FR 588, January 7, 1992) are no longer necessary.

With respect to the second issue, overall, the Louisiana black bear metapopulation (TRB, UARB, and TRC) has an estimated probability of long-term persistence (more than 100 years) of 0.996 under even the most conservative scenario (Laufenberg and Clark 2014, p. 82). There is evidence of interchange of bears between the TRB, UARB, TRC, WRB, and Mississippi subpopulations including documented interchange occurring "from the UARB to the TRB by way of the TRC" (Laufenberg and Clark 2014, pp. 2, 84). The stability of the Louisiana black bear metapopulation coupled with recent and significant habitat gains since the time of listing indicates that the Louisiana black bear has recovered and is no longer threatened by habitat loss (from any source including development and conversion to agriculture). Furthermore, we will be monitoring these subpopulations closely as described in our PDM plan. A more detailed discussion of Louisiana black bear population dynamics and habitat trends is presented in this rule (see Factors A and D).

Comment (44): Several commenters expressed concerns about the apparent lack of sufficient habitat, corridor, and den tree protections, and they cited actions (such as clearcuts in the Atchafalaya Basin, residential and commercial development, and the lack of enforcement of Corps easements and Clean Water Act regulations) as evidence for concerns. One commenter suggested that new threats to the Louisiana black bear such as wood pellet mills could result in habitat destruction from forest clear-cutting and a resultant expansion of feral hog populations. *Our response:* Although one group submitted select photographs to better demonstrate their concerns, they did not provide specific data regarding the effect of various timber management practices on bottomland hardwood habitats in Louisiana or their associated long-term effects on forest health. We

acknowledge that forestry management within the range of the Louisiana black bear has occasionally included clear-cutting on particular tracts. However, during field studies and management activities within known bear habitat, we have rarely, if ever, encountered large-scale clearing-cutting of BLH forest habitat in a manner that would have long-term detrimental impacts to the Louisiana black bear. Rather, our field experiences suggest that a relatively minimal amount of BLH forests within the range of the Louisiana black bear have undergone such treatment. In any case, Louisiana black bears are habitat generalists that benefit from sustainable timber management and the habitat features of early successional forests (BBCC 2015, p. 28). For that reason, a forestry exemption was included in the 1992 final rule listing the Louisiana black bear as a threatened subspecies (57 FR 588, January 7, 1992). In our 2009 final rule that designated critical habitat for the Louisiana black bear, we specifically stated that research supports our conclusion that normal silviculture is compatible with Louisiana black bear management and we upheld that special forestry exemption. Moreover, because normal silvicultural activities conducted as part of "established, ongoing" silvicultural operations are exempt from Corps of Engineers permit requirements under section 404 of the Clean Water Act (LDAF et al. 1998, p. 31), we would lack a Federal nexus for consulting on virtually all silvicultural activity regardless of whether or not the Louisiana black bear remains listed. Also, we are not aware of any data that demonstrate that clear-cutting specific forested tracts would constitute a threat to bears by enhancing feral hog habitat.

Although no specific data were provided regarding the extent of bald cypress removal within portions of the Atchafalaya Basin that have been designated as Louisiana

black bear critical habitat, we acknowledge that timber is routinely harvested from its swamps and BLH forests. We also recognize that large trees with cavities often provide high-quality den sites for bears (particularly females with young-of-the-year cubs). In fact, to afford additional protection to denning bears, the Service through the final Louisiana black bear listing rule had extended legal protection to candidate and actual den trees in breeding habitat (57 FR 588, January 7, 1992). Because of generally low elevations and frequent riverine flooding, there is no breeding habitat (i.e., habitat that has been conclusively determined to support resident reproductive-aged female Louisiana black bears) within the Atchafalaya Basin between U.S. Interstate 10 and U.S. Highway 90. Therefore, the harvesting of large-diameter trees in that area would not constitute a violation of the Act.

Regarding the loss and/or conversion of habitat within the Atchafalaya Basin, it has been documented that there has been increased and substantial sedimentation within the Atchafalaya Basin with certain areas exhibiting "the highest documented sedimentation rates in forested wetlands of the United States" (Hupp et al. 2008, p. 139). Sedimentation increases elevation, and areas that were once wet will be naturally colonized with vegetation that will ultimately result in upland forests (Hupp et al. 2008, p. 127) that are more suitable for bear foraging and habitation. LeBlanc et al. (1981, p. 65) estimate that more than 35,000 ac (14,000 ha) of lakes and cypress may convert to higher elevation forests within the Basin by the year 2030. For these reasons, we believe that the extent of higher quality forested land within the Atchafalaya Basin will continue to increase over time. In the more than two decades since the bear was listed, we have not seen any scientific evidence demonstrating the need to regulate timber harvests for

Louisiana black bear conservation purposes. In fact, timber management often provides or enhances black bear habitat by leaving downed tree tops and creating openings that provide cover and foraging opportunities (Weaver 1999, pp. 126–128; Hightower et al. 2002, p. 14; Weaver et al. 1990b, p. 344; Lindzey and Meslow 1977, p. 424).

We acknowledge that relatively small-scale developments have impacted forests within the range of the Louisiana black bear. However, there are multiple legal mechanisms currently in place to protect much of the habitat that currently supports the Louisiana black bear breeding subpopulations or that serves as corridors between those subpopulations. All available data suggest that those mechanisms (such as the Food Security Act of 1985 and the Federal Water Pollution Control Act Amendments of 1972 [a.k.a, the Clean Water Act]) have afforded sufficient protections to Louisiana black bear habitat. In fact, an analysis of data obtained from the Corps' wetland regulatory program demonstrates that substantially more forested habitat is restored through compensatory wetland mitigation than is eliminated via permitted wetland development projects (Table 10). While we acknowledge that consultation under section 7 of the Act will no longer be required for the Louisiana black bear, the Service will continue to provide comments to the Corps on proposed Clean Water Act permit authorizations throughout the range of the Louisiana black bear through our authorities under the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.). The Service reviews all individual permit applications advertised by the Corps, and we will continue to provide specific comments and recommendations to reduce negative effects to fish and wildlife, including species that are not protected by the Act. Finally, it should be noted that there are over 637,000 ac (257,784 ha) of permanently protected lands within the Louisiana black bear HRPA.

Those lands are protected via ownership by a State or Federal government agency or by a permanent easement. All such voluntary permanent easements will be maintained regardless of whether the bear is delisted. A more detailed discussion and associated data regarding Louisiana black bear habitat protection is presented in the sections entitled Recovery Criteria: Criterion (3), and Factors A and D (including Figure 2, *http://www.regulations.gov* at Docket Number FWS–R4–ES–2015–0014) and Tables 2, 3, 5, 6, and 10).

Comment (45): One commenter mentioned that there is no discussion of the effects of removal of protection afforded by critical habitat after the species is delisted and asked for a further assessment and explanation of why such protection is no longer needed.

Our response: Our analysis of Louisiana black bear habitat clearly demonstrates a reversal in historical habitat loss since the time of listing, with habitat gains being realized throughout our analysis area (i.e., the Louisiana black bear HRPA) (see Comment 44). Louisiana black bear critical habitat is completely contained by, and includes a substantial proportion of the forested land within, that HRPA. The habitat gain trend confirmed by our analysis would, therefore, apply not only to the HRPA, but also to Louisiana black bear critical habitat. A detailed discussion of those analyses and results are presented in the section entitled Recovery Criteria and in the section entitled Factor A: The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range. We have also documented that the management efforts of governmental agencies and nongovernmental groups, as well as existing regulatory mechanisms, currently and will continue to provide long-term and adequate protection to Louisiana black bear

habitat (see Recovery Criteria section and Factor D: The Inadequacy of Existing Regulatory Mechanisms for additional discussion). Furthermore, available scientific data confirm that the Louisiana black bear has reached recovery in part due to the lack of significant threats to that subspecies and its habitat. Because the Louisiana black bear is recovered and no longer listed under the Act, due in large part to the fact that suitable habitat is adequately protected and increasing in geographic extent, designation of any bear habitat as "critical" is no longer warranted.

Comment (46): One commenter stated that the Service failed to follow through on its commitments to establish a black bear preserve and restore 5,000 ac (2,000 ha) of agricultural land that is currently in sugarcane production. The commenter also stated that the Service rejected an occupied bear habitat donation offer.

Our response: We were unable to verify whether the Service ever made any official commitment to establish a black bear preserve or to revert 5,000 ac (2,000 ha) of sugarcane-producing agricultural land to forested habitat. It should be noted, however, that the Service and its partners have expended a substantial amount of effort and funding for, and have been highly successful in, the restoration and protection of Louisiana black bear habitat as described in the section entitled: *Habitat Protection Through Ownership or Permanent Easements.* Through our partnering with NRCS in the implementation of the WRP program, over 148,000 ac (60,000 ha) of habitat have been permanently protected within the Louisiana black bear HRPA since 1992 (see Table 2). Additionally, the Service established the 9,028-ac (3653-ha)Bayou Teche National Wildlife Refuge in St. Mary Parish in 2001 for the primary purpose of preserving and managing habitat for the Louisiana black bear. There are also over 450,000 ac (180,000 ha) of Federal and

State Natural Resource Management Areas ("preserves") that support Louisiana black bear breeding subpopulations (see Table 6).

We could find no records documenting the Service's rejection of any formal land donation offers of occupied Louisiana black bear habitat. We do acknowledge, however, that the Service does not accept all land donation offers. We evaluate numerous factors, in addition to suitability of the habitat for listed species, in deciding whether to accept a land donation (e.g., management challenges associated with the site's proximity to other Service facilities; the presence of contaminants on the site; operation and maintenance costs; and benefit to Federal trust resources).

Comment (47): Several commenters asserted that the Service and LDWF had failed to protect the Lower Atchafalaya subpopulation by not creating crossings and corridors across U.S. Highway 90 (Hwy. 90), and noted that installing wildlife crossings there and along U.S. Interstate 20 (I–20) in Madison Parish would help to mitigate road mortalities.

Our response: We agree that Hwy. 90 through St. Mary Parish, LA, has been a source of mortality for the Lower Atchafalaya River Basin subpopulation of the Louisiana black bear and is likely a partial obstacle to intra- and inter-subpopulation movement. The Service has organized numerous site inspections and meetings involving biologists from both the Refuge and Ecological Services programs of the Service, LDWF, Louisiana Department of Transportation and Development (LDOTD), Federal Highway Administration (FHWA), private environmental and engineering firms, and the BBCC to address issues with highway-associated impacts to bears in this region. We have completed a biological opinion on the effects of a proposed upgrade of Hwy. 90 on the

Louisiana black bear, which included a conservation recommendation that FHWA "install large mammal/bear crossings at suitable locations along the subject reach of Hwy. 90." We have worked collaboratively with a diverse group of environmental interests (e.g., the BBCC, LDWF, nongovernmental environmental organizations, and major local landowners) that assembled for the purpose of developing and implementing a large-scale habitat restoration and protection plan to address both habitat issues and highway-associated limitations on bear conservation in this region of the State. Based on the interest level of the other involved parties, we strongly anticipate that this initiative will move forward regardless of Service involvement or the listing status of the Louisiana black bear.

Similarly, we acknowledge that I–20 through Madison Parish has also been both a source of mortality and a partial obstacle to Louisiana black bear movement in northeast Louisiana. To improve the ability of bears to cross and transverse that roadway and the surrounding landscape, we developed and successfully implemented a large-scale habitat restoration project, which was accomplished through a cooperative effort with the NRCS and resulted in the designation of a WRP Special Project Area for this region. Although that area of I–20 has numerous large bridges over river and stream crossings that provide safe passage opportunities for bears, we have also developed plans in coordination with several partners (e.g., the BBCC, LDWF, FHWA, and the LDOTD) to improve the functionality of those crossings by instituting a modified mowing/maintenance regime (in which the area beneath those bridge crossings would be mowed less frequently). Again, based on the interest level of our partners, we anticipate a continuation of this effort regardless of Service involvement or the listing status of the Louisiana black bear.

Furthermore, the tracts restored via the WRP Special Project will remain as functional Louisiana black bear habitat in perpetuity as legally required by the respective WRP easements.

That said, we do not believe any road mortalities in either of these areas would be at a level that would cause this animal to be threatened in the foreseeable future (see Summary of Factors Affecting the Species).

Comment (48): One commenter stated that the Service should work to provide "refugia" to protect breeding females and provided references suggesting that a bear reserve should protect, at a minimum, 12 percent of the population, or 5 percent of the total land mass for that population.

Our response: We agree that providing habitat protection for breeding female Louisiana black bears is important to ensure long-term population viability. To that end, the Service and its partners (various State and Federal agencies, nongovernmental environmental organizations, and private landowners) developed a strategy to position and implement habitat restoration and protection projects in a manner that maximizes benefits to this subspecies (additional discussion in Recovery Criteria–Criterion (1) regarding that strategy). We address this in the section entitled: *Habitat Protection Through Ownership or Permanent Easements*. Since 1992 through the WRP program, over 148,000 ac (60,000 ha) of habitat has been permanently protected within the Louisiana black bear HRPA, including almost 100,000 ac (40,000 ha) of breeding habitat (i.e., habitat that supports breeding females). Currently, more than 5 percent of the breeding habitat within each of the three Louisiana river basins that supports bears (TRB,

UARB, and LARB), including a total of 40 percent of all Louisiana black bear breeding habitat within those basins, is permanently protected (see Table 3).

Comment (49): One commenter requested that we consider bear habitat that would be provided by the additional mitigation banks planned in the Lower Atchafalaya River Basin, and the many landowners who receive revenue from hunting leases, particularly in bottomland hardwood forests, which would help ensure retention of those lands as working forests.

Our response: We are encouraged that additional planning for habitat restoration and protection is occurring within the Lower Atchafalaya River Basin. We are also aware of the importance of hunting leases in maintaining forested habitat for many landowners within Louisiana black bear range and believe such areas have likely contributed to the bear's recovery. We have made note of both of these facts in our final rule; however, in making our determination regarding whether Louisiana black bears require protection under the Act, we relied on habitat currently known to be under permanent protection.

Comment (50): Multiple bear management organizations, though they stated their support for delisting the Louisiana black bear due to recovery criteria being met, expressed concern over the amount of suitable but unoccupied bear habitat in Louisiana (e.g., Kisatchie National Forest). Other groups and individual commenters stated similar concerns, specifically that:

(1) We should not delist the Louisiana black bear because of the failure of the Service and LDWF to relocate bear populations to areas that could support them

(specifically Kisatchie National Forest, the Pearl River Swamp, the Big Thicket area of Texas, and forests in western Mississippi);

(2) We consider establishing an east-west corridor (perhaps in the vicinity of the coast) to complement the current north-south distribution of bears and habitat;

(3) Bears in the TRC and north-central Louisiana [should] be considered separately from the TRB subpopulation, and should have their status maintained as listed regardless of whether the TRB subpopulation is delisted;

(4) The Louisiana black bear has not recovered within a significant portion of its range and the status of subpopulations in Arkansas and Mississippi should be considered in our decision to delist this subspecies.

