

American Black Bear

Ursus americanus (Pallas, 1780)

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CONTENT AND TAXONOMIC COMMENTS

Hall (1981) and Lariviere (2001) recognize 16 subspecies of the American black bear (*Ursus americanus*). Three subspecies occur in the region: *U. a. americanus*, Florida black bear (*U. a. floridanus*), and Louisiana black bear (*U. a. luteolus*). The life history of the black bear is reviewed by Kolenosky and Strathearn (1987), Powell et al. (1997), Lariviere (2001), and Pelton (2003).

DISTINGUISHING CHARACTERISTICS

The American black bear is a large-bodied, powerfully built species. Measurements are: total length, 125–180 cm; tail, 8.0–12.5 cm; hind foot, 18.5–28.0 cm; ear 13.0–14.5 cm; weight, 100–250 kg. Males typically are 10–70% heavier than females. Most black bears in the South are uniformly black with a tapered, brown muzzle and an occasional white blaze on the chest (D. Hightower, Quantitative Ecological Services, personal communication). The eyes and erect ears are small. The legs and feet are massive; the plantigrade feet possess strong, recurved claws. The skull is massive (may exceed 30 cm in length) with a large cranium, prominent sagittal crest and zygomatic arches, and broad rostrum. Auditory bullae are flat, depressed, and inconspicuous. Nares are large and expose well-developed turbinate bones (Lariviere 2001). In an analysis of morphological characters from eastern black bear, Kennedy et al. (2002a) reported that the largest measurements of the cranium and mandible occurred from animals collected in the southernmost states. The teeth are bunodont and the first three premolars are rudimentary; the last upper molar is elongate rather than round. The dental formula is $I\ 3/3, C\ 1/1, P\ 4/4, M\ 2/3 = 42$; the number of premolars may vary on each side of the upper and lower jaws (Figure 1). See keys for details. Kennedy et al. (2002b) provide additional measurements for subspecific recognition including dentition, height of frontal region, and skull length and width.

CONSERVATION STATUS

The American black bear has a global rank of Secure (NatureServe 2007). It is also Secure in Florida and Apparently Secure in Georgia, North Carolina and Virginia. The black bear is listed as Vulnerable in Arkansas, South Carolina, Tennessee and Texas. It is Imperiled in Alabama, Kentucky, Louisiana, and

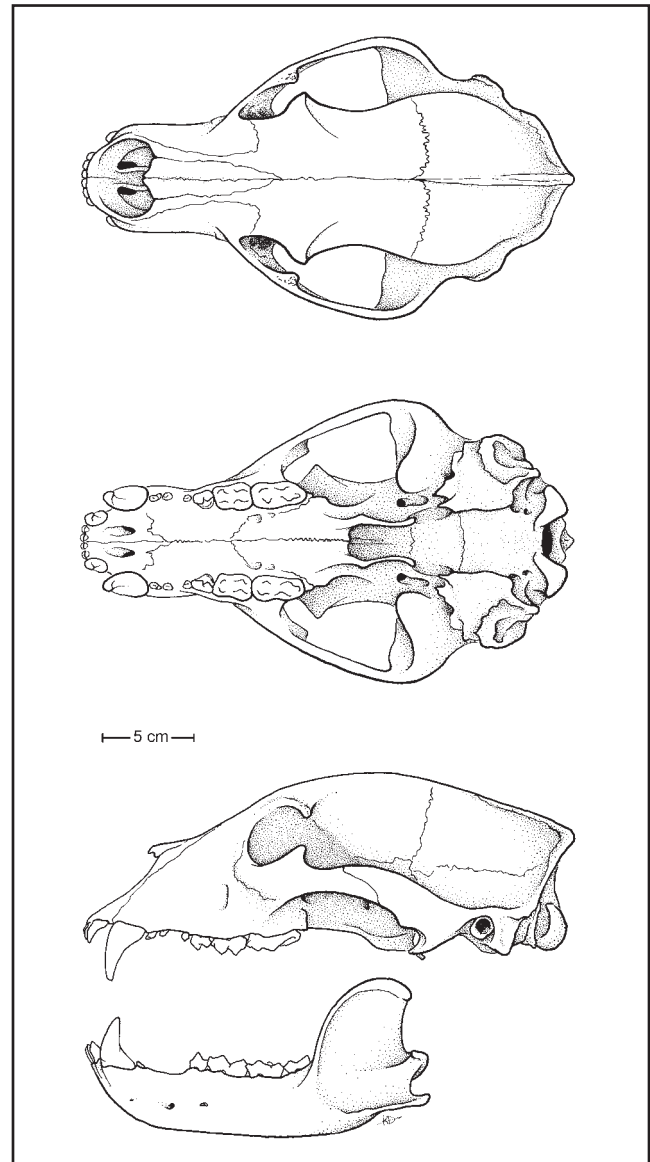


Figure 1. Dorsal, ventral, and lateral view of cranium and lateral view of mandible of *Ursus americanus* from “Rocky River”, Virginia (USNM 288946, gender unknown)

