

However, if the species is sufficiently widespread and healthy, the area subject to the threat would not be biologically important, and we believe it was not the intent of Congress that all such circumstances lead to the listing of all affected species.

Understanding “significant” to mean “important,” the following analysis concentrates on applying our understanding of the ecology of the lynx to the geography of its habitat. This allows us to determine whether a given area is a significant portion of the range of lynx.

With the help of new information available as a result of ongoing research, we continue to improve our understanding of lynx ecology in the contiguous United States. In delineating the range of the lynx in the contiguous United States, we must take into account lynx life history requirements, population dynamics, and the natural features of the vegetation communities that make up lynx habitat. The following list summarizes fundamental elements that determine the range of the lynx in the contiguous United States. We describe these elements in further detail later in this notice.

(1) Lynx in the contiguous United States are at the southern margins of a widely-distributed lynx population whose center is in north-central Canada and Alaska. Lynx populations in the contiguous United States are sustained by cyclic influx from lynx populations in Canada.

(2) Lynx are specialized predators of snowshoe hare (*Lepus americanus*). Lynx populations track hare cycles. Abundant hares are necessary to support survival of lynx kittens and recruitment into and maintenance of the lynx population. As a result, depending on habitat quality, local lynx populations naturally may not be able to survive through a cyclic low in the hare cycle.

(3) Lynx and snowshoe hare habitat is boreal forest where there are cold winters with deep snow.

(4) In the contiguous United States, the boreal forest is at its southernmost extent, transitions into other vegetation communities, and is naturally patchy. These natural patches may not be big enough or of high enough quality to support a resident lynx population.

(5) The habitat within these patches changes over time and location, naturally becoming suitable or unsuitable for lynx with forest succession or changes in local climate conditions.

(6) Lynx disperse long distances when hare populations decline. As a result, they can colonize suitable but

unoccupied habitats, augment existing resident populations, or disperse to habitats where they cannot survive.

As a result of the factors described above, the range of the lynx in the contiguous United States is comprised of areas supporting resident, breeding populations and areas supporting occasional dispersers:

(1) Resident population—Resident, breeding populations exist in areas of abundant, higher-quality habitat. These areas are “core” areas essential to maintaining lynx in the contiguous United States. During cyclic population lows, resident lynx populations are naturally reduced to extremely low numbers of individuals. Throughout this document, we use the term “resident population” to refer to a group of lynx that has exhibited long-term persistence in an area as determined by a variety of factors, such as evidence of reproduction, successful recruitment into the breeding cohort, and maintenance of home ranges.

(2) Dispersers—Lynx records in many parts of the contiguous United States are of dispersing animals. Lynx occur as dispersers where boreal forest is isolated, patchy, or of marginal quality such that it cannot sustain a resident, breeding lynx population. We include areas of the contiguous United States that contain boreal forest as potential lynx range. Although dispersing lynx may periodically occupy some of this range, there is a low probability that habitat quality and quantity are sufficient to support a breeding population. It is possible that some of the large outlying patches of boreal forest may periodically support some breeding lynx; however, evidence of this is minimal and our best information indicates that these areas are likely to contribute little to the persistence of the species in the contiguous United States.

Some dispersing lynx are found in completely unsuitable habitats, such as prairie or deciduous forest, where they are unable to survive in the long term. We do not include such areas within the range of lynx because such occurrences are unpredictable and because, to the best of our knowledge, such areas have not contained conditions capable of supporting lynx since at least the time of European settlement.

We use the word “dispersers” to refer to lynx that have left the area they originally occupied for various reasons, most often when snowshoe hare populations decline. To successfully disperse, lynx must find suitable habitat and a mate and must successfully reproduce (McKelvey *et al.* 2000a). Successful dispersals can result in the colonization of unoccupied habitats and

contribute to the persistence of the metapopulation (as described in the next paragraph). Unsuccessful dispersal is a natural phenomenon that occurs when lynx move to habitats that are unable to sustain lynx. These individuals are unable to survive and are lost from the metapopulation. Unsuccessful dispersal is demonstrated by records of lynx in areas such as North Dakota, Nebraska, and Iowa, which cannot support lynx populations in the long term (Adams 1963; Gunderson 1978; W. Jobman, U.S. Fish and Wildlife Service, in litt. 1997).

Another word we use is “metapopulation.” According to McKelvey *et al.* (2000a), a metapopulation is a number of discrete subpopulations within habitat patches, connected by dispersal. Through time, subpopulations may go extinct (no longer existing or living) and be recolonized, but the larger metapopulation persists. We believe lynx in the contiguous United States are part of a larger metapopulation with lynx populations in Canada.

The range of the lynx must be considered differently from the range of other species that are less mobile and have more stable population dynamics. Because the lynx is highly mobile and has cyclic population dynamics that are tied to its primary prey, the snowshoe hare, numbers of lynx naturally fluctuate and become extremely low at times during a cycle. Additionally, where snowshoe hare populations are not adequate, resident lynx populations cannot be sustained. Because of this, resident lynx populations never occurred everywhere boreal forest existed in the contiguous United States. Where the boreal forest was naturally more patchy and marginal the habitat was incapable of supporting an adequate snowshoe hare population that in turn was able to support a resident lynx population over time. As a result, only a few areas in the contiguous United States historically supported adequate quantity and quality of habitat to support resident lynx populations over time. Many historical lynx occurrences across a large area of the contiguous United States were likely dispersers. The occurrence of dispersing lynx is unpredictable, and dispersing lynx will continue to periodically move into areas that are not lynx habitat. This historic, natural condition continues to exist today, as will be discussed in this document.

#### Natural History

In the following section we describe in more detail than we did in the final rule the natural history, population