To D.S.
from A. E. v.d.M.

Return of the Fisher

by
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for
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Wildlife management is

> the science and art
> of making decisions and taking actions
> to manipulate the structure, dynamics, and relations
> of populations, habitats, and people
> to achieve specific human objectives
> by means of the wildlife resource.[1]

This comprehensive definition of wildlife management only begins to shed light on the complex nature of the subject. Clearly it is course directed by people because of people. Using the case of fisher (Martes pennanti) in Ulster County, this paper intends to explore the various components of wildlife management. It is anticipated that through the story of the fisher, the facets of wildlife management will be clearly illustrated and effectually reviewed.

Fisher have existed in North America since the late Pleistocene epoch.[2] Map I illustrates the difference between the primordial range of fisher and its range in 1979.[3] More significantly Map II indicates fisher species range before European settlement of North America versus the present.[4] This Map (II) clearly shows the extirpation of fisher from Ulster County. In 1976 The State of New York Department of Environmental Conservation implemented a fisher trap and transfer program to "establish significant breeding populations in the Catskills." [5] Why did fisher leave Ulster County? What role did people play in its extirpation? Why, now, are people attempting to assist in the resurgence of fisher populations? Have these programs been successful? These and more questions are to be answered in this paper. However before a response might be made, it is helpful to explore the realm of the fisher world - its description, habits and preferred habitat.

Information about fisher habits and preferences is collected through a variety of sources. Wildlife enthusiasts, outdoors people, trappers and hunters report serendipitous observations of fisher in the wild. People particularly interested in fisher information actively search for direct observations to supplement existing field notes and statistics. Indirect support for certain assumptions are gained through tracks and signs left in an area. For instance the tracks left by fisher in the snow are characteristic of its normal gait.[6] Further data is gained by studying fisher remains. Age can be determined through dentition, sex criteria via skull development.[7] Food habits might be investigated through stomach contents.[8] Some information is acquired by observing fisher in captivity. However often the noted behavior is affected by captivity and therefore unreliable if applied to wild fisher.[9]

Over a period of years this information has been coalesced to allow some generalizations to be made in regard to fisher activity. It must always be remembered that these "facts" are only as reliable as the people who made them. A fisher might very well be documented doing something heretofore thought highly unlikely.[10] However these studies are valuable assistants for programs such as the DEC's.

The fisher is a long, slender animal classified in the same family with weasels, ferrets, martens and wolverines.[11] "Dark brown, approaching black down their back, rump, tail and limbs, (it) is often heavily grizzled around the head and shoulders by subterminal white on the guard hairs."[12] The fur on the male is

coarser than that of the female.[13] The average total length is: males - 94 cm (37 inches), females - 81 cm (32 inches).[14] The tail generally measures from one-third to one half the body length. Weight varies between 4 to 10 pounds for males and 3.5 to 5 pounds for females.[15] This sexual dimorphism is significant among fisher in regard to energy expenditure and pelt value. (Discussed later)

Fisher are generally described as solitary animals. "Evidence suggests that female fishers raise their young with no help from the males."[16] Unless breeding, fisher tend to avoid contact with other fisher. Track observations indicate that fisher travel alone in circuitous routes encompassing an area of ten square miles or considerably greater.[17] Figure 27 illustrates the solitary nature of two male fishers and their home range.[18] The South Sheet map offers further representation of the range of fisher released through the DEC's trap and transfer program in Ulster County.[19]

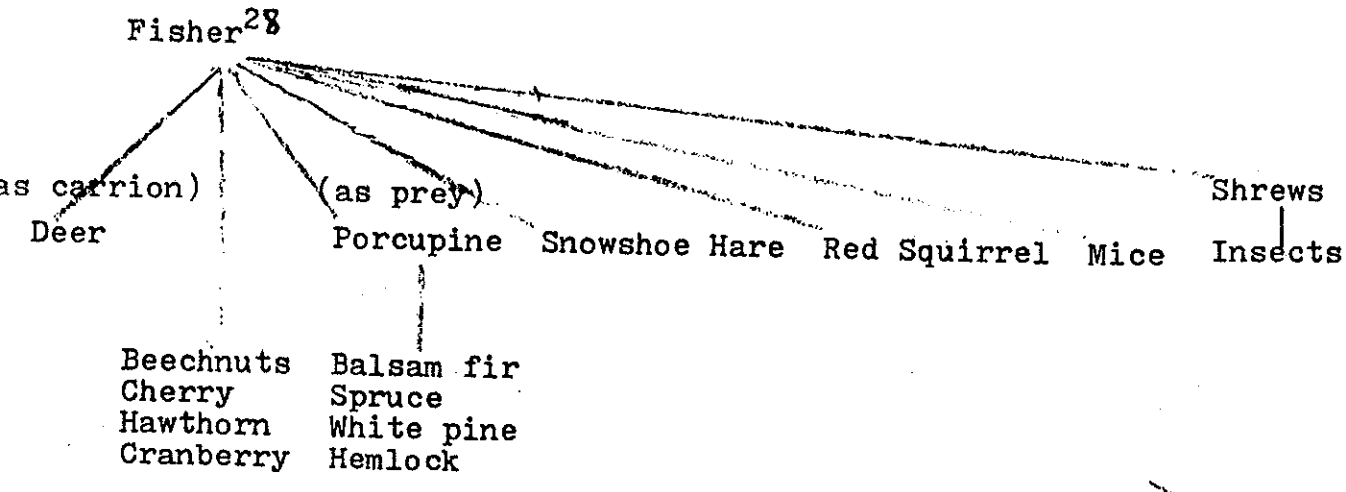
It is understood that fisher avoid open and clear cut areas. Although fisher might be found in the relatively more open hardwood forests (especially in winter when food is scarce), they will abandon this habitat if and when denser overhead cover is available.[20] Although fisher travel along stream flows and will swim if necessary, they are reluctant to cross large bodies of water - even if frozen.[21]

Herein lies an example of the precautions necessary when utilizing generalizations. One of the assumptions made by the DEC when choosing a release area for fisher was that the Hudson River would inhibit the movement of newly transferred fisher to the east.[22] A glance at the South Sheet Map will

for the most part support this assumption. Yet notice the blue dot on the east of the Hudson River. This mark designates a recorded known kill. The fisher found there was tagged as having been released from Minnewaska State Park in 1977.[23] Clearly it traveled over an extensive open area, crossed the Hudson and covered a distance of nearly twenty-five miles. This fisher is one of those exceptions to the generalized rules.