Our response: The recovery status of the Louisiana black bear is not contingent upon it occupying a particular portion of suitable habitat within its historical range, nor is it dependent upon the status of subpopulations in Arkansas and Mississippi. Documented interchange is occurring among most satellite populations and subpopulations throughout the Louisiana black bear's range, and we consider all such bears *U.a. luteolus* (Laufenberg and Clark 2014, p. 93). This subspecies, as a whole, has reached recovery because its metapopulation (including the TRB, TRC, and UARB subpopulations) has long-term viability, there is adequate long-term protection of its habitat, and there are no longer significant threats to the Louisiana black bear or its habitat. Recent field data demonstrate a significant range expansion by the Louisiana black bear into areas that were unoccupied at the time of listing. It is true that, as data suggest, minimal expansion is occurring within coastal Louisiana for several reasons including: (1) Much of the area has poor-quality bear habitat (e.g., open water, marsh, and heavily inundated swamps);

(2) bear dispersal is restricted by development (particularly along existing highways); and (3) minimal habitat restoration has occurred due to a lack of landowner interest in incentive-based programs (presumably due to the high productivity and associated value of agricultural land in this region). However, significant range expansion is occurring westward of the current breeding subpopulations in the UARB and TRB, toward Kisatchie National Forest and other large forested tracts that are currently unoccupied. Most of these areas are remote and expansive, and they are well positioned to accommodate the growing Louisiana black bear population.

Comment (51): Numerous commenters expressed opposition to delisting the Louisiana black bear because they were opposed to potential hunting of the bear after delisting (viewing it as inhumane and contrary to a perceived public opposition of hunting) or believed that overutilization due to recreation posed a threat to this species. Others stated there were insufficient data to set a hunting quota at this time, that more data are needed on mortality, and that all sources of mortality should be considered with annual thresholds established to determine the hunting quota. Another commenter suggested there should be a period of time specified in the PDM in which it is determined that the bear is doing well before hunting is allowed.

Our response: Some commenters assumed that because the LDWF Plan included hunting as a management option, hunting would commence immediately post-delisting and pose a threat to the long-term survival of the Louisiana black bear; however, that LDWF Plan did not state when hunting would commence. The LDWF Plan describes the multiple factors that would be considered (e.g., demographics, reproductive vital rates, genetic characteristics, magnitude of anthropogenic mortalities) as well as the modeling

techniques and types of data to be collected on subpopulations (Davidson et al. 2015, pp. 55–56). The demographic analyses conducted by Laufenberg and Clark (2014) are the data that would be used to establish baseline subpopulation information, and additional data would be collected to monitor those subpopulations.

Specifically regarding any future harvest of the Louisiana black bear, the LDWF Plan stated that "at no time would harvest be allowed if existing data and simulated population dynamics models indicate harvest could potentially compromise Louisiana black bear sustainability" (Davidson et al. 2015, p. 55). Additionally, the Black Bear management plans for Mississippi and Texas (see Factor D below) are protective of bear populations. Regarding the comment to modify the PDM plan to specify a specific time period before hunting would be allowed, we prefer to rely on scientific data to make such decisions. Post-delisting monitoring is designed to ensure Louisiana black bear status does not deteriorate and if a substantial decline in the species (numbers of individuals or populations) or an increase in threats is identified, to enact measures to halt the decline so that reproposing the species as threatened or endangered is not needed. Monitoring activities are focused on trends and populations' vital statistics (e.g., recruitment, survival, genetic exchange, and cause-specific mortality). Therefore, we have determined that there are adequate safeguards in place to maintain Louisiana black bear populations into the future should the LDWF decide to conduct a regulated harvest.

Comment (52): One group, referencing the LDWF Plan, stated that proven standards are needed by which all proposed hunting programs should be measured in relation to wildlife sustainability should hunting be implemented.

Our response: We believe the methods described in the LDWF Plan are based on sound scientific data. Before harvest would occur, multiple factors that may affect population sustainability would be considered such as: subpopulation demographics, reproductive vital rates, genetic characteristics, and the magnitude of anthropogenic causes of mortality (Davidson et al. 2015, p. 55). Baseline demographic data would be established from mortality and survival data, and previous demographic research including Laufenberg and Clark (2014) (see Peer Review section). Many states in the southeastern United States conduct regulated harvest of their black bear populations and continue to maintain stable populations.

Comment (53): One commenter stated that the Service should have management agreements with the state agencies before the bear is delisted.

Our response: We reviewed Louisiana black bear management plans for Louisiana, Mississippi, and Texas for the protection offered to the species and its habitat (see Factor D). We have determined that these and other existing regulatory mechanisms are, and will continue to be, adequate to protect Louisiana black bears from taking, possession, and trade by State laws throughout their historical range. Similarly, we find the existing regulatory mechanisms that currently protect Louisiana black bear habitat on State-owned lands are adequate to address the threats to the Louisiana black bear posed by the original listing factors. Therefore, we have determined no additional management agreements are necessary.

Comment (54): Some commenters may have confused the LDWF Plan with the PDM plan. They offered comments regarding public involvement and private landowner involvement, the lack of transparency, and the Service's apparent granting to LDWF the

unsupervised development of post-delisting management; it was difficult for us to discern to which document the comments referred. Another commenter stated that the Service had excluded the BBCC from the PDM and had not operated in accordance with our guidance.

Our response: We regret that there was confusion regarding the two plans. To clarify, the PDM plan is a Service document developed in coordination with the LDWF as required under section 4(g)(1) of the Act, while the LDWF Plan was developed independently by LDWF. The PDM plan covers a period of 7 years, while the LDWF Plan is a more long-term plan.

The LDWF Plan was developed by the LDWF under their State management authorities, not under Federal authority; the State will assume long-term management of Louisiana black bears upon delisting. Upon delisting, as stated in the LDWF Plan: "it is the responsibility of LDWF to ensure Louisiana black bear subpopulations persist into the future." The LDWF Plan details current and future courses of action for promoting the continued persistence and long-term sustainability of the Louisiana black bear within Louisiana. Individuals having questions or concerns with the LDWF Plan may contact the LDWF.

Comment (55): We received several comments on the LDWF Plan. Some commenters stated the LDWF Plan could not be reasonably expected to maintain the Louisiana black bear from returning to a "threatened" status again; others expressed concern that management would be turned over to the State agency. One believed the LDWF Plan was lacking in protection because it did not include a good method to identify females. Another commenter stated that the LDWF Plan is not a statewide plan

but limited to the populations monitored in the PDM and excludes all bears except the Louisiana black bear leaving those other subpopulations with no regulatory protection.

Our response: The LDWF Plan includes conservation and management actions to conserve this species into the future (see our response to Comment 51), and it applies to all bears, regardless of taxonomic status occurring within the State of Louisiana. The LDWF submitted a formal comment stating "LDWF is prepared to accept full responsibility for the management of bears in Louisiana, and regulations are in place that protects all bears—regardless of subspecific designation—within the state of Louisiana" (see the State Comments section).

The LDWF Plan was available for public review (see the State Comments section). In our proposed rule, we stated that the LDWF Plan, and all literature referenced in our proposed rule, was available from our office upon request. In addition, the LDWF Plan was presented to and reviewed by the LWFC in February 2015, subsequently subjected to a 30-day public review and comment period, and published on the LDWF website (*www.wlf.louisiana.gov*) immediately thereafter. Finally, this is not a Service plan, rather it is the LDWF's plan. The Service will work with the LDWF via the PDM to monitor threats.

Comment (56): Two commenters expressed concern that the PDM plan was limited only to Louisiana. One commenter questioned why post-delisting monitoring was limited to only three of the Louisiana subpopulations. One asserted that the lack of plans for future reintroductions was a glaring deficiency in the PDM plan. Another questioned whether the LDWF had the resources to implement their part of the PDM plan without outside assistance. One commenter expressed concern that the PDM plan was in draft

form and believed the Service should not go forward with delisting until the PDM plan was finalized. One commenter stated that there was no public input or input from long-time partners in the development of the PDM plan and the Service should re-draft the PDM plan to include such.

Our response: The purpose of the PDM plan is to detect any declines in Louisiana black bear populations (at extremely early stages) upon delisting, and it includes threshold triggers that would allow for corrective actions to be taken before the species would require protection under the Act. It focuses on the populations and habitat features that we relied on to demonstrate the black bear's recovery (e.g., the three subpopulations and habitat in Louisiana). The PDM plan is not a plan for continued restoration efforts (unless, as identified during the post-delisting monitoring period, corrective actions are needed); it is a plan to monitor the status of the Louisiana black bear upon delisting to ensure the subspecies remains secure. Upon delisting, the States will be responsible for Louisiana black bear management. When we developed the PDM plan, implementation costs were considered to ensure the plan could be implemented as designed. We will stay in close contact with the LDWF as the PDM plan moves forward.

We published the draft PDM plan with the proposed rule in order to allow for public input and scientific peer review before it is finalized. The Service encouraged all partners to use the public comment period to submit comments on the PDM plan. Comments addressing the PDM plan have been addressed where appropriate, and the final PDM plan is available with this delisting action.

Comment (57): One commenter mentioned the need for forest management guidelines and would like to see them discussed in the PDM plan —similar to the current

"4(d)" rule, recognizing that habitat management is critical for the sustainability of the bear.

Our response: In our evaluation of adequate regulatory mechanisms for protected lands (e.g., State and Federal-owned lands, permanent easements), we reviewed the management plans and guidelines for those habitats to ensure those areas are managed in a way to sustain black bears (see Factor D). We have added statements to the PDM plan emphasizing that proper management is an important part of maintaining a black bear population.

Summary of Factors Affecting the Species

This section contains updated information and associated analysis from that presented in the proposed rule (80 FR 29394, May 21, 2015). Updated information includes data provided as part of public comments received, recent publications (Puckett et al. 2015), and additional information received by peer reviewers.

Section 4 of the Act and its implementing regulations (50 CFR part 424) set forth the procedures for listing species, reclassifying species, or removing species from listed status. "Species" is defined by the Act as including any species or subspecies of fish or wildlife or plants, and any distinct vertebrate population segment of fish or wildlife that interbreeds when mature (16 U.S.C. 1532(16)). We may determine that a species is an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) overutilization for commercial, recreational, scientific, or educational purposes;

(C) disease or predation;

(D) the inadequacy of existing regulatory mechanisms; or

(E) other natural or manmade factors affecting its continued existence.

We must consider these same five factors in delisting a species.

A recovered species is one that no longer meets the Act's definition of endangered or threatened. Determining whether the status of a species has improved to the point that it can be delisted or downlisted requires consideration of whether the species is endangered or threatened because of the five categories of threats specified in section 4(a)(1) of the Act identified above. For species that are already listed as endangered or threatened, this analysis of threats is an evaluation of both the threats currently facing the species and the threats that are reasonably likely to affect the species in the foreseeable future following the delisting and the removal of the Act's protections.

A species is an "endangered species" for purposes of the Act if it is in danger of extinction throughout all or a significant portion of its range and is a "threatened species" if it is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. The word "range" in the *significant portion of its range* phrase refers to the range in which the species currently exists. For the purposes of this analysis, we first evaluated whether the currently listed species, the Louisiana black bear, should be considered endangered or threatened throughout all its range. Then we considered whether there are any significant portions of the Louisiana black bear's range

where the species is in danger of extinction or likely to become so within the foreseeable future.

The Act does not define the term "foreseeable future." For the purpose of this rule, we define the "foreseeable future" to be the extent to which, given the amount and substance of available data, we can reasonably anticipate events or effects, or reliably extrapolate threat trends, such that we believe that reliable predictions can be made concerning the future as it relates to the status of the Louisiana black bear. In considering the foreseeable future as it relates to the status of the Louisiana black bear, we considered the factors affecting the Louisiana black bear, historical abundance trends, and ongoing conservation efforts.

The following analysis examines all five factors currently affecting, or that are likely to affect, the Louisiana black bear within the foreseeable future.

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range

The final rule that listed the Louisiana black bear as a threatened subspecies stated that it "meets the criteria for protection under the Act on the basis of past habitat loss alone" (57 FR 588, January 7, 1992). It also identified the threat of further loss of occupied habitats due to conversion to agriculture or other non-timber uses on top of past severe losses that occurred (historical modification and reduction and reduced quality of habitat, primarily as a result of conversion to agriculture), the lack of protection of privately owned woodlands in the north Atchafalaya and Tensas River Basins, and

inadequacy of existing regulatory protections to protect Louisiana black bear habitat (see Factor D below for regulatory mechanism discussion).

We present multiple habitat assessment metrics to establish trends within the LMRAV and the Louisiana black bear HRPA. This relatively high level of redundancy is provided to demonstrate that habitat trends have been accurately identified, and to compensate for the limitations in geographic information system (GIS) technology at the time of listing of the Louisiana black bear. GIS technology was in its infancy in the 1990s, so our ability to accurately delineate the extent and distribution of Louisiana black bear habitat at the time of listing was determined from a best professional estimate based on hand-drawn maps. In addition, the geographic areas used for those initial estimates were not often well described; and varied by study, making successive temporal comparisons difficult. Advances in technology, including GIS and remotely sensed data (e.g., aerial and satellite imagery), currently allow for highly accurate identification and delineation of habitat based on specified characteristics. This capability subsequently provides for a more consistent and reproducible estimate of Louisiana black bear habitat distribution and trend.

According to Haynes (2004, p. 172), the forested wetlands of the LMRAV have been reduced from historical estimates of 21 to 25 million acres (8.5 to 10 million ha) to a remnant 5 to 6.5 million acres (2 to 2.6 million ha). Significant increases in soybean prices in the late 1960s and early 1970s provided the impetus for the large-scale conversion of forested habitat to agriculture, which was facilitated by improved flood control, drainage, and technology (Wilson et al. 2007, pp. 7–8). Allen et al. (2004, p. 4) concurred that the primary cause of BLH forest loss has been conversion to agricultural

production. According to Creasman et al. (1992) as cited by Haynes (2004, p. 170), approximately 78 percent of the bottomland forests in Arkansas, Louisiana, and Mississippi had been lost to conversion at the time of listing. When the bear was listed in 1992, the Service recognized that the rate of loss of bear habitat had leveled off (Service 1992, p. 592). Since that time (1990–2010), forested habitat within the LMRAV has increased (Oswalt 2013, p. 4).

The BBCC Black Bear Restoration Plan states that the recovery criteria standard of long-term habitat and corridor protection could involve a projection of future habitat trend based on historical trends in acreage and habitat type/quality (BBCC 1997, p. 58). In that regard, Schoenholtz et al. (2001, p. 612; 2005, p. 413) described a "promising or encouraging" trend in the annual increase of afforestation (planting of trees to create forested habitat) in the LMRAV. Available data indicate that, over the past three decades, forest restoration in the LMRAV portions of Louisiana, Mississippi, and Arkansas has increased dramatically, and has led to a significant removal of land from agricultural production for the purpose of hardwood forest establishment (Gardiner and Oliver 2005, p. 243; and Oswalt 2013, p. 6). In some areas, these gains have been especially noteworthy. For example, West Carroll Parish, Louisiana, experienced a 92 percent loss of forested area from 1950 (45 percent forest) to 1980 (8 percent forest), but by 2013, the parish was approximately 18 percent forested (Oswalt 2013, p. 4).

