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Abstract: We review the status of the bobcat (*Lynx rufus*) spanning 3 decades, the 1970s through the 1990s, and take speculative look ahead. We rely on information available from published reports and workshops to describe historical trends and status in the 1970s and 1980s. Our 1996 summary is based on a survey of state agency furbearer biologists in the 48 conterminous United States, which requested their "expert" opinion on the status of the bobcat and its management. We focused on the Midwest, especially Illinois, to evaluate possible impacts of land use and other anthropogenic influences on current bobcat populations and to speculate on the outlook for the species as we approach the 21st century.



Status and management of bobcats in the United States over three decades: 1970s–1990s

Alan Woolf and George F. Hubert, Jr.

We review the status of the bobcat (*Lynx rufus*) spanning 3 decades, the 1970s through the 1990s, and take a speculative look ahead. We rely on information available from published reports and workshops to describe historical trends and status in the 1970s and 1980s. Our 1996 summary is based on a survey of state agency furbearer biologists in the 48 conterminous United States which requested their “expert” opinion on the current status of the bobcat and its management. We focused on the Midwest, especially Illinois, to evaluate possible impacts of land use and other anthropogenic influences on current bobcat populations and to speculate on the outlook for the species as we approach the 21st century.

Historical context and sources of concern

The history of furbearer management has its roots in economic considerations; either the value of pelts,

or competition with humans for food or wildlife resources. The evolution of a scientific basis for furbearer management began with Leopold (1933). Wolfe and Chapman (1987:101) aptly described the paradigm that evolved and serves us today; “... this involves not only maintaining populations at harvestable levels and providing trappers with a place to trap, but ensuring that problems involving nuisance animals and predators are minimized for homeowners and farmers, that animals are treated humanely, and that populations of rare furbearers—which are the concern of everyone—are safeguarded and enhanced.” Expressions of concern for the well being of populations of rare furbearers certainly is not new. Young (1958), in addressing the bobcat’s economic status, noted a philosophical opposition to any form of control (or unnecessary killing) of injurious animals.

Before the early 1970s, there was relatively little public concern for the status of the bobcat, or any other predatory furbearer. In 1975, the bobcat was

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classified as a predator in most states and protected by closed seasons in only a few. However, world demand for bobcat pelts increased in the mid-1970s due to the adoption of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora), whereby pelts of cats listed in Appendix I became legally unobtainable for the commercial fur trade.

The average annual reported harvest of bobcats in the United States from 1967-1973 was about 10,200 (range: 9,419-14,989). By the 1975-1976 season, the harvest of bobcats had increased to 35,937 per year, and peaked at 86,168 in 1979-1980 (Novak et al. 1987). A simultaneous increase in the value of bobcat pelts resulted, and a myriad of voices raised concern about potential overexploitation and threats to the welfare of bobcats.

The bobcat was listed in Appendix II of CITES in 1975. This action forced member countries to demonstrate that continued international trade would not threaten the survival of the bobcat before permitting export of this species or its products to other member countries. Consequently, state management programs were subjected to federal review, and resource management agencies were challenged to prove that harvests were not detrimental to bobcat populations (Rolley 1987).

During the same period, more individuals and organizations than previously began to express opposition to any form of animal exploitation. Segments of the public began to perceive some furbearers as "charismatic fauna" to be protected at all costs rather than as predators sometimes causing economic damage, or as a renewable wildlife resource. Resource managers, as well as the public, began to express concern over impacts of habitat alteration, or outright loss on wildlife populations. It is in this framework, spanning 3 decades, that we review the status and management of bobcat populations in the conterminous United States.

Methods

Deems and Pursley (1978) conducted a survey in 1976 to obtain information on the status of North American furbearers as a response to a growing controversy over trapping of wild animals. Towell (1979) reviewed available literature and contacted many sources to prepare a summary of published information about bobcats and their management. We used these surveys to begin our review. Just over a decade later, the status of the bobcat was revisited in a series of presentations at the Seventh Midwest and Third Southeast Furbearer Workshop (Kulowiec 1990). Finally, we surveyed wildlife biologists in nat-

ural resource agencies in the 48 contiguous states by mail to determine the status of bobcat populations and their management in 1996.