considered Critically Imperiled in Mississippi and Oklahoma. Regulated hunting seasons occur in Virginia, Tennessee, North Carolina, Georgia, South Carolina, and Arkansas. The timing, length of season, and methods allowed varies; harvests within each state where hunting is allowed are based on bear population levels. No other game species or its

harvest is as closely monitored in the South. There is currently no hunting season in Kentucky, Oklahoma, or Texas.

The U. S. Fish and Wildlife Service (U. S. Department of the Interior 2007) lists the Louisiana black bear as Threatened, with a recovery plan approved for the species (USFWS 1995). Other bears within the historic range of *U. a. luteolus* are designated as Threatened by Similarity of Appearance and are protected in eastern Texas, southern Mississippi, and Louisiana. The Florida black bear (*U. a. floridanus*) is listed as Threatened by the Florida Fish and Wildlife Conservation Commission. The subspecies was a candidate for listing under the U. S. Endangered Species Act (Federal Register, 28 February 1996) and subsequently removed from candidacy (Federal Register, 8 December 1998). The subspecies is protected in Alabama.

DISTRIBUTION

The American black bear historically ranged throughout most of North America from Alaska to the Atlantic Ocean and south to central Mexico. The species was largely absent only from portions of the Great Basin Desert and the arid Southwest (Hall 1981, Choate et al. 1994). Habitat loss, fragmentation, and unrestricted harvest have significantly reduced the present distribution of the American black bear (Hellgren and Vaughan 1994, Lariviere 2001). Since the 1970s, active state management programs have resulted in expanding populations in some portions of the South (Pelton 2001).

U. a. americanus. Martin and Steffen (2005) report that the black bear has been observed in all but seven counties in the easternmost portion of Virginia (Figure 2). The highest populations are found in the western mountains (e.g., Shenandoah National Park in the Blue Ridge Mountains) and in the southeast tidewater area of the Great Dismal Swamp bordering North Carolina, while populations in the eastern counties are sparse (Hellgren et al. 1991, Handley 1992, Garshelis and Hellgren 1994, Kasbohm et al. 1996, Linzey 1998, D. Martin, Virginia Game and Inland Fisheries, personal communication). The species occurs in two disjunct populations in North Carolina: the first occurs in the Appalachian Mountains in the western third of the state and the second occurs throughout the Coastal Plain in the eastern portion of the state (Clark et al. 1985, Warburton et al. 1993, Pelton and van Manen 1996, Beringer et al. 1998, Mitchell et al. 2002, Jones 2005). In South Carolina, the mountain population of American black bear occurs in Oconee, Pickens, and Greenville counties, and appears to be expanding their range southward

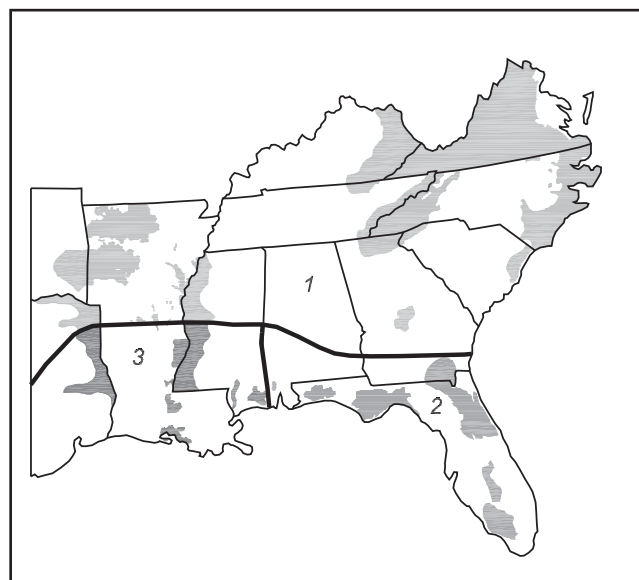


Figure 2. Distribution of *Ursus americanus* in the South: (1) *U. a. americanus*; (2) *U. a. floridanus*; (3) *U. a. luteolus*.