As stated in Table 1, occupied breeding habitat for the bear at the time of listing was roughly 340,400 acres (138,000 ha). The current occupied breeding habitat has grown based on implementation of recovery actions by the Service and numerous partners to more than 1,800,000 acres (728,435 ha)—more than five times larger—by the

end of 2014. Examples of actions that have helped reduce habitat loss or improve suitable habitat for the Louisiana black bear are discussed below.

A major factor in this positive habitat trend is the success of incentive-based private land restoration programs, such as WRP, which was established by the Food Security Act of 1990. The WRP has been "perhaps the most significant and effective wetland restoration program in the world" (Haynes 2004, p. 173). According to Haynes (2004, p. 173), within 12 years of the Louisiana black bear being listed as a threatened species, an estimated 450,000 to 550,000 ac (182,000 to 222,000 ha) of BLH forest had been restored in the LMRAV. Since 1992, more than 148,000 ac (60,000 ha) of land has been permanently protected and/or restored in the HRPA via the WRP program (mostly in the TRB and UARB areas) (see Table 2). The entire 148,000 ac (60,000 ha) of restored land benefits movement between bear populations, with approximately 97,000 ac (39,000 ha) directly benefitting breeding populations (see Table 2). The use of the Louisiana Black Bear Habitat Restoration Planning Maps in conjunction with the WRP has not only increased the total amount of available Louisiana black bear habitat, but has also allowed us and our partners to directly focus on addressing the recovery criteria. When WRP permanent easement lands are added to the habitat protected on Federal and State NWRs or WMAs, mitigation banks, and the numerous Corps fee title and easements (as discussed in detail in the Factor D section), approximately 638,000 ac (258,000 ha) have been permanently protected and/or restored within the HRPA in Louisiana (see Table 3) versus the 227,200 ac (91,945 ha) estimated to exist in 1991 (Service 2014, p. 74, Table 6), an estimated increase of more than 280 percent in protected habitat status.

Although not permanently protected, an additional 122,000 ac (49,000 ha) of lands currently enrolled in 10- to 15-year agreements via the CRP program of the Farm Service Agency (FSA) within the HRPA (Table 4) provide short-term habitat that can be used by bears for foraging/denning and travel.

Many of the remaining forested wetland areas have been protected within the Service's NWRs, in National Forests, in State WMAs, and on USDA WRP or other conservation easement sites (King et al. 2006). The Partners for Fish and Wildlife Program provides conservation delivery adjacent to or nearby such protected areas to help meet our strategy of expanding main conservation areas and linking habitat by reducing fragmentation. Numerous projects administered through this program have provided direct habitat benefits for the Louisiana black bear. Additional details regarding the effectiveness of this program can be found in the Factor D section, titled Partners for Fish and Wildlife Act Regulations.

Table 4. CRP within the Louisiana black bear breeding habitat and Louisiana Black Bear HRPAs, LA (ac [ha]) *(Numbers may not total due to rounding).*

	Tensas River Basin[1]	Upper Atchafalaya River Basin	Lower Atchafalaya River Basin	Total
Breeding Habitat[2,3]	44,766 [18,116]	21,770 [8,810]	0 [0]	66,536 [26,926]
HRPA	120,793 [48,883]	1,344 [544]	11 [5]	122,149 [49,432]

[1] Includes the TRC subpopulation.
[2] Breeding habitat area is largely a subset of (i.e., contained within) the total HRPA.
[3] Breeding habitat areas have expanded beyond the HRPA boundary.

It should also be noted that in Louisiana there are approximately 480,000 ac (195,000 ha) of public lands (e.g., NWRs, WMAs, and Corps lands) that are managed or maintained in a way to benefit wildlife (including bears) in the HRPA (see Table 5). A

description of the formal guidance and/or legal documents that direct those management actions is provided in Factor D. Several of these public lands did not exist or were not as large in the early 1990s as they are today (e.g., Bayou Teche NWR, Tensas River NWR, Buckhorn WMA). Approximately 460,000 ac (186,000 ha) of public lands (inside and outside of the HRPA) in Louisiana and Mississippi directly support Louisiana black bear breeding populations (see Table 6).

Table 5. State and Federal management areas within the Louisiana Black Bear Habitat Restoration Planning Areas, LA (ac [ha]) *(Numbers may not total due to rounding).*

	Tensas River Basin[1,2]	Upper Atchafalaya River Basin[2]	Lower Atchafalaya River Basin[2]	Total[2]
NWRs	111,966 [45,311]	17,614 [7,128]	7,426 [3,005]	137,006 [55,444]
WMAs	143,933 [58,248]	59,423 [24,048]	1,474 [597]	204,830 [82,892]
Atchafalaya Basin Floodway Master Plan Easements and Acquisitions[3]	-	126,417 [51,159]	-	126,417 [51,159]
Total	255,899 [103,559]	226,037 [91,476]	8,900 [3,602]	480,836 [194,588]

[1] Includes the TRC subpopulation.
[2] Some acreage figures are less than that presented in the Louisiana Black Bear 5-Year Status Review due to property boundary refinements and corrections for certain NWRs and WMAs.
[3] This acreage (126,417) does not equal the 141,400 ac estimated by the Corps (Lacoste 2014). The reason for the apparent discrepancy is that the LDWF has been granted management authority over portions of the 141,400 ac (which include both fee title and easement properties). In our analysis, the management-transfer acreage was credited to LDWF (in the form of WMA acreage) rather than to the Corps. However, the total calculated protected-habitat acreage remains consistent (and accurate) regardless of that management authority reassignment.

Barriers to movement—Habitat fragmentation can create barriers to immigration and emigration that can affect population demographics and genetic integrity (Clark et al. 2006, p. 12). Fragmentation was identified as a threat to the Louisiana black bear at the time of its listing because it limits the potential for the existing Louisiana black bear

subpopulations to expand their breeding range (Service 1995, p. 8). Habitat fragmentation can restrict bear movements both within and between populations (Marchinton 1995, p. 53: Beausoleil et al. 2005, p. 403). Even though Louisiana black bears are capable of traveling long distances, including swimming across rivers, traversing open areas, roads, large waterways, development, and large expanses of agricultural land, these features may affect habitat contiguity, and such features tend to impede the movement of bears (Clark 1999, p. 107). Laufenberg and Clark (2014, p. 84) detected evidence of possible gene flow restriction in the TRB associated with U.S. Interstate 20 (I–20). Such barriers can result in increased mortality as bears are forced to forage on less protected sites, travel farther to forage, or cross roads (Hellgren and Maehr 1992, pp. 154–156, Pelton 2003, p. 549; Laufenberg and Clark 2014, p. 84).

Table 6. Federal and State natural resource management areas that support Louisiana black bear breeding subpopulations (ac [ha]).

	Tensas River Basin[1]	Upper Atchafalaya River Basin[2,3]	Lower Atchafalaya River Basin	Louisiana Total	Mississippi Total[4]	Total
NWRs	160,815 [65,079]	16,030 [6,487]	7,355 [2,976]	184,199 [74,543]	4,383 [1,774]	188,582 [76,316]
WMAs	223,926 [90,620]	49,042 [19,846]	0	272,968 [110,466]	0	272,968 [110,466]
Total	384,741 [155,699]	65,071 [26,333]	7,355 [2,976]	457,167 [185,009]	4,383 [1,774]	461,550 [186,783]

[1] Includes the TRC subpopulation and the Louisiana black bear subpopulation in north-central Louisiana near the Arkansas State line.
[2] Includes the Louisiana black bear subpopulation found in the Florida parishes of Louisiana (east of the Mississippi River).
[3] These figures do not include Atchafalaya Basin Floodway Master Plan easements and acquisitions purchased by the Corps, or lands not managed as part of a Federal or State natural resource management area.
[4] Although there are Louisiana black bear breeding subpopulations in Warren, Wilkinson, Issaqueena, and Sharkey Counties, only the Issaqueena/Sharkey subpopulation is currently located by State and Federal lands.

Even bear populations in a relatively large habitat patch are not necessarily ensured long-term survival without recolonization by bears from adjacent patches (Clark 1999, p. 111). Anderson (1997, p. 73) observed that males may not be as affected by

fragmentation as females. Louisiana black bears have been observed to occur in open areas such as fields (Anderson 1997, p. 45). Tracking the dispersal of translocated females demonstrated that bears can disperse through fragmented landscapes (Benson 2005, p. 98). The results of genetic analyses indicated differentiation between the three Louisiana subpopulations present at listing (TRB, UARB, and LARB) partially as the result of restricted gene flow (Laufenberg and Clark 2014, p. 84). Laufenberg and Clark (2014, p. 24) analyzed connectivity between Louisiana black bear subpopulations using a combination of genetic markers (differentiating resident from immigrant bears and within-population genetic structure) and actual bear movements as recorded by global positioning system (GPS) data and step-selection function (SSF) models. Tools like SSF models are relatively new powerful models used to quantify and to simulate the routes and rates of interchange selected by animals moving through the landscape. The SSF models can be used to identify landscape features that may facilitate or impede interchange or dispersal. The results of connectivity modeling indicated that, in general, the bears selected a movement direction as distance to natural cover and agriculture decreased and distance to roads increased (Laufenberg and Clark 2014, pp. 70–71). Those models also predicted occasional crossing of habitat gaps (even large ones) by both males and females.

When Laufenberg and Clark (2014, p. 85) examined the potential effect of continuous corridors on bear dispersal, they concluded that, while such corridors may be important, they were not more effective than the presence of a broken habitat matrix such as that currently surrounding Louisiana black bear subpopulations. The genetic and GPS data used in Laufenberg and Clark's study (2014, p. 86) generally agreed with the

connectivity model results, which indicated interchange was occurring between some Louisiana black bear subpopulations and unlikely to occur between others (see Recovery Criteria discussion). Laufenberg and Clark (2014, p. 90) concluded that a patchwork of natural land cover between Louisiana black bear breeding subpopulations may be sufficient for movement of individuals to occur between subpopulations (at least for males).

In east Texas, habitat fragmentation may become a concern as timberland owners dissolve their holdings over much of southeast Texas lands (Barker et al. 2005, p. 26). Future water reservoir developments further threaten the highest quality habitat remaining in East Texas (Barker et al. 2005, p. 26). However, this area is not currently supporting breeding populations, and habitat restoration activities continue in Texas. Between 2008 and 2011, more than 500 ac (200 ha) have been restored and 1,550 ac (630 ha) have been enhanced in east Texas via the Hardwood Habitat Cooperative program.

In summary, there are about 460,000 ac (186,000 ha) of Federal- and State-owned conservation lands managed for wildlife in Louisiana and Mississippi that directly support the Louisiana black bear. Those areas will continue to remain permanently protected following publication of this final rule. Since listing, more than 4,000 ac (1,600 ha) of Federal land that benefits bears has been acquired, including new NWRs (such as Bayou Teche NWR in Louisiana in 2001) and other areas. In addition to the permanently protected habitat in public ownership, we have worked with States and landowners to secure 148,000 ac (60,000 ha) of permanent WRP easements. Regardless of whether the protections of the Act are removed for the bear, these voluntary permanent easements protect wetlands and ensure that habitat will be maintained (see Factor D for associated

regulatory protections). In addition to the approximately 638,000 ac (258,000 ha) of permanently protected habitat (refer to Table 3), there are roughly 122,000 ac (49,000 ha) of habitat enrolled in CRP (with 10- to 15-year contracts), which also provides benefits to the Louisiana black bear.

Table 7. Changes in the extent of forested habitat coverage within the Louisiana black bear HRPA between 1998 and 2013.[1]

	Northern Zone[2]	Central Zone[2]	Southern Zone[2]
Percent Increase in Forested Landscape[3]	11.4%	7.6%	7.5%

[1] Data were obtained through image classification of digital orthophoto quarter quadrangles (DOQQs; digital orthorectified aerial photography produced at a spatial resolution of 1 meter by the U.S. Geological Survey). Analysis sites were selected to avoid potential bias against landscape features that could result in an underestimation of, or failure to detect, forested habitat losses (e.g., sites with a relatively high proportion of open water, agricultural fields, publicly owned properties, or perpetual conservation easements).

[2] These zones correspond to the general geographic location of our habitat assessment sites within the large-scale monitoring grid presented in the Service's *Post-Delisting Monitoring Plan for the Louisiana Black Bear* (Service 2016, p. 62, Figure 4).

[3] Percentages rather than acreages are provided because only a portion of the overall landscape was evaluated. The intent of this assessment is to evaluate habitat trends and not to calculate absolute habitat values.

Table 8. Forested habitat changes in acres [and hectares] between 2001 and 2011[1, 2]

2001-2011 Changes in Landcover Within the Louisiana Black Bear Habitat Restoration Planning Area	Tensas River Basin	Upper Atchafalaya River Basin	Lower Atchafalaya River Basin	Total
Crops/Open Water/Other Non-Habitat	-1,833.78 [-742.11]	-2,857.42 [-1,156.36]	-4,047.68 [1,638.04]	-8,738.88 [-3,536.51]
Development	521.93 [211.22]	181.44 [73.43]	362.91 [146.86]	1,066.28 [431.51]
Potential Louisiana Black Bear Habitat	1,311.85 [530.89	2,675.99 [1,082.94]	3,684.77 [1,491.18]	7,672.61 [3,105.00]

[1] As detected through satellite-based image classification produced at a spatial resolution of 30 meters within the Louisiana Black Bear Habitat Restoration Planning Area (ac[ha]). The classified image data are formally termed NLCD and are a national land cover product created by the Multi-Resolution Land Characteristics Consortium.

[2] NLCD habitat classes considered potentially suitable for the Louisiana black bear include: deciduous forest, woody wetlands, mixed forest, evergreen forest, shrub/scrub, emergent herbaceous wetlands, and grassland/herbaceous.

Forested wetlands throughout the range of the Louisiana black bear habitat that are not protected through direct public ownership or easements on private lands will continue to receive protection through section 404 of the CWA and the "Swampbuster" provisions of the Food Security Act of 1985 as described in Factor D. Forested habitat trends in the LMRAV indicate that those regulations have provided adequate long-term protection of Louisiana black bear habitat since the listing of the Louisiana black bear in 1992. BLH forest loss in the LMRAV has been reversed with substantial gains in forested habitat being realized within both the LMRAV and the more restrictive HRPA.

To further evaluate forested wetland habitat trends within the HRPA, we employed a GIS analysis of landscape changes in which classified habitat types were monitored over time. To increase the confidence level of that analysis, we evaluated two independent sets of imagery (image dates were based on availability). The results of both methodologies (shown in Tables 7 and 8) demonstrate significant gains in potential bear habitat within the Louisiana black bear HRPA in recent decades. Those results are consistent with government agency records for forested habitat restoration through programs such as WRP, CRP, and wetland mitigation banking.