Temporal population trends

Fur harvest data

Notwithstanding the shortcomings of using harvest data to infer population size or trends, such data still provide a useful frame of reference. From 1955 through the 1966-1967 season, the number of bobcats harvested annually in the United States averaged 10,480; the highest reported harvest was 14,989, occurring in the final season of this 12-year span (Novak et al. 1987).

Additional harvest records compiled by Novak et al. (1987) reveal about a 3-fold increase to an average of 31,945 pelts per year in the 1973-1974 to 1975-1976 seasons. As the value of bobcat pelts increased, so did the harvest. An average of 77,460 pelts was reported over the next 8 seasons, from 1976-1977 to 1983-1984 (Novak et al. 1987). Combined trapping and hunting harvest reported for the 1995-1996 season in our survey was 34,420, a number comparable to the reported 35,937 bobcats taken 20 years earlier in the 1975-1976 season (Novak et al. 1987).

We would not suggest that the reported harvest directly reflects population trend. However, the harvest data do imply it was unlikely that bobcat population levels in the 1950s and 1960s were reduced by exploitation. Instead, it is reasonable to assume that populations were at least stable, if not increasing, from the 1950s to the early 1970s. At a minimum, bobcats were abundant enough to withstand the increased levels of exploitation from the mid-1970s through the mid-1980s and sustain a 1995-1996 reported harvest comparable to that reported 20 years earlier.

"Expert" opinion

According to Young (1958) there were records of bobcats from 47 states and the District of Columbia (Delaware lacked records). He further noted (1958:13) "...that for the past several years there has been a tremendous increase in the bobcat population throughout most of its range." Although unsubstantiated by data, Young's "expert opinion" suggests that bobcats were widely distributed and certainly not scarce in the late 1950s. This opinion was supported by Towell's (1979) analyses of historical trends in the western United States, indicating the number of bobcats increased dramatically in the early 1950s to a high level in the mid-1960s. He then noted populations (in the west) began a decline that continued until the time of his 1979 report. The increase was pre-

sumed a response to declining numbers of coyote (*Canis latrans*) throughout the west, while the decline reportedly coincided with increasing numbers of coyotes (Nunley 1978). Trapper harvest was discounted as a factor in the general decline in numbers of bobcats because the decline began before the higher levels of exploitation associated with the increased demand for bobcat pelts (Towell 1979).

The range map (Fig. 1) produced by Deems and Pursley (1978) reveals a distribution not unlike that reported by Young (1958). Delaware was the only state that reported bobcats absent, but they were not present in large portions of some midwestern states (Fig. 1). At the time of Deems and Pursley's survey, bobcats were protected by continuous closed seasons in 12 of the conterminous United States. Towell's (1979) survey in the same time period stated that 16 of 35 states (45.7%) reported bobcat populations to be stable or increasing, and 10 (28.6%) reported populations as declining or being locally overharvested.

The level of bobcat harvest prior to the 1976 season (Novak et al. 1987) would not appear to be high enough to affect bobcat populations over the continental distribution. However, was the increased exploitation after 1976 at a level high enough to adversely affect bobcat populations as some segments of the public and scientific community feared? The

opinions expressed in presentations at a 1989 furbearer workshop (Kulowiec 1990) would suggest not. Seven of 13 southeastern states reported stable populations from the mid-1970s, 2 states reported increases throughout the period, 1 state reported increase later in the period, 2 states reported stable populations in some regions but increasing in others, and 1 state reported an initial decline in 1 region followed by stability beginning in the early 1980s (Hon 1990). In the 11 states of the Northeast region, bobcats were reported absent in Delaware and Rhode Island, rare in New Jersey, and uncommon in Connecticut, Maryland, and Pennsylvania. In Maine, Massachusetts, New Hampshire, New York, and Vermont, bobcats were considered common and were trapped and hunted on a limited basis (Distefano 1990). However, Distefano noted the ancestral range seemed restricted to the remote mountainous areas because of intensive habitat degradation elsewhere in the region. Bobcat populations were considered to be stable to improved in 5 western Great Lakes states (Berg 1990), and secure in 6 northwestern (Stiver 1990) and 5 southwestern states (Pfeelps 1990).

