

CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

Amendments to Appendices I and II of CITES

Thirteenth Meeting of the Conference of the Parties
Bangkok (Thailand), 2 – 14 October 2004

A. PROPOSAL

Deletion of bobcat (*Lynx rufus*) from Appendix II.

B. PROPONENT

United States of America.

C. SUPPORTING STATEMENT

1.1 Taxonomy

1.1 Class: Mammalia

1.2 Order: Carnivora

1.3 Family: Felidae

1.4 Species: *Lynx rufus*, Latham 1852

Potential subspecies: *L. r. baileyi*, *L. r. californicus*, *L. r. escuinapae*, *L. r. fasciatus*, *L. r. floridanus*, *L. r. gigas*, *L. r. oaxacensis*, *L. r. pallescens*, *L. r. peninsularis*, *L. r. rufus*, *L. r. superiorensis*, *L. r. texensis*. Hall 1981.

1.5 Scientific synonyms

Felis rufus, Jones et al. 1975, Tumlison 1987, Nowak 1999

1.6

Common names (Jackson 1961, Banfield 1987, McCord and Cardoza 1982)

English: bobcat, barred bobcat, bay lynx, bob-tailed cat, cat o' the mountain, cat lynx, catamount, lynx cat, pallid bobcat, red lynx, wildcat

French: chat sauvage, chat sauvage de la nouvelle cosae, loup-cervier, lynx roux, pichou, pichu

Spanish: gato de monte

1.7 Code Numbers: A-112.007.001.024

2. Biological Parameters

2.1 Distribution

The bobcat is the most widely distributed native felid in North America, ranging from as far north as central British Columbia (55°N) and south to Oaxaca, Mexico (17°N). Currently, with the exception of Delaware, the bobcat can be found in all the contiguous United States; however, its distribution is restricted in Illinois, Indiana, Iowa, Michigan, Missouri, and Ohio (Woolf and Hubert 1998). Historically the bobcat was found in all 48 states (Young 1958). During the last century, its range expanded into northern Minnesota, southern Ontario, and Manitoba as lumbering, fire, and farming opened the dense, unbroken coniferous forests of these areas (Rollings 1945). Further expansion

into human-influenced landscapes has been noted during the past decade, particularly in the midwestern and eastern United States (Woolf and Neilson 2001).

There are 12 potentially valid subspecies of the bobcat in North and Central America (Hall 1981). However, a detailed morphological study of bobcat skulls from the south-central United States led Read (1981) to suspect that there were far fewer valid intra-specific taxa than Hall (1981) had recognized, since the bobcat is fairly continuous in its distribution with no clear geographic breaks. McCord and Cardoza (1982) suggested that the differences between subspecies are so minor that they have no real biological or managerial significance. They questioned the biological significance and validity of *L. r. escuinapae* of central Mexico. The subspecies was described from two immature male specimens on the basis of color and cranial differences (Allen 1903). A multivariate statistical analysis of a variety of skull measurements has indicated that cranial characteristics of *L. r. escuinapae* are similar to those of *L. r. californicus* and *L.r. texensis* (Samson 1979). Also, the range of *L. r. escuinapae* overlaps with that of *L. r. baileyi* and *L.r. texensis*.

2.2 Habitat availability

Bobcats are found in a wide variety of habitats, from bottomland forests in Alabama to arid deserts in Mexico, and from northern boreal forests in Canada to the humid tropical regions of Florida. They generally prefer rough, rocky country interspersed with dense cover (Pollack 1951b, Erickson 1955, Young 1958, Zezulak and Schwab 1979, Karpowitz 1981, Golden 1982). McCord (1974) snow-tracked bobcats in Massachusetts and found that roads, cliffs, spruce plantations, and hemlock-hardwoods were used most in relation to their abundance. He attributed the use of hemlock-hardwoods to high white-tailed deer (*Odocoileus virginianus*) (prey) densities and use of spruce plantations to abundant snowshoe hare (*Lepus americanus*) (prey) and protection from the wind. Similarly, Fuller et al. (1985a) in Minnesota found a disproportionate use of coniferous areas, which also supported the highest density of snowshoe hares and white-tailed deer, the bobcats' main prey in that region. Bobcats in Missouri preferred bluffs, brushy fields, and second-growth oak habitats (Hamilton 1982). Bluffs were apparently selected for social reasons as well as the physiological advantages of cover, whereas brushy fields and areas of oak regeneration offered high densities of prey. In Wisconsin, lowland coniferous forests were consistently selected by both sexes during all seasons, although there were sex-related and seasonal differences in selection of other habitats (Lovallo and Anderson 1996). In Mexico, bobcats are found in dry scrub, coniferous forests, mixed forests of pine and oak, and tropical deciduous forests (27 April 2004 letter to K. Stansell, Assistant Director, International Affairs, U.S. Fish and Wildlife Service from H. Benítez Díaz, Director of Outreach and International Affairs, National Commission for the Understanding and Use of Biodiversity, Mexico).