In 1992, when the Louisiana black bear was listed, the lack of habitat protection within the Atchafalaya River Basin was considered a significant component of the overall habitat loss threat to Louisiana black bears. The final rule that listed the Louisiana black bear as a threatened subspecies states that "privately owned lands of the Atchafalaya River Basin south of U.S. 190 may remain exposed to threat from clearing and

conversion to agricultural uses" (Service 1992, p. 591). It further states that approximately one-half of the forests in the northern Atchafalaya River Basin and the Tensas River Basin are "privately owned and under no protection through conservation easements or acquisition" (Service 1992, p. 591). The Corps' Feasibility Study for the Atchafalaya Basin Floodway System projected the "conversion of about 200,000 ac [81,000 ha] of forestland to agricultural land" within the Lower Atchafalaya Basin Floodway (Corps 1982, p. 29). Partly in response to the threat of land-use conversion and the potential to affect its potential use as a floodway, the Corps' Atchafalaya Basin Multi-Purpose Plant authorized the acquisition of more than 300,000 ac (121,000 ha) of non-developmental easements on private lands and the fee-title purchase of more than 50,000 ac (20,000 ha) of land for conservation purposes within the Atchafalaya Basin covering a substantial amount of land between the UARB and the LARB subpopulations (Corps 1983, p. 3). According to the most current Corps' data, approximately 94,000 ac (38,000 ha) of environmental easements have been purchased and 47,400 ac (19,000 ha) of land have been purchased in fee title for conservation purposes within the Basin (Lacoste 2014).

Developmental and environmental provisions of those easements prohibit the conversion of these lands from existing uses (e.g., conversion of forested lands to cropland). Hunting and fishing camp development as well as timber harvests within the easement area must be conducted in compliance with associated easement restrictions. The current and future acquisition of land (via easement and fee-title purchase) for environmental purposes within the Basin have substantially reduced, and will continue to substantially reduce, the threat of habitat loss within this region of the State. In addition

to those protections afforded to existing forested lands, the Service estimated that more than 35,000 ac (14,000 ha) of lakes and cypress-tupelo swamps would convert to higher elevation forests within the Basin by the year 2030 (LeBlanc et al. 1981, p. 65). This prediction is supported by more recent studies documenting increased and "substantial" sedimentation within the Basin, to the extent that certain areas exhibit "the highest documented sedimentation rates in forested wetlands of the United States" (Hupp et al. 2008, p. 139). Sedimentation results in increased forest floor elevation, and areas currently subject to frequent inundation will eventually reach elevations that are significantly less prone to flooding. Such elevation and hydrology changes are typically accompanied by a shift in vegetative community (reflective of the hydrologic conditions) resulting in habitats that are more suitable for bear foraging and habitation. These changes could ultimately expand the amount of suitable habitat for the UARB and LARB subpopulations, and improve the habitat linkage and genetic exchange between those subpopulations.

Although trends related to agricultural conversion of forested land have been reversed since the listing of the Louisiana black bear, another possible source of future habitat loss may be development associated with increased urbanization. To assess potential future habitat losses associated with development, we acquired population trend projections for all of the parishes within the Louisiana black bear HRPA. Population projections are available through year 2030; see Table 9. The Louisiana Parish Population Projections Series (2010–2030) were developed by Louisiana State University–Department of Sociology for the State of Louisiana, Office of Information

Technology, Division of Administration

(http://louisiana.gov/Explore/Population_Projections/).

Table 9. Human population projections for Louisiana parishes within the Louisiana Black Bear Habitat Restoration Planning Area.[1]

Parish	Population Projection for 2015	Population Projection for 2030	Number Population Change	Percent Population Change
Avoyelles	42,550	42,380	-170	-0.40
Catahoula	9,400	7,720	-1,680	-17.87
Concordia	17,160	13,930	-3,230	-18.82
East Carroll	7,600	5,960	-1,640	-21.58
Franklin	18,450	15,460	-2,990	-16.21
Iberia	75,990	75,450	-540	-0.71
Iberville	29,350	24,640	-4,710	-16.05
Madison	10,470	8,230	-2,240	-21.39
Pointe Coupee	21,560	19,380	-2,180	-10.11
Richland	19,260	17,460	-1,800	-9.35
St. Landry	94,420	98,080	3,660	3.88
St. Martin	54,250	57,000	2,750	5.07
St. Mary	47,410	40,390	-7,020	-14.81
Tensas	5,200	3,990	-1,210	-23.27
West Baton Rouge	22,540	21,070	-1,470	-6.52
West Carroll	10,750	9,190	-1,560	-14.51
West Feliciana	15,250	14,260	-990	-6.49
Total Projected Population Change over the Next 15 Years in the 17 Parishes Included in the Louisiana Black Bear HRPA			**-27,020**	
Average Percent Projected Population Change over the Next 15 Years in the 17 Parishes Included in the Louisiana Black Bear HRPA			**- 11.13%**	

[1] The effects of Hurricanes Katrina and Rita were considered in all projections. Data represent the "Middle Series" scenario provided by the State of Louisiana, Office of Information Technology, Division of Administration (http://louisiana.gov/Explore/Population_Projections/; downloaded on December 4, 2014).

Of the 17 parishes included within our Louisiana Black Bear Habitat Restoration Planning Area, 15 were projected to experience human population declines, including several that may experience substantial reductions (population declines of 10–23

percent). St. Landry and St. Martin Parishes were the only parishes within our analysis polygon with projected population growth over the next 15 years (though increases of only 3.88 and 5.07 percent, respectively, are expected). Significant portions of those parishes, including their largest urban areas where most future population growth and associated development would be expected, occur outside of the HRPA. In summary, based on our review of the available human population projections, it appears that there is an extremely low threat of future Louisiana black bear habitat loss from urban expansion or other types of development.

Summary of Factor A

Under current landscape conditions and forested habitat extent, the subpopulations within the Tensas and Upper Atchafalaya River Basins (specifically the TRB, UARB, and TRC) have an overall probability of persistence of approximately 100 percent (0.996; Laufenberg and Clark 2014, p. 2). This indicates that current available habitat is sufficient in quality and quantity to meet long-term survival requirements of the Louisiana black bear. Much of that habitat is protected and the extent of protected habitat continues to increase. Since the listing of the Louisiana black bear in 1992, voluntary landowner-incentive based programs and environmental regulations have not only stopped the net loss of forested lands in the LMRAV, but have resulted in significant habitat gains within both the LMRAV and the Louisiana black bear HRPA. We do not have any data indicating that future enrollment in voluntary landowner-incentive based programs would deviate significantly from recent historical trends.

A substantial amount of private land that supports Louisiana black bears is not encumbered by conservation easements. To conservatively estimate long-term habitat availability for the Louisiana black bear, those lands were excluded from much of our analyses (Tables 2, 3, 5, and 6). Those lands largely consist of forested habitats that are occasionally to frequently flooded and would not be suitable for conversion to agriculture or development without the construction of significant flood control features. The construction of such features or other activities would eliminate or reduce existing wetland habitat (including forested wetlands) and would be regulated via the Food Security Act of 1985 and/or section 404 of the CWA (refer to the Factor D section for further discussions on long-term protections afforded to private land through existing regulatory mechanisms). Following the listing of the Louisiana black bear, more than 460,000 ac (186,000 ha) of available and restored habitat is now held in Federal and State ownership, and a substantial portion of restored habitats are protected with perpetual non-developmental easements (through the WRP or wetland mitigation banking programs). Additionally, remnant and restored forested wetlands are protected through applicable conservation regulations (e.g., section 404 of the CWA). We conclude that the present or threatened destruction, modification, or curtailment of its habitat or range does not constitute a substantial threat to the Louisiana black bear now and is not expected to in the foreseeable future.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Hunting During the Past 23 Years: In addition to habitat loss, prior to listing, Louisiana black bear numbers had been reduced throughout its range due to historical overexploitation (Barker et al. 2005, p. 3; Davidson et al. 2015, p. 3; St. Amant 1959, p. 42; Shropshire 1996, p. 20). For example, Keul (2007, p. i) reviewed historical literature on the black bear in East Texas and concluded the primary reason for loss of bears was due to aggressive and uncontrolled sport hunting. Currently, there are no legal commercial or recreational consumptive uses of Louisiana black bears. In the mid-1950s, the bear hunting season in Louisiana was temporarily closed due to low bear numbers (Davidson et al. 2015, p. 5). In spite of low numbers, bear hunting remained legal for short time periods in restricted areas of Louisiana until 1988, when the season was once again closed; it has not since reopened (Davidson et al. 2015, p. 5; Murphy 2015 personal communication). Additional protection was provided by the State listing of the Louisiana black bear (listed as threatened in Louisiana in 1992, endangered in Mississippi in 1984, and threatened in Texas in 1987) (refer to the Factor D section for further discussions on regulatory mechanisms).

Hunting in the Future: When this final rule goes into effect, the Louisiana black bear will be delisted and the protection afforded under the Act removed; however, the bear will remain protected under State laws within its range, and the State penalties for poaching or harming a bear will remain in place (see Factor D discussion) (Davidson et al. 2015, p. 57). These provisions include protections that would remain in place for all bear species. However, the legal harvest of bears, with approval from the LWFC, could occur in Louisiana based on demographic monitoring data (Davidson et al. 2015, p. 55).

Based on the 2015 Louisiana black bear management plan, LDWF has the authority, capability, and biological data to implement careful hunting restrictions and population management (Davidson et al. 2015, p. 55). The LDWF will consider the possibility of a limited hunt only through a quota system allocated by management area, based on harvest models accounting for such things as demographics, reproductive vital rates, genetic characteristics, and the magnitude of human-caused mortality if those models that indicate a harvest would not compromise Louisiana black bear sustainability (Davidson et al. 2015, pp. 55–56). Baseline estimates would be established for every Louisiana black bear subpopulation, and population monitoring would be conducted (Davidson et al. 2015, p. 55). The baseline estimates and population monitoring will be based on the extensive data and monitoring methods developed by LDWF and described in the PDM plan. The LDWF Plan states that no regulated hunt would be allowed if it compromises Louisiana black bear sustainability (Davidson et al. 2015, p. 55). Harvest seasons cannot be set without LWFC approval and a public review and comment period. If approved, the harvest would be monitored by the LDWF, who would also reserve the right to revoke tags and/or cancel harvest seasons at any time (Davidson et al. 2015, p. 55).

Scientific Research and Public Safety: Bears are routinely captured and monitored for scientific and public safety purposes. During scientific research activities, there is a rare chance a bear could be accidentally killed during the capture process, but these activities are conducted via State permits and closely monitored by the State agencies to reduce the likelihood of such events. Since listing in 1992, in Louisiana there have been at least seven documented mortalities incidental to research activities

(Davidson and Murphy 2015, pp. 1–2) and eight euthanizations due to management actions (e.g., conditioning to anthropogenic food sources and subsequent human habitation; Davidson and Murphy 2015, p. 1). In Mississippi, two research-related deaths have occurred since listing (Rummel 2015, personal communication). However, this small number of mortalities occurring from research activities or removal due to public safety concerns does not represent a threat to the Louisiana black bear population.

Summary of Factor B

Recreational hunting is not a threat because there has been no existing functional mechanism to hunt or take bears in the States in their range since 1984 (refer to Factor E discussion for a discussion of mortality due to poaching). Also, when this rule goes into effect as specified above in **DATES**, bear species would remain protected in the States where the Louisiana black bear occurs through State regulations so there is no identified threat to the Louisiana black bear (refer to Factor D discussion for a discussion of regulations that will remain in place). Therefore, the associated protections afforded to the American black bear due to similarity of appearance with the Louisiana black bear will no longer be necessary. The potential for a regulated restricted harvest of the Louisiana black bear population exists. The LDWF would not consider a harvest if existing data and simulated population dynamics models indicate a restricted hunt could potentially compromise Louisiana black bear sustainability. Louisiana's State management plan has measures in place to ensure the Louisiana black bear population would not be impacted. Based on these provisions, we do not have any evidence to suggest that overutilization is a threat to the Louisiana black bear.

C. Disease or Predation

When we listed the Louisiana black bear in 1992, we did not consider disease or predation to be limiting or threatening to the Louisiana black bear (57 FR 588, January 7, 1992). Several diseases and parasites have been reported for black bears but are not considered to have significant population impacts (Pelton 2003, p. 552). Limited information has been collected in the wild on diseases or parasites of black bears and causes of cub mortality (LeCount 1987, p. 75). Natural predation has been documented as a result of cannibalism by other bears and cub predation by other animals (LeCount 1987, pp. 77–78; Rogers 1987, p. 54; Pelton 2003, p. 552). Rogers (1987, pp. 53–54) documented four yearling bears that had been eaten (including one that had been eaten by its mother) but could not determine if they had been killed or scavenged and noted that small bears in poor condition would be more susceptible to predation. Cannibalism rates are not likely to regulate population growth (Rogers 1987, p. 55). It is unknown how many juvenile males are killed (rather than dispersed from the area) by adults, but that mortality probably has little effect on population growth due to the polygamous (having more than one mate) mating system of bears (Rogers 1987, p. 55). O'Brien's (2010, p. 17) literature review of black bear disease indicated bears may be susceptible to a number of parasitic, bacterial, and viral diseases but none are likely to cause high morbidity or mortality. Similarly, Pelton (1982, p. 511) listed the following diseases of black bears—liposarcoma and unidentified tumors, Elokomin fluke, rabies, and several bacterial and parasitic infestations—noting that none appeared to have significant effects on population regulation and LeCount (1987, p. 79) did not believe disease represented a substantial

mortality factor for bear populations. Disease vectors are monitored by the LDWF whenever bears are handled. During the period extending from 1992 through 2014, researchers documented 11 black bear mortalities as a result of sickness or injury (Davidson and Murphy 2015, p. 1).

Summary of Factor C

We have no evidence or data indicating that disease or predation present a threat to the Louisiana black bear population.

D. The Inadequacy of Existing Regulatory Mechanisms

Overharvest was identified as one of the factors that resulted in low Louisiana black bear numbers. When this rule goes into effect, protections afforded by the Act will be removed; however, Louisiana black bears will remain protected from take by State laws throughout its historical range (Louisiana: Title 56, Chapter 8, Part IV. Threatened or Endangered Species; Mississippi: Title 49, Chapter 5–Fish, Game and Bird Protections and Refuges, Nongame Endangered Species Conservation; Texas: Title 5. Wildlife and Plant Conservation, Subtitle B. Hunting and Fishing, Chapter 68. Endangered Species).

Louisiana: As stated above, when this rule goes into effect, Louisiana black bears will remain protected from take ("take" is defined in Louisiana law at Title 56:8(131): in its different tenses, as the attempt or act of hooking, pursuing, netting, capturing, snaring, trapping, shooting, hunting, wounding, or killing by any means or device), possession, and trade. The LDWF will be the sole agency responsible for Louisiana black bear

management in Louisiana when the bear is delisted with publication of this final rule. The removal of the Louisiana black bear from protections under the Act will not alter or negate State laws or lessen penalties protecting the bear. In Louisiana, there are nine laws and regulations authorized under Louisiana Title 56 and Louisiana Title 76 regulating and setting violation classes for such actions as taking, possessing, and feeding fish and wildlife under their protection (Davidson et al. 2015, pp. 57–59). The LDWF Law Enforcement Division (LED) is responsible for enforcing State and Federal laws relative to fish and wildlife resources. In fiscal year 2012–2013, the LED conducted 226,427 patrol hours on land and made 730,942 contacts with the public, the majority of whom were in compliance with State and Federal wildlife and fisheries regulations (LDWF 2014a, p. 2). Agents issued more than 20,000 criminal citations and 5,700 warnings during this period, with the most common related to actions like fishing without a license, or not abiding by rules and regulations on wildlife management areas (see Factor E for a discussion of documented illegal poaching). In the last 10 years, the LDWF enforcement division has prosecuted seven black bear cases (Davidson 2015, personal communication; note—these represent prosecutions that are a different number from enforcement actions that they were not able to carry out to full prosecution). Operation Game Thief (OGT) is a nonprofit corporation program that provides cash awards to individuals who provided LDWF with information regarding a wildlife violation that result in an arrest. Since its inception in 1984, over 700 violators, convicted of numerous State and Federal charges, have been apprehended as a result of information provided by OGT informants (LDWF 2015, http://www.wlf.louisiana.gov/enforcement/operation-game-thief).