Fisher preferred habitat is very closely connected to the environment of its preferred prey.[24] When compared to Map II, Maps III and IV depict the coincidental ranges of fisher with porcupine and snowshoe hare .[25]

Using a biotic pyramid to illustrate its trophic levels, one must place the fisher at the carnivorelevel - a secondary and tertiary consumer. However fisher also consume vegetation when preferred prey is scarce and therefore occupy the primary consumer trophic level as well.[26] In a word fisher are opportunistic predators.[27] They eat whatever they can catch and what is left as available carrion.



As predators fisher are a territorial, self-determining species. But fisher are also dependent on their habitat. They require the overhead cover of near climax habitat conditions. This habitat requirement poses a particular hazard in regard to the maintenance of fisher populations.[29]

In New York State the fisher story reflects the history of deforestation. Today less than ½ of one per cent of the original woodland cover in New York State remains as virgin forest.[30] As logging interest cleared the forests, the incidence of forest fires increased to massive proportions. "...fires destroyed 464,000 acres of forest cover in the spring of 1903 and another 346,000 acres in the fall of 1908."[31] Although fisher might visit a recent burn because of a relatively high snowshoe hare population, they are rare to absent in extensive fire-caused areas.[32] As a density independent factor deforestation reduced, and in some areas eliminated, the fisher population regardless of existing numbers.[33]

In addition to habitat alteration, fisher populations were also affected by zealous trapping interests. During the early part of the twentieth century, fisher pelts increased in value as their availability declined. As the records of the Brightman Bothers, a furbuyer in Rochester, New York, indicate:[34]

> In 1916, 18 pelts averaged $16.40. In 1921, 37 pelts commanded an average of $65.50 per skin. In 1924, eight pelts averaged 38.00 each to the trapper. The late 1920's witnessed an increasing demand for fisher pelts, and some dealers paid 4150 for a good silky pelt. The Brightmans paid $288 for five pelts in 1928 and $214 for four pelts in 1929, the average price per pelt being $57.60 and $53.50, respectively.

Fisher pelts became a valuable asset to a trapper's net catch. During this same period the price of a single fisher pelt ran as high as $345.00.[35] These higher prices were paid for the finer quality female pelt as opposed to the coarser male pelt. Yet unless populations are significantly reduced male fisher and juveniles are more likely to be caught in traps. Juvenile animals are captured 1st, likely because their dispersal movements and inexperience make them more vulnerable."[36] Males, as the larger animal, require a greater amount of food to maintain their energy expenditure and are therefore more likely to succumb to the bait of traps.[37]

Once the fisher population is being overharvested females occur at ratios close to the actual, i.e. females outnumber males.[38] "When trapping this heavy continues , such a high proportion of the population is being trapped that a serious population decline is inevitable."[39] Fisher are particularly sensitive to trapping because of the reproductive biology of the female;[40]

> The fisher is peculiarly vulnerable to intense trapping of females, for its gestation period lasts about fifty weeks. Almost immediately after giving birth, the mother mates again and is pregnant while nursing her few young through much of the winter, the time when her pelt is most sought. Each one trapped represents a disproportionately large loss to the future of fishers: an adult, an unborn litter, and a little family that starves when the mother is caught.

Finally New York State legislated closed seasons for fisher from 1936 to 1948 in the Adirondacks. The season

remains closed for the Catskill area. In the Adirondacks this action along with the reclamation of forest lands on once cleared areas and a reduced demand for fisher pelts coincided with an increase in fisher populations.[41] However legislated protection could not help the fisher of the Catskills. They had been decidedly extirpated and would not return without further assitance.

In the balance of things it is noteworthy that the same forces which lead to the reduction of fisher populations also contributed to their reintroduction and improvement through wildlife managment practices. Logging and trapping interests have played significant roles in the return of the fisher.

In order to understand how the logging industry assisted the resurgence of the fisher, it is necessary to explore one further aspect of its predator - prey relationship. As shown on page 4 fisher prey upon an animal with very few other successful predators - the porcupine. Although early stories described fisher as able to swing from a tree branch or flip over a live porcupine to reach its vulnerable underside, recent reliable observations describe the interaction as follows:[42]

> Every once in a while a fisher will find a porcupine travelling from its den tree to a feeding tree. Under these circumstances the fisher has a chance of killing the porcupine. The weasel-shaped fisher is small enough and quick enough so that while circling the porcupine it can jump in whenever the opportunity arises and bite the porcupine on the face, where there are few quills. Then the fisher will jump back again before the porcupine can counter-attack with its tail...Several such wounds on the face during the course of thirty to forty-five minutes will slow down the porcupine so that the fisher can turn it over and begin to dine at the chest and belly. The myth that fishers turn porcupines over and kill them by biting the belly probably originated from observations of fisher-killed porcupines which had been eaten starting from the belly.

This popularly known relationship between fisher and porcupine motivated several states to enact fisher reintroduction programs. It was thought that fisher would control porcupine populations and thereby diminish the destruction caused by a high density of porcupines. In Wisconsin and Michigan porcupine populations caused damage to timber stands in both the Nicolet and Ottawa National Forests.[43] Although the introduction of fisher in these states and other areas has coincided with declining porcupine populations, there have been no studies carried on long enough (at least twenty years) to definitively prove that fisher actually do control porcupine populations over time.[44] Nevertheless the occurence of that effect in areas such as the Adirondacks has encouraged the reintroduction of fisher in other areas.[45]

If fisher did indeed control porcupine populations, here would be an argument in favor of a diversified wildlife ecology, directly beneficial to people. Logging interests need healthy timber stands. Fisher need overhead cover. If fisher inhibit the destruction of timber caused by porcupine, perhaps the logging industry can find economic justification for fisher habitat management in conjunction with the fulfillment of their supply needs. Indeed the Lake States, Pacific Nothwest, New York and Vermont have found it advantageous to do so despite the lack of "hard data".[46]

Another major impetus for sustained interest in the fisher has been its pelt value on the trapping market. Although prices "bottomed out" in the forties, fisher pelts have seen

a recurring rise in value.[47] Figures from fisher harvests and average pelt value in North America, 1969 - 1979 indicate:[48]

Season	New York Reported Harvest	Mean Price
1969-1970	953	$ 24.39
1970-1971	918	$ 36.87
1971-1972	869	$ 37.24
1972-1973	1,008	$ 26.81
1973-1974	1,299	$ 57.19
1974-1975	1,210	$ 60.25
1975-1976	1,690	$113.42
1976-1977	839	$114.76
1977-1978	Closed*	----
1978-1979	1,380	$179.99

*Note the decline in numbers followed by a closed season.

