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POPULATION TRENDS IN FURBEARERS IN NEBRASKA

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ABSTRACT

Population trends are documented from 1941 to 1997 for the 12 species of furbearing mammals harvested in Nebraska. Populations of red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), beaver (*Castor canadensis*), coyote (*Canis lupus*), and bobcat (*Lynx rufus*) have increased during this period. Populations of muskrat (*Ondatra zibethicus*), mink (*Mustela vison*), eastern spotted skunk (*Spilogale putorius*), long-tailed weasel (*Mustela frenata*), and striped skunk (*Mephitis mephitis*) have decreased. Populations of mink, eastern spotted skunk, long-tailed weasel, and striped skunk may have decreased in Nebraska in part in response to the introduction and widespread use of pesticides. Populations of badger (*Taxidea taxus*) and Virginia opossum (*Didelphis virginiana*) have remained stable. Numbers of beaver and badger harvested are strongly driven by pelt prices.

† † †

Furbearing mammals played an important role in the opening of the American frontier as traders and trappers moved west in search of furs. Not only were the furbearers needed for the benefits of their fine furs, but also for the valuable income they brought to the economy. The economic importance of furbearers remains today, as harvest value for Nebraska in 1987 was $4,270,903 (McCullough and Stutheit 1990) and the harvest value for United States in 1982-83 was $203,095,843 (Schieff and Baker 1987).

As the American frontier was explored and settled, natural habitats changed. Human activities were converting the land to agricultural uses, damming and rerouting waterways, eliminating top predators and grazers, building cities, introducing chemicals, and controlling fire. Settlement altered both the land and its carrying capacity. These alterations profoundly affect all species. While some species have benefitted from human activities, other species have been seriously diminished. Species benefitting from human activity tend to be generalists in both diet and habitat requirements.

With increase in human population in the country, the need for managing wildlife became imperative. In 1933 Aldo Leopold initiated a plan for *Game Management*. Management of species is accomplished by direct manipulation by regulating harvest by number, season, and technique, or by indirect manipulation by modifying habitats. State agencies are traditionally responsible for the management of wildife, with the exception of federally listed endangered and threatened species, migratory species, and marine species. The agencies first need to collect data on population dynamics and habitat requirements to know how changes affect these populations.

Nebraska has 16 species of furbearing mammals, but only 12 presently are regulated and managed. Although the striped skunk may be trapped and hunted year-around, the spotted skunk is fully protected year-around. The majority of the 12 furbearers managed in Nebraska are protected by regulating trapping seasons. Mink, raccoon, opossum, long-tailed weasel, red fox, and badger currently have a hunt/trap season that extends from November 1 until February 29. The season for muskrat and beaver is November 1 until March 31, and for bobcat is December 1 through January 31. The coyote is an unprotected nongame species for which no fur harvest permit is required of residents. Of the four furbearers not managed in Nebraska, Canada lynx (*Lynx canadensis*), river otter (*Lutra*

Table 1. The *R*-values resulting from regressing harvest per year of each furbearer against time in years, price for pelts in dollars, and total licenses sold per year.

Scientific/common names	Time in years	Price for pelts in dollars	Total licenses sold per year
Didelphis virginiana—Virginia opossum	+0.076	+0.195	+0.754
Castor canadensis—beaver	+0.400	+0.453	+0.212
Ondatra zibethicus—muskrat	-0.449	+0.023	+0.047
Procyon lotor—raccoon	+0.570	+0.278	+0.368
Canis latrans—coyote	+0.360	+0.187	+0.284
Vulpes vulpes—red fox	+0.640	+0.115	+0.347
Mustela frenata—long-tailed weasel	-0.340	-0.004	+0.005
Mustela vison—mink	-0.395	+0.032	+0.015
Taxidea taxus—badger	+0.164	+0.670	+0.747
Mephitis mephitis—striped skunk	-0.202	+0.009	+0.069
Spilogale putorius—eastern spotted skunk	-0.388	-0.542	+0.040
Lynx rufus—bobcat	+0.237	+0.001	+0.107

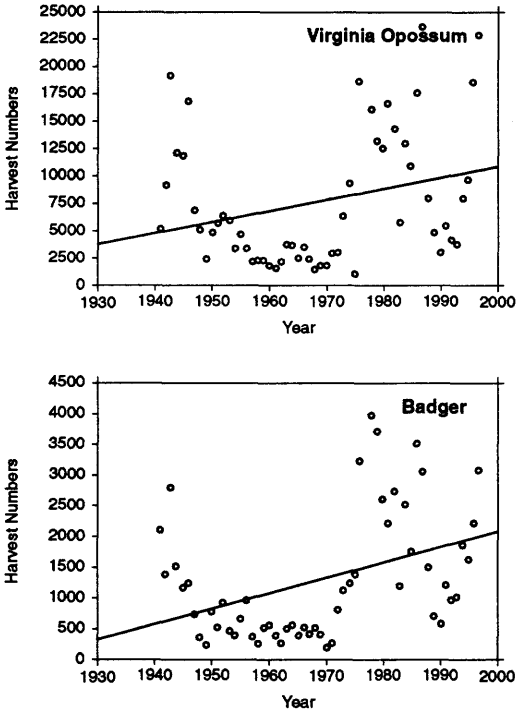


Figure 1. Regression of harvest numbers per year of stable-furbearer populations.

canadensis), and marten (*Martes americanus*) are rare and possibly extripated, and are protected year-around. The other non-managed furbearer, gray fox (*Urocyon cinereoargenteus*), has a season corresponding to red fox and badger, November 1 until February 29, but it rarely is seen in the state today.

A closer look at the population trends between 1941 and 1997 for the 12 furbearers regulated by the State of Nebraska should give management decisions a historical perspective, may identify some species needing further protection, and recognize those with increasing populations in which harvest could be increased. It is difficult to find data that give any insight into what has occurred with the populations of furbearing species of mammals. However, we were able to obtain trapping harvest records from Nebraska Game and Parks Commission (NGPC) that dates back to 1941 for the 12 furbearers. Although there are some problems with these data, they are the only major data set available for populations of these mammals in Nebraska. Some problems we observed in these data were different lengths of trapping seasons, missing data for a few years, and not all harvests reported, and harvest numbers may be affected by the price of furs (measure of motivation for trapping efforts) or number of trappers (measure of trapping effort). Another problem is that the numbers of some species were composed of hunting and trapping harvests, whereas other species contained only trapping harvests. Even in view of these difficulties, we believe that our analyses of these data have

given some significant insights in the population trends in these economically and ecologically valuable species of mammals.

METHODS AND MATERIALS

Nebraska fur-harvest history from 1941 to 1997 was obtained from Nebraska Game and Parks Commission (NGPC). The historical data contained number of trapping licenses issued, number of active trappers, prices paid for pelts, and harvest of 12 furbearers for each year. The furbearers were Virginia opossum (*Didelphis virginiana*), beaver (*Castor canadensis*), muskrat (*Ondatra zibethicus*), raccoon (*Procyon lotor*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), long-tailed weasel (*Mustela frenata*), mink (*Mustela vison*), badger (*Taxidea taxus*), striped skunk (*Mephitis mephitis*), eastern spotted skunk (*Spilogale putorius*), and bobcat (*Lynx rufus*). There was no information available for 1977, except for the number of trappers.

The fur-harvest history was analyzed using regression analysis (StatView) and bivariate scattergram. We regressed harvest per year of each furbearer against time in years, price for pelts in dollars, and total licenses sold per year. An R-value was generated for each relationship. An R-value of one is the strongest relationship, whereas an R-value of zero indicates the weakest relationship. A positive or negative relationship was revealed by inspecting the scattergram.

Harvest numbers were inspected on approximately ten-year intervals by counties to obtain more data for the furbearers that had high R-values for the harvest/time relationship. The information was obtained from NGPC Pittman-Robertson Work Reports (W-15-R).