Although prey abundance is considered the most important factor in the selection of habitat types, protection from severe weather, availability of resting and denning sites, dense cover for hunting and escape, and freedom from disturbance are also important factors in determining habitat use (Pollack 1951b, Erickson 1955, Bailey 1974). Knowles (1985) found that bobcats in Montana generally selected habitat types with 52% or greater vertical cover. Although prey densities were highest in those types, she felt that cover was crucial for the bobcat's effective hunting by ambush and stalking. Similarly, Lovallo (1999) in Pennsylvania found that bobcats were strongly associated with eastern to southeastern exposures on 7-8° slopes. McCord (1974) felt that behavioral factors, such as hunting habits or social interactions, also dictate the temporal and spatial use of habitat types.

2.3 Population status

The U.S. Fish and Wildlife Service (USFWS) estimated that, in 1988, bobcat population size in the United States was from 700,000 to 1,500,000 adult resident animals (Turbak 1988). Geographic expansion of bobcat range and notable increases in bobcat density during the past decade suggest that population size has likely increased since these estimates were produced (Woolf and Hubert

2001, Lovallo 2001). Numerous States independently estimate bobcat populations by using a variety of methods, such as computer population models and life table analyses (Anderson and Lovallo 2003). Bobcat populations in Canada and Mexico are reported as widespread and generally healthy (Government of Canada 1983, United States Government 1992). Bobcats are described as abundant throughout many regions of Mexico, including developed areas of the southern and central portions of the country (27 April 2004 letter from H. Benítez Díaz).

2.4 Population trends

As of 1996, populations in the United States were considered stable in 22 States and increasing in 20 States, with no States reporting overall declines (Woolf and Hubert 1998). As of 2001, several midwestern and eastern States continued to report population increases (Woolf and Neilson 2001). Mexican scientists have indicated that there have been no reductions in bobcat populations over the past 25 years (27 April 2004 letter from H. Benítez Díaz).

2.5 Geographic trends

Periodic national surveys of bobcat abundance and distribution suggest continued geographic expansion of bobcat populations throughout their range in the United States, particularly in Midwestern and several mid-Atlantic States (Hon 1990, Woolf and Neilson 2001). Most notably, bobcat populations have expanded their ranges in Illinois (Bluett et al. 2001, Woolf and Hubert 1998), Missouri (Erickson et al. 2001), Nebraska (Lendholt and Genoways 2000), and Pennsylvania (Lovallo 2001), as well as Indiana, Michigan, and Ohio (Woolf and Hubert 1998).

2.6 Role of the species in its ecosystem

Bobcats are one of several carnivores within the complex predator communities of North America. Because bobcats occupy a wide variety of habitats, their role as forest and farmland predators is varied. Although bobcats compete with other predators, there is no evidence that other predator species populations are directly related to bobcat density on the landscape. Bobcats are ecologically similar to Canadian lynx, particularly in terms of prey selection, and their ranges are rarely sympatric. Where bobcat and lynx ranges overlap, bobcat typically outcompete lynx unless excessive snow depth provides lynx with a foraging advantage (Parker et al. 1983).

2.7 Threats

Although bobcats adapt to a wide variety of habitat conditions, loss of habitat to urbanization is the only significant threat to current populations. Woolf and Hubert (1998) suggested that recent expansions of bobcat populations in the Midwest have resulted from increased forestation during recent decades. The bobcat is not listed in the *2003 IUCN Red List of Threatened Species* (IUCN 2003).

3. Utilization and Trade

3.1 National utilization

Bobcats are legally harvested in 38 U.S. States as well as regions of Canada and Mexico. Bobcat harvests in North America have varied due to changes in pelt value and fur harvest intensity for other species. Although bobcat harvests increased during 1976-1984, recent harvest levels in the United States have been comparable to those observed prior to CITES listing (34,937 harvested during 1995-1996 versus 35,937 harvested during 1975-1976). Woolf and Hubert (1998) concluded that, based on harvest-associated data, it was unlikely that bobcat populations were reduced during high harvest years; rather, these populations were thought to have remained stable.