This table clearly illustrates the monetary incentive for trappers to facilitate the process of reintroducing and sustaining fisher populations.

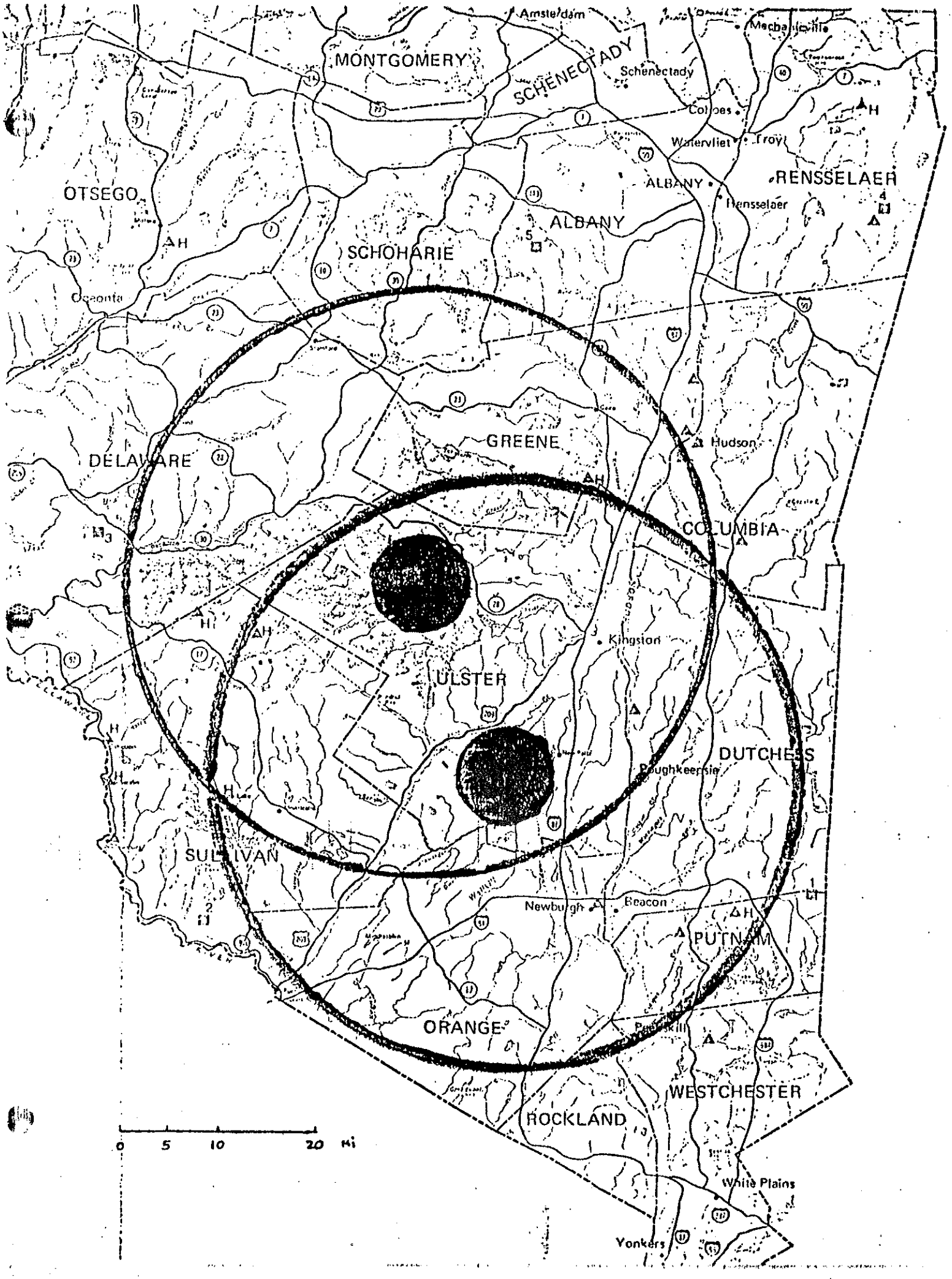
In Ulster County the Bureau of Wildlife - Region 3 stated two major objectives for their trap and transfer program. The Primary objective was to "establish and maintain fisher populations at a carrying capacity density of 3 to 5 animals per 10 square miles of available habitat by 1987-88, to provide a more diversified furbearer and aesthetic resource."[49] The objective of establishing fisher in order to facilitate the return of a previously extirpated species is not unique to the Region 3 project. This goal is shared by nearly twenty fisher transfer programs implemented or planned between 1955 and 1981 in Canada and the United States.[50] Basic principles

of wildlife management encourage a diversity of species within a biotic community. The buffering effects of variety "tend to prevent excessive loss from predation; normal resistance and immunities, combined with natural checks on the increase of disease organisms or parasites, prevent spectacular die-offs from these causes."[51]

The carrying capacity density of 3 to 5 fisher per 10 square miles of available habitat was determined using data gathered in the Adirondack region.[52] It is anticipated that this density figure would provide a harvestable surplus of fisher. This surplus, produced by the annual addition of young to the population, would be above the ability of the area to support and thereby be available to trappers without interfering with the optimum population numbers.[53]

In 1955 Hamilton and Cooke recommended that a fisher trap and transfer program be implemented in the Catskill area.[54] As interest in fisher as a valuable furbearer and aesthetic resource increased so did the evidence that the Catskill area was suitable for fisher reintroduction. Fisher emigrating from the population in northern New York were sighted in the Northern Catskill area.[55] The DEC decided that this natural dispersal would be facilitated through a directed trap and transfer program.[56]