RESULTS AND DISCUSSION

The R-values resulting from regressing harvest per year of each furbearer against time in years, price for pelts in dollars, and total licenses sold per year are presented in Table 1. The analyses of the trapping data for harvest of furbearers over time in Nebraska give insight into overall population trends in these mammalian species. However, fur prices and the amount of trapping effort (as represented by number of licenses sold) may affect insight into population trends of furbearers and for some species these appear to be important factors.

The number of licensed trappers directly affects the harvest of all 12 furbearer species (Table 1), but the effect is quite weak for muskrat, mink, stripped skunk, bobcat, eastern spotted skunk, and long-tailed weasel (R = +0.005 to +0.107). In contrast the number of licensed trappers strongly impacts the harvest of bea-

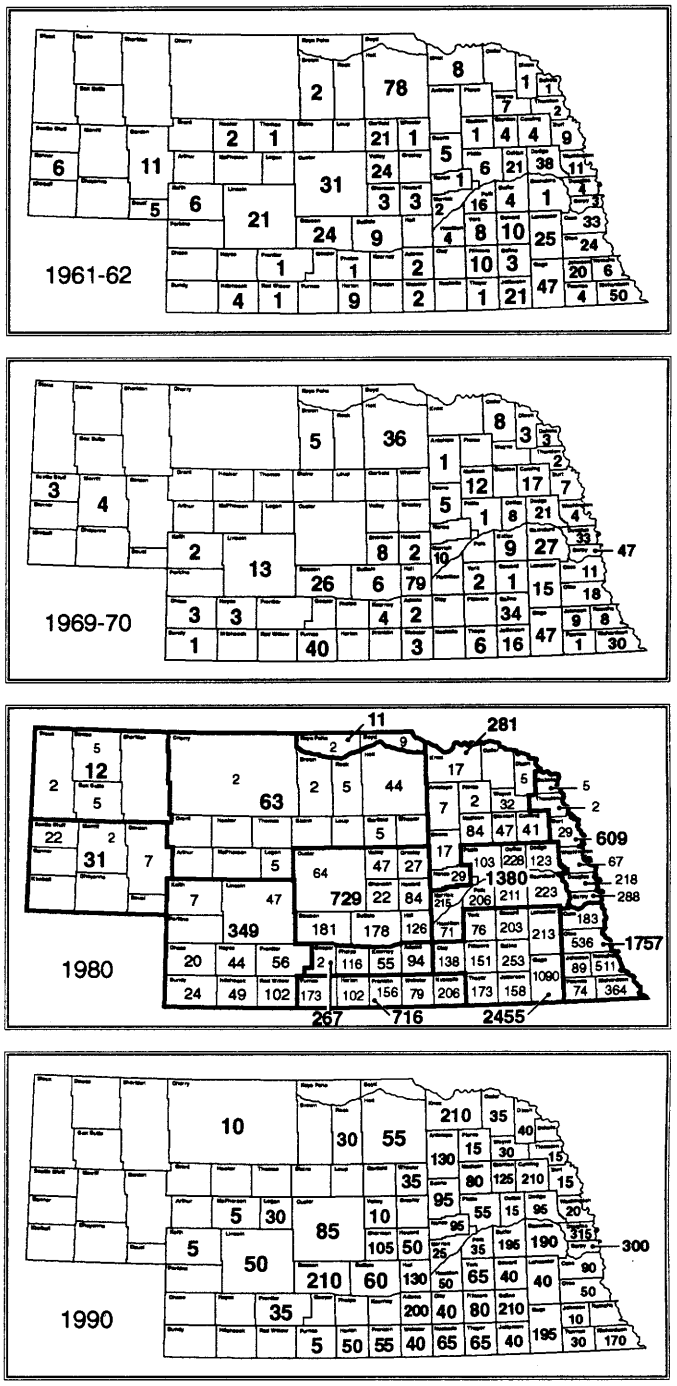
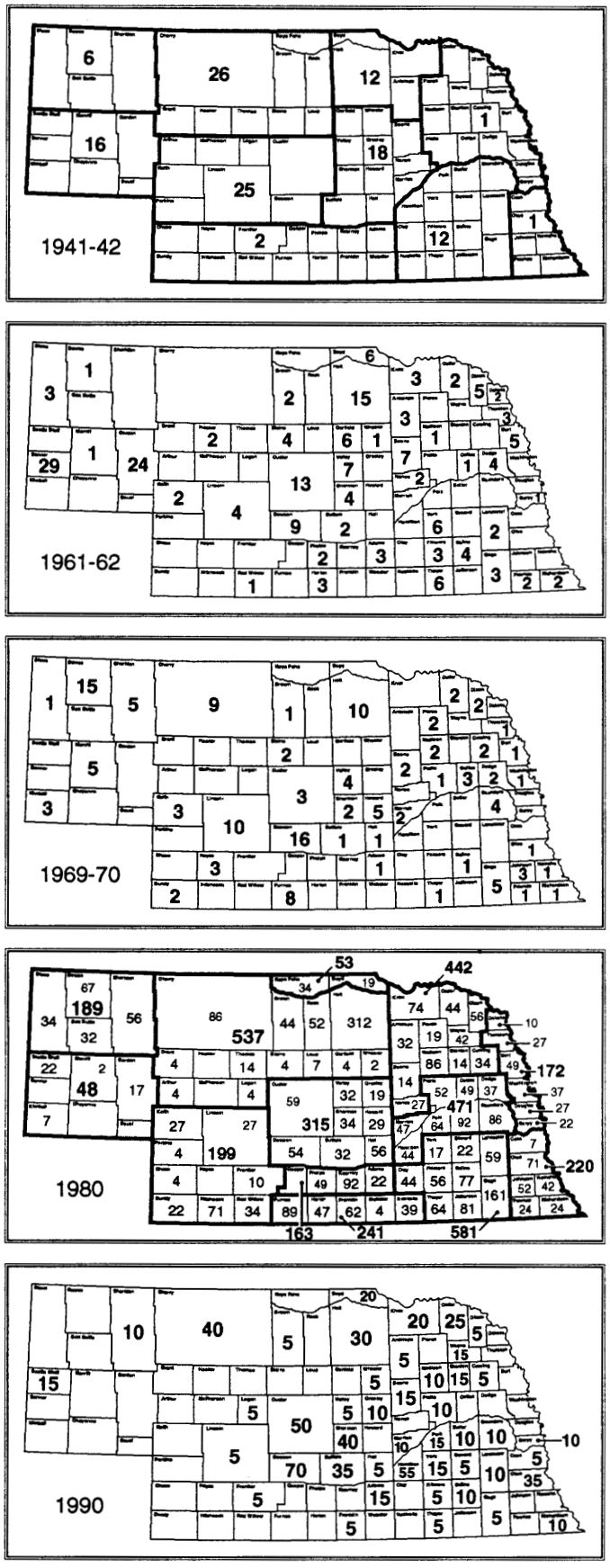


Figure 2. Harvest numbers by county in Nebraska for populations of Virginia opossum.



ver, raccoon, coyote, and red fox (R = +0.212 to +0.368). These species are more desirable for many trappers in Nebraska, thus as the number of trappers increases so does the harvest of these four species. The strong direct relationships of the harvests of Virginia opossum (+0.754) and badger (+0.747) to the trapping effort are more difficult to understand.

Virginia opossum is seldom a target species for trappers, but because it occupies a broad ecological niche, it can be expected in almost any trapping situation. As the number of trappers increases so does the number of traps available to catch non-target species such as opossum. The strong direct relationship of badger fur harvest and number of licensed trappers may be because of the direct relationship the harvest of this species has with the price of furs.