3.2 Legal international trade

According to World Conservation Monitoring Centre (WCMC) data, between 1998 and 2002, there were 118,929 specimens exported. The majority of the exports originated from range countries. However, only 9 specimens originated from Mexico. Non-range countries or unknown sources accounted for 0.5% of exports (World Conservation Monitoring Centre 2003; Table 1).

Table 1. Number of specimens of <i>Lynx rufus</i> in international trade exported between 1998 and 2002.		
Year	Specimens exported from the Canada, Mexico, or the United States	Specimens exported from non-range countries or of unknown origin
1998	17,397	3
1999	20,454	44
2000	15,925	1
2001	34,287	0
2002	30,269	549
Total	118,332	597

3.3 Illegal trade

According to U.S. Fish and Wildlife Service Law Enforcement databases, from 1998 to 2004, there were 174 *Lynx rufus* specimens seized by law enforcement agents.

3.4 Actual or potential trade impacts

Neither domestic nor international trade constitutes a threat for populations of the bobcat.

3.5 Captive breeding or artificial propagation for commercial purposes (outside country of origin)

Some States allow and regulate captive rearing and propagation of bobcats for commercial purposes. However, current international trade of bobcat pelts is dominated by wild fur harvests from North American countries.

4. Conservation and Management

4.1 Legal status

4.1.1 National

Bobcat hunting and trade is regulated domestically throughout its range (Nowell and Jackson 1996). In the United States, bobcats are currently classified as game or furbearer species and subsequently harvested through regulation in 38 States. The species is further protected by continuous closed hunting seasons in 9 States and is classified as a State endangered species in Indiana, Ohio, New Jersey, and Iowa. Bobcats are classified and protected as a State threatened species in Illinois.

In Mexico, bobcat hunting is regulated in 5 States, and shooting suspected livestock predators is permitted on a limited basis (Nowell and Jackson 1996). In Canada, bobcat hunting is also regulated.

4.1.2 International

Prior to COP8, all subspecies of bobcats except *Lynx rufus escuinapae* were included in Appendix II due to similarity of appearance (Article II, paragraph 2b) to other listed felids. *L. r. escuinapae* was listed in Appendix I, but due to the uncertainty of its validity as a subspecies, the United States successfully proposed its downlisting to Appendix II. Presently, the entire species is listed in Appendix II. Trade is not threatening this species with the possibility of extinction. In the United States, *L. r. escuinapae* is listed as endangered under the U.S. Endangered Species Act of 1973; however, this listing status is currently under review.

4.2 Species management

4.2.1 Population monitoring

Although population size is difficult to estimate for bobcats due to their cryptic and primarily nocturnal behavior, numerous indices have been employed by State and provincial furbearer managers to determine range, occupancy of habitats, and geographic and numeric trends in bobcat populations. Examples of such data include but are not limited to collection of vehicle-caused mortalities, hunter and trapper questionnaires, geographically referenced harvest data, employee opinion, hunter sightings, archer sightings, incidental captures by trappers, scent-station surveys, and winter track counts (Anderson and Lovallo 2003).

4.2.2 Habitat conservation

Because bobcats thrive in a wide variety of habitats throughout their range, State and Federal acquisitions of these habitats are able to sustain the current distribution.

4.2.3 Management measures

The 38 States that allow bobcat harvest have implemented measures to control harvest intensity through regulations that dictate season length, methods of take, bag limits, and mandatory reporting. Additionally, many States use individual permits (9 States) or statewide harvest quotas (4 States) to limit the annual harvest (Woolf and Hubert 1998). States periodically review species harvest programs to account for new findings and current advice from experts in their region. Commercial harvest of captive-bred animals is not common, but where legal, is monitored by state authorities.

Sustainable harvest rates are most often determined by using population models or life table analyses based on population demographic data collected annually from harvested samples. Managers generally consider 20% to be the maximum sustainable harvest rate for bobcats, and age structure analyses, such as adult-to-yearling ratios, have been developed to estimate changes in harvest rates over time (Knick 1990).

4.3 Control measures

4.3.1 International trade

In the United States, transport of bobcats among States and across international borders is controlled and enforced through the Lacey Act. State and Tribal CITES furbearer export

programs in the United States must be approved by the U.S. Fish and Wildlife Service's Division of Management Authority and Division of Scientific Authority. Minimum requirements are established for biological and management program information necessary for approval (48 *Federal Register* 37494, 18 August 1983). Approved programs are monitored through submitted annual reports to the Service.