After studying Adirondack locations exhibiting stable fisher harvests and contacting sportspeople's groups to determine the degree of acceptance and concern over fisher releases, two release sites were chosen.[57] "The Shawangunk Ridge and Slide Mountain were chosen due to their social and biological suitability."[58]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OTSEGO
SCHOHARIE
Oneonta
GREENE
Hudson
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FISHER RELEASE RECORD

	1976	1977	1978	1979	Total Released
Shawungunk Site					
Male	6	1	3	-	10
Female	3	4	4	-	11
Slide Mt. Slide					
Male	-	-	7	2	9
Female	-	-	2	10	12
			TOTAL Fisher Released		42
			TOTAL MALE		19
			TOTAL FEMALE		23

1976

1 male released 11/5/76)
2 males released 11/23/76)--Rhodedendron
1 female released 12/21/76)

3 males released 11/23/76)--Bonticou

1 female released 12/27/76)--Minnewaska State Park
1 female released 12/29/76)

1977

3 females released 4/20/77)
1 male released 5/5/77)--Minnewaska State Park
1 female released 5/5/77)

Fisher Release Record

1978

1 female released 7/5/78	)
3 males released 10/23/78	)
1 female released 10/23/78	)--Minnewaska State Park
1 female released 10/27/78	)
1 female released 11/15/78	)

2 males released 11/1/78	)
1 male released 11/6/78	)
1 female released 11/6/78	)
2 males released 11/13/78	)--Slide Mountain
1 male released 11/14/78	)
1 male released 11/28/78	)
1 female released 12/6/78	)

1979

4 females released 11/1/79	)
1 male released 11/1/79	)
4 females released 11/15/79	)--Slide Mountain
1 male released 11/15/79	)
2 females released 12/7/79	)

The map shows the immediate release site of 100 square miles as the darkened portion. The outer ring represents a thirty mile radius of potential movement. On the South Sheet Map the green dots indicate the specific release location. The date and site of the releases are documented on the Fisher Release Record.[59] Release of fisher in this area or secondary stocking was implemented by primary transplanting, that is capturing wild fisher from the Adirondacks and transporting them to the Catskills. Before release fisher were examined, vaccinated against canine distemper and rabies and tagged with ear tags.[60]

The secondary objective of the Region 3 Fisher Trap and Transfer Program is directed toward the individuals who are instrumental in the success of such a project. The secondary objective aims to "provide the opportunity for legal harvest of fisher at a rate of one animal for each six to nine square miles of available habitat by 1987-88."[61] As the DEC Job Report states, " It should be recognized that the success of obtaining live fisher for transfer rests entirely on successful, experienced and cooperative fisher trappers." [62] For the Catskill project, cooperating Adirondack trappers were supplied with box traps and paid $75.00 for every acceptable live fisher received.[63]

Once released the task of assessing the success of the program and estimating population density becomes a rather difficult one. Initially the Bureau of Wildlife expected to be able to estimate fisher per observance in a specific block area.[64] This method soon became obsolete when the extensive

range of each fisher was recognized.

Trappers and furbuyers were solicited to report any evidence of fisher in their working areas in order to assist in the evaluation of the program.[65] Unfortunately the existence of a closed season inhibited most of the reports from reaching the Department. "Unsworn testimony from cooperating trappers and furbuyers indicates that during the fall and winter of 1981-1982 approximately 20 fisher were trapped and pelted and five were shot by snowshoe hunters...Fear of prosecution and unwillingness to part with a valuable pelt resulted in only five of these animals reported to the Department and only two carcasses were received for verification."[66] In order to improve the feedback from trappers and furbuyers, the Bureau of Wildlife has proposed a limited bag trapping season. The inclusion of mandatory pelt tagging would provide an official method for evaluating fisher populations levels.[67] A limited season would allow legal recourse in reporting any accidental pelts.

A new furbearer management unit has been created this year in order to oversee a land trapping season for beaver and fisher only. The designated trapping area virtually follows the perimeter of the Catskill Park. It includes the Slide Mountain fisher release site. The DEC chose this boundary for two reasons. One, the entire land area within the boundary is open to trapping. Whereas if the boundary had included The Mohonk Trust or Minnewaska State Park, trapping would have been restricted. Two, by separating the two release areas the trapping boundary serves as a control factor. A trapping area will be able to be compared to a non-trapping area in regard to its effect on fisher population.[68]

Initially the DEC wanted to implement a limited bag trapping season this year (1982-1983). However because fisher populations and harvest has decreased enough in the Adirondacks to close their fisher season this year, the Catskill region will remain closed as well.[69] "Establishing a fisher season only in the Catskills can only serve as a 'legitimate' market for incidental trapped Adirondack fisher and the data obtained would be invalid." [70]

Presently the Bureau of Wildlife can only make assumptions from noted observations and animal traces. South Sheet Map indicates verified observations using the red dots. In 1983 a female fisher skull was made available to the Department. If through cementum annuli aging techniques, this fisher is determined to be two or three years old, certain assumptions are probable. Since the last fisher were released in 1979, this fisher would not be old enough to have been a tagged fisher. Therefore one could assume that transported fisher are dense enough to breed, that they are giving birth and that their young are reaching adulthood. [71]

In Wisconsin it was noticed that unless fisher reach a sufficient density, females (who are driven to breed ten days after giving birth) must travel so far from their nesting den that their newborn kits starve before the mothers are able to return.[72] This aspect of fisher behavior is reflected in the population dynamics of reintroduced animals. In Vermont, for instance, initial fisher population increased very slowly, and as the critical breeding density was reached the population

expanded rapidly.[73] Without sufficient numbers of male fisher to accommodate breeding females, the population will increase slowly or decline.[74]

Prior to the project's inception the Bureau of Wildlife calculated two population models for the Shawangunk Ridge and Slide Mountain sites. "These models varied in the mortality and reproductive rates used, as well as the age when females were capable of producing young.Each model tends to represent a lower and upper estimate of population growth. In the lower estimates a high mortality rate and low reproductive rate were used. The upper estimate used a reduced mortality, and a reproductive rate that assumed some juveniles did breed."[75]