The only furbearers in Nebraska to show a strong relationship between harvest number and fur prices are beaver, badger, and eastern spotted skunk with R-values of +0.453, +0.670, and –0.542, respectively. Beaver and badger require unique types of trapping methods and locations (Schildman et al. 1980) that take time to prepare. These animals also are difficult and time consuming to skin (Schildman et al. 1980) because the hide tightly adheres to the body. Evidently the price of pelts of these two species must reach a certain level before trappers are willing to take the additional time and effort to trap and prepare their hides. We do not understand the relationship of increased price to decreased harvest in the eastern spotted skunk.

In evaluating the impact of time (in years) on harvest numbers discussed below, we consider a population to have increased if the R-value exceeds +0.2 (five species), to have decreased when below –0.2 (five species), and to have remained stable if between +0.2 and –0.2 (two species).

Species with stable populations

Furbearers with stable populations (Fig. 1) since 1941 are Virginia opossum and badger (+0.076 and +0.164, respectively).

The harvest of the Virginia opossum showed the slightest relationship to time of any species studied, but the harvest data indicate the populations of the species have shifted distribution over the time period studied (Fig. 2). In 1941-42, the Virginia opossum was harvested in the eastern one-third and south-central portion of the state (Fig. 2). By 1961-62, its harvest range expanded to include the entire central portion of

Figure 3. Harvest numbers by county in Nebraska for populations of badger.

the state (Fig. 2) and again expanded to include northwestern portions of the state by 1980 (Fig. 2). The expansion of opossum harvest followed the Platte and Niobrara rivers over time, but by 1990, harvest was not abundant on either river system (Fig. 2).

Time was of minimal relevance to harvest of badgers, but as with the previous species the areas of high harvest of badgers has shifted (Fig. 3). Badgers were harvested throughout the state in 1941-42, although most were taken in the central portion of the state (Fig. 3). Harvest peaked in the late 1970s/early 1980s, with the eastern one-third of the state being more heavily harvested than the central (Fig. 3). By 1990, harvest of badgers remained in the eastern two-thirds of the state with a few taken in the western one-third of the state (Fig. 3).

Species with increasing populations

The furbearers whose populations have increased (Fig. 4) in Nebraska since 1941 are red fox, raccoon, beaver, coyote, and bobcat (+0.640, +0.570, +0.400, +0.360, and +0.237, respectively).

Red fox is the most widely distributed carnivore in the world and has benefited from clearing of land for agriculture and extirpation of large predators such as the gray and red wolf (Voight 1987). Other attributes that benefit red fox are its ability to survive in a variety of habitats, its high fecundity, its being a nonspecific predator, and its high dispersal potential. The adaptability of red fox regardless of management practices insures its future success (Voight 1987). Harvest numbers of red foxes contain no, or only a few, gray foxes. Gray fox harvest for the state of Nebraska is minimal; therefore, even if this species were included in some of the counties harvest numbers for red fox, it would not alter our results.

The geographic range of red fox was first noticed moving westward in 1943 while numbers in extreme eastern Nebraska increased (Fitcher 1943). The eastern portion of the harvest area expanded from the furthest southeastern portion of the state to include the northeastern portion of the state as well (Fig. 5). The shift to the west was positioned at the 98th meridian by 1989-90, except for a rare harvest recorded in 1980 in the extreme northwestern corner of the state (Fig. 5).

Increases in numbers of raccoons since the 1940s are attributed to their adaptability and omnivory (Sanderson 1987). In Nebraska, dense raccoon populations expanded from the extreme southeastern corner of the state in 1941-42 to the entire state by 1989-90

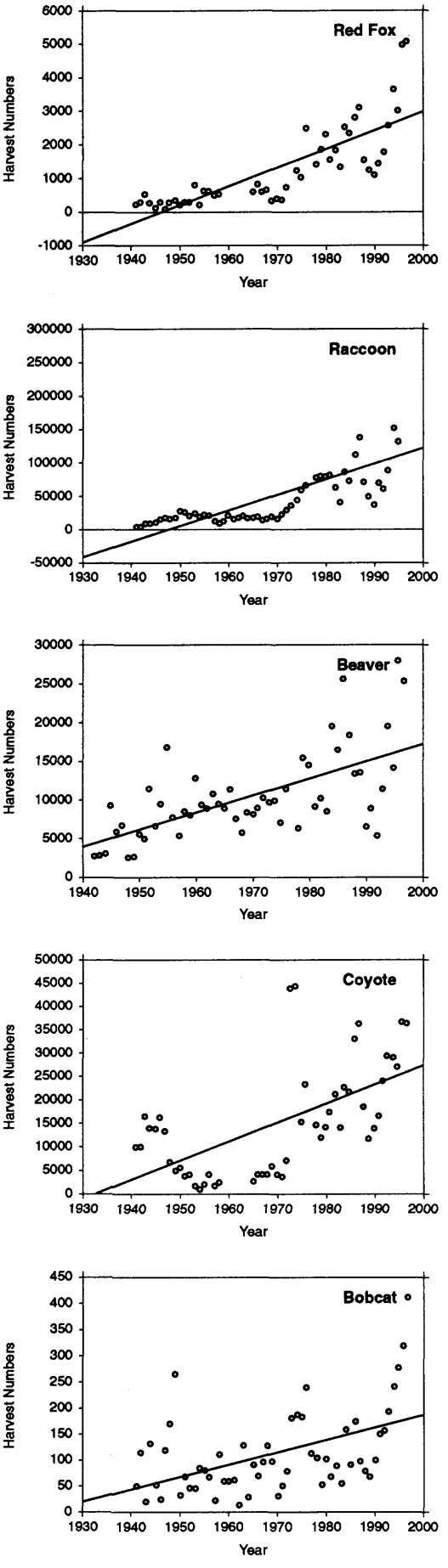
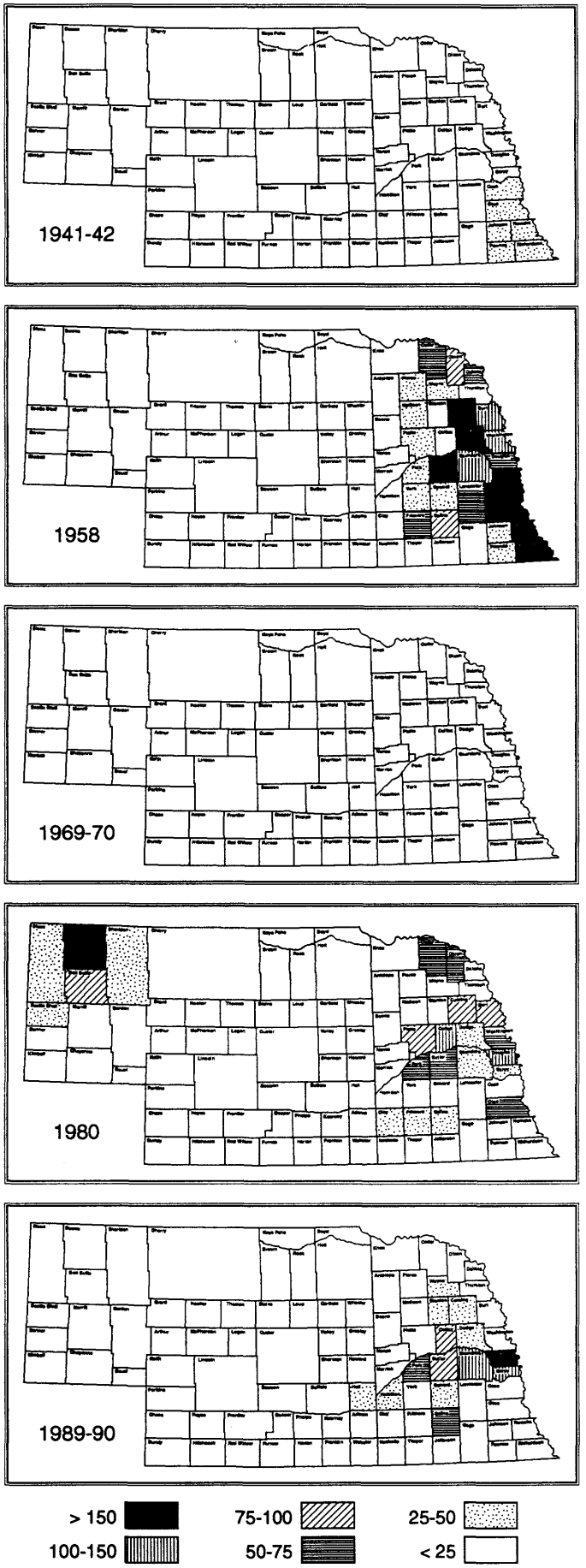


Figure 4. Regression of harvest numbers per year of increasing-furbearer populations.