4.3.2 Domestic measures:

According to Nowell and Jackson (1996), the bobcat management programs in the United States and Canada are the most advanced management programs for commercial exploitation of feline furbearers. The management programs ensure long-term sustainable use of the species and support its conservation. State agencies employ qualified and specialized wildlife biologists to provide management and harvest recommendations for bobcats in their respective regions. Other scientists, agency personnel, and the public review management recommendations prior to adoption. State and Federal agency wildlife law enforcement personnel are trained to identify bobcats and are well versed in State and Federal law regarding the harvest, transport, and sale of bobcats and bobcat parts.

5. Information on Similar Species

Several species have been identified as similar in appearance to bobcat including Canada lynx (*Lynx canadensis*), Iberian lynx (*Lynx pardinus*), and Eurasian lynx (*Lynx lynx*). Although differentiation of spotted belly hair may be problematic, the pelage and skull can be used to clearly distinguish bobcats from other members of the genus *Lynx*. For example, Canada lynx can be distinguished visually from bobcats by their large furry pads, slightly shorter tail, longer black ear tufts and black margins along the ear (>2.5 cm), as well as a less defined spotting on the coat. The tail of the lynx is brownish or pale buff white and ends in a black tip that completely encircles the tail whereas the bobcat the tail is banded on the upper surface only (Lariviere and Walton 1997). Also, the pelage of the lynx is generally grayer than the reddish-brown color of the bobcat.

Bobcat skulls can be identified by the presence of both a narrow presphenoid bone (<6 mm) and a confluence of the hypoglossal foramen with the posterior lacerate foramen. Lynx skulls have an inflated presphenoid bone and the hypoglossal and posterior lacerate forama are separated (Jackson 1961). Additionally, Ommundsen (1991) identified 3 other morphometrics that can be used to distinguish skulls: the number of minor palatine foramina (=2 in bobcat, <2 in lynx), the height of the post-orbital process of the jugal (larger than the space in the rim in bobcats and smaller than the space in the rim for lynx), and most significantly the angle of the infra-orbital foramen (the long axis is nearly horizontal in the bobcat and intersects the nasal bone while it is closer to vertical in the lynx).

6. Other Comments

None.

7. Additional Remarks

None.

8. References

Allen, J. A. 1903. A new deer and a new lynx from the state of Sinaloa, Mexico. *Bulletin of the American Museum of Natural History*. 19:614.

Anderson, E. M. 1987. *Critical review and annotated bibliography of the literature on the bobcat*. Colorado Division of Wildlife Special Report No. 62.

- Anderson E.M. and M. J. Lovallo. 2003. Bobcat and Lynx. Pages 758-786 in J. A. Chapman and G. A. Feldhamer, editors. *Wild Mammals of North America: Biology, Management, and Economics*. Johns Hopkins Press: Baltimore, Maryland.
- Bailey, T. N. 1974. Social organization in a bobcat population. *Journal of Wildlife Management* 38:435-446.
- Bluett, R. D., G. F. Hubert, and A. Woolf 2001. Perspectives on bobcat management in Illinois. Pages 67-73 in A. Woolf, C. K. Nielsen, and R. D. Bluett editors. *Proceedings of a Symposium on Current Bobcat Research and Implications for Management*. The Wildlife Society 2000 Conference: Nashville, Tennessee.
- Erickson, A. W. 1955. *An ecological study of the bobcat in Michigan*. Thesis, Michigan State University: East Lansing, Michigan.
- Erickson, D. W., D. A. Hamilton, and F. G. Sampson. 1981. The status of the bobcat (*Lynx rufus*) in Missouri. *Transaction of Missouri Academy of Science* 15:49-60.
- Fuller, T. K, W. E. Berg, and D. W. Kuehn 1985. Survival rates and mortality factors of adult bobcats in north-central Minnesota. *Journal of Wildlife Management* 49:292-296.
- Golden, H. 1982. *Bobcat populations and environmental relationships in northwestern Nevada*. Thesis, University of Nevada: Reno, Nevada.
- Government of Canada. 1983. Proposal for the deletion of the Canadian populations of bobcat, *Lynx rufus*, from Appendix II. *Proceedings of the Fourth Conference of the Parties*. Secretariat of CITES: Lausanne, Switzerland.
- Hall, E. R. 1981. *The Mammals of North America*. Wiley and Sons: New York.
- Hamilton, D. A. 1982. *Ecology of the bobcat in Missouri*. Thesis, University of Missouri: Columbia, Missouri.
- IUCN 2003. *2003 IUCN Red List of Threatened Species*. IUCN: Gland, Switzerland.
- Jackson, H. H. T. 1961. *Mammals of Wisconsin*. University of Wisconsin Press: Madison, Wisconsin.
- Karpowitz, J. F. 1981. *Home range and movements of Utah bobcats with reference to habitat selection and prey base*. Thesis, Brigham Young University: Provo, Utah.
- Knowles, P. R. 1985. Home range size and habitat selection of bobcats, *Lynx rufus*, in north-central Montana. *Canadian Field Naturalist* 99:6-12.
- Landholt, L. M. and H. H. Genoways. 2000. Population trends in furbearers in Nebraska. *Transactions of the Nebraska Academy of Sciences* 26:97-100.
- Lariveire, S. and L. R. Walton 1997. *Lynx rufus*. *Mammalian Species* 563:1-8.
- Lovallo, M. J. 1999. Multivariate models of bobcat habitat selection for Pennsylvania landscapes. Dissertation, Pennsylvania State University: University Park, Pennsylvania.
- Lovallo, M. J. 2001. Status and management of bobcat in Pennsylvania. Pages 74-79 in A. Woolf, C. K. Nielsen, and R. D. Bluett editors. *Proceedings of a Symposium on Current Bobcat Research and Implications for Management*. The Wildlife Society 2000 Conference: Nashville, Tennessee.