The trend perceived by respondents to our 1996 survey is even more positive. Delaware was the only state that reported the bobcat absent, 22 states reported populations stable, and 20 states reported increasing populations. Notably, no state reported an overall decline. In the Midwest, where the 1978 range map (Fig. 1) suggested that bobcats did not reside in major portions of 6 states (Illinois, Indiana, Iowa, Michigan, Missouri, and Ohio), the bobcat appeared to be increasing in numbers and perhaps distribution. The increase was especially evident in Illinois, where bobcats were reported in more counties than prior to 1982, and number of reported sightings had increased over the same time span (Woolf 1996).

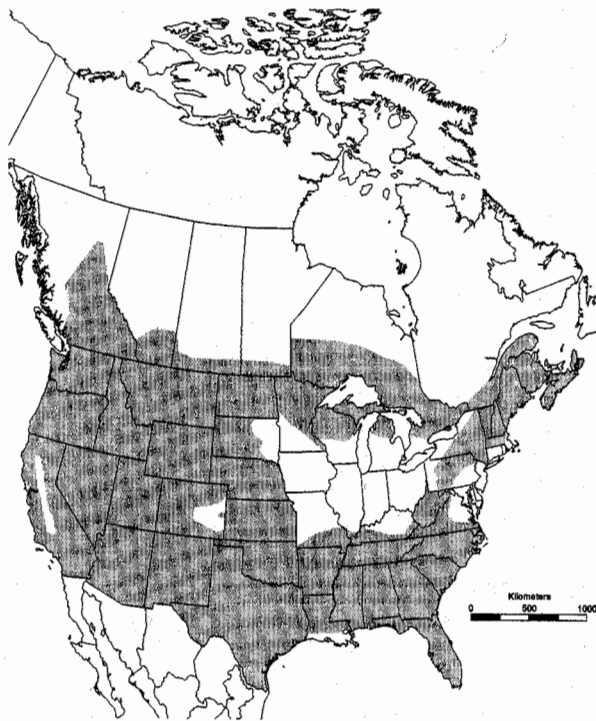


Fig. 1. The range of the bobcat in North America in 1977 (modified from Deems and Pursley [1978:139]).

The scope and outcome of management efforts

According to McCord and Cardoza (1982), most states eliminated bounties in the 1960s and 1970s, marking a trend to afford the bobcat some degree of protection. Our survey revealed that in all but 1 of 37 states where the bobcat is managed as either a furbearer or a game animal and trapping and hunting are permitted, some combination of season length, bag limits, quotas, or restrictions on method of take is used to control the harvest; only Texas allows harvest, but does not protect the bobcat by either a season or bag limit. Although harvest is not the only fac-

tor that may adversely affect bobcats, it is the element that wildlife managers can readily manipulate. Rolley (1987) noted that furbearer managers lack the information base and tools to manage bobcat populations to achieve either a maximum sustained yield or an optimum yield. However, Rolley (1987) further added the prevailing management strategy (i.e., monitoring population levels by the use ≥ 1 indices) would likely offer long-term protection for the species. The prevailing management strategy and tools reported to us in 1996 differ little from the previous 2 decades. About 1/3 of the states that allow harvest require a special permit (8 states), or impose a statewide harvest quota (4 states). When biologists were asked to list their 3 most important management concerns, 65.9% of the 88 listed (some respondents had none, or < 3) were related to harvest or population management. Both categories reflected the biologists' recognition of the need for reliable tools to determine population status and trends with the goal of regulating harvest. Identified research needs mirrored management concerns; 62.7% of the biologists wanted more reliable survey methods and better information about population distribution, abundance, and demographics.