Using a 1 : 1 sex ratio and 1.91 young per adult female at a 25% mortality to all young born,the 1983 upper projection predicts a total of 1,154 fisher or .619 fisher per square mile in the Swawangunk range and .430 on Slide Mountain. (see first table) Assuming the same sex ratio with 2.5 young per adult female, 50% mortality, the 1983 lower projection predicts 279 total fisher , .150 - Shawangunk, .104 - Slide Mountain. (see second table) The Conservation Biologist at the Bureau of Wildlife suspects that the actual number of fisher to date rests somewhere between the lower and upper projections.[76] The upper projection is considered to be just short of the biotic potential for fisher in the area. It is intended to be a more realistic figure in estimating fisher population growth. In actuality both natality and mortality rates are higher than anticipated.[77]

SHAWUNGUNK AND SLIDE MOUNTAIN

(An Upper Projection)

YEAR	# FEMALES	# MALES	YEARLY INCREMENT	MORTALITY	FISHER PER SQUARE Mile in Area (30 Mi. Radius) SHAWUNGUNK	SLIDE	TOTAL # FISHER
1977	13	7	25 10 F, 9 M	6	.021	.015	39
1978	23	16	44 16 F, 17 M	11	.039	.027	72
1979	39	33	74 28 F, 27 M	19	.068	.047	127
1980	67	60	128 48 F, 48 M	32	.120	.083	223
1981	115	108	220 82 F, 83 M	55	.208	.145	388
1982	197	191	376 141 F, 141 M	94	.332	.231	620
1983	338	332	646 242 F, 242 M	162	.619	.430	1,154

20 animals released in 100 sq. mi. area.
13 females and 7 males, all females reproduce 1.91 young annually (1975 study of fisher)
25% mortality to all young born, 0% mortality to initial animals.
Assume 1:1 sex ratio.

SHAWUNGUNK RIDGE AND SLIDE MOUNTAIN

(A Lower Projection)

YEAR	# FEMALES ADULT	# FEMALES JUVENILE	REPRODUCTION BY FEMALES ADULT	# MALES	YEARLY INCREMENT FEMALES	YEARLY INCREMENT MALES	MORTALITY FEMALES	MORTALITY MALES	FISHER PER SQUARE Mile in Area (30 mi. Radius) SHAWUNGUNK	FISHER PER SQUARE Mile in Area (30 mi. Radius) SLIDE	TOTAL # OF LIVE FISHER
1977	3	10	8	7	4	4	2	2	.013	.009	24
1978	13	2	33	9	17	16	8	8	.022	.015	41
1979	15	9	38	17	19	19	10	9	.032	.022	60
1980	24	9	60	27	30	30	15	15	.048	.034	90
1981	33	15	83	42	41	42	20	21	.070	.049	132
1982	48	21	120	63	60	60	30	30	.103	.072	192
1983	69	30	173	93	87	86	43	44	.150	.104	279
1984	99	44	248	135	124	124	62	62	.216	.150	402
1985	143	62	358	197	179	179	90	89	.312	.216	581
1986	205	89	513	287	257	256	128	129	.449	.312	838
1987	294	129	735	415	367	368	184	183	.646	.449	1205

20 animals released in 100 square mile area.
13 females (10 juvenile, 3 adults). Figures taken from % of take 1975 Fisher Study.
7 males (age not important as adult females already bread).
2.5 young per adult females. 0 young per juvenile female.
50% mortality to all young born, 0% mortality to initial animals, assume 1:1 sex ratio.

Throughout this paper the components of wildlife management have been explored using the fisher in Ulster County as an example. Through the experience of one member of the wildlife community, one begins to understand the complex nature of an ecosystem and the rippling effects of people's actions within it. It does not require great insight to see that the simple fisher - porcupine - logging triangle is just one facet of the web of relationships within a biotic community. Nor does it seem impossible for human beings to act responsibly through management objectives.

Today people largely determine the welfare of wildlife. People were responsible for the fisher's extirpation from formerly inhabited lands, and people rediscovered the value of the fisher as a furbearer and aesthetic resource and facilitated its return. Luckily the fisher was available when the tide of appreciation turned in its favor. Other species have not been so fortunate. Perhaps if human beings could quantify the contributions of wildlife, they would be more inclined to prevent its loss. In a world where wildlife is perceived as an incidental occurrence on land designated for more "productive" use, its preservation appears tenuous. Yet the fisher has survived - so far -

"Man is incapable of making permanent changes in the cosmos. Except one. In only one way can man truly make his mark upon time and life and evolution: by exterminating any species of plant or animal. If he does that, if he eradicates or allows to fail any line of evolution through time, he will

have permanently altered the life potential of the cosmos for as long as matter and energy are in balance. Nothing else he does can be thought of as permanent because everything is reparable by time and natural laws, and those he can never alter."[78]