The LDWF Plan was finalized in 2015 (Davidson et al. 2015). The management objective for that Plan is to maintain a sustainable black bear population in suitable habitat and has the following key requirements: sufficient habitat available within dispersal distance, maintaining connectivity among subpopulations, and continued monitoring of subpopulation demographics (Davidson et al. 2015, p. 2). The LDWF identified three bear management actions it will implement: (1) continued public education and outreach; (2) minimizing human–bear conflicts; and (3) bear harvest as a management action if such actions do not impede sustainability of bears (as determined by the ongoing population monitoring program as described in the LDWF Plan (Davidson et al. 2015, pp. 32–33, 55–56).

Mississippi: The Mississippi Department of Wildlife, Fisheries, and Parks will be the agency responsible for black bear management in Mississippi when this rule goes into effect. MDWFP developed a management plan entitled "Conservation and Management of Black Bears in Mississippi" in 2006 (Young 2006). The purpose of that plan was to: (1) serve as a basis for information about black bears in Mississippi and (2) outline protocols and guidelines for dealing with the continued growth of black bear populations in Mississippi (Young 2006, p. 6). That plan covers black bear habitat management and restoration needs, public education, conflict management, and research needs (Young 2006, pp. 25–36).

Texas: The TPWD will be the agency responsible for black bear management in Texas when this rule goes into effect. An East Texas Black Bear Conservation and Management Plan was developed in 2005 (Barker et al. 2005). Its purpose is to facilitate the conservation and management of black bears in East Texas through cooperative

efforts. Broadly described components of the plan include: habitat management and enhancement, public education, conflict management, and research needs (Barker 2005, pp. 31–41). No Louisiana black bear breeding populations are believed to currently exist in Texas; however, this Plan contains a framework to improve habitat and provide possibilities for future bear conservation in the State.

State-owned Lands: The LDWF is responsible for administering the many State-owned wildlife management areas (WMAs) in Louisiana. The WMAs within the HRPA include Big Lake WMA (19,587 ac (7,927 ha)), Buckhorn WMA (11,238 ac (4,548 ha)), Richard K. Yancy WMA (73,433 ac (29,717 ha)), and Grassy Lake WMA (13,214 ac (5,348 ha)), Sherburne WMA and the adjacent (State-managed) Corps-owned Bayou Des Ourses Area (29,883 ac (12,093 ha)), and Attakapas Island WMA (26,819 ac (10,854 ha)). Those areas are managed according to the LDWF Master Plan for Wildlife Areas and Refuges (LDWF 2014b). The vision identified is to build an interconnected system of natural areas and open spaces (a green infrastructure) consisting of core areas (e.g., NWRs and WMAs), and corridors to provide essential habitat to state and federally listed endangered and threatened species as well as other species important to ecosystem function (LDWF 2014b, p. 18). Implementation of the strategic plan includes potential land acquisition in support of threatened and endangered species, cooperating with the Service in the recovery of listed species, and restoration of BLH forest habitat (LDWF 2014b, p. 16).

The MDWFP is responsible for administering the many State-owned wildlife management areas in Mississippi. The WMAs within the MAVU include Leroy Percy WMA (2,664 ac (1,078 ha)), Shipland WMA (4,269 ac (1,728 ha)), Copiah County

WMA (6,830 ac (2,764 ha)), and O'Keefe WMA (5,918 ac (2,395 ha)). Those areas are managed according to the MDWFP Strategic Plan (MDWFP undated, p. 17) and are actively managed to provide for a diversity of wildlife species. The management goals are to manage agency-owned lands for the long-term conservation of wildlife habitat and for multiple user groups to enjoy diverse outdoor recreational opportunities that are consistent with natural resource management goals.

National Wildlife Refuges: The NWRs shown in Table 10 occur within the Louisiana HRPA and the Mississippi MAVU. The National Wildlife Refuge System Improvement Act of 1997 requires that every refuge develop a Comprehensive Conservation Plan (CCP) and revise it every 15 years, as needed. CCPs identify management actions necessary to fulfill the purpose for which a NWR was enacted. CCPs allow refuge managers to take actions that support State Wildlife Action Plans, improve the condition of habitats, and benefit wildlife. The current generation of CCPs will focus on individual refuge actions that contribute to larger, landscape-level goals identified through the Landscape Conservation Design process. CCPs address conservation of fish, wildlife, and plant resources and their related habitats, while providing opportunities for compatible wildlife-dependent recreation uses.

An overriding consideration reflected in these plans is that fish and wildlife conservation has first priority in refuge management, and that public use be allowed and encouraged as long as it is compatible with, or does not detract from, the Refuge System mission and refuge purpose(s).

Each NWR within the Louisiana black bear range addresses management actions for maintaining appropriate bear habitat on their lands and are listed below: Tensas River

NWR (Service 2009a, pp. 77–78); Bayou Teche NWR (Service 2009b, p. 34); Atchafalaya NWR (Service 2011, pp. 68–75); Grand Cote NWR (Service 2006a, p. 54); Upper Ouachita NWR (Service 2008a, pp. 85–86); Lake Ophelia NWR (Service 2005a, pp. 49–50); Bayou Cocodrie NWR (Service 2004, p. 40); Hillside, Matthews Brake, Morgan Brake, Panther Swamp, Theodore Roosevelt, and Yazoo NWRs (Service 2006c, pp. 92–93); Coldwater and Tallahatchie NWRs (Service 2005b, pp. 78–79); and St. Catherine Creek NWR (Service 2006b, p. 58).

Table 10. Extent of NWR lands occurring within the LA HRPA and the MS MAVU.

		Acres	Hectares
Louisiana NWRs			
	Atchafalaya NWR	15,764	6,379
	Bayou Cocodrie NWR	15,149	6,131
	Bayou Teche NWR	9,004	3,644
	Tensas River NWR	77,956	31,548
	Lake Ophelia NWR	17,427	7,052
	Louisiana Total	*135,300*	*54,754*
Mississippi NWRs			
	Coldwater River NWR	283	115
	Hillside NWR	15,498	6,272
	Matthews Brake NWR	2,393	968
	Morgan Brake NWR	7,585	3,070
	Panther Swamp NWR	40,859	16,535
	St. Catherine Creek NWR	25,384	10,273
	Tallahatchie NWR	24	10
	Theodore Roosevelt NWR	6,019	2,436
	Yazoo NWR	13,050	5,281
	Mississippi Total	*111,095*	*44,959*
TOTAL FOR BOTH STATES		**246,395**	**99,713**

Morganza and Atchafalaya Basins: The lands in the Atchafalaya Basin and Morganza Floodway are prominent features of the Mississippi River and tributaries flood control project authorized by the Flood Control Act of May 15, 1928. In 1985, the Corps enacted the Atchafalaya Basin Multipurpose Plan with the purpose of protecting south Louisiana from Mississippi River floods and retaining and restoring the unique environmental features and long-term productivity of the Basin. The purpose of the Morganza Floodway is to provide a controlled floodway to divert Mississippi River flood waters into the Atchafalaya basin during major floods on the Mississippi River. The Corps has acquired fee title ownership and permanent easements of approximately 600,000 ac (200,000 ha) for perpetual flowage, developmental control and environmental protection rights. The developmental control, and environmental protection easement prohibits conversion of land from existing uses (e.g., conversion of forested lands to cropland). Landowners may harvest timber only in compliance with specified diameter-limit and species restrictions. The construction or placement of new, permanently habitable dwellings or other new structures, including camps, except as approved by a Corps real estate camp consent and in accordance with Corps restrictions, is prohibited on the easement lands in the Atchafalaya Basin.

NRCS Administered Permanent Conservation Easements on Private Lands: The WRP is a voluntary program that provides eligible landowners the opportunity to address wetland, wildlife habitat, soil, water, and related natural resource concerns on private lands in an environmentally beneficial and cost-effective manner. The WRP is authorized by 16 U.S.C. 3837 et seq., and the implementing regulations are found at 7 CFR part 1467. The first and foremost emphasis of the WRP is to protect, restore, and

enhance the functions and values of wetland ecosystems to attain habitat for migratory birds and wetland-dependent wildlife, including federally listed threatened and endangered species. The WRP is administered by the NRCS (in agreement with the Farm Service Agency) and in consultation with the Service and other cooperating agencies and organizations. The Service participates in several ways, including assisting NRCS with land eligibility determinations; providing the biological information for determining environmental benefits; assisting in restoration planning such that easement lands achieve maximum wildlife benefits and wetland values and functions; and providing recommendations regarding the timing, duration, and intensity of landowner-requested compatible uses.

Participating landowners may request other prohibited uses such as haying, grazing, or harvesting timber. When evaluating compatible uses, the NRCS evaluates whether the proposed use is consistent with the long-term protection and enhancement of the wetland resources for which the easement was established and Federal funds expended. Requests may be approved if the NRCS determines that the activity both enhances and protects the purposes for which the easement was acquired and would not adversely affect habitat for migratory birds and threatened and endangered species. NRCS retains the right to cancel an approved compatible use authorization at any time if it is deemed necessary to protect the functions and values of the easement. According to the authorizing language (16 U.S.C. 3837a(d)), compatible economic uses, including forest management, are permitted if they are consistent with the long-term protection and enhancement of the wetland resources for which the easement was established. Should

such a modification be considered, NRCS would consult with the Service prior to making any changes.

According to the WRP Manual, prior to making a decision regarding easement modification, the NRCS must:

(1) Consult with the Service;

(2) evaluate any modification request under the National Environmental Policy Act (NEPA);

(3) investigate whether reasonable alternatives to the proposed action exist; and

(4) determine whether the easement modification is appropriate considering the purposes of WRP and the facts surrounding the request for easement modification or termination.

Any WRP easement modification, must:

(1) Be approved by the Director of the NRCS in consultation with the Service (the National WRP Program Manager must coordinate the consultation with the Service at the national level);

(2) not adversely affect the wetland functions and values for which the easement was acquired;

(3) offset any adverse impacts by enrolling and restoring other lands that provide greater wetland functions and values at no additional cost to the government;

(4) result in equal or greater ecological (and economic) values to the U.S. Government;

(5) further the purposes of the program and address a compelling public need; and

(6) comply with applicable Federal requirements, including the Act, NEPA (42 U.S.C. 4321 et seq.), Executive Order 11990 (Protection of Wetlands), and related requirements.

The WRP manual states that "NRCS will not terminate any of its easements, except for a partial termination that may be authorized as part of an easement modification request…in which additional land will be enrolled in the program in exchange for the partial termination." Therefore, based on our assessment of these requirements, the termination of an entire WRP easement, or a reduction in the total acreage of WRP lands via authorized modifications, appears highly improbable. In addition, we have partnered with NRCS to administer WRP in Louisiana since the inception of that program in 1992. Following a comprehensive review of our local files and a search of national WRP records, we have been unable to find a single instance of a WRP easement being terminated in the history of that program (which includes nearly 10,000 projects on approximately 2 million ac (800,000 ha) of land nationwide).

Food Security Act Regulations: The Food Security Act of 1985 included Highly Erodible Land Conservation and Wetland Conservation Compliance (i.e., "Swampbuster") provisions to deter forested wetland loss by withholding many Federal farm program benefits from producers who convert wetland areas to agricultural purposes. Persons who convert a wetland and make the production of an agricultural commodity possible are ineligible for NRCS program benefits until the functions of that wetland were restored or mitigated. According to the NRCS, those wetland conservation provisions have sharply reduced wetland conversion for agricultural uses

(http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/programs/alphabetical/camr/?cid=stelprdb1043554).

Partners for Fish and Wildlife Act (PFWA) Regulations: The PFWA of 2006 provides for the restoration, enhancement, and management of fish and wildlife habitats on private land through the Partners for Fish and Wildlife Program, a program that works with private landowners to conduct cost-effective habitat projects for the benefit of fish and wildlife resources in the United States. This program provides technical and financial assistance to private landowners to conduct voluntary projects to benefit Federal trust species by promoting habitat improvement, habitat restoration, habitat enhancement, and habitat establishment, as well as technical assistance to other public and private entities regarding fish and wildlife habitat restoration on private lands. Numerous projects providing direct habitat benefits for the Louisiana black bear have been accomplished via the Partners for Fish and Wildlife Program. One such example involves a 120- ac (49-ha) site within Louisiana black bear breeding and critical habitat. Because it is also located within the Morganza Floodway (which is encumbered with a Corps flowage easement), the site was ineligible for most other habitat restoration programs such as WRP. Prior to enrollment into the Partners for Fish and Wildlife Program, that site was maintained as a marginally productive agricultural field. In 2002, through the planting of a diverse mixture of over 36,000 native seedlings, the entire site was restored to a bottomland hardwood forest, reducing fragmentation and providing habitat benefits for a variety of species including the Louisiana black bear.

Clean Water Act Regulations: For the first several years following the passage of the CWA (enacted as the Federal Water Pollution Control Act Amendments of 1972), the

Corps regulated only activities that clearly constituted a deposition of dredge and fill material in wetlands or other waters of the United States. Subsequently, large-scale clearing of BLH wetlands was largely unregulated during this era (Houck 2012, pp. 1495–1503).

In response to the considerable wetland habitat conversion throughout the LMRAV, and fueled by the ongoing clearing of the Lake Long tract, the Avoyelles Sportsmen's League and partnering organizations sued the Corps and EPA for allegedly failing to properly enforce section 404 of the CWA. On March 12, 1981, a U.S. District Court (Western District of Louisiana–Alexandria Division) ruled in favor of the plaintiffs with a decision that would substantially alter the regulatory scope and enforcement authority of the Corps and EPA under the CWA. The decision noted: (1) the term "wetland vegetation" was more broadly defined, which would ultimately result in the reclassification of many areas that were previously considered non-wetland (such as the Lake Long tract), and (2) the Corps' and EPA's jurisdiction were expanded beyond the limited scope of dredge and fill regulation to include all activities that may result in the placement or redistribution of earthen material, such as mechanized land clearing (*Avoyelles Sportsmen's League, Inc.* v. *Alexander*, 511 F. Supp. 278, (W.D. La. 1981)).