The scope of management has changed little over the past 3 decades; species protection by season closure or regulation of harvest predominates. Bobcat managers based their recommendations on "expert opinion," supported by a variety of surveys and indices (surveys of trappers and hunters, catch per trapper or hunter, and employee [e.g., conservation officer, district wildlife manager] opinion). Thirteen states reported using population models and life-table analyses to develop management recommendations. If any new component has been added to the management model, it would be the area of human dimensions. There is growing recognition among furbearer managers that humane harvest techniques and effective communication are essential to maintain public acceptance of harvest management goals and methods. However, only 17% of the expressed management concerns included topics categorized as human dimensions. We suggest that closer attention should be paid to this topic.

Although still lacking the sophistication and precision that many biologists would like and some segments of the public demand, the outcome of agency management efforts has been positive. At the range of exploitation that bobcats experienced over the last 3 decades, all evidence indicates that populations have done well. Distribution is similar to that at the beginning of the 3-decade span of interest, and populations are stable or increasing in most cases. Clearly, at the

level of exploitation bobcats currently face, existing management strategies are more than adequate to afford the species protection from overexploitation, with the possible exception of a few localized cases.

Anthropogenic influences — a Midwest example

Temporal changes in the bobcat's status in the Midwest, historically and in recent times, provide an opportunity to assess the impacts of habitat loss and exploitation on populations. Young's (1958) range map, Cowan's (1971) status assessment, and Deems and Pursley's (1978) map (Fig. 1) suggested few bobcats remained in a large portion of the Midwest; in some areas bobcats appeared absent. A survey of the bobcat's status (Rhea 1982) substantiated this pattern in Illinois about the same time. This Midwestern trend is not surprising given the changes in land use throughout the 13 midwestern states (Hamilton and Fox 1987).

Illinois serves as illustration. The area that is now Illinois was estimated to be 38% forested in presettlement times, but clearing for agriculture, mainly between 1820 and 1925, left only 8-9% of the state forested (Iverson et al. 1989). Prairies and wetlands experienced even greater losses in Illinois and throughout the Midwest (Hamilton and Fox 1987, Ill. Dep. of Energy and Nat. Resour. 1994). Although bobcats are adaptable, the conversion of forests, prairies, and wetlands to agricultural, industrial, and urban uses represent changes in land use detrimental to bobcats. Later, the changes associated with the more intensive, "fence row-to-fence row" era of agriculture were linked to population declines of bobcats in the Midwest (Erickson et al. 1981).

Rhea's (1982) survey in Illinois (and a review of status in adjacent states) revealed a pattern of distribution and abundance consistent with the described changes in land use. Her compilation of historical records from 1809 to 1978 listed bobcats in 73 of 102 Illinois counties. The bobcat in Illinois was first protected by state law on 1 July 1972 by the Wildlife Code of 1971 (P.A. 76-1855, Ill. Rev. Stat. 61, § 2.31). From 1979 to 1982 only 89 bobcats were reported from 52 (of 102) counties (Rhea 1982); so nearly a decade of protection did not result in an obvious increase in reported numbers and distribution. However, by 1996 records of bobcats from 92 Illinois counties and surveys documented increasing numbers and wider distribution of bobcats (Woolf 1996).

What influences could have produced the observed pattern of distribution and abundance of bobcats in Illinois? Are these influences prevalent throughout

the Midwest? Historical records and literature cited by Rhea (1982) suggested that disappearance of bobcats coincided with human settlement, and bobcats were scarce soon after the turn of the century. Brown and Yeager (1943) thought that habitat loss, sport hunting, and predator control led to a rapid decline of bobcats in Illinois after 1910. While exploitation likely contributed, historical records indicate that loss of habitat was a paramount factor. For example, Mohr (1943) noted that although bobcats were scarce or absent elsewhere in the state, hunters often reported bobcats in southern Illinois where forest habitat dominated the landscape.