(Fig. 6). Increasing agricultural uses of land have made such highly desirable food items as corn more widely available. The exact harvest of raccoon is difficult to estimate because regulations only require a permit if the pelt is to be sold. Raccoons, as well as other predators, can be taken any time of the year by landowners. Revenue from harvesting raccoon has made it the most economically important furbearer in the U.S. (Sanderson 1987) and in Nebraska (McCullough and Stutheit 1990).

Beavers were harvested throughout the state in 1944-45 as they are today, but the number of beavers being harvested per year has increased (Fig. 7). The increase is probably the result of the return of population numbers from near extirpation at the beginning of the 20th Century and to increased woodland along streams and rivers in Nebraska. Larger harvest is a result of increase in population of beavers and the increased price for pelts.

Populations of coyotes have increased and expanded despite numerous control methods and increasing urbanization (Voight and Berg 1987). Further, although wolves and coyotes coexisted in the past, the extirpation of the larger wolves also has allowed coyotes to expand populations (Hamilton and Fox 1987). Coyotes occurred in high numbers only in the western two-thirds of the state in 1941-42, but are now common throughout the state (Fig. 8). The exact number of coyotes taken per year is difficult to estimate. Although a bounty is no longer paid for coyotes, Nebraska residents do not need a permit to take them because coyotes are considered a pest species. Many are taken or destroyed as part of predator control program of the Wildlife Services, U.S. Department of Agriculture, as well as by private landowners.

Harvest numbers of bobcats showed a minimal increase over the years, but increased resources may have helped them expand their geographic range in Nebraska. Although a variety of small mammals are taken by the bobcat, white-tailed deer are a significant part of their diet (Rolley 1987). Increased food and decreased predation by large predators have allowed Nebraska's population of deer to greatly expand in recent years.

Species with decreasing populations

Five furbearers harvested in Nebraska have populations that have decreased (Fig. 9) since 1941, including muskrat, mink, eastern spotted skunk, long-tailed weasel, and striped skunk (–0.449, –0.395, –0.388, –0.340, and –0.202, respectively).

Figure 5. Harvest numbers by county in Nebraska for populations of red fox.

The R-value for time versus harvest numbers of muskrats in the period of 1941 to 1997 indicates there is a strong relationship between harvest numbers and time, with the harvest of muskrats decreasing over this time period (Fig. 10). When the harvest is broken down by decades, the population relationships become more obvious with the following R-values: 1941-49, –0.060; 1950-59, –0.666; 1960-69, –0.546; 1970-79, +0.535; 1980-89, –0.544; 1990-97, +0.723. The data indicate fluctuations within the muskrat populations (Sather 1958, Errington 1951, 1963), but timing and causes of fluctuations are not fully understood.

Sather (1958) believed that fluctuating water levels of Valentine National Wildlife Refuge lakes significantly impacted muskrats by providing new habitat as water levels increased, while at the same time the emergent vegetation tended to decrease. Along with rising water levels, Sathers also noted a change in behavior and physiological patterns, which allowed muskrats to maintain a high survival rate while habitat deteriorated. The ability of muskrats to prosper in these conditions was the result of increased tolerance to crowding (Sather 1958). The ability of muskrats to tolerate crowding is described as a cyclic behavior of an animal controlling their density that is not part of the visible environment (Errington 1963). The occurrence of hemorrhagic muskrat disease and tularemia may be associated with overpopulation (Sather 1958).

Our data indicate fluctuations in populations levels of muskrats with decreasing harvest numbers occurring through the 1950s and 1960s and again in the 1980s with increasing harvest numbers in the 1970s and early 1990s (Fig. 10). Natural population fluctuations may not concern management, especially because Sather (1958) believed these fluctuations primarily involved surplus, unharvested muskrats. However, our data do indicate a more troubling long-term overall decline in muskrat populations since the early 1940s. The overall decline in the populations of muskrats in the last 60 years, as our data indicate, is not easy to document because there is have been no long-term studies.

The harvest area for minks has expanded from the north-central portion in 1941-42 to the entire state by 1989-90 (Fig. 11); however, at the same time their harvest numbers decreased (Fig. 9). A significant decline in harvest occurred between 1947 and 1948 (Fig. 9). In 1947, the harvest was 14,181 and in 1948 the harvest was 5,481 (Fig. 9). This decrease is similar to the drop between 1956 and 1957, which was from 10,239

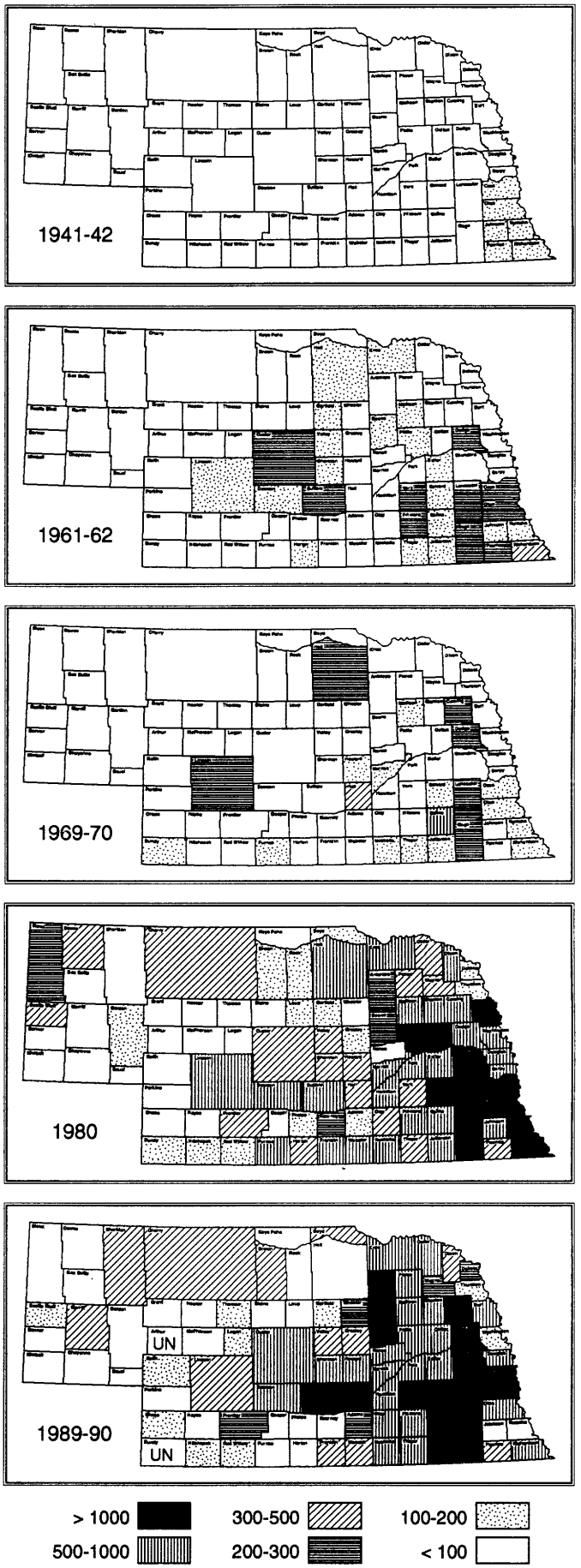


Figure 6. Harvest numbers by county in Nebraska for populations of raccoon.