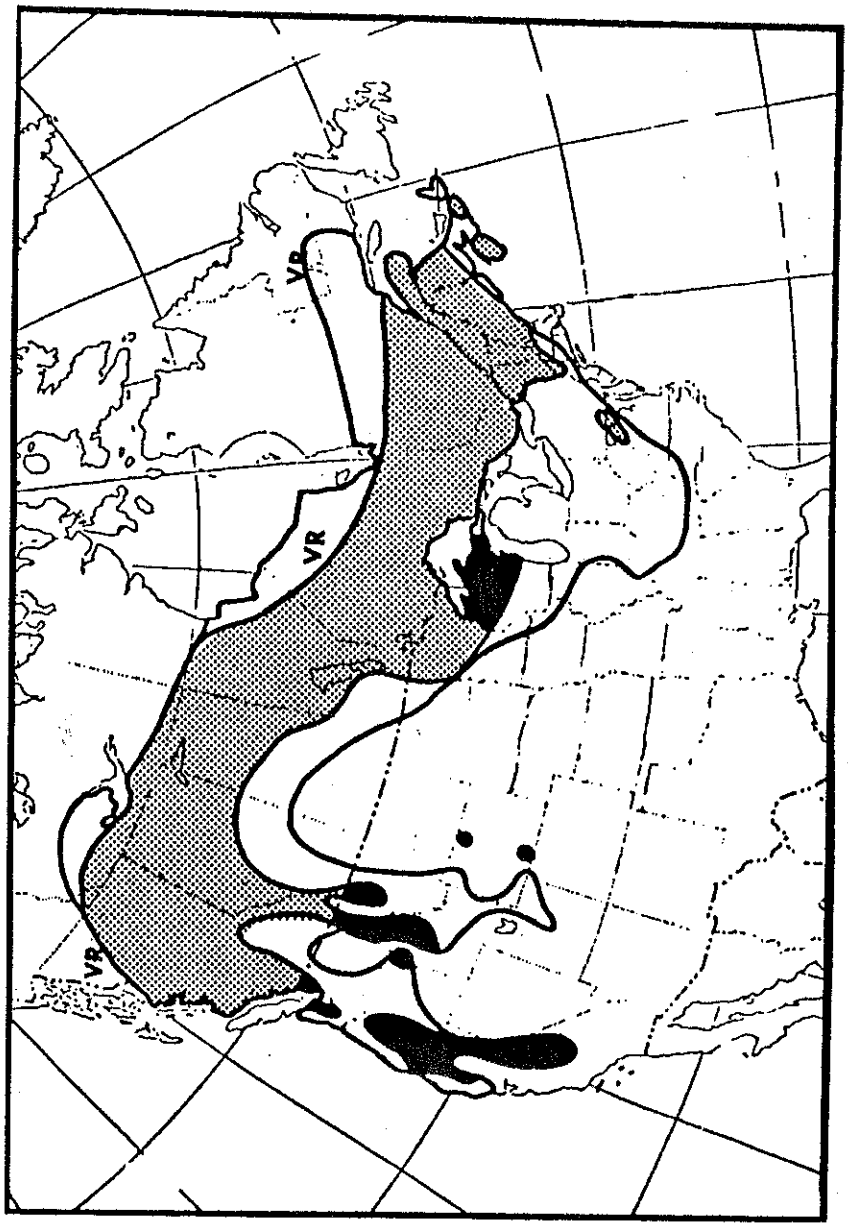

Figure 1. Primordial range of fisher (Hall and Kelson 1959) and 1979 range of fisher in North America. (Stippled - present and harvested; Solid - present, no season; Remainder extirpated; VR - very rare)

Map II

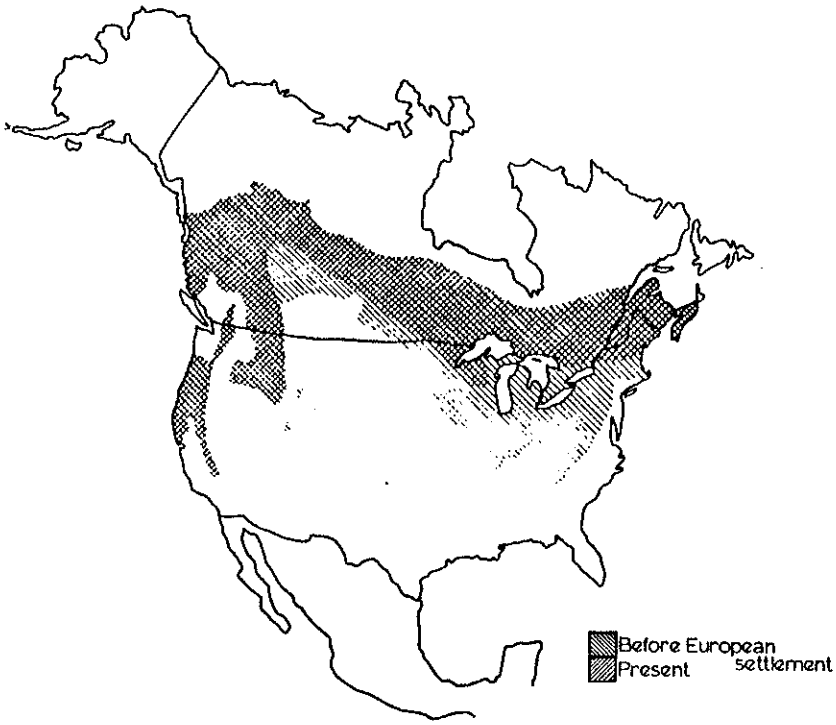

Figure 26. Map of fisher species range before settlement of North America by Europeans and at present. (*Drawn by C. B. Powell; based on Banville 1980, Earle 1978, Hagmeier 1956, Petersen, Martin, and Pils 1977, and Powell 1977a*)

hardwood, western mountain, and boreal forests (forest ranges taken from Cronquist 1961).

Population Decline

During the last part of the nineteenth century and the early part of this century, the number of fishers decreased strikingly, and they were exterminated over much of their former range in the United States (Brander and Books 1973; Coulter 1966; deVos 1951, 1952). The decline in population was significant in almost all areas populated by humans, and it was precipitous in some places. Fishers were exterminated in the East, the Midwest, and much of the West in the United States and from much of eastern Canada (Bensen 1959; Coulter 1966; deVos 1952; Dodds and Martell 1971; Dodge 1977; Hall 1942; Ingram 1973; Rand 1944; Schorger 1942; Weckwerth and Wright 1968).