To summarize, though the CWA was enacted in 1972, it was a full decade later before the authority and associated protection that it affords to forested wetlands was legally recognized. In the interim, and in the decade prior, the BLH forests of the LMRAV were decimated (Creasman et al. 1992; Haynes 2004, pp. 170, 172) ultimately constituting the primary threat that warranted the listing of the Louisiana black bear (Service 1992, p. 592). After the new legal protection of forested wetlands defined via

the Avoyelles Sportsmen's League rulings on CWA authority, the trend of BLH forest loss in the LMRAV was reversed. Available data regarding the extent of forested wetlands in the LMRAV (e.g., image classification of digital orthophoto quarter quadrangles [DOQQs], analysis of NLCD data, and government agency records for forested habitat restoration in the LMRAV [via programs such as WRP, CRP, and wetland mitigation banking (see below)] clearly demonstrate that trend reversal and suggest that the long-term protection of forested wetlands (largely absent prior to the Avoyelles Sportsmen's League rulings of the early 1980s) are now being realized (See discussion under Factor A).

Mitigation banking has been an additional factor responsible for alleviating wetland losses associated with the Corps' wetland regulatory program. Persons obtaining a wetland development permit from the Corps (pursuant to section 404 of the CWA and/or section 10 of the Rivers and Harbors Act) that authorizes impacts to waters of the United States, including wetlands, are typically required to compensate for wetland losses in a manner that ensures project implementation would result in no net loss of wetlands. Mitigation banks are intended to provide a mechanism to assist permit applicants, who may be unable or unwilling to implement an individual compensatory mitigation project, in complying with those mitigation requirements. The design and implementation of compensatory wetland mitigation projects (particularly wetland mitigation banks) are accomplished through a coordinated effort among the Corps, the Service, and other State and Federal environmental resource management agencies, and are individually authorized by a mitigation banking instrument (MBI). With a high degree of specificity, MBIs mandate restoration practices, contingencies and remedial actions, long-term

monitoring and maintenance, adherence to performance standards, financial assurances, and the establishment of perpetual conservation servitudes. Without exception, wetland mitigation banks are restored and managed with the intent of providing the full array of wetland functions and values (such as providing habitat for a multitude of wildlife species, which typically includes the Louisiana black bear).

For permitted projects that would impact Louisiana black bear habitat, the Service routinely requests that any associated wetland mitigation project (or wetland mitigation bank option) be sited in a location, and conducted in a manner, that would result in the restoration of suitable Louisiana black bear habitat including all of the various functions that would be potentially impacted by the corresponding development project (e.g., travel corridors or breeding habitat). The quality/functionality of habitat restored through such conservation efforts, coupled with typical compensatory mitigation ratios, outweighs any loss resulting from individual development projects.

Our analysis of impacts and mitigation associated with the Corps' wetland regulatory program suggests that substantially more forested habitat is restored through compensatory wetland mitigation than is eliminated via permitted wetland development projects (see Table 11). That analysis was conducted over a 5-year period spanning July 1, 2009, through July 31, 2014. According to personnel within the Corps' wetland regulatory program, a standardized electronic database to track permitted projects was not developed until 2004, and was not reliably used by permit analysts until 2009. Therefore, there is no reliable database to query such records prior to that time. Note that the corresponding table displays permitted wetland losses and approved wetland mitigation banks that would be available to offset those losses. We were unable to obtain the

baseline data necessary to calculate a loss-to-gain wetland habitat ratio. However, personnel within the Corps' wetland regulatory program evaluated their records for specific mitigation requirements associated with each permitted activity and estimated that the ratio of wetland habitat gains from compensatory mitigation to wetland habitat losses attributed to permitted projects is 6:1 (Stewart 2014).

Table 11. Impacts (positive/negative) to potentially suitable Louisiana black bear habitat resulting from permitted losses and mitigation gains through the Corps' wetland regulatory program.[1]

IMPACTS	New Orleans District	Vicksburg District	***TOTAL***
Number of Permits Issued via the Corps' Wetland Regulatory Program for Projects in Potentially Suitable Bear Habitat within the Louisiana Black Bear Habitat Restoration Planning Area			
Projects Resulting in Permanent Impacts	137	79	216
Projects Resulting in Temporary Impacts	411	32	443
Total	**548**	**111**	**659**
Acres of Potentially Suitable Bear Habitat within the Louisiana Black Bear Habitat Restoration Planning Area Impacted/Lost by Projects Permitted via the Corps' Wetland Regulatory Program			
Permanent Impacts	221.8	37.8	259.6
Temporary Impacts	262.7	10.0	272.7
Total	**484.5**	**47.8**	**532.3**
MITIGATION	New Orleans District	Vicksburg	*TOTAL*
Number of Compensatory Wetland Mitigation Banks Approved by the Corps within the Louisiana Black Bear Habitat Restoration Planning Area	7	7	14
Acres of All Habitats Restored, Enhanced, and Preserved via Wetland Mitigation Banking within the Louisiana Black Bear Habitat Restoration Planning Area	2,633.8 [1,065.86]]	2,630.7 [1,064.61]	5,264.5 [2,130.47]
Acres of Forested Habitat Restored via Wetland Mitigation Banking within the Louisiana Black Bear Habitat Restoration Planning Area	2,323.3 [940.2]	2,538.7 [1,027.3]	**4,862.0 [1,967.6]**
NET ACRES OF FORESTED HABITAT GAINED	1,838.8 [744.2]	2,490.9 [1,008.0]	***4,329.7 [1752.2]***

[1] Analysis conducted by the Service's Louisiana Field Office based on regulatory program data (from a 5-year period spanning July 1, 2009 through July 31, 2014) provided by the New Orleans and Vicksburg Corps Districts.

The results of our GIS landscape analysis indicate that the recent (post 1990) positive trends in forested habitat extent within the LMRAV (as documented above) have also been realized within our more focused HRPA. Regardless of our methodology (1-meter DOQQ analysis or 30-meter NLCD analysis), the analyses yielded similar results. There has been a significant gain in the acreage of potential Louisiana black bear habitat within the HRPA since the 1992 listing of the Louisiana black bear (see Tables 7 and 8). Our review of available literature and research, in conjunction with our own analyses, suggest that those gains are the result of both voluntary private land restoration programs (mainly CRP and WRP) and wetland regulatory mechanisms (primarily section 404 of the CWA).

The documented trends in Louisiana black bear population growth and population viability validate the assertion that existing environmental regulatory mechanisms and conservation measures are sufficient for the Louisiana black bear. We do not have any other data indicating that current regulatory mechanisms are inadequate to provide long-term protection of the Louisiana black bear and its habitat. Accordingly, we conclude that existing regulatory mechanisms are adequate to address the threats to the Louisiana black bear posed by the other listing factors, especially habitat loss.

Summary of Factor D

Louisiana black bears are currently, and will continue to be, protected from taking, possession, and trade by State laws throughout their historical range. Regulatory mechanisms that currently protect Louisiana black bear habitat through conservation easements or ownership by State and Federal agencies will remain in place (e.g., WRP

tracts, WMAs, NWRs, FmHAs, and Corps easements in the Atchafalaya and Morganza Floodways). Forested wetlands throughout the range of the Louisiana black bear habitat that are not publicly owned or encumbered by conservation easements will continue to receive protection through section 404 of the CWA and the Swampbuster provisions of the Food Security Act of 1985. Forested habitat trends in the LMRAV indicate that those regulations have provided adequate long-term protection of Louisiana black bear habitat since the listing of the Louisiana black bear in 1992. Specifically, the trajectory of BLH forest loss in the LMRAV has not only improved, but has been reversed with substantial gains in forested habitat being realized within both the LMRAV and the more restrictive HRPA. Therefore, we find that existing regulatory mechanisms are adequate to address the threats to the Louisiana black bear posed by the other listing factors.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Hybridization: At the time the Service listed the Louisiana black bear, we discussed what appeared to be a threat from hybridization resulting from the introduction of bears from Minnesota (57 FR 588, January 7, 1992). We noted that the threat from hybridization at the subspecies level might not be a cause for significant concern and acknowledged that the subpopulations in the TRB and UARB were possibly intraspecifically hybridized and mostly unchanged (genetically) because of the low probability of reproductive isolation since they were relatively close geographically. Reproductive isolation is required for an extended period for the evolutionary process of differentiation to operate (57 FR 588, January 7, 1992). Prior to listing, Pelton (1989, p. 5) argued there was considerable evidence that a pure strain of *U. a. luteolus* subspecies

no longer existed because: (1) There was a broad continuum of habitat between the TRB and UARB populations (based on Weaver's [1990] maps); (2) habitat corridors still existed [1989] between those areas allowing for continued dispersal; (3) bear releases in Arkansas resulted in widespread dispersals; (4) the presence of narrow dispersal corridors through Arkansas following such rivers as the Ouachita and Saline Rivers were still being used by transplant offspring and evidence of use had been observed all the way to the Louisiana border; and (5) long-distance natural movements of bears had been documented. Based on historical descriptions of the UARB release area, we believe it is very likely there was no known breeding population in that area at the time of the releases; however, it is not determinable whether that area was "bear-free" as supposed by the commenter. Subsequent taxonomic studies conducted since listing have revealed differing results on the extent of hybridization.

Our knowledge of bear behavior coupled with the habitat in existence at that time would support the presence of males in or traveling through that area. This, in combination with the findings presented by Laufenberg and Clark (2014, pp. 60–63), would support our assumption that the UARB is not strictly composed of Minnesota bears and our inclusion of that subpopulation in our recovery assessment.

The most recent unified analyses of genetic data by Laufenberg and Clark (2014, pp. 50–58) found varying levels of genetic structure among pairs of subpopulations and identified five genetically distinct groups (Laufenberg and Clark 2014, p. 60) and an affinity between Minnesota and UARB subpopulations (Laufenberg and Clark 2014, p. 84).

The analyses concluded that differentiation between the Louisiana black bear subpopulations within the LMRAV can be explained as the result of restricted gene flow, accelerated genetic drift, and differing levels of genetic introgression as a result of the Minnesota introductions (Laufenberg and Clark 2014, p. 84). The results also show some interchange of Louisiana black bear subpopulations with Arkansas populations and found affinities to the WRB subpopulation and Minnesota bears. The level of genetic affinity or differentiation between the Louisiana black bear subpopulations and the WRB subpopulation and Minnesota bears is not sufficient evidence for determining taxonomic status (Laufenberg and Clark 2014, p. 85). Thus, while recent genetic analyses results did indicate the existence of some effects of the Minnesota reintroductions (as postulated at listing; the data do not indicate that the UARB subpopulation is completely composed of Minnesota bears), those effects do not seem to be great enough to pose a significant threat to this subspecies' genetic integrity by hybridization as speculated at listing. In fact, genetic exchange that is occurring among bears from Louisiana, Mississippi, and Arkansas can be considered a positive genetic and demographic contribution to the Louisiana black bear (Laufenberg and Clark 2014, p. 85) (see the Distribution and Taxonomy section).

Human-Related Mortality: Davidson et al. (2015, p. 15) described the Louisiana black bear as susceptible to drowning, maternal abandonment of cubs, and climbing accidents, but the remaining leading cause of black bear mortalities is human-related (Pelton 2003, p. 552; Simek et al. 2012, p. 164; Laufenberg and Clark 2014, p. 76). Increased movement during food shortages substantially increases their chances for human encounters and human-related mortality (Rogers 1987, p. 436; Pelton 2003, p.

549). These mortality rates are suspected to be greater for yearling and subadult black bear males dispersing from the family unit, and are probably the result of starvation, accidents (e.g., vehicular collisions), and poaching.

Vehicular Collisions/Deaths and Bears Taken for Management Reasons: Since listing in 1992, at least 239 black bears have been documented as killed in vehicular collisions in Louisiana (USGS et al. 2014) and 11 bears have been killed in Mississippi (Rummel 2015, personal communication), making this the leading known cause of death for Louisiana black bears (Davidson et al. 2015, p. 15). In spite of these numbers, black bear populations have increased over this same time period. Black bear population growth in conjunction with urban expansion and habitat fragmentation has resulted in the increased availability of anthropogenic food sources (Davidson et al. 2015, p. 15). Since listing, the LDWF and Service have recognized the need for rapid response to human–bear conflicts in order to maintain social tolerance by the communities where bears and people coexist and to prevent habituation of nuisance behavior by bears. However, conflict management of black bears exhibiting nuisance behavior can result in mortality and, in the rare case where a bear cannot be left in the wild (as a result of nuisance behavior resulting in a demonstrable threat to human safety), it may be captured and placed into permanent captivity by management agencies or humanely euthanized. LDWF personnel have euthanized 15 black bears since 1992 (Davidson et al. 2015, p. 15).

Illegal Killing: The listing rule for the Louisiana black bear (57 FR 588, January 7, 1992) identified illegal killing as a potential threat to this species that could not be ruled out until better data could be obtained. The majority of illegal killings have been

the result of direct poaching; however, there have been 4 documented mortalities incidental to the use of snares in Louisiana for nuisance animal control (Davidson and Murphy 2015, p. 1). Since 1992, there have been 33 documented illegal bear killings in Louisiana (Davidson and Murphy 2015, p. 1) and 9 documented in Mississippi (Rummel 2015, personal communication). If all other documented deaths of unknown causes (40) are assumed to be the result of illegal taking, a total of 75 bears have been documented as killed since listing (Davidson and Murphy 2015, p. 1). Taken altogether, since Federal listing, approximately 350 individual Louisiana black bears are known to have been killed as a result of anthropogenic conflicts in Louisiana (USGS et al. 2014). In Mississippi, 22 bears have been reported killed (Rummel 2015, personal communication). In summary, an average of approximately 15 bears per year have succumbed to anthropogenic causes of mortality since 1992 in Louisiana (Davidson and Murphy 2015, p. 1) and approximately 1 bear per year in Mississippi (Rummel 2015, personal communication). The total annual documented non-road kill mortality of black bears in Louisiana has remained at a low level from 1991 through 2014 (Davidson and Murphy 2015, p. 2). Documented annual road kill mortalities began increasing about 2009 and have remained relatively high, primarily along the I–20 corridor (Davidson and Murphy 2015, pp. 2–3), coinciding with the time when the TRB bear population was increasing.

Hurricanes and Tropical Storms: Hurricanes and tropical storms can affect forested habitat throughout the LMARV. The potential effects of any tropical storm event will depend on where it makes landfall and what area is receiving the brunt of the wind and force of the cyclone. These storms can also have additional negative effects to

the LARB subpopulation due to its proximity to the coast; however, these effects are deemed to be a low magnitude because of the Louisiana black bear's ability to quickly adapt and move while using a variety of habitats. Murrow and Clark (2012) studied the impacts of Hurricanes Katrina and Rita on habitat of the LARB subpopulation. They did not detect in their research any significant direct impacts to forested habitat. For example, suitable bear habitat was found to have decreased only by 0.9 percent (from 348 to 345 square kilometers (km^2)) within the occupied study area and only 1.4 percent (from 34,383 to 33,891 km^2) in the unoccupied study area following the hurricanes. The analysis showed that bear habitat was not significantly degraded by the hurricanes and the effects of wind and storm surge that came with them. Hurricane Katrina represents the highest recorded storm surge in the Southeast. If hurricane events occur during the 7-year PDM period, we will assist our State partners in monitoring the possible effects of these hurricanes (e.g., vegetation changes from flooding).