(S. Still, South Carolina Department of Natural Resources, personal communication). The Coastal Plain population occurs primarily in Georgetown and Horry counties (Golley 1966, Webster et al. 1985, Cothran et al. 1991, Willey et al. 1996, Still 2005). The two disjunct populations of *U. a. americanus* in Georgia occur in the Appalachian Mountains and portions of the upper Piedmont in the northern portion of the state and the Ocmulgee River drainage in the upper Coastal Plain (Golley 1962, Laerm et al. 1981, Cantrell et al. 2005). The species is known from 11 counties within the Blue Ridge portion of the southern Appalachians in eastern Tennessee (Eiler et al. 1989, Kennedy 1991, Pelton 2001, 2003). Following an experimental repatriation of black bear during 1996–1998 in the Big South Fork National River and Recreation Area and Daniel Boone National Forest in Tennessee and Kentucky (Eastridge and Clark 1998), a second disjunct population now occurs in the Cumberland Mountains and Plateau region within Campbell, Fentress, Morgan, and Scott counties (Brandenburg 2005). American black bears also occur in other portions of eastern Kentucky (Day et al. 2005) that include dispersing animals from Virginia and West Virginia (Pelton 2001). The bear was reintroduced into the Arkansas Interior Highlands (Ozark and Ouachita Mountains) between 1958–1968 from Minnesota and Manitoba, Canada (Smith et al. 1991). Today, the Interior Highlands populations have expanded their range into Missouri, Oklahoma, and southward along the Ouachita and Saline river drainages (Eastridge 2005). It also occurs in portions of the Mississippi Alluvial Valley in the White River National Wildlife Refuge and along the southern border in

Ashley, Bradley, and Union counties (Clark and Smith 1994, Bowman et al. 1996, Oli et al. 1997, Clark et al. 2005). There are questions over the subspecific taxonomy of bears occurring within the refuge; Csiki et al. (2003) present DNA data indicating that these animals may be Louisiana black bear. The U. S. Fish and Wildlife Service formally recognize the Arkansas/Louisiana state border as the range limit for the subspecies (M. Harney, U. S. Fish and Wildlife Service, personal communication). Although the black bear was extirpated from eastern Oklahoma (Caire et al. 1989), the species now occurs in the in the southeastern portion of the state in LeFlore, McCurtain, Latimer, Haskell, and Pushmataha counties (Bales 2003; R. Bastarache, U. S. Forest Service, personal communication). The black bear also occurs in the vicinity of Broken Bow Lake north through the Ouachita National Forest and Kiamichi, Winding Stair, and San Bois Mountains (J. Ford, Oklahoma Department of Wildlife, personal communication).

U. a. luteolus. In Louisiana, black bears are found in the Upper and Lower Atchafalaya River Basin in the south central part of the state and on the Tensas National Wildlife Refuge and surrounding private lands in the Tensas River Basin in northeast Louisiana (Weaver et al. 1990, Marchinton 1995, Pace et al. 2000, Hightower et al. 2002, Clark et al. 2005, Davidson 2005). Translocated bears from Minnesota augmented the Upper Atchafalaya Basin and Tensas River Basin populations during the 1960s (Triant et al. 2003). There has been a recent range expansion within the Three Rivers Wildlife Management area in central Louisiana (D. Telesco, Black Bear Conservation Committee, personal communication). Currently in the sixth year of a repatriation project, 168 bears have been moved from the northern population into suitable, unoccupied habitat in east-central Louisiana (D. Telesco, Black Bear Conservation Committee, personal communication). A remnant population exists in Mississippi (Jones and Carter 1989, Stinson 1996, Oli et al. 1997). Black bear sightings are concentrated along the western border, primarily in the Mississippi, Pearl, and Pascagoula River drainages (Mississippi Department of Wildlife, Fisheries, and Parks 2005). Reproducing bears have recently been reported in the southwestern corner of the state (B. Young, Mississippi Department of Wildlife, Fisheries, and Parks, personal communication). The species was believed extirpated in eastern Texas during the period between 1900–1940 (Davis and Schmidly 1994). Currently, there are 28 counties with confirmed bear sightings although they likely are juvenile or sub-adult males dispersing from Arkansas, Oklahoma (Maxey and Lange 2005), and Louisiana (R. Maxey, Texas Parks and Wildlife, personal communication). The majority of sightings are near major river basins

including the Angelina, Cypress, Neches, Red, Sabine, San Jacinto, Trinity, and Sulphur River basins.