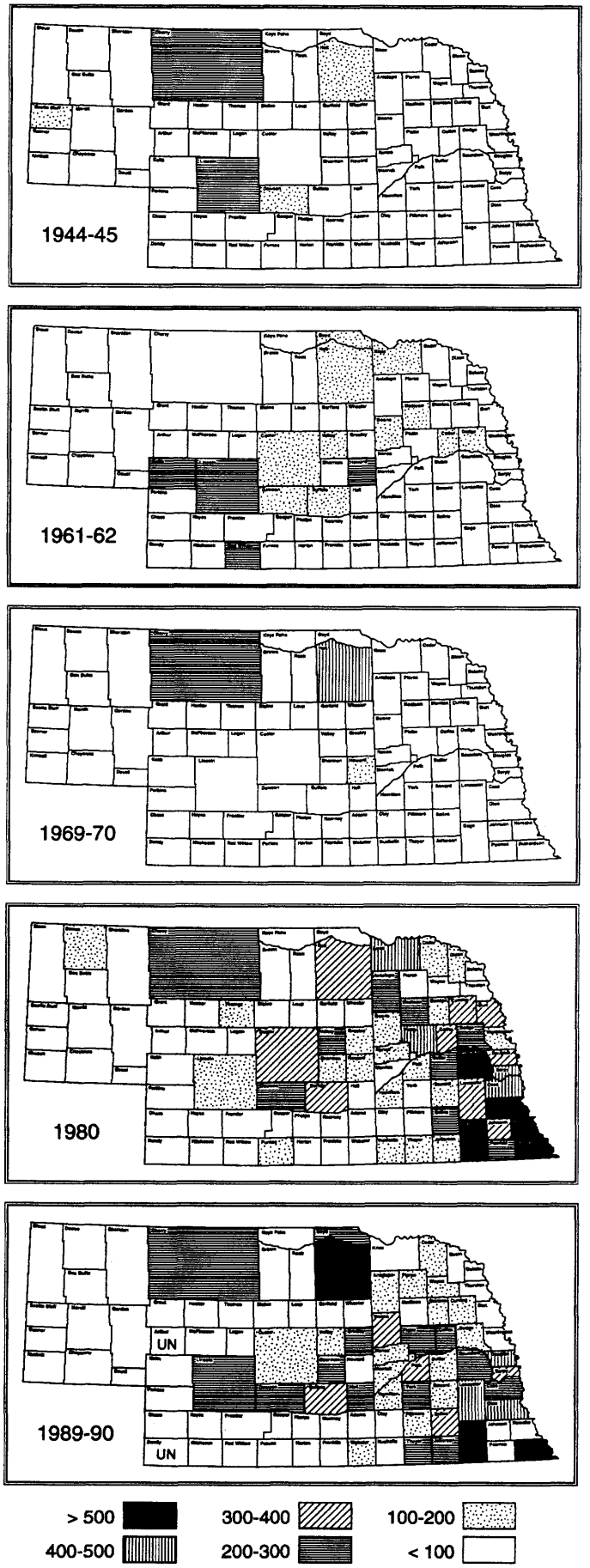


Figure 7. Harvest numbers by county in Nebraska for populations of beaver.

to 6,062, respectively (Fig. 9). The fluctuating populations of muskrats, a primary prey item of mink, could locally contribute to the periodic decrease in numbers of mink. Another possible contributor to the decrease in the harvest of mink is the effect pesticides have on mink populations (Aulerich et al. 1974; Frank et al. 1979; Franson et al. 1974; Platonow and Karstad 1973), which we discuss below.

Populations of eastern spotted skunks in Nebraska decreased significantly in the 1940s and has yet to increase (Figs. 9 and 12). Harvest was 8,000 in 1926-27 (Schildman 1980), increased to 25,570 in 1941, and peaked in 1944, but declined to a minimal harvest today (Fig. 9). A drastic change in the harvest numbers occurred from 1944 to 1946, with harvest decreasing from 35,260 to 20,060 in 1944-1945 with another drop to 11,550 in 1946 (Fig. 9). Since 1969-70, the only individuals taken are along the Platte River, with the last recorded harvest of eastern spotted skunks in 1982 in which 33 individuals were reported.

There is speculation that the drastic decline in the abundance of the eastern spotted skunk is related to agriculture. Schwartz and Schwartz (1981) suggest that the change in agricultural practices in the late 1940s left skunks homeless and pesticides may have left them hungry. Choate et al. (1974) also hypothesized that agricultural practices played a key role in eastern spotted skunk abundance and decline. They theorized that small farms of the early 1900s provided shelter for the skunks. The food supply of skunks increased as commensal mice and rats were attracted to the crops that were raised and stored on farms. Humans also may have enhanced populations of eastern spotted skunks by decreased other predaceous animals, which were competition for the skunks as well as preying on them. Choate et al. (1974) compared the historical record of eastern spotted skunk with human historical record to find that "the species probably was at, or near, peak abundance at the time of the onset of the Great Depression....Years following 1929, many farms were deserted and the land was incorporated into progressively larger agricultural units. The reduction in number of small farms was hastened by the disastrous drought of 1933-40." The availability of shelter and food, which were once plentiful on small farms, declined as these farms became larger. As a result, habitat and resources for the eastern spotted skunk declined.

Hamilton and Fox (1987) concluded that the population explosion in eastern spotted skunks occurred during the early agricultural era of small family farms

for all the same reasons mentioned by Choate et al. (1974). They further mentioned that after peaking in number during the 1930s and 1940s, there was a rapid decline of eastern spotted skunks. Changes in agriculture in the 1940s, specifically with the application of chemicals, may have been responsible for the rapid decline (Hamilton and Fox 1987).

Populations of eastern spotted skunk were considered by Choate et al. (1974) to have returned to the level they were before the increase in density in the early 1930s. In Nebraska, we believe that populations of eastern spotted skunk are even lower than they were before the increases of the late 1920s and early 1930s as the harvest of 8,000 in 1926-27 as compared with 33 in 1982 would indicate.

Harvest of long-tailed weasels also declined drastically in the 1940s (Figs. 9, 13). The numbers harvested varied from 2,433 in 1942, 4,200 in 1943, 1,371 in 1944, 4,628 in 1945, to 1,238 in 1946 (Fig. 9). By 1947, harvest of weasels were at 611 and slowly diminished with a slight increase between 1950-52 (Fig. 9). The harvests for the early 1940s are higher than the 500 individuals taken in 1926-27 (Schildman et al. 1980). More recently, long-tailed weasels are rarely trapped—92 in 1960, 27 in 1970, 40 in 1980, and 5 in 1990 (Figs. 9, 13), with the few individuals being harvested coming from the southeastern corner of the state. Because there has been no research on what may have happened to the long-tailed weasel, we can only speculate that it may be related, as with mink, to susceptibility to environmental contaminants.

Although the *R*-value for harvest versus time for striped skunks is –0.202, which is only slightly below the limit for stable populations, the species is considered to have decreased (Figs. 9, 14). This value is most likely because harvest has been stable after a drastic decline in 1946 (Fig. 9). Harvest declined in 1946 from 22,221 to 6,806 in 1947 (Fig. 9). From that time on, the harvest numbers remained notably well under the 10,000 mark except for a few occurrences in 1950, 1979, 1980, and 1997 (Fig. 9).