Illinois now has more forest cover (1.72 million ha) than remained at the lowest level after clearing for agricultural use abated in 1925 (1.22 million ha), and forest cover increased by 10% from 1962 to 1985 (Ill. Dep. of Energy and Nat. Resour. 1994). However, while about 31% of presettlement forest area remains, only about 10% (371,414 ha) of natural wetlands and <1/100 of 1% of high-quality native prairie remains. Overall, only about 11% of land in Illinois remains in its original vegetation type (Ill. Dep. of Energy and Nat. Resour. 1994). Although the amount of forest cover is increasing, with a growing population and expanding exurban development, can habitat improvement be cited as responsible for the apparent improved status of the bobcat in Illinois?

If habitat change seems an improbable link to increasing numbers of bobcats in Illinois and elsewhere in the Midwest, what other factors could be important? Competition and prey availability have been suggested as explanations for both increases and declines of bobcat populations. We believe that data from Illinois discount both of these causes from consideration in our state. A variety of monitoring techniques and indices of population trend employed by the Illinois Department of Natural Resources staff (Ill. Div. of Wildl. Resour., unpubl. data) provide evidence that cottontail rabbit (*Sylvilagus floridanus*) populations have declined since the early 1970s, and coyote populations have dramatically increased during the same period. Thus, evidence is strong that neither principal prey nor predator population trends can explain the increasing abundance of Illinois bobcats.

Previously, we proposed that level of exploitation after 1976 in response to high fur prices did not affect populations over their continental distribution. Bobcats were not scarce, rather they were relatively abundant with an adequate population base to withstand exploitation. However, in Illinois and other portions of the Midwest bobcat were scarce, if not absent (Fig. 1). In this context, we believe that exploitation (and concurrent demographic changes)

may have influenced bobcat populations more than habitat change, prey abundance, or competition over the past 2 decades.

We hypothesize that bobcats were vulnerable to trapping, and that accidental or illegal captures could have been frequent enough to limit growth of low-density populations. The dramatic changes in numbers of licensed trappers in Illinois supports our premise. From 1976 to 1980, an average of 19,271 resident trapping licenses were sold each year. In 1981 there were 18,218 licensed trappers, and the number steadily declined to 3,013 by 1990. In 1994 there were 3,267 licensed trappers in Illinois. Our hypothesis that bobcats were readily trapped is based on our research in Illinois and on reported and anecdotal stories of accidental captures.

The second part of our hypothesis addresses the influence of exploitation (or any mortality factor) on population growth. We hypothesize that a population in the lower limb of the growth curve is vulnerable to continued suppression by mortality factors that are less important at higher densities.

Our explanation for bobcat declines emphasizes the exploitation of a small population; if this explanation is correct, protection through closed seasons alone did not protect remnant populations in Illinois and allow rapid recovery. Two additional factors may have been operative: (1) a simple lag effect—the population could only increase slowly at first, until a threshold was reached that would allow the rate of increase to exert a strong influence; and (2) reduced mortality from accidental capture after the early 1980s allowed the rate of increase to operate on a growing population base. The cumulative net effect was a dramatic increase in bobcat sightings over the past 5 years.

We believe this hypothesis is plausible and explains the population trend in Illinois, but perhaps not everywhere in the Midwest, where bobcats now appear to be more abundant than they have been in decades. However, we suggest the common lesson is that protection of small populations by closed seasons alone may not be adequate to prevent declines. Losses will still occur; population recovery and rate of recovery will be subject to other influences, many stochastic, that managers cannot control. Anthropogenic influences should be identified, monitored, and, whenever possible, carefully managed to avoid putting healthy populations at risk and to recover those adversely affected by anthropogenic influences.

