

**Observations on the
Mammals of Aton Forest
1925-1980**

by Dr Frank E. Egler

Data transcribed by Ian Collins Civco, DVM, 2010.

The following observations on the local mammals are those which have accumulated through half a century of living on this property, first through the summers, and year-round since the end of 1945. The material is not presented as an “annotated list” as that term is professionally used. No specific scientific projects or trapping studies have been made. Since some mammals are frequent and abundant diurnal elements of the landscape, and others are secretive nocturnal species rarely seen, the quantity of information for the different species is highly variable.

The scientific nomenclature is that given by Hamilton and Whittaker (1979). Names in parentheses are those used by Goodwin 1935. For further Connecticut information on these species, the page references are given for “The Mammals of Connecticut” by George Gilbert Goodwin (e.g., “G:22” for the opossum), State Geological and Natural History Survey, Bull. 53, 1935, 221 p.

The enjoyment these mammals have given is here presented as a basis for scientific studies of the future.

Aton Forest is a privately owned research property that has grown from an initial [300] acres in 193[0], to its present size of 1000 acres. Through these years vegetation development (re: “succession”) has changed most open fields on this and surrounding properties into dense second growth forest. Many ancient old trees (veterans and snags) are scattered throughout the relatively young (50-100 year old) stands and attest to the land’s formerly more open character by their spreading crowns. Remaining open shrub-dotted fields, totally about [15] acres, have been maintained by intensive selective weeding procedures in connection with my botanical research.

The property is located at 1500 feet on the Berkshire Plateau in the Northwestern corner of Connecticut. It is surrounded by extensive tracts of similar forest of white pine-hemlock and mixed hardwoods (beech-birch-maple-red oak-black cherry-white ash). In terms of Life Zone it would be classified as upper Alleghenian or lower Canadian.

INTRODUCTION

The upland mixed conifer-hardwood forests of northwest (NW) Connecticut have their special “flavour” of species composition and physiognomy. This character is evident to the discerning layman, and certainly to any timber or wildlife manager that appraises or cover maps a tract of land. Any phytosociologist who might examine these forests would quickly systematize its distinctive attributes, communities, seral stages, synusive, life-forms, etc. Today, in the 1970’s and 1980’s, white-tail deer abound in these rugged hills; densities may exceed 25-30 per square mile. The people of these hills, the hunters, nature-appreciators, and affluent rural residents, place considerable value on these inter-related resources of deer, timber, and attractive landscape. But, the ecosystem they experience today, grossly perceived through its main influents of many deer and dense trees, is much different than that known by a past generation. And, what of the future character of this system?

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Our presumption is that it is important and worthwhile to know something of the large-scale dynamics of a Biocommunity system—when such is possible. In other words, we are not content just to observe the present conditions, and treat them as static, unchanging. We presume there is value in knowing how the present mosaics evolved, and through this knowledge we gain deeper understanding. We may then build better conceptual structures in our “quest for truth and reality” (Egler 1975), and, perhaps, even make some small gain in improving human behaviour toward resources. This paper reports general observations on landuse-forest-wildlife dynamics made over a continuous 60 year period at Aton Forest, Town of Norfolk, NW Connecticut. This continuity of documentation reveals how misleading short-term observations might be absent caution, discipline, and experience by an investigator.

The following list, the annotations and the casual observations, are not those of a research mammalogist, but merely those of an observant naturalist who has known this property since 1925, and has been resident on it year-round from 1945 to this year of 1980. The enjoyment these mammals have given may thus provide a basis for scientific studies of the future. For further information on each species, the reader is guided to *The Mammals of Connecticut*, by George Gilbert Goodwin (e.g. “G: 22” for the opossum), State Geological and Natural History Survey, Bull. 53, 1935, and to other publications as chosen by the reader, and to more recent other publications.

1. ***Didelphis virginiana virginiana***. Virginia Opossum. G:22. –In 1900, unheard of in Connecticut. After 1915, it was establishing itself

in southern Connecticut, especially near the Sound. Said to be extending northward, but not surviving severe winter weather. No reports known from Norfolk. Aton Forest? A dead animal was found in early spring about 1970, at the base of the large maple, at the southeast edge of Woodchuck Hill, Compartment C-47.