Environmental contaminants cause poisoning, reproductive problems, and mortality in mink (Linscombe et al. 1982). These contaminants include mercury and halogenated hydrocarbon compounds such as DDT, PCBs, DDE, and dieldrin. Wobeser et al. (1976) showed that although mercury may not kill mink, they are very sensitive to it. "Clinical signs of mercuralism in mink include anorexia, weight loss, incoordination, tremors, ataxia, paralysis, and paroxysmal convulsions" as well as typical limb-crossing when suspended by the tail

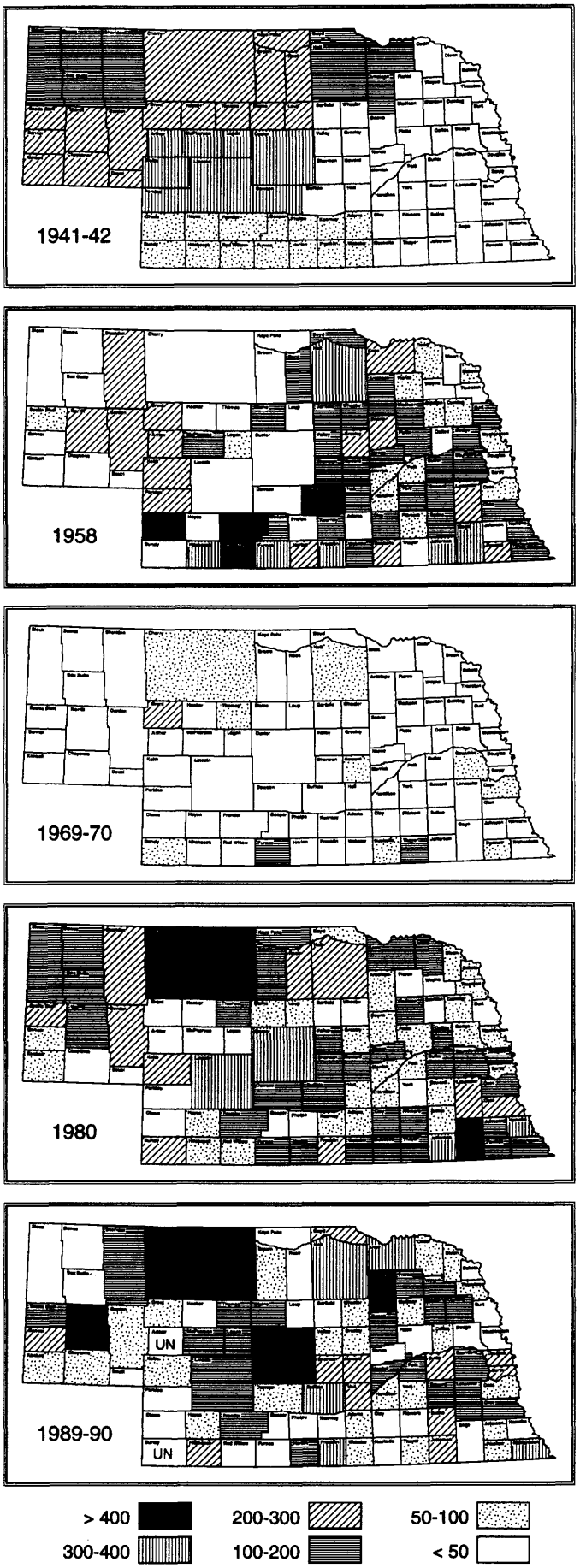


Figure 8. Harvest numbers by county in Nebraska for populations of coyote.

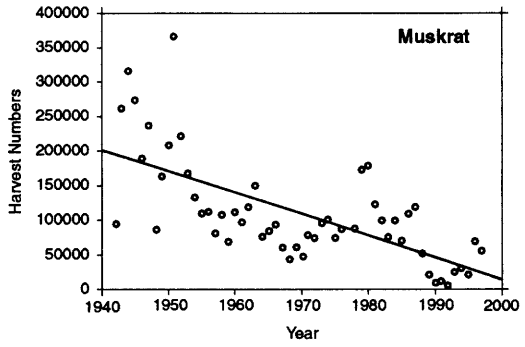
(Aulerich et al., 1974). Mink can survive with 0.5 ppm mercury in their diet, although greater than 1 ppm can be fatal (Linscombe et al. 1982). Platonow and Karstad (1973) found that reproductive failure occurred at 0.64 ppm PCB diet for 160 days, with a 3.57 ppm PCB diet to be lethal. Clinical signs of PCB poisoning were considered nonspecific. All of the studies that Linscombe et al. (1982) examined for pesticide poisoning contained higher residue levels than would normally be expected from mink's prey species but there is the cumulative effect to be considered.

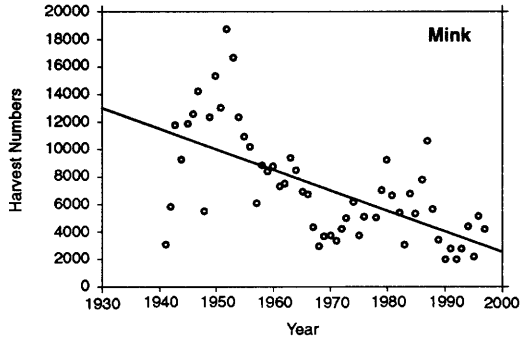
The first batch of DDT for experimental use arrived in the United States in 1942 (Ware 1983), although it was not used until 1944 in Nebraska (AES 1945). Chloradane and DDD were also used for the first time in Nebraska along with DDT in 1944 (AES 1945). It was not known in 1947 that the insecticide toxaphene, which was being introduced, would become the most heavily used insecticide in U.S. agricultural history (Ware 1983). Nebraska was again two years behind other states in the introduction of the regular use of this pesticide. The next important pesticides introduced in Nebraska were aldrin and dieldrin in 1950 (AES 1951).

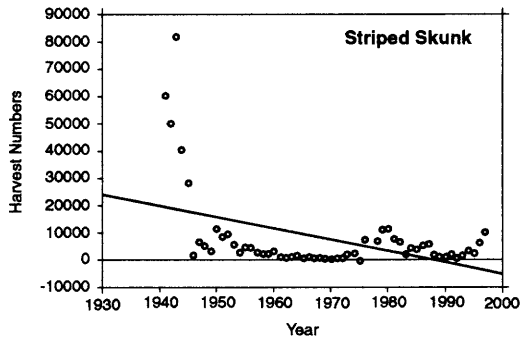
The close correlation of pesticide use and the rapid decline of mustelid populations in Nebraska could easily indicate cause and effect in the decrease of these furbearers. The first mustelid to start declining in Nebraska was the eastern spotted skunk in 1944 (Fig. 9). The long-tailed weasel was next in 1945 with the striped skunk the following year in 1946 (Fig. 9). The decline in harvest of mink was not seen until 1956 (Fig. 9). Indepth examination of pesticide levels in voucher specimens of mustelids from Nebraska could prove this correlation.

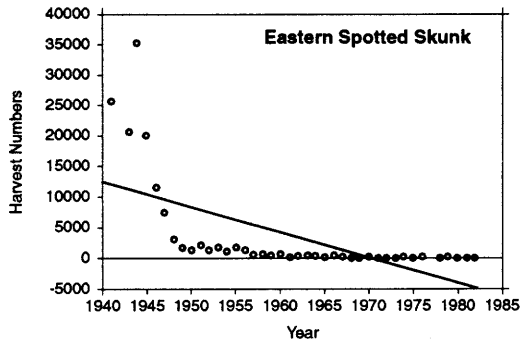
We support the assertion of Choate et al. (1974) that eastern spotted skunk and long-tailed weasel populations increased through the first part of the 20th Century, and changing agricultural practices in the 1930s and 1940s may have resulted in populations decreasing to their pre-increase levels. However, we believe that these mustelid populations are currently far below pre-1900 levels and these dramatic population decreases occurred during the 1940s and 1950s because of the introduction and widespread use of pesticides.