U. a. floridanus. The six primary black bear populations within Florida occur on the Apalachicola National Forest, Big Cypress National Preserve, Eglin Air Force Base, Ocala and Osceola National Forest, and St. Johns River region (Maehr and Wooding 1992, Roof 1997, Seibert et al. 1997, Dobey et al. 2005, Dixon et al. 2006). Two smaller, restricted populations occur in the Greater Chassahowitzka Ecosystem and in the Glades and Highland counties area (Maehr et al. 2003, Simek 2005). In southeast Georgia, the subspecies inhabits the Okefenokee National Wildlife Refuge and the Dixon Memorial State Forest (Wilson and Ruff 1999, Cantrell et al. 2005). A small, remnant population of Florida black bear also exists in southwestern corner of Alabama near the Mississippi border (K. Guyse, Alabama Department of Conservation and Natural Resources, personal communication).

ABUNDANCE STATUS

Populations appear to be stable or increasing in Virginia, Tennessee, North Carolina, Georgia, South Carolina, and Arkansas. Martin and Steffen (2005) estimate the number of bears in Virginia at 7000–9000. In North Carolina, the mountain population (4000) is increasing whereas the coastal population (7000) appears stable (M. Jones, North Carolina Wildlife Resources Commission, personal communication). Black bear abundance in northern and central Georgia is stable or slightly increasing (Cantrell et al. 2005) with population estimates between 1400–1500 (B. Bond and W. Abler, Georgia Department of Natural Resources, personal communication). Population estimates for Tennessee range between 1500–2000 (D. Ratajczak, Tennessee Wildlife Resources Agency, personal communication); the Great Smoky Mountains National Park population shared with North Carolina is estimated at approximately 1250 bears (W. Stiver, National Park Service, personal communication). South Carolina reports the mountain population (900) is increasing whereas the Coastal Plain population (250) is stable (S. Still, South Carolina Department of Natural Resources, personal communication). The Interior Highlands population in Arkansas has grown to 3,000 bears (Eastridge 2005); the White River population is estimated between 300–500 animals (R. Hines, U. S. Fish and Wildlife Service, personal communication). Black bear abundance in eastern Oklahoma is estimated at 250–275 (J. Ford, Oklahoma Department of Wildlife, personal communication). Bear abundance for the small, recolonizing population in Kentucky is unknown (Day et al. 2005); research is underway to develop a population estimate using hair snare and infrared

surveys (D. Maehr, University of Kentucky, personal communication).

There are between 2000–3200 Florida black bears in Florida (Simek 2005), approximately 50 in Alabama (K. Guyse, Alabama Department of Conservation and Natural Resources, personal communication), and 700–800 in South Georgia (W. Abler, Georgia Department of Natural Resources, personal communication). The population of Louisiana black bear is estimated at almost 600 in the Tensas and Atchafalaya River basins (D. Telesco, Black Bear Conservation Committee, personal communication) and 60 in Mississippi (B. Young, Mississippi Department of Wildlife, Fisheries, and Parks, personal communication). In Texas, sightings of black bear have increased 60–70% in the past 10–15 years (Maxey and Lange 2005); the current estimate of bear abundance is less than 50 animals (R. Maxey, Texas Parks and Wildlife, personal communication). Research is underway by state personnel and cooperators to determine the extent of range expansion.

PRIMARY HABITATS

In the Appalachians, Ozark, and Ouachita mountains, the black bear inhabits several communities including red spruce-fir (*Picea rubens-Abies*) forest, northern hardwoods (*Acer-Fagus-Betula*); mixed mesophytic forest including blackgum (*Nyssa sylvatica*), black walnut (*Juglans nigra*), and eastern hemlock (*Tsuga canadensis*); oak-hickory (*Quercus-Carya*) forest, mixed pine (*Pinus* spp.) forest, and others (Garshelis and Pelton 1981, Pelton 2003). Large tracts of suitable habitat are important (Kolenosky and Strathearn 1987, Pelton 2003). Areas of at least 389–778 km² with relatively low human habitation have been suggested for sustaining harvestable, viable populations (Hellgren and Vaughan 1984, Rudis and Tansley 1995). In the Coastal Plain, habitat includes pocosins, bottomland hardwoods, Carolina bays, mixed hardwood hammocks, bald cypress (*Taxodium distichum*) swamps, cabbage palm (*Sabal palmetto*) forests, pine flatwoods dominated by slash pine (*P. elliotii*) and longleaf pine (*P. palustris*), loblolly bay (*Gordonia lasianthus*), and sand pine (*P. clausa*) scrub (Landers et al. 1979, Clark et al. 1985, Webster et al. 1985, Mykytko and Pelton 1990, Weaver et al. 1990, Hellgren et al. 1991, Maehr et al. 2003, Dobey et al. 2005). The black bear requires an impenetrable understory for escape cover as a habitat component (Pelton 2001); dense thickets of mountain laurel (*Kalmia latifolia*) and rhododendron (*Rhododendron maxima*) are important in the Appalachians whereas greenbrier (*Smilax* spp.), titi (*Cliftonia monophylla*), and other evergreen shrubs are important in the Coastal Plain. Winter denning habitat includes cavities in large trees, hollow logs and