2. ***Parascalops breweri***. (Bachman). Hairy-Tailed Mole. G:27. –Three records: Trapped in the lawn at the main house, September 20, 1951; two individuals found dead on the driveway, with no evident injury or disease, about 1974, and 1978.
3. ***Condylura cristata***. (Linnaeus). Star-Nosed Mole. G: 29. –Two records. One taken at lawn of Salamone’s (ex-Metzdorf’s) house, May, 1977; one found dead on driveway at main house, with no evident injury or disease, 1978.
4. ***Sorex cinereus cinereus*** and/or ***Sorex fumeus fumeus***. (Miller). Masked and/or Smoky Shrew(s). G: 32 and 33. One young specimen (body 4 cm long, tail 4 cm long) taken in a mouse trap, in the Study, 1978.
5. ***Blarina brevicauda brevicauda***. (Say). Short-Tailed Shrew. G: 39. –Short-tailed Shrews are frequently caught in mouse traps in the Study and in the Main House (cellar and attic), being ca. 5% of the total catches. If a mouse is left in for more than a day or two, it is likely to be partially or entirely eaten, presumably by these shrews. On one occasion an animal was investigating our bed in the Study; woke my wife Happy, who assumed it was a mouse; investigated again, an hour later, by nipping her nose (leaving two minute red spots at the very tip; no poison reaction followed); a mouse trap was set nearby; and before morning a shrew was caught.
6. ***Myotis lucifugus lucifugus*** (LeConte) and/or ***Eptesicus fuscus fuscus***. (Beauvois). Little Brown Bat and/or Big Brown Bat. G: 43 and 52. –In the period 1928 to 1936, bats presumed to be these species, were occasionally seen at summer dusk, flying over the field immediately behind the House. From 1954 to 1977, and especially after 1968, bats were observed almost every summer evening from the windows of the Study complex, seemingly concentrating their attention to an area within a 50 foot radius of the buildings. In the early 1970’s it was realized that at dusk there was a continuing flight of bats coming up the Town Road from North Colebrook, flying westward; maybe to Benedict Pond for night time feeding? They flew low, under the crowns of the overlapping trees, yet above our heads. One after another they would pass over, approximately every 30 seconds. We traced the flight almost to the State Road at North Colebrook; and then lost it. In 1976 they had vanished. We heard later that year that a colony had been roosting in the cupola of the

old, abandoned Phelps cheese factory at North Colebrook, now owned by Nancy Phelps Blum and her husband John Blum (donors to The Nature Conservancy of the adjacent 300-acre “Phelps Research Area”). They casually remarked that they disliked the accumulation of guano, and had eliminated the colony by the simple expedient of putting wire netting over all the openings.

7. ***Ursus americanus americanus***. (Pallas). Black Bear. G: 57. – There is a “bear story” in Crissey’s “History of Norfolk”, 1900, itself taken from an older 1847 history of the town. Individual bears have subsequently entered Connecticut, wandering around even in suburban areas, eventually to be shot by some fearless hunter. The last was in 1964. One never knows where these fearless animals (fearless in another sense) came from. There is always the possibility that they are escapees from a roadside zoo, or abandonees from people who discovered that baby bears do not stay babies. On the other hand northwest Connecticut is contiguous with the relatively uninhabited Berkshire Plateau in one place, and with the Taconic Range in another where there are occasional bears. Barring significant changes in wildlife attitudes, it is to be expected that the species will continue to wander, even to Aton Forest. Before then, northwest Connecticut will have its quota of emotionally or alcoholically stimulated “sightings”, of animals or their droppings.
8. ***Procyon lotor lotor***. (Linnaeus). Eastern Raccoon. G: 59. –I do not remember seeing any raccoons in the days before 1934, although I had heard of “raccoon hunts” on adjacent Doolittle Lake Club lands. My brother reported that raccoons were a decided nuisance in his corn patch in the years from 1934 to 1940. I began seeing raccoons at all seasons, after 1945. In the late 1950’s I caught one in a Havahart trap (meant for woodchucks) and by morning it had pulled up half the trip-pedal (a piece of steel with turned down flanges) a feat of very considerable strength. (I gave the trap to my brother, to keep if he could fix it. He never returned it; but he never told me he fixed it.) In the early 1970’s we encouraged them with kitchen scraps, which soon involved several animals, and later in the season, the families of young. Wild screeching at night between competitors (not in competition for any food we had put out), plus extensive digging and turning of stones in the experimental “Playground” soon made the animals completely unwelcome. The animals have very different personalities, with respect to earliness of arriving for food in the late afternoon, and to allowing proximity of a human being. (We never made house pets of any.) There was ample opportunity to observe that their digging for grubs in the soil was dominated by a sense of feeling in the fingers, with a constant rubbing of the soil between the