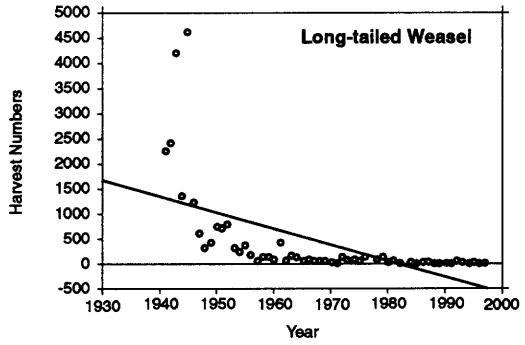
The eastern spotted skunk may have been the first to decline because it was experiencing habitat decline along with being susceptible to environmental contaminants. Skunks are more likely to eat insects (which some of the pesticides are trying to control) than weasels or minks. Although the weasels and minks may feed on insects at times, they mainly feed on animals











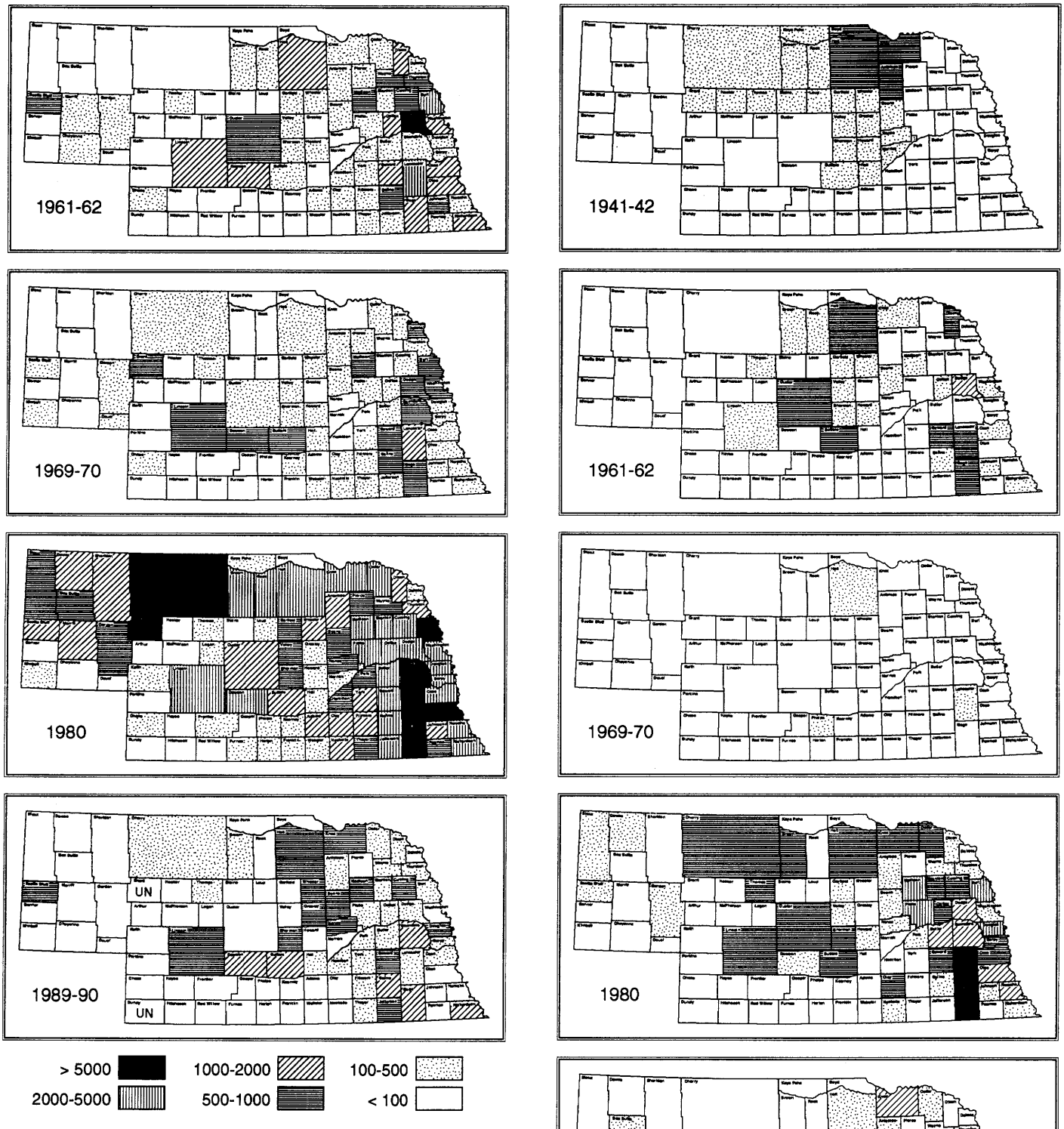
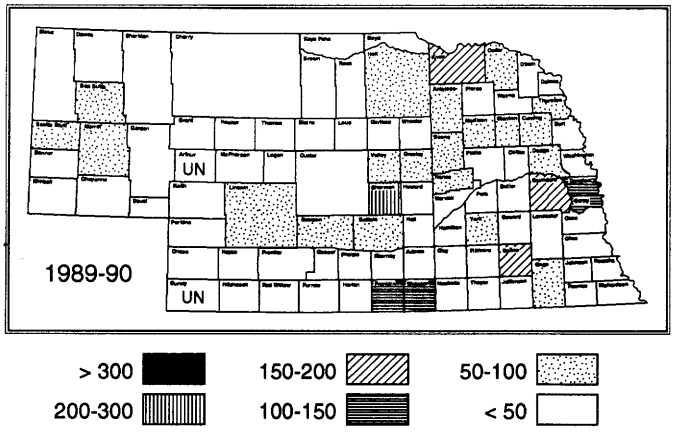


Figure 9 (facing page at left). Regression of harvest numbers per year of decreasing-furbearer populations.

Figure 10 (above). Harvest numbers by county in Nebraska for populations of muskrat.

Figure 11 (at right). Harvest numbers by county in Nebraska for populations of mink.



that rely on insects. Another food source for all four of the mustelids are bird eggs, which were severely affected by the use of pesticides (Carson 1962).

RECOMMENDATIONS

- Initiate short-term and long-term studies of the fluctuating and declining populations of muskrats in Nebraska. The studies should lead to better management of this valuable furbearer.
- Establish studies of pesticide levels and their effects on wild populations of mink, eastern spotted skunks, striped skunks, and long-tailed weasels. This will give a much better understanding of the impacts of these environmental contaminants on these four mustelid furbearers.
- Survey the current status of populations of eastern spotted skunks and long-tailed weasels. We believe these species are at least rare in Nebraska and may be threatened or endangered. Data on the natural history of these two species should be gathered to understand their habitat requirements.
- Study the food habitats of bobcats, with particular emphasis on their impact on deer populations in Nebraska.
- Survey populations of badger and Virginia opossum in Nebraska to determine whether they are stable or not.