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Figure 27

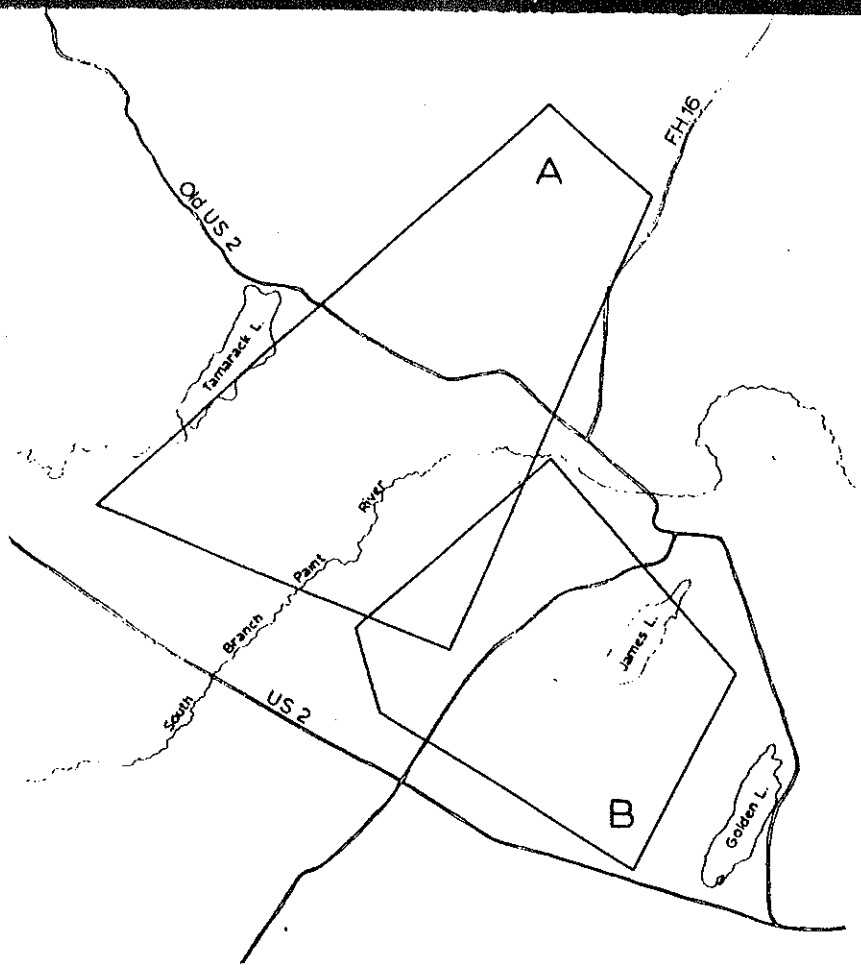

Figure 27. Home ranges of two male fishers (A and B) during the winter of 1975-1976 in the Ottawa National Forest, Upper Michigan. Note that the home ranges are almost completely nonoverlapping. The small overlap was created by a single location of fisher A inside fisher B's home range. (*C. B. Powell*)

territorially against other males and the females against other females, but there is extensive territorial overlap among members of opposite sexes. This pattern is called intrasexual territoriality (Powell 1979b). In these species, the males tend to have larger home ranges and the home ranges of the females are often located within those of the males. Evidence in the literature suggests that mink (Gerell 1970), black-footed ferrets (Henderson, Springer, and Adrian 1969; Hillman 1968), beech marten (Jensen and Jensen 1972), and wolverines (Krott 1959; Rausch and Pearson 1972) have the same type of social organization.

In most studies of fishers, it has not been possible to analyze the data on home ranges by sex. In tracking studies (Coulter 1966;

Map III

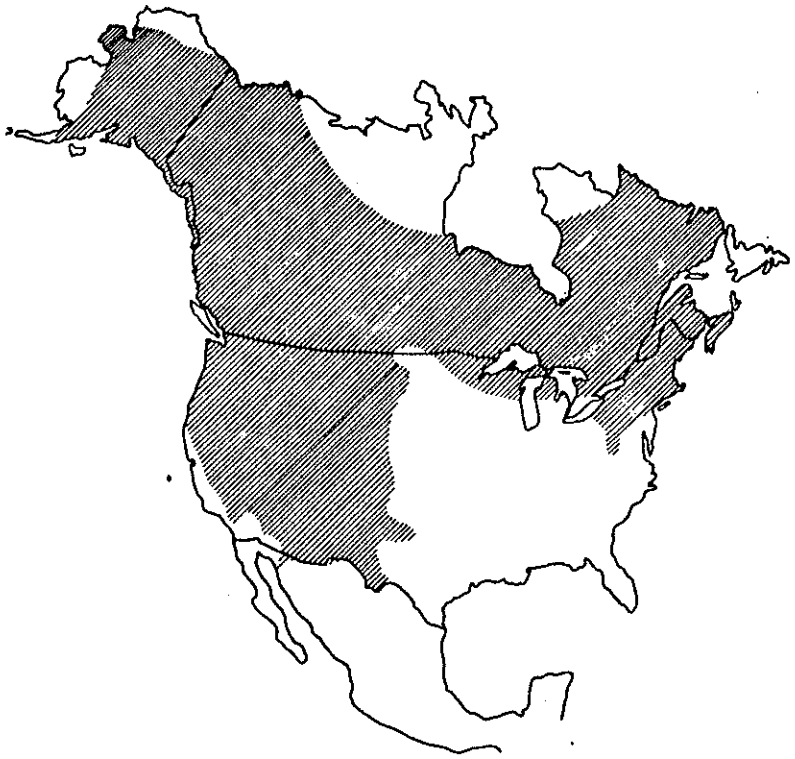

Figure 44. Species range of the Canadian porcupine. Note the overlap of this range with that of the fisher (shown in Figure 26). (*Redrawn by C. B. Powell, from Taylor 1935; and from W. H. Burt and R. P. Grossenheider, 1964, A Field Guide to the Mammals, Houghton Mifflin Company, New York, ©1952, 1964, 1976 by William Henry Burt and Richard Phillip Grossenheider, by permission of the publisher*)

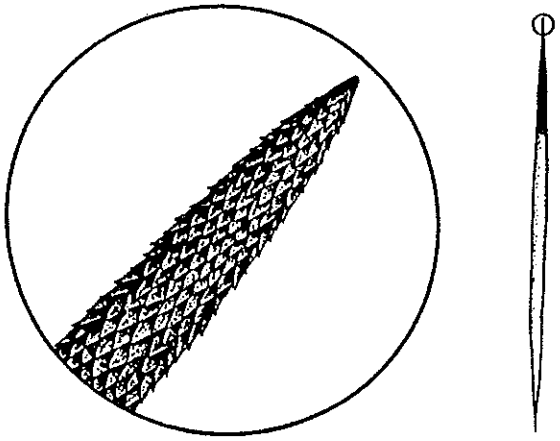

Figure 45. Porcupine quill with enlarged inset of tip showing barbs, which resemble sharp, overlapping scales. (*C. B. Powell*)

Powell, p. 137.