Current status and outlook

Today, the bobcat is secure in the conterminous United States; it is reported absent only in Delaware.

In 1996, 37 states allowed the harvest of bobcats. The species is protected by continuous closed seasons in 10 states (Connecticut, Illinois, Indiana, Iowa, Maryland, New Hampshire, New Jersey, Ohio, Pennsylvania, and Rhode Island) compared to 12 in 1977. The bobcat is classified as state endangered in Indiana, Iowa, New Jersey, and Ohio; Illinois classifies the bobcat as threatened at the state level. Also, the bobcat continues to be listed in Appendix II of CITES, thus requiring continued determination of no-detriment from harvest and exportation of the species or its products.

Many factors affect bobcat populations, but anthropogenic influences, especially rate of exploitation and land use, have the greatest impact. Diminished trapping pressure over the past decade was mentioned as a positive factor by 16 of the 20 biologists from states reporting an increasing population trend. Biologists from 6 states attributed the increasing trend to better habitat (better was not defined). Most respondents from the 22 states where populations were considered stable attributed lack of increases to limited habitat, or interspecific competition with canids, especially coyotes.

The ability of bobcats to withstand dramatic shifts in land use and a 10-year period of relatively high exploitation, from the mid-1970s to the mid-1980s, may speak to the resiliency of the species or to the effectiveness of our management (or both). If the expert opinion of wildlife biologists who responded to our 1996 survey is correct, bobcat populations are now doing as well, if not better, than they have over the past 30 years. We do not think the exploitation of bobcats will dramatically increase, certainly not to a level exceeding that experienced during the mid-1970s through the mid-1980s. Currently, bobcats do not face any major threats to their well-being over their broad range, and management strategies, although less precise than we might like, are adequate to protect bobcats as we enter the next millennium. Cowan (1971) described the bobcat as adaptable and generally abundant, and that opinion is valid today. The bobcat is indeed an adaptable, successful, and generally abundant species. Even in the central Mississippi basin, where they have been relatively scarce for decades, bobcats seem to be on the increase. We are confident that this secretive predator can coexist with humans, given a modest degree of protection, and the species seems secure as a valuable component of our biota.

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Literature cited

- BERG, B. 1990. Bobcat status and management in the western Great Lakes states and Central Provinces. Page 36 *in* T. G. Kulowiec, editor. Proceedings of the Seventh Midwest and Third Southeast furbearer workshop, 27 February-2 March 1989, Jefferson City, Missouri, Missouri Department of Conservation.
- BROWN, L. G., AND L. E. YEAGER. 1943. Survey of the Illinois fur resource. *Illinois Natural History Survey Bulletin* 22:434-504.
- COWAN, I. M. 1971. Summary of the symposium on the native cats of North America. Pages 2-8 *in* S. E. Jorgensen and L. D. Mech, editors. Proceedings of a symposium on the native cats of North America, their status and management, 7-10 March 1971, Portland, Oregon, Thirty-sixth North American Wildlife and Natural Resources Conference.
- DEEMS, E. F., JR., AND D. PURSLEY, editors. 1978. North American furbearers, their management, research and harvest status in 1976. The International Association of Fish and Wildlife Agencies, Washington, D.C.
- DISTEFANO, J. J. 1990. Bobcat status and management in the Northeast. Page 35 *in* T. G. Kulowiec, editor. Proceedings of the Seventh Midwest and Third Southeast furbearer workshop, 27 February-2 March 1989, Jefferson City, Missouri, Missouri Department of Conservation.
- ERICKSON, D. W., D. A. HAMILTON, AND F. W. SAMPSON. 1981. The status of the bobcat in Missouri. *Transactions of the Missouri Academy of Science* 15:49-59.
- HAMILTON, D. A., AND L. B. FOX. 1987. Wild furbearer management in the midwestern United States. Pages 1100-1115 *in* M. Novak, J. A. Baker, M. E. Obbard, and B. Malloch, editors. Wild furbearer conservation and management in North America. Ontario Ministry of Natural Resources, Toronto, Canada.
- HON, T. 1990. Bobcat status and management in the Southeast. Page 23 *in* T. G. Kulowiec, editor. Proceedings of the Seventh Midwest and Third Southeast furbearer workshop, 27 February-2 March 1989, Jefferson City, Missouri, Missouri Department of Conservation.
- ILLINOIS DEPARTMENT OF ENERGY AND NATURAL RESOURCES. 1994. The changing Illinois environment: critical trends. Volume 3: Ecological resources. Illinois Department of Energy and Natural Resources, Report Number ELENR/RE-EA-94/05.
- IVERSON, L. R., R. L. OLIVER, D. P. TUCKER, P. G. RISSER, C. D. BURNETT, AND R. G. RAYBURN. 1989. The forest resources of Illinois: an atlas and analysis of spatial and temporal trends. Illinois Natural History Survey, Special Publication 11.
- KULOWIEC, T. G., editor. 1990. Proceedings of the Seventh Midwest and Third Southeast furbearer workshop, 27 February-2 March 1989, Jefferson City, Missouri, Missouri Department of Conservation.
- LEOPOLD, A. 1933. Game management. Charles Scribner's Sons, New York, New York.
- MCCORD, C. M., AND J. E. CARDOZA. 1982. Bobcat and lynx. Pages 728-766 *in* J. A. Chapman and G. A. Feldhamer, editors. Wild mammals of North America. The Johns Hopkins University Press, Baltimore, Maryland.
- MOHR, C. O. 1943. Illinois furbearer distribution and income. *Illinois Natural History Survey Bulletin* 22:505-537.