- Lovallo, M. J. and E. M. Anderson 1996. Bobcat (*Lynx rufus*) home range size and habitat use in northwest Wisconsin. *American Midland Naturalist* 135:241-252.
- McCord, C. M. 1974. Selection of winter habitat by bobcats (*Lynx rufus*) on the Quabbin Reservation, Massachusetts. *Journal of Mammalogy* 55:428-437.
- McCord, C. M and J. E. Cardoza. 1982. Bobcat and lynx (*Felis rufus* and *F. lynx*). Pages 728-766 in J. A. Chapman and G. A. Feldhamer, editors. *Wild Mammals of North America: Biology, Management, and Economics*. Johns Hopkins Press: Baltimore, Maryland.
- Nowell, K. and P. Jackson (compiler and eds.). 1996. *Wild Cats: Status Survey and Action Plan*. IUCN: Gland, Switzerland. Pp. 140-144.
- Ommundsen, P. D. 1991. Morphological differences between lynx and bobcat skulls. *Northwest Science* 65:248-250.
- Parker, G. R. and G. E. J. Smith 1983. Sex- and age-specific reproductive and physical parameters of the bobcat (*Lynx rufus*) on Cape Breton Island, Nova Scotia. *Canadian Journal of Zoology* 61:1771-1782.
- Pollack, E. M. 1951. Observations on New England bobcats. *Journal of Mammalogy* 32:356-358.
- Read, J. A. 1981. *Geographic variation in the bobcat (Felis rufus) in the south-central United States*. Thesis, Texas A & M University: College Stations, Texas, USA.
- Rollings, C. T. 1945. Habits, foods and parasites of the bobcat in Minnesota. *Journal of Wildlife Management* 9:131-145.
- Samson, F. B. 1979. Multivariate analysis of cranial characters among bobcats, with a preliminary discussion of the number of subspecies. Pages 80-86 in P. C. Escherich and L. Blum, editors. *Proceedings of the 1979 Bobcat Research Conference. National Wildlife Federal Science and Technology Series 6*.
- United States Government. 1994. Proposal to transfer *Felis rufa escuinapae* from Appendix I to Appendix II. *Proceedings of the Eighth Meeting of the Conference of the Parties*. Secretariat of CITES: Geneva, Switzerland.
- Woolf, A. and G. F. Hubert 1998. Status and management of bobcats in the United States over three decades: 1970's-1990's. *Wildlife Society Bulletin* 26:287:294.
- Woolf and Neilson. 2000.
- Young, S. P. 1958. *The Bobcat of North America*. Wildlife Management Institute: Washington, D.C.
- Zeulak, D. S. and R. G. Schwab. 1979. A comparison of density, home range, and habitat utilization of bobcat populations at Lava Beds and Joshua Tree National Monuments, California. Pages 74-79 in P. C. Escherich and L. Blum, editors. *Proceedings of the 1979 bobcat research conference. National Wildlife Federal Science and Technology Series 6*.