fingers. They never looked at their hands; they were constantly looking around and observing. It is my general impression that the population has gradually increased since local farmers and their hunting pressure has ceased. Probably since 1960 the population has stabilized, though with minor fluctuations due to unidentified factors.

9. ***Mustela frenata*** (Lichenstein) and/or ***Mustela ermine***. (Linnaeus). Long-Tailed Weasel and/or Short-Tailed (ermine) Weasel. G: 64. – Weasels (species uncertain) have been observed only three times. In the late 1940's, while building the retaining stone wall behind the house, I must have disturbed one's home site. For several days, it would repeatedly run off, then come out of another rocky site to look at me, showing all the curiosity and fearlessness so often mentioned in the literature. In the early 1970's, one early winter morning with deep soft snow, a full-grown rabbit (itself an unusual sight) was seen from the window bounding westwards, followed at a distance of ca. 20 feet by a weasel. Later we found the trails ended 300 feet away; predator obtained prey. Rare! A few years later, Happy came back from a walk to the nearby "Corn Field", glowing excitedly with the story of a weasel. For five or ten minutes she had stood at one spot, while the animal walked all over her shoes, in fearless curiosity.
10. ***Mustela vison***. (Schreber). Mink. G: 68. –Since 1945 I had been told that mink existed in Benedict Pond. The first time I ever saw one was March 28, 1973, crossing the road at the pond's dam, heading down stream. He was not hurried, and observation was ample. A year or so later, looking out one of the back windows, we saw an animal walking up Baldur Brook in the snow, which by size could only be a mink. That afternoon we followed the track up the entire water course for almost a mile, to a place east of the Tows Caretaker House; and then we turned back. Soon after purchasing the c. 50-53 swamp in [the 1970's], in walking around the east shore, there were several places with little piles of fish scales about 2 inches in diameter, which we assumed to indicate a resident mink. It appears that there is a local population, which at least on two beaver impoundments will be safe from legal trapping pressures, since we prefer the animals alive.
11. ***Lutra canadensis canadensis***. (Schreber). River Otter. G: 71. –Dave Curtiss (then caretaker of Doolittle Lake Club) in the 1960's reported that he had seen otter in Benedict Pond. It was not until January 1980 that Mike and Janet Moraski (new residents of the Sturm-Curtiss Cottage, Old Sandisfield Road), told me they had spent 15 minutes watching three otters playing out in the lake. The fate of this species probably depends heavily on Doolittle Lake Club interest.

12. ***Mephitis mephitis***. (Schreber). Striped Skunk. G: 73. –The skunk was never considered “uncommon”, even though in all these years I have never seen a single animal killed on the Town roads in the vicinity. After 1945, I would see tracks in light snow near the house, perhaps once every 2 or 3 years. In the 1950’s one was caught in a Havahart trap near the Playground, when it was set for woodchucks. When found in the morning, the animal was contented and quiet. I cautiously approached; carefully opened the ends and set the pedal; still the animal did not leave; and I finally walked away. When I returned an hour later the animal had disappeared. On another occasion in the early 1970’s, we tracked a skunk in the snow back to a den in high forest, 1300 feet to the southeast of the House. For two years, 1971-72, we had occasional visits to food set for raccoons, under the Study window, of an individual that strikingly appeared almost entirely white. Richard Van Gelder (Amer. Mus. Of Nat. History) was contacted. He indicated the colour pattern of this species is highly variable, and did not seem overly surprised at my description. I would judge skunks to be uncommon on Aton Forest.
13. ***Vulpes vulpes***. (Linnaeus). Red Fox. G: 76. –Foxes were not seen or talked of in all the early years and it is assumed they were too rare to be noticed by the local farmers. I believe they were shot out by preceding generations of farmers, as predators of their chickens. (Between 1955 and 1965 the rabbit population dwindled from “abundant” to “rare”.) In 1969, early March, with deep snow, a den was in use in the central part of Woodchuck Hill; and on April 6 two small kits could be heard “talking” in the burrow, and were curious enough to come out far enough to be seen. In 1972, April, a den was in use in the southern part of the Pine Grove (adjacent to Woodchuck Hill), with remains of grouse, rabbit, and chipmunk at the entrance. Dr David Luchs (neighbour at the Northeast) reported that one of his cats had taken to playing daily with a very young fox, close to his house, while the mother looked on from a distance. From 1976 on, at all seasons of the year, a fox might be seen from a window, or while out in the field, six or eight times a year, maybe several days in succession, always in good health. In 1979, the den in the middle of Woodchuck Hill was again in use, with two or three kits. The young were actively eating Low Blueberries, and were sufficiently unafraid that one could approach to a distance of 20 feet from them. As they became older, in September, they either dove into the burrow or ran off. Presumably, the fox population—all are of the red colour phase—has regained a sort of balance after near-annihilation by the earlier farmers; and in turn is now exerting pressures on its avian and mammalian prey.