stumps, standing snags, piles of woody debris, caves, rock outcroppings, and thickets (Hellgren and Vaughan 1989b, Wooding and Hardisky 1992, Pelton 2003). Elevated den sites are important in areas with significant winter flooding (Oli et al. 1997). The American black bear requires secure corridors for obtaining food, dispersal, and travel (White et al. 2000, Pelton 2001).

Sex, population density, and changing food resources influence the size of the home range (Pelton 2003). Average home ranges are quite variable with sizes reported of 2–11 km² in the White River area of Arkansas (Oli et al. 2002) and 30–78 km² in the Okefenokee National Wildlife Refuge-Osceola National Forest area of Georgia and Florida (Dobey et al. 2005). Home range estimates from Appalachian populations include 7–51 km² in Tennessee (van Manen 1994) and 27–112 km² in Virginia (Hellgren and Vaughan 1989a). Seasonal changes in habitat use occur in response to food availability; following poor acorn and other mast production in the fall, black bears disperse into habitats that increase their chances of contact with humans (Pelton 2001).

REPRODUCTION

Breeding occurs in summer and peaks between June–July (Eiler et al. 1989, Pelton 2003). Depending on nutritional status, female black bears reach sexual maturity between 2–7 years with 3–4 years being common (Pelton 2003). Black bears are polygynous and dominant males may mate with several females (Pelton 2001). During years of poor mast production, suboptimal nutrition results in failed implantation of the blastocysts or death of the neonates (Hellgren et al. 1990). If a female attains sufficient body weight by fall, implantation occurs (Samson and Huot 1995). The gestation period for the American black bear is 7–8 months with the majority of fetal development occurring during the last 6–8 weeks. Cubs are born in winter dens during January–February (Pelton 2003). The average litter size is 2 (range 1–5); reported litter sizes in Louisiana range between 1.5–2.4 (Hightower et al. 2002). The adult female normally breeds every other year; older females show the greatest productivity (Eiler et al. 1989). Dispersal occurs at approximately 16 months (Seibert et al. 1997); most mortality occurs in this subadult group up through 4–5 years of age. Years with poor food availability can cause reproductive failure, initiating population-wide breeding synchrony (McLean and Pelton 1994, Pelton 2003). With declining nutrition, litter size may decline, age at first reproduction rises, juvenile and first-year cub survival diminish, and litter frequency declines (Lariviere 2001). The American black bear can live for 20–25 years (Kolenosky and Strathearn 1987).

FOOD HABITS

The American black bear is an opportunistic feeder with a diet that changes seasonally. During the spring, newly emerging grasses, sedges, forbs, catkins, leaves of trees and shrubs, and squawroot (*Conopholis americana*) comprise much of the diet. In summer, the bear feeds on blackberries (*Rubus* spp.), huckleberries (*Gaylussacia* spp.), blueberries (*Vaccinium* spp.), wild grapes (*Vitis* spp.), red mulberry (*Morus rubra*), hawthorn (*Crataegus* spp.), sassafras (*Sassafras albidum*), pokeberry (*Rivina humilis*), and persimmon (*Diospyros virginiana*; Landers et al. 1979, Beeman and Pelton 1980, Eagle and Pelton 1983, Clark et al. 1987, Pelton 2003). Other foods include saw palmetto berries (*Serenoa repens*), cabbage palm, swamp tupelo (*Nyssa biflora*), black gum fruits, gallberry (*Ilex glabra*), honey bees (*Apis mellifera*) and their honey, yellow jackets (*Vespula* spp.), bumble bees (*Bombus bimaculatus*), and carpenter ants (*Camponotus* spp.; Maehr and Brady 1984, Maehr and DeFazio 1985, Dobey et al. 2005). Oak mast becomes a staple food during the fall and winter, with other foods such as pecans (*Carya* spp.) and hickory nuts consumed as available (Pelton 2001). The bear adapts readily to abundant agricultural crops such as sugarcane (*Saccharum officinarum*), corn (*Zea mays*), and soybeans (*Glycine max*; Jones 2005). Vertebrate prey reported include Virginia opossum (*Didelphis virginiana*), nine-banded armadillo (*Dasypus novemcinctus*), feral pig (*Sus scrofa*), northern raccoon (*Procyon lotor*), and white-tailed deer (*Odocoileus virginianus*; Roof 1997).