- NOVAK, M., J. A. BAKER, M. E. OBBARD, AND B. MALLOCH. 1987. Furbearer harvests in North America, 1600-1984. Ontario Ministry of Natural Resources, Toronto, Canada.
- NUNLEY, G. L. 1978. Present and historical bobcat population trends in New Mexico and the west. Proceedings of the Vertebrate Pest Conference 8:177-184.
- HELPS, J. 1990. The status of bobcat management in the Southwest. Pages 25-31 *in* T. G. Kulowiec, editor. Proceedings of the Seventh Midwest and Third Southeast furbearer workshop, 27 February-2 March 1989, Jefferson City, Missouri, Missouri Department of Conservation.
- RHEA, T. 1982. The bobcat in Illinois: records and habitat. Thesis, Southern Illinois University, Carbondale.
- ROLLEY, R. E. 1987. Bobcat. Pages 672-681 *in* M. Novak, J. A. Baker, M. E. Obbard, and B. Malloch, editors. Wild furbearer conservation and management in North America. Ontario Ministry of Natural Resources, Toronto, Canada.
- STIVER, S. J. 1990. Bobcat status and management in the North-western states. Pages 32-33 *in* T. G. Kulowiec, editor. Proceedings of the Seventh Midwest and Third Southeast furbearer workshop, 27 February-2 March 1989, Jefferson City, Missouri, Missouri Department of Conservation.
- TOWELL, D. E. 1979. Bobcat populations, a review of available literature. Information Report Series, Wildlife Number 79-2. Oregon Department of Fish and Wildlife, Research and Development Section, Portland.
- WOLFE, M. L., AND J. A. CHAPMAN. 1987. Principles of furbearer management. Pages 101-112 *in* M. Novak, J. A. Baker, M. E. Obbard, and B. Malloch, editors. Wild furbearer conservation and management in North America. Ontario Ministry of Natural Resources, Toronto, Canada.
- WOOLF, A. 1996. Status of the bobcat in Illinois. Illinois Department of Natural Resources, Annual Performance Report, Federal Aid Project W-126-R-1.
- YOUNG, S. P. 1958. The bobcat of North America. The Stackpole Company, Harrisburg, Pennsylvania.

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