

beaver (*Castor canadensis*), and snowshoe hare (*Lepus americanus*), with small mammals, birds, and large invertebrates sometimes being taken (Mech 1974, Stebler 1944, WI DNR 1999a). In the Midwest, during the last 22 years, wolves have also killed domestic animals including horses (*Equus caballus*), cattle (*Bos taurus*), sheep (*Ovis aries*), goats (*Capra hircus*), llamas (*Lama glama*), pigs (*Sus scrofa*), geese (*Anser sp.*), ducks (*Anas sp.*), turkeys (*Meleagris gallopavo*), chickens (*Gallus sp.*), pheasants (*Phasianus colchicus*), dogs, and cats (*Felis catus*) (Paul 2001, Wydeven *et al.* 2001a). Since 1987, wolves in the northern Rocky Mountains of Montana, Idaho, and Wyoming have also killed domestic animals, including llamas, horses, cattle, sheep, and dogs (Service *et al.* 2002).

Wolves are social animals, normally living in packs of 2 to 12 wolves. However, 2 packs within Yellowstone National Park (NP) had 22 and 27 members in 2000, and Yellowstone's Druid Peak pack increased to 37 members in 2001 (Service *et al.* 2001, 2002). Packs are primarily family groups consisting of a breeding pair, their pups from the current year, offspring from the previous year, and occasionally an unrelated wolf. Packs typically occupy, and defend from other packs and individual wolves, a territory of 50 to 550 square kilometers (sq km) (20 to 214 square miles (sq mi)). However, in the northern U.S. Rocky Mountains territories tend to be larger, usually from 520 to 1,040 sq km (200 to 400 sq mi), and in Wood Buffalo National Park in Canada, territories of up to 2,700 sq km (1,042 sq mi) have been recorded (Carbyn *in litt.* 2000). Normally, only the top-ranking ("alpha") male and female in each pack breed and produce pups. Litters are born from early April into May; they can range from 1 to 11 pups, but generally include 4 to 6 pups (Michigan Department of Natural Resources (MI DNR) 1997; Service 1992a; Service *et al.* 2001). Normally a pack has a single litter annually, but producing 2 or 3 litters in one year has been documented in Yellowstone NP (Service *et al.* 2002). Yearling wolves frequently disperse from their natal packs, although some remain with their natal pack. Dispersers may become nomadic and cover large areas as lone animals, or they may locate suitable unoccupied habitat and a member of the opposite sex and begin their own territorial pack. Dispersal movements on the order of 800 km (500 mi) have been documented (Fritts 1983; James Hammill, Michigan DNR, *in litt.* 2001).

The gray wolf historically occurred across most of North America, Europe, and Asia. In North America, gray wolves formerly occurred from the northern reaches of Alaska, Canada, and Greenland to the central mountains and the high interior plateau of southern Mexico. The only areas of the conterminous United States that apparently lacked gray wolf populations since the last glacial events are parts of California and portions of the eastern and southeastern United States (an area occupied by the red wolf). In addition, wolves were generally absent from the extremely arid deserts and the mountaintops of the western United States (Young and Goldman 1944, Hall 1981, Mech 1974, Nowak 2000). (Refer to the *Taxonomy of Gray Wolves in the Eastern United States* section below for additional discussion.)

European settlers in North America and their cultures often had superstitions and fears of wolves. Their attitudes, coupled with perceived and real conflicts between wolves and human activities along the frontier, led to widespread persecution of wolves. Poisons, trapping, and shooting-spurred by Federal, State, and local government bounties—resulted in extirpation of this once widespread species from more than 95 percent of its range in the 48 conterminous States. At the time of the passage of the Act, likely only several hundred wolves occurred in northeastern Minnesota and on Isle Royale, Michigan, and possibly a few scattered wolves in the Upper Peninsula of Michigan, Montana, and the American Southwest.

Researchers have learned a great deal about gray wolf biology, especially regarding the species' adaptability and its use of nonwilderness habitats. Public appreciation of the role of predators in our ecosystems has increased, and we believe that the recovery of the species is widely supported. Most importantly, within the last decade the prospects for gray wolf recovery in several areas of their former historical United States range have greatly increased. In the western Great Lakes area, wolves have dramatically increased their numbers and occupied range. Gray wolf reintroduction programs in the northern U.S. Rocky Mountains have shown great success. Additionally, the reintroduction and recovery program of the Mexican wolf in the American Southwest, although in its initial stages, is beginning to show similar progress after only a few years.

The gray wolf (*Canis lupus*) is one of two North American wolf species currently protected by the Act. The other is the red wolf (*C. rufus*), a

separate species that is listed as endangered throughout its range in the southeastern United States and extending west into central Texas. The red wolf is the subject of a separate recovery program. This final rule does not affect the current listing status or protection of the red wolf.

#### *B. Taxonomy of Gray Wolves in the Eastern United States*

Both the 1978 and 1992 versions of the Recovery Plan for the Eastern Timber Wolf were developed to recover the gray wolf subspecies *Canis lupus lycaon*, commonly known as the eastern timber wolf. *C. l. lycaon* was believed to be the gray wolf subspecies historically occurring throughout the northeastern quarter of the United States east of the Great Plains (Young and Goldman 1944, Hall 1981, Mech 1974). Since the publication of those recovery plans, various studies on the subspecific taxonomy of the gray wolf have been conducted with conflicting results (Nowak 1995, 2000; Wayne *et al.* 1995; Wilson *et al.* 2000).

At the time we prepared the July 13, 2000, gray wolf reclassification proposal, new information had recently become available that called into question the identity of the large canid in southeastern Canada, an area with an extant wolf population adjacent to the northeastern United States. However, we believed that the preponderance of available data supported the position that the historical canid in the northeastern United States was a subspecies of the gray wolf, probably *Canis lupus lycaon*.

An alternative position advanced by Wilson *et al.* (2000) appears to be gaining wider acceptance. That view is that the wolf currently occurring in Algonquin Provincial Park, and possibly the ancestral wolf of southeastern Canada and the northeastern United States, is a smaller form of wolf that is similar to or indistinguishable from the red wolf (*C. rufus*). Still others argue that ecologically, the ancestral wolf in northern Maine, New Hampshire, and Vermont, where moose and woodland caribou were the predominant ungulate prey (Hall 1981), was likely to be a large-bodied *C. lupus*, rather than a smaller, deer-eating wolf such as the red wolf (Daniel Harrison, University of Maine, pers. comm.).

The coyote is the dominant canid in the northeastern United States today, although wolf genetic material is also present in these animals. Prey species' ranges in the Northeast have undergone significant changes in the last hundred-plus years as the whitetail deer has expanded north into Canada, while the