Climate Change: The Intergovernmental Panel on Climate Change (IPCC) concluded that warming of the climate system is unequivocal (IPCC 2014, p. 3). The more extreme impacts from recent effects of climate change include heat waves, droughts, accelerated snow and ice melt including permafrost warming and thawing, floods, cyclones, wildfires, and widespread changes in precipitation amounts (IPCC 2014, pp. 4, 6). Due to projected climate change-associated sea level rise, coastal systems and low-lying areas will increasingly experience adverse impacts such as submergence, coastal flooding, and coastal erosion (IPCC 2014, p. 17). In response to the ongoing effects of climate change, many terrestrial, freshwater, and marine species have shifted their geographic ranges, seasonal activities, and migration patterns (IPCC

2014, p. 4). Species that are dependent on specialized habitat types or are limited in distribution will be most susceptible to future impacts of the effects of climate change. Many species will be unable to relocate rapidly enough to keep up with their climate niche under the effects of mid- and high-range rates of climate change. The climate velocity (the rate of movement of the climate across the landscape) will exceed the maximum velocity at which many groups of organisms, in many situations, can disperse or migrate, under certain climate scenarios. Populations of species that cannot migrate at effective speeds will find themselves in unfavorable climates, unable to reach areas of potentially suitable climate. Species with low dispersal capacity (such as plants, amphibians, and some small mammals) could be especially vulnerable (IPCC 2014, p. 275).

Biological and historical evidence suggests that the Louisiana black bear is well-adapted to endure the projected effects of climate change throughout its range. As stated above, Louisiana black bears inhabit more than 1.4 million ac (approximately 576,000 ha) of habitat in all or portions of 21 Louisiana parishes and 6 Mississippi counties. It is a generalist that uses a variety of habitat types within and adjacent to the LMRAV, including forested wetlands, scrub-shrub, marsh, spoil banks, and upland forests (including upland hardwoods and mixed pine-hardwood forests). On a larger scale and to make a comparison to the Louisiana black bear's capability to use many habitat types, American black bears (in the other portions of the United States and Canada) are known to inhabit vast mountainous areas, coastal plains, chaparral and pinyon-juniper woodlands (*Pinus* spp., *Juniperus* spp.), oak-hickory forests (*Quercus* spp., *Carya* spp.), upland and bottomland hardwood forests, redwood-sitka spruce-hemlock woodlands (*Sequoia*

sempervirens–Picea sitchensis–Tsuga spp.), and ponderosa pine forests (*Pinus ponderosa*), to name only a few (Pelton 2003, pp. 549–550). There is a vast array of habitats and associated food sources available for black bears throughout their current range, and bears have demonstrated adaptability and mobility in finding such areas. Therefore, it is highly unlikely that currently projected climate change scenarios would impact black bear habitat to the extent that the Louisiana black bear would be unable to locate suitable habitats (in both quality and quantity) to maintain a viable population for the foreseeable future.

The Louisiana black bear is capable of efficiently traversing the landscape, and individual bears incorporate relatively large expanses of habitat within their respective home ranges (which varies based on gender and subpopulation). Home ranges vary from approximately 1,000 ac [400 ha] to 84,000 ac [34,000 ha] (Beausoleil 1999, p. 60; Wagner 1995, p. 12). Numerous long-distance movements of the Louisiana black bear have been confirmed, and there is documented evidence of dispersal throughout most of their current range (Figure 1 in Davidson et al. 2015, p. 24). In the event habitat is lost due to the effects of climate change effects (such as extreme flooding or drought), Louisiana black bears have demonstrated the ability not only to move at a relatively rapid pace to more suitable areas, but also to adapt to a wide range of potential habitats and food sources.

Habitat supporting the LARB subpopulation (population range from 136 to 194 adult bears (Laufenberg and Clark 2014, p. 45)) of the Louisiana black bear is more vulnerable to the effects of climate change than other subpopulations due to its occurrence within low-elevation coastal habitats that are susceptible to flooding from

extreme rainfall events, significant tidal surges (including those associated with tropical weather systems), and riverine flooding. That subpopulation occurs entirely within the Louisiana Coastal Zone, which was delineated by the Louisiana Department of Natural Resources–Office of Coastal Management (LDNR–OCM) based on storm surge data, geology, elevation, soils, vegetation, predicted subsidence/sea level rise, and boundaries of existing coastal programs (LDNR–OCM 2010, pp. 54–60). Based on the current sea level rise estimates (http://tidesandcurrents.noaa.gov/sltrends/sltrends.shtml), we do not anticipate a complete and persistent inundation of the coastal zone of Louisiana within the next 100 years. Any such sea level rise impacts are likely to be ameliorated to some extent by the projected successional changes in the Atchafalaya Basin that would eventually convert many of its swamps to BLH forest, thus improving the suitability of that habitat for the Louisiana black bear (e.g., facilitating its dispersal to higher elevation habitats if necessary for survival).

The Service estimated that more than 35,000 ac (14,000 ha) of lakes and cypress-tupelo swamps would convert to higher elevation forests within the ARB by the year 2030 (LeBlanc et al. 1981, p. 65). This prediction is supported by studies documenting increased sedimentation within the Basin (Hupp et al. 2008, p. 139). Sedimentation increases elevation, and areas that were once wet will be naturally colonized with vegetation that will ultimately result in upland forests (Hupp et al. 2008, p. 127) that are more suitable for bear foraging and habitation. Even if the most conservative models were exceeded and the entire coastal zone of Louisiana was subject to permanent inundation in the future (prior to projected habitat changes in the Atchafalaya Basin), only a relatively small proportion of Louisiana black bears and their habitat would be

affected. Specifically, more than 80 percent of the Louisiana black bear HRPA, more than 90 percent of Louisiana black bear breeding habitat, 85 percent of the area described as Louisiana black bear critical habitat, and 70 percent of the Louisiana black bear population occur outside of the Louisiana Coastal Zone.

A specific illustration of the resilience of the Louisiana black bear to survive and adapt to extreme climatic events occurred during the recent operation of the Morganza Floodway. The UARB subpopulation occupies a 175-square-mile (453-square-km) area within and adjacent to the Morganza Floodway. Much of the area inhabited by the UARB subpopulation is subject to extreme flooding, especially when Mississippi River stages rise to levels that warrant the Corps' operation of the Morganza Floodway (which has occurred only twice, in 1973 and 2011). The 2011 operation of the Morganza Flood Control Structure coincidentally occurred during an ongoing 6-year Louisiana black bear genetics and population dynamics study that included both radio telemetry and mark-recapture (via hair snares and genetics analyses) methods within and adjacent to the Morganza Floodway (O'Connell-Goode et al. 2014, pp. 479–482). Approximately 60 percent of the breeding habitat that supports the UARB subpopulation was covered in floodwaters, ranging in depth from approximately 10 to 20 feet (3 to 6 meters; O'Connell-Goode et al. 2014, p. 477). Study results indicate that most bears (88.7 percent) maintained residence within the Morganza Floodway (presumably in the remaining 40 percent of available habitat that was less severely flooded) throughout the 56-day operational period of the Morganza Flood Control Structure (O'Connell-Goode et al. 2014, p. 482). A small number of bears did temporarily disperse to higher elevation forests, but most returned to their original home ranges following floodwater recession.

The study concluded that the 2011 operation of the Morganza Flood Control Structure had "no negative biological effects" on adult Louisiana black bears within the UARB subpopulation (O'Connell-Goode et al. 2014, p. 483). Based on their adaptability, mobility, and demonstrated resiliency, and the lack of evidence suggesting that previous and ongoing climate change has had any adverse impact on the Louisiana black bear or its habitats, we conclude that the effects of climate change are not a threat to the Louisiana black bear now or within the foreseeable future.

Summary of Factor E

Based on recent genetic analyses, the effects of Minnesota bear reintroductions, while evident to some extent in the UARB subpopulation, do not represent a threat to the Louisiana black bear. Other potential threats such as anthropogenic sources of mortality (e.g., poaching, vehicle strikes, and nuisance bear management) and potential effects of hurricanes or climate change do not represent significant threats to the Louisiana black bear. In spite of ongoing mortality from those anthropogenic sources, recent research concludes that the Louisiana black bear within the Tensas and Upper Atchafalaya River Basins (specifically the metapopulation composed of the TRB, UARB, and TRC subpopulations) has an overall probability of persistence in the wild for the next 100 years (in spite of any random demographic, genetic, environmental, or natural catastrophic effects) of approximately 100 percent (0.996; Laufenberg and Clark 2014, p. 2); and population numbers in the LARB subpopulation have nearly doubled since listing. The effects of climate change are not threats based on the species' adaptability, mobility, and demonstrated resiliency in regard to extreme climatic events. Based on all

these factors, we find that there are no other natural or manmade factors that are threats to the Louisiana black bear.

Overall Summary of Factors Affecting the Louisiana Black Bear

The primary factors that led to the Louisiana black bear's listing under the Act were historical modification and reduction of habitat, the reduced quality of remaining habitat due to fragmentation, and the threat of future habitat conversion and human-related mortality. An indirect result of habitat fragmentation was isolation of the already small bear populations, subjecting them to threats from factors such as demographic stochasticity and inbreeding. We have carefully assessed the best scientific and commercial information available regarding the threats faced by the Louisiana black bear. These threats have been removed or ameliorated by the actions of multiple conservation partners over the last 20 years. Research has documented that the four main Louisiana subpopulations (TRB, TRC, UARB, and LARB) are stable or increasing (Hooker 2010, O'Connell 2013, Troxler 2013, Laufenberg and Clark 2014, entire documents respectively). Emigration and immigration (i.e., gene flow) has been documented among several of the Louisiana and Mississippi subpopulations (Laufenberg and Clark 2014, pp. 91–94). Overall, the Louisiana black bear metapopulation (TRB, UARB, and TRC) has an estimated probability of long-term persistence (more than 100 years) of 0.996 under even the most conservative scenario (Laufenberg and Clark 2014, p. 82). The areas supporting Louisiana black bear breeding subpopulations have also increased over 430 percent, for a total of 1,806,556 ac (731,087 ha) (see Table 1). We expect conservation efforts will continue to support persistent recovered Louisiana black bear populations

post-delisting and into the future, as described above. Based on this assessment of factors potentially impacting the subspecies and its habitat, the current status of the population (increasing abundance, increasing number and distribution of subpopulations, genetic interchange between subpopulations and the overall long-term viability of the metapopulation), we conclude that the Louisiana black bear is not in danger of extinction throughout all of its range or likely to become endangered within the foreseeable future throughout all of its range.

Determination

An assessment of the need for a species' protection under the Act is based on whether a species is in danger of extinction or likely to become so because of any of five factors described in the Summary of Factors Affecting the Species**.** As required by section 4(a)(1) of the Act, we conducted a review of the status of this species and assessed the five factors to evaluate whether the Louisiana black bear is endangered or threatened throughout all of its range. We examined the best scientific and commercial information available regarding the past, present, and future threats faced by the Louisiana black bear and its habitat. We reviewed the information available in our files and other available published and unpublished information, and we consulted with recognized experts and other Federal, State, and Tribal agencies.

In considering what factors might constitute threats, we must look beyond the mere exposure of the species to the factor to determine whether the exposure causes actual impacts to the species. If there is exposure to a factor, but no response, or only a positive response, that factor is not a threat. If there is exposure and the species responds

negatively, the factor may be a threat and we then attempt to determine how significant the threat is. If the threat is significant, it may drive, or contribute to, the risk of extinction of the species such that the species warrants listing as endangered or threatened as those terms are defined by the Act. This determination does not necessarily require empirical proof of a threat. The combination of exposure and some corroborating evidence of how the species is likely impacted could suffice. The mere identification of factors that could impact a species negatively is not sufficient to compel a finding that listing is appropriate; we require evidence that these factors are operative threats that act on the species to the point that the species meets the definition of an endangered species or threatened species under the Act.

During our analysis, we did not identify any factors that reach a magnitude that threaten the continued existence of the species. Significant impacts at the time of listing that could have resulted in the extirpation of all or parts of populations have been eliminated or reduced since listing, and we do not expect any of these conditions to substantially change post-delisting and into the foreseeable future. We conclude that the previously recognized impacts to the Louisiana black bear from the present or threatened destruction, modification, or curtailment of its habitat or range and effects of climate change (Factors A and E), and isolation from genetic exchange (Factor E), have been ameliorated or reduced such that the Louisiana black bear is no longer in danger of extinction throughout all of its range or likely to become endangered within the foreseeable future throughout all of its range. We, therefore, conclude that the Louisiana black bear is no longer in danger of extinction throughout its range, nor is it likely to become so in the foreseeable future.

Significant Portion of the Range Analysis

Background

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so throughout all or a significant portion of its range. Having determined that the Louisiana black bear is not endangered or threatened throughout all of its range, we next consider whether there are any significant portions of its range in which the Louisiana black bear is in danger of extinction or likely to become so. We published a final policy interpreting the phrase "Significant Portion of its Range" (SPR) (79 FR 37578; July 1, 2014). The final policy states that (1) if a species is found to be endangered or threatened throughout a significant portion of its range, the entire species is listed as endangered or threatened, respectively, and the Act's protections apply to all individuals of the species wherever found; (2) a portion of the range of a species is "significant" if the species is not currently endangered or threatened throughout all of its range, but the portion's contribution to the viability of the species is so important that, without the members in that portion, the species would be in danger of extinction, or likely to become so in the foreseeable future, throughout all of its range; (3) the range of a species is considered to be the general geographical area within which that species can be found at the time the Service makes any particular status determination; and (4) if a vertebrate species is endangered or threatened throughout a significant portion of its range, and the population in that significant portion is a valid Distinct Population Segment (DPS), we will list the DPS rather than the entire taxonomic species or subspecies.

The procedure for analyzing whether any portion is a SPR is similar, regardless of the type of status determination we are making. The first step in our analysis of the status of a species is to determine its status throughout all of its range. If we determine that the species is in danger of extinction, or likely to become endangered in the foreseeable future throughout all of its range, we list the species as an endangered species or threatened species and no SPR analysis will be required. If the species is neither in danger of extinction nor likely to become so throughout all of its range, as we have found here, we next determine whether the species is in danger of extinction or likely to become so throughout a significant portion of its range. If it is, we will continue to list the species as an endangered species or threatened species, respectively; if it is not, we conclude that listing the species is no longer warranted.

When we conduct an SPR analysis, we first identify any portions of the species' range that warrant further consideration. The range of a species can theoretically be divided into portions in an infinite number of ways. However, there is no purpose in analyzing portions of the range that have no reasonable potential to be significant or in analyzing portions of the range in which there is no reasonable potential for the species to be endangered or threatened. To identify only those portions that warrant further consideration, we determine whether substantial information indicates that: (1) The portions may be "significant" and (2) the species may be in danger of extinction there or likely to become so within the foreseeable future. Depending on the biology of the species, its range, and the threats it faces, it might be more efficient for us to address the significance question first or the status question first. Thus, if we determine that a portion of the range is not "significant," we do not need to determine whether the species

is endangered or threatened there; if we determine that the species is not endangered or threatened in a portion of its range, we do not need to determine if that portion is "significant." In practice, a key part of the determination that a species is in danger of extinction in a significant portion of its range is whether the threats are geographically concentrated in some way. If the threats to the species are affecting it uniformly throughout its range, no portion is likely to have a greater risk of extinction, and thus would not warrant further consideration. Moreover, if any concentration of threats apply only to portions of the range that clearly do not meet the biologically based definition of "significant" (i.e., the loss of that portion clearly would not be expected to increase the vulnerability to extinction of the entire species), those portions would not warrant further consideration.