ASSOCIATED SPECIES

The American black bear inhabits a diversity of habitats and is associated with numerous mammals in the South. Comparison of diet, habitat use, and movement indicated a low probability for competitive interactions with strict predatory carnivores such as bobcat (*Lynx rufus*) and Florida panther (*Puma concolor*; Maehr 1997). However, competition for food with the coyote (*Canis latrans*) may influence bear numbers in Florida (Maehr 1997). The bobcat, coyote, and adult bear may kill young black bears (Lariviere 2001). The bear is an opportunistic predator that occasionally preys upon young white-tailed deer or newborn livestock (Pelton 2001); however, they are more likely to feed on the carrion of these and other species.

VULNERABILITY AND THREATS

Habitat loss continues to threaten the American black bear. Forest fragmentation and the conversion of forest to agriculture, commercial and urban development, and pine monoculture restricts available habitat or limits additional range expansion (Pelton 2001, Jones

2005). The disjunct nature of black bear populations in the Coastal Plain is exacerbated by several major highway projects (J. Dozier, South Carolina Department of Natural Resources, personal communication) that may eventually result in the loss of genetic diversity (Hellgren and Vaughan 1994). As the human population continues to expand into bear habitat, increased incidents of road mortality are reported in Alabama, North Carolina, Tennessee, and Florida. Advances in hunting techniques and increased access capabilities can result in over-exploitation (Lee and Vaughan 2005). The illegal trade in bear gall bladders used for the alternative medicine markets overseas also is a concern.

Twenty-two different parasites have been reported including lice, fleas, and ticks (Lariviere 2001). Severe cases of mange have been reported in Florida populations (Forrester et al. 1993). A number of neoplastic, rickettsial, viral, and bacterial diseases have been reported (Foster et al. 2004); none appears to contribute greatly to the natural regulation of populations (Cook and Pelton 1979). Few significant diseases are reported for black bears (Pelton 2001). Diseases include fluke fever, rabies, bronchopneumonia, dental caries, osteomyelitis, and periodontal disease (Pelton 2003). Most mortality is human-induced through legal hunting, poaching, depredation control, and collision with vehicles.

MANAGEMENT SUGGESTIONS

The components of black bear management include a mix of hunting access, habitat protection, nuisance control, research, and education. Access can be restricted through road gating, designation of no-hunting zones, and provision of escape cover. Roadless and wilderness area designation on public lands can reduce vehicle-based hunting where it serves as an important management tool to sustain bear numbers. Habitat management includes mast enhancement and provision of key habitat components such as foraging and denning cover (Hellgren and Vaughan 1994, Oli et al. 1997). Management practices that enhance suitable cover in areas of inundation may mitigate for lack of den trees in flood-prone landscapes. The bear has a relatively low biological potential, and changes in food availability can significantly alter population stability, becoming an important consideration for management (Pelton 2003). In the Gulf Coastal Plain, incentive programs encourage the replanting of marginal farmland into bottomland hardwood forest. The provision of dispersal corridors between bear populations has proven successful (Vaughn and Pelton 1995, Pelton 2001, Davidson 2005, Dixon et al. 2006). Sanctuaries established in North Carolina protect female bears and foster population

recruitment (Beringer et al. 1998). Texas has proposed the establishment of bear “recovery zones” through a partnership of federal and state agencies, forest industry, and other landowners. Stringent law enforcement also is required to continue to combat illegal hunting. Additional research can improve monitoring programs, providing accurate predictions of population responses to various perturbations (Pelton and van Manen 1996). Finally, education is essential to successful nuisance control programs, acceptance of regulations such as those that discourage feeding of bears, and for mitigation of human-bear conflicts.

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