Map IV

Figure 37. A snowshoe hare in white, winter pelage.

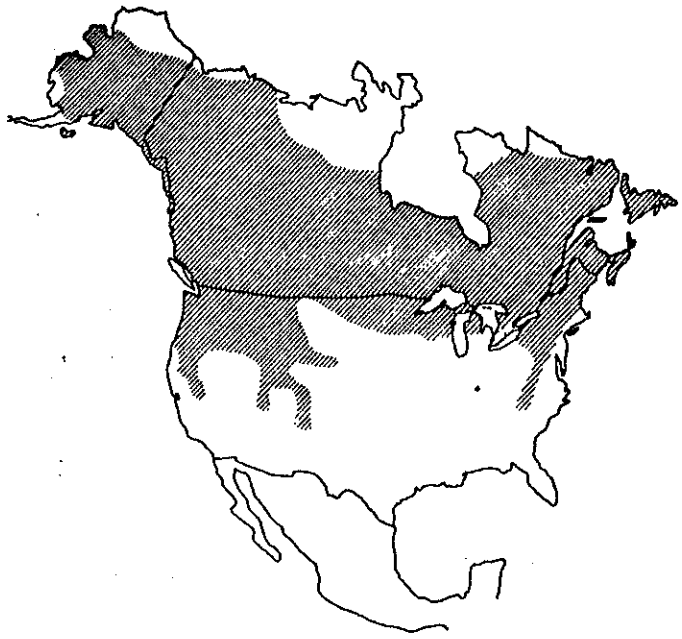

Figure 38. Map of the species range of the snowshoe hare. Note the broad overlap of this range with that of the fisher (shown in Figure 26). (*From W. H. Burt and R. P. Grossenheider, 1964,* A Field Guide to the Mammals, *2nd ed., Houghton Mifflin Company, New York, © 1952, 1964, 1976 by William Henry Burt and Richard Phillip Grossenheider, reproduced by permission of the publisher*)

Powell, p. 114.

New York State Department of Environmental Conservation

Peter A. A. Berle,
Commissioner

Ray Brook, NY 12977

Dear

Recently, the Department of Environmental Conservation released 12 fisher (6 females, 6 males) on the Shawangunk Ridge in Ulster County. As you might know the Fisher Trap and Transfer Program along with other programs was mandated by sportsmen throughout New York State as a requirement for license fee increases. Hopefully, in future years this valuable furbearer will again roam the Catskill woods as in time past.

To evaluate the success of the program we are trying to enlist the help of trappers such as yourself who are known to have trapped in Ulster County in the past. Basically the information we are trying to obtain is:

1. Have you ever seen any fisher or fisher tracks prior to last winter in Ulster or other Southern Zone counties and if so, where?

2. Have you seen any fisher or fisher tracks in Ulster county this past winter and if so, where?

Any cooperation with this and any future information you might come across would be very much appreciated.

Enclosed is a pamphlet to help familiarize yourself with the fisher and some helpful hints on identifying their tracks. We have also enclosed a stamped envelope. If you are interested in helping us, please send us a reply. Include your phone number so that we may reach you for further comment.

Thank you for your cooperation.

Sincerely,

Jon Kopp
Fish and Wildlife Technician

JK:j
enc.

Footnotes

1. Giles, p.4.
2. Powell, The Fisher: p. 18.
3. Strickland & Douglas, p. 1444.
4. Ibid., p: 70.
5. DEC Report, 1976, p.1.
6. Powell, p. 10.
7. Dasmann, Wildlife Biology, p. 135.
8. Will & Brown, p. 87.
9. Powell, p. 81.
10. Example given p.3 in regard to river crossings.
11. Powell, p. 13.
12. Kelsey, Conservation Comments, p. 2.
13. Ibid.,
14. de Vos, p. 1.
15. Ibid.
16. Powell, p. 53.
17. Hamilton and Cook, p. 23.
18. Powell p. 84.
19. New York State Map: South Sheet.
20. Powell, p. 86 & 89.
21. DEC Report, 1976, p. 2.
22. Ibid.
23. See Fisher release record.
24. de Vos, pp. 2-3.
25. Powell, pp. 137 & 114.
26. Dasmann, p. 17.
27. Ibid., p. 122.
28. Will & Brown, pp. 88 - 90.
29. Dasmann, Environmental Conservation , p. 226.
30. DEC Leaflet, Changes in the Forests, p. 3.
31. Ibid.,
32. de Vos, p. 3.
33. Dasmann, Wildlife Biology, pp. 84 -85.
34. Hamilton & Cook, p. 18.
35. Kelsey, p. 1.
36. Strickland & Douglas, p. 1452.
37. Powell, p. 175.
38. Ibid, Strickland, p. 1455.

39. Ibid.
40. Milne, p. 104.
41. Hamilton & Cook, p. 15.
42. Powell, Bulletin, p. 11.
43. Irvine et al, p. 307.
44. Powell, The Fisher, p. 158.
45. Ibid., p. 78.
46. Berg, p. 9.
47. Hamilton & Cook, p. 19.
48. Strickland & Douglas, pp. 1445-1446.
49. DEC Subprogram Report, p. 1.
50 Berg, p.5.
51. Dasmann, p. 202.
52. DEC Subprogram Report, p. 2.
53. Dasmann, p. 220.
54. Hamilton & Cook, p. 34.
55. DEC Projection Report, p.1.
56. Kelsey, p. 2.
57. DEC Job Report # 1.
58, DEC Projection Report, p.1.
59. All release information is from DEC records 1976 - 1983.
60. DEC Job Report # 3.
61. DEC Projection Report, p. 1.
62. DEC Job Report p. 2.
63. DEC Job Report #2.
64, Personal Interview with Richard Henry.
65. See letter from Jon Kopp at the end of this paper.
66. DEC Subprogram Report, p. 3.
67. Ibid.
68. All information in this paragraph from personal interview.
69. DEC Subprogram Report, p. 4.
70. Ibid.
71. Personal Interview.
72. Irvine et al, p. 308.
73. Personal Interview.
74. Ibid.
75 DEC Projection Report, p. 1.
76. Personal Interview.
77, Ibid.
78, Roger Caras, Yale University, April 10 1978.

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