14. ***Canis latrans***. Eastern Coyote. –The origins and development of what is now known as the Eastern Coyote is well documented. A population of coyotes had moved eastward through Canada, then southeastward into New York state, and thence into New England. Some wolf blood is possibly involved and, in New York there was at one time strong admixtures of dog; these coydogs do not seem to persist however because of breeding-season incompatibilities. The Coyote that emerged from this genetic mixing is a larger animal than the western strain. In northwest Norfolk, a den of coyotes has been known to some people at least since 1975. The animals are surviving successfully, though a few oldtime “hunters” are determined to shoot them off, with all the newspaper publicity they can get, because of supposed deer population. Research elsewhere has indicated that coyotes are preferably carrion feeders. The Moraskis have several times in 1979 reported hearing the animals close to, or on, the northwest corner of Aton Forest. I have seen the carcass of a female coyote road-killed in the Village of Norfolk in 1979. It was definitely a wild animal. Three deer carcasses have been left as attractants at field edges within 600 feet of the house, January 1980, but as of mid-February have not yet been found by the coyotes.
15. ***Canis lupis***. (Linnaeus). Gray Wolf. G: 81. –The 1847 Roys History of Norfolk reports the deaths of what were presumably the last wolves in the Town, included therein because of “its novelty and the rare sport it afforded”. It was Thanksgiving Day 1787, and everyone was in church listening to the sermon. Not everyone. A Messenger walked in; interrupted the service, and announced that five wolves, two dogs and three pups were on the top of Haystack Mountain. (Even then, it might seem, there was hybridization.) The story, written in flamboyant journalese, indicates that most of the men fled the church for the hunt. They formed a ring around the summit; progressed upwards; killed the beasts and trooped back to town to display to admiring crowds the bloody results of their fearless courage. (Man has not changed. One of my less appreciated neighbours recently got his picture in a local newspaper, proudly showing two trophies, a coyote hanging from one hand; a bob cat from the other.) And so ended our wolf population. (The fate of the coyotes remains to be seen.)
16. ***Lynx rufus rufus***. (Schreber). Bobcat. G: 88. –The bobcat is locally hunted and hated with the same fury and fervour as is the coyote and the wolf was. First it was because they were capable of taking a farmer’s sheep and chickens. Then it was because they were man’s competitors for deer. A new factor has been added, with the high prices that the furs now bring. But just below the surface lies

the simple fact that these animals are worthy predator-competitors of Man the Hunter. The bobcat is the “panther” of the local literature of the 1800’s. I even recall none other than Paul Grigg (who should have known better) about 1950, talking about a “black panther” that either he, or a good friend, had seen at night, in the headlights of the automobile. He believed it was larger than a bobcat, was black, and thought it had a long tail. (The name “black panther” has tremendous appeal.) Bobcat are here, though they are very rarely seen. In the 1950’s while on the rocks below the cliff on Knapp Hill I found Harry Williams—oldtime hunter, who grew up believing he could hunt anywhere he wanted. He calmly announced he was there trapping bobcat. I told him the area was under scientific study. I never saw him there again (but then, I do not get there often). In the early 1970’s, we were sitting in the big window at the Cottage at Spaulding Pond 10 miles SE of Aton Forest. A bobcat came from the West, and slowly walked within 15 feet of the window. About 1975, driving home in early afternoon, I parked at the edge of the road west of the Laitinen house site to watch a grouse. To my amazement, a bobcat stepped five feet out in the road, looked both ways, then went back. Immediately she, followed by two kittens, sedately crossed the road Indian file, and disappeared into the woods.