We emphasize that answering these questions in the affirmative is not a determination that the species is endangered or threatened throughout a significant portion of its range—rather, it is a step in determining whether a more detailed analysis of the issue is required.

If we identify any portions that may be both (1) significant and (2) endangered or threatened, we engage in a more detailed analysis to determine whether these standards are indeed met. The identification of an SPR does not create a presumption, prejudgment, or other determination as to whether the species in that identified SPR is endangered or threatened. We must go through a separate analysis to determine whether the species is endangered or threatened in the SPR. To determine whether a species is endangered or threatened throughout an SPR, we will use the same standards and methodology that we use to determine if a species is endangered or threatened throughout

its range.

Depending on the biology of the species, its range, and the threats it faces, it may be more efficient to address the "significant" question first, or the status question first. Thus, if we determine that a portion of the range is not "significant," we do not need to determine whether the species is endangered or threatened there; if we determine that the species is not endangered or threatened in a portion of its range, we do not need to determine if that portion is "significant."

SPR analysis for Louisiana black bear

Applying the process described above for the Louisiana black bear, we have already determined that the species is no longer endangered or threatened throughout its range. We next identified portions of the Louisiana black bear's range that may be significant, and examined whether any threats are geographically concentrated in some way that would indicate that those portions of the range may be in danger of extinction, or likely to become so in the foreseeable future. In Louisiana, both the Louisiana and Mississippi black bear breeding populations occur in the LMRAV. These subpopulations make up the majority of the overall Louisiana black bear population, providing the primary contributions to the conservation of the species, and all face the same type of potential threats—primarily habitat conversion. We have already discussed that trends in that threat have been significantly reduced and in some cases reversed (see Factors A and D). As discussed above, estimates of persistance probability over 100 years of the TRB and the UARB subpopulations were greater than 95 percent except for the two most conservative models for the UARB (long-term viability estimates of 85 percent and 92

percent). While these two subpopulations may be significant, information and analyses indicates that the species is unlikely to be in danger of extinction or to become so in the foreseeable future in these portions. Therefore, these portions do not warrant further consideration to determine whether they are a significant portion of its range.

We next examined whether any threats are geographically concentrated in some way that would indicate the species could be in danger of extinction, or likely to become so, in that area. Through our review of potential threats, we identified the LARB subpopulation as one that that may be at greater risk of extinction due to its additional potential threats from future anticipated development and sea level rise. We thus considered whether this subpopulation may warrant further consideration as a significant portion of the Louisiana black bear's range. The LARB is located within the coastal area of Louisiana in St. Mary, Iberia, and Vermillion Parishes in forested habitat similar to other Louisiana black bear subpopulations. That subpopulation is separated from the other subpopulations and the habitat between them within the Basin is believed to be too wet currently to support breeding females, although bears have been observed along the higher areas on both sides of the Basin. The probability of interchange between the LARB and the other subpopulations is low (Laufenberg and Clark 2014, p. 93); however, reports of bear live-captures, known natal dens, and confirmed sightings indicate bears can and do move out (at least temporarily) of this subpopulation (Figure 1 in Davidson et al. 2015, p. 24). Dispersal by male bears of more than 100 miles is not unusual and combined with the documented occurrences of bears (likely males) on the higher portions (levees and ridges) of the Basin spanning the area between the UARB and LARB subpopulations, movement of individuals among other subpopulations cannot be ruled

out. Increased sedimentation is occurring in the interconnecting habitat in the Basin (Hupp et al. 2008, p. 139) as predicted by LeBlanc et al. (1981, p. 65). The increase in sedimentation is resulting in higher elevations within the Basin that will produce suitable bear habitat (e.g., less inundation and more food sources).

Additionally, range expansion by bears from the northern subpopulations would take advantage of the improved Basin habitats. At the current time, the LARB subpopulation is stable to increasing, although we did not have data to determine its long-term viability. The LARB has been characterized by some, based on its genetic uniqueness, as more representative of the Louisiana black bear and thus should be given special consideration for its integrity (Triant et al. 2003, p. 647). However, Csiki et al. (2003, p. 699) suggested that the distinctness of the Louisiana black bear was the result of a genetic bottleneck rather than a true genetic difference. Since 2003, our understanding of genetic markers has improved. Studies by Troxler (2013) and Laufenberg and Clark (2014) reached similar conclusions (e.g., that distinctness is likely due to isolation resulting in restricted gene flow and genetic drift) as Csiki et al. (2003) concluded.

Habitat supporting the LARB subpopulation (population range from 136 to 194 adult bears (Laufenberg and Clark 2014, p. 45)) of the Louisiana black bear is more vulnerable to one of the particular effects of global climate change, the long term threat of sea level rise, than other subpopulations due to its occurrence within low-elevation coastal habitats. However, as discussed above, in the event of coastal bear habitat loss due to climate change effects, bears have demonstrated the ability to adapt and would likely move into more suitable areas. Additionally, any long-term threat of sea level rise would likely be ameliorated to some extent by the projected successional changes in the

Atchafalaya Basin that would eventually convert many of its swamps to BLH forest, thus improving the suitability of that habitat for the Louisiana black bear. Although this portion of the range may have a concentration of threats, the subpopulation is currently stable or increasing. However, the lack of data make it difficult to predict long-term viability for this portion of the range, but if the current stability or increasing size continues, it is unlikely that the subspecies would be in danger of extinction (or likely to become so) in this portion of its range. Additionally, the long-term viability estimates for the TRB and UARB subpopulations (greater than 95 percent for over 100 years), which make up the majority of the overall Louisiana black bear population, make is unlikely that the loss of the LARB subpopuation would cause the Louisiana black bear to be in danger of extinction, or likely to become so in the foreseeable future, throughout all of its range. Because we conclude the available information does not indicate that this portion may be both in danger of extinction and likely to be significant, this portion does not warrant further consideration.

We also evaluated whether the other occurrences in Mississippi and northern Louisiana that we cannot currently consider self-sustaining, and may therefore have a higher risk of extinction, could be considered a significant portion of the species' range. We determined that those subpopulations have formed as the result of emigration from nearby subpopulations and are not genetically unique (in other words, they do not contribute substantially to the genetic diversity or representation of the species). These subpopulations indicate the health of their parent subpopulations, but are not so large themselves that their loss would affect the health or conservation status of the other subpopulations. These areas, individually or collectively, are therefore unlikely to

constitute a significant portion of the species' range.

Surveys indicate that Louisiana black bear subpopulations have been maintained and are well-established and that remaining factors that may affect the Louisiana black bear occur at similarly low levels throughout its range. Some factors may continue to affect Louisiana black bear, but would do so at uniformly low levels across the subspecies' range such that they are unlikely to result in adverse effects to subpopulations of the subspecies and do not represent a concentration of threats that may indicate the species could be threatened or endangered in a particular area. Therefore, based on the best scientific and commercial data available, no portion warrants further consideration to determine whether the subspecies may be endangered or threatened in a significant portion of its range.

Summary

In conclusion, we find that the Louisiana black bear is no longer in danger of extinction throughout all or a significant portion of its range, nor is it likely to become endangered in the foreseeable future. Therefore, at this time, the Louisiana black bear no longer meets the definitions of endangered or threatened under the Act, and we are removing the Louisiana black bear from the Federal List of Endangered and Threatened Wildlife.

Conservation Measures

Section 4(g)(1) of the Act requires us, in cooperation with the States, to implement a monitoring program for not less than 5 years for all species that have been

delisted due to recovery. PDM refers to activities undertaken to verify that a species delisted due to recovery remains secure from the risk of extinction after the protections of the Act no longer apply. The primary goal of PDM is to ensure that the species' status does not deteriorate, and if a decline is detected, to take measures to halt the decline so that proposing it as threatened or endangered is not again needed. If, at any time during the monitoring period, data indicate that protective status under the Act should be reinstated, we can initiate listing procedures, including, if appropriate, emergency listing under section 4(b)(7) of the Act. At the conclusion of the monitoring period, we will review all available information to determine if relisting, the continuation of monitoring, or the termination of monitoring is appropriate.

Post-Delisting Monitoring (PDM) Plan Overview

The purpose of this post-delisting monitoring is to verify that a species remains secure from risk of extinction after it has been removed from the protections of the Act. The monitoring is designed to detect the failure of any delisted species to sustain itself without the protective measures provided by the Act. Section 4(g) of the Act explicitly requires us to cooperate with the States in development and implementation of post-delisting monitoring programs, but we remain responsible for compliance with section 4(g) and, therefore, must remain actively engaged in all phases of post-delisting monitoring. We also seek active participation of other entities that are expected to assume responsibilities for the species' conservation post-delisting.

The Service developed a final PDM plan in cooperation with the LDWF (Service 2016). The PDM plan is designed to verify that the Louisiana black bear remains secure

from the risk of extinction after removal from the Federal List of Endangered and Threatened Wildlife by detecting changes in its status and habitat throughout its known range. The PDM plan consists of: (1) A summary of the species' status at the time of delisting; (2) an outline of the roles of PDM cooperators; (3) a description of monitoring methods; (4) an outline of the frequency and duration of monitoring; (5) an outline of data compilation and reporting procedures; and (6) a definition of thresholds or triggers for potential monitoring outcomes and conclusions of the PDM effort.

The PDM plan provides for monitoring Louisiana black bear populations following the same sampling protocol used by the LDWF and USGS prior to delisting. Monitoring will consist of two components: (1) population demographics and vital statistics monitoring consisting of: regular live-capture (including collection of genetic material), radio-collaring, winter den checks, and radio-telemetry monitoring to estimate recruitment, survival, genetic exchange, and cause-specific mortality in a timely manner; and non-invasive mark-recapture methods to estimate change in population size, apparent survival, per-capita recruitment, and genetic exchange for future viability analyses, and if needed, maintaining a database of reliable public sightings to track geographic distribution; and (2) a habitat-based component consisting of periodic assessments of habitat abundance, persistence, and any changes in protection using interpretation of remotely sensed data and updated GIS information (e.g., conservation easements) range-wide within the HRPA and in specific geographic areas supporting and surrounding the TRB, TRC, UARB, and LARB subpopulations of the Louisiana black bear. The methods described below were developed based on the best known methods currently available. Should newer methods for population monitoring or habitat trend assessment become

available during the post-deleting monitoring period that may improve our ability to better evaluate trends, those methods would be explored. Section 4(g) of the Act explicitly requires that we cooperate with the States in development and implementation of PDM programs. However, we remain ultimately responsible for compliance with section 4(g) and, therefore, must remain actively engaged in all phases of PDM. We also seek active participation of other entities that are expected to assume responsibilities for the species' conservation after delisting. In August 2013, LDWF and the Service agreed to be cooperators in the PDM of the Louisiana black bear.

Multiple monitoring strategies will be used for the individual subpopulations in order to ensure that demographics and habitat status will be captured at differing time periods and scale, respectively. Because the TRB and UARB subpopulations were identified as necessary for recovery and delisting (Service 1995, p. 14) of the subspecies, intensive monitoring will occur annually for 7 years within each of these subpopulations following the delisting of the subspecies to monitor Louisiana black bear population vital rates. Although monitoring of the TRC and LARB subpopulations will occur during the 7-year period, it will be less intensive than that of the monitoring for TRB and UARB.

The final PDM plan identifies measurable management thresholds and responses for detecting and reacting to significant changes in Louisiana black bear protected habitat, distribution, and persistence. If monitoring detects declines equaling or exceeding these thresholds, the Service in combination with the LDWF and other partners will investigate causes of these declines, including considerations of habitat changes, substantial human persecution, stochastic events, or any other significant evidence. Such investigation will determine if the Louisiana black bear warrants

expanded monitoring, additional research, additional habitat protection, or relisting as an endangered or a threatened species under the Act.

We will post the final PDM plan and any future revisions on our national web site (*http://endangered.fws.gov*) and on the Louisiana Fish and Wildlife Office's web site (*http://www.fws.gov/lafayette*).

Effects of the Rule

This final rule revises 50 CFR 17.11(h) by removing the Louisiana black bear from the Federal List of Endangered and Threatened Wildlife. In addition, the rule revises § 17.11(h) to remove similarity of appearance protections for the American black bear, which are in effect within the historical range of the Louisiana black bear. This designation is assigned for law enforcement purposes to an unlisted species that so closely resembles the listed species that its taking represented an additional threat to the Louisiana black bear at the time of listing. With the final delisting of the Louisiana black bear, such a designation would no longer be necessary. Therefore, as of the effective date of this rule (see **DATES**), the prohibitions and conservation measures provided by the Act, particularly through sections 7 and 9, no longer apply to either the American black bear or the Louisiana black bear. Removal of the Louisiana black bear from the Federal List of Endangered and Threatened Wildlife relieves Federal agencies from the need to consult with us under section 7 of the Act. This final rule also revises 50 CFR 17.40(i) by removing regulatory provisions specific to the Louisiana black bear and § 17.95(a) by removing the designated critical habitat for the Louisiana black bear.

Required Determinations

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This rule does not contain any new collections of information that require approval by the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq*). This rule will not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq*.), need not be prepared in connection with regulations pursuant to section 4(a) of the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994, "Government-to-Government Relations with Native American Tribal Governments" (59 FR 22951), Executive Order 13175, and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with

recognized Federal Tribes on a government-to-government basis. We have determined that no tribal lands or interests are affected by this rule.

References Cited

A complete list of all references cited in this final rule is available at *http://www.regulations.gov* at Docket No. FWS–R4–ES–2015–0014, or upon request from the Louisiana Fish and Wildlife Office (see **ADDRESSES**).

Authors

The primary authors of this rule are staff members of the Service's Louisiana Fish and Wildlife Service Office (see **ADDRESSES** and **FOR FURTHER INFORMATION CONTACT)**.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as follows:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

AUTHORITY: 16 U.S.C. 1361–1407; 1531–1544; 4201–4245, unless otherwise noted.

§ 17.11 [Amended]

2. Amend § 17.11(h) by removing the entries for “Bear, American black” and “Bear, Louisiana black” under “MAMMALS” from the List of Endangered and Threatened Wildlife.

§ 17.40 [Amended]

3. Amend § 17.40 by removing and reserving paragraph (i).

§ 17.95 [Amended]

4. Amend § 17.95(a) by removing the entry for ““Louisiana Black Bear (*Ursus americanus luteolus*)”.

Dated: ___March 2, 2016_____

Signed: __James W. Kurth_____

Acting Director, U.S. Fish and Wildlife Service

[FR Doc. 2016-05206 Filed: 3/10/2016 8:45 am; Publication Date: 3/11/2016]