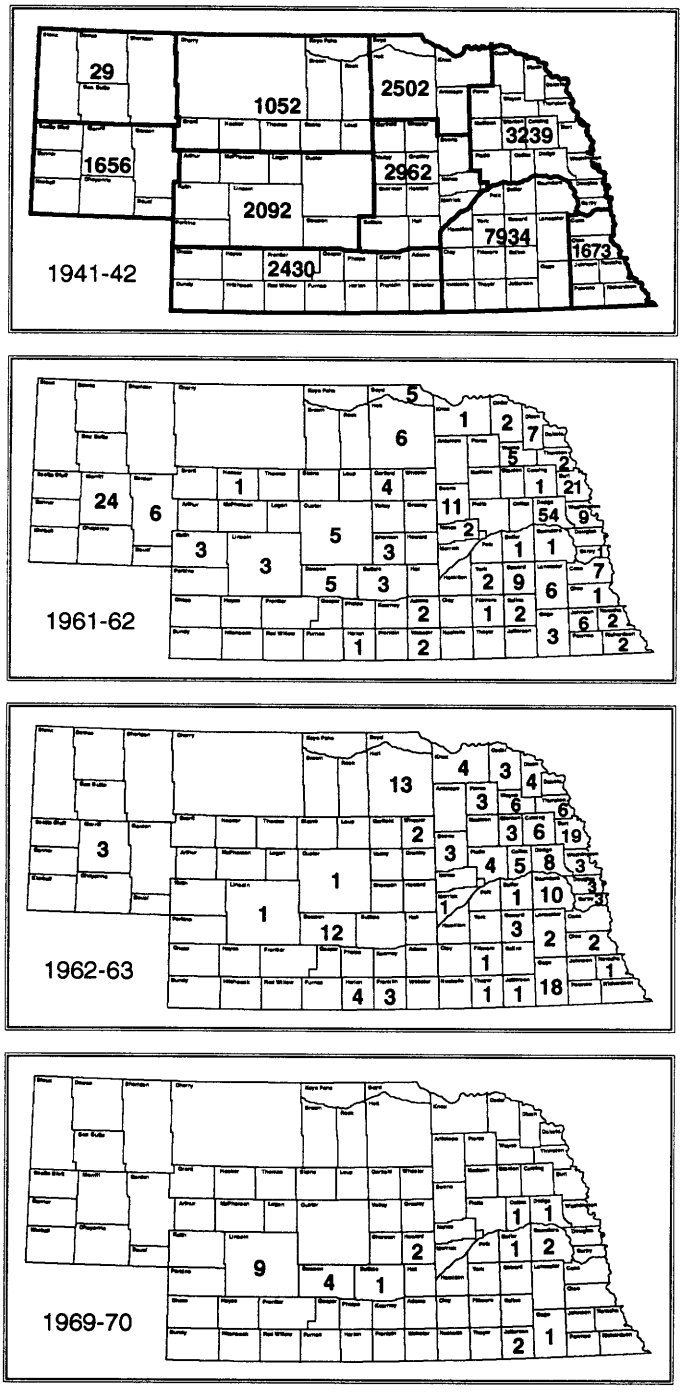


Figure 12. Harvest numbers by county in Nebraska for populations of eastern spotted skunk.

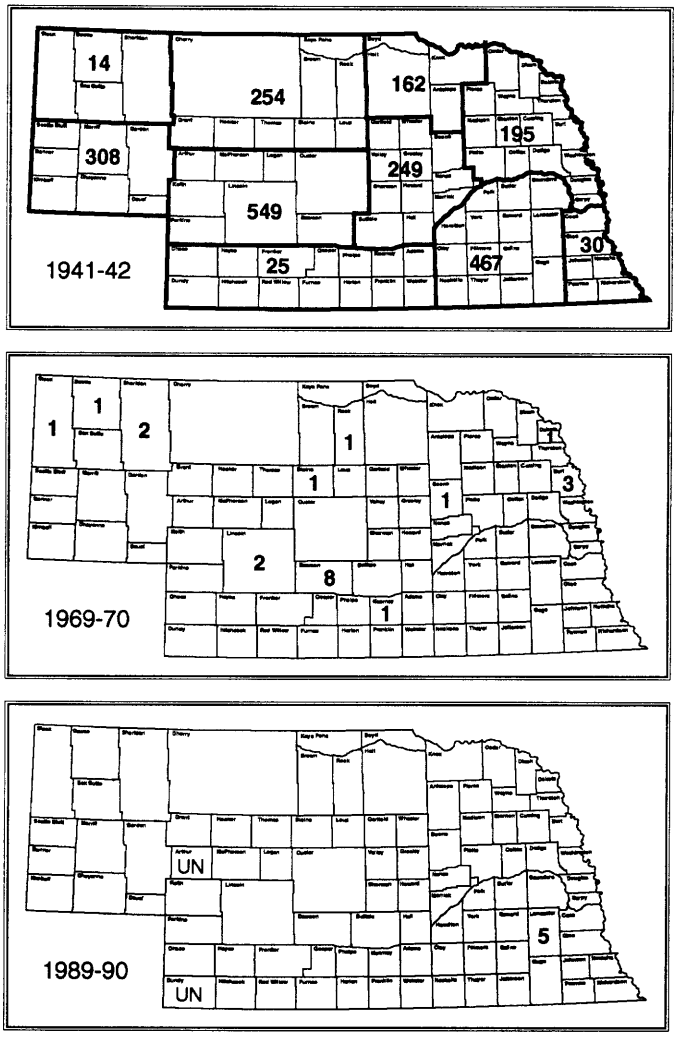


Figure 13. Harvest numbers by county in Nebraska for populations of long-tailed weasel.

ACKNOWLEDGMENTS

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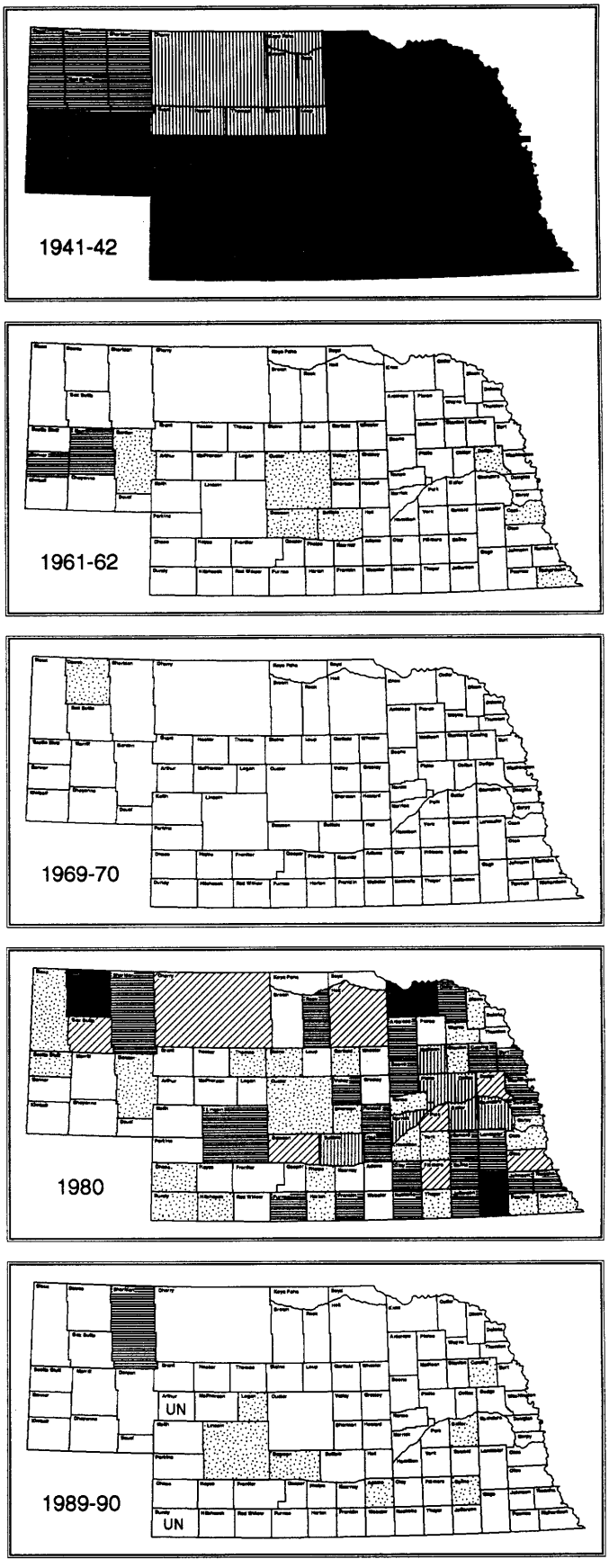

Figure 14. Harvest numbers by county in Nebraska for populations of striped skunk.

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