17. ***Marmota monax preblorum***. Woodchuck. G: 97. –In 1925 the woodchuck was a continuing problem in every farmer’s field and meadow. Natural predators had been killed off. Only the farmer’s dog remained, and a woodchuck could be a good match for most canines. Not only did the woodchuck delight in the best of grasses, but also the most succulent of the farm crops. Besides, he would build up large mounds of raw soil in the middle of mowed meadows. As farm fields were abandoned from 1925 through 1945, the woodchuck population began to decrease, concomitant with an increase in hawks, owls, foxes and other predators. For Aton Forest there were many local variations: I have never found here an active woodchuck den within closed forest. Ancient dens now used by other animals may date from pre-forest times. I find it very strange that certain fields kept open by management research (namely Old Orchard, Cross Brook, Far North and Corn Field) do not have, and never did have, active woodchuck dens. Is it possible that these fields, relatively distant from house and barn, were able to maintain such predator-pressure as to restrict the population? Woodchuck Hill was its own problem. This field had three distinct den sites, about 150 feet distant from each other. Chuck grazing was intensive close to the openings, and trodden trails were visible at the end of the growing season leading out 30-50 feet. From 1945 to about 1955, I live-trapped woodchuck continuously (for

release 7 or more miles away), aiming to eradicate the animal. From 2 to 8 were so trapped each year. The population remained unchanged. Then I gave up trapping; decided to live with the animals; and called the field Woodchuck Hill. Within 2 or 3 years the woodchucks disappeared. (Unrelated I am sure to my behaviour, but correlated with incoming fox behaviour). Quite different was the situation in Headquarters Clearing. There, close to the house with mowed grass and gardens, woodchucks continued to be a nuisance. They could be watched from the windows. Invariably, late March or early April, a “huge woodchuck” would be seen. By May and June, invariably four young would be seen. The very young were remarkably unafraid and one could approach within five feet—to their disadvantage. The game was on, to trap each and every one, or try to do so. Later in the season, other burrows in the vicinity would be in use, and further trapping was done at their entrances. Sometimes two or three chucks would be trapped from one burrow. Then I would pack it solid; but alas, it would be found reopened either directly, or the next season. About 1972 a technique was discovered that seemed to prevent reopening: a wire mesh (one-inch squares) was placed over the opening, the edge weighted down with stones. It would seem that the chuck, peering through, tried to dig through and could not; but it never thought of digging out to, or from, the edge of the wire mesh. In addition, the location of all these burrows was mapped. There were 9, within 200 feet of the house, or large stone pile (actually a stone dump dating from 1910) nearby. Then, in 1974, we no longer saw the “huge woodchuck”; nor did we have young; nor were any nearby burrows opened. The hypothesis: that for all these years a lady chuck, well protected from predators by the proximity of the house, and by a stone pile for a den, had brought forth an annual quartet of youngsters, whom she had planted around in the near vicinity at the end of each season. And now she had gone to her heaven. Then other chucks moved in; perhaps roving bachelors? The holes in the rock pile were plugged with other stones jammed tightly in. At least ten such holes were opened by animals at various times; and then promptly plugged. With this major den site “eradicated”, and predators operating elsewhere, I now think of the woodchuck as a Rare and Endangered Species.

18. ***Tamias striatus listeri***. Eastern Chipmunk. G: 101. –The chipmunk is one of the more attractive, and almost always omnipresent, elements of the native mammalian fauna. Beautiful, friendly and energetic in its pelage, behaviour, and calls, it is a constant associate of the forests and the forest-edges. And also of the stone walls built by our ancestors. One wonders whether these

“artificial habitants” lead to a higher local population than would otherwise exist. The numbers of chipmunks have varied greatly through the years, not always in obvious relation to food supply, predators, or weather, though these factors must play their roles. I have seen years when, on a drive to town, one would see dozens of chipmunks scurrying across the road. Then there were the inevitable automobile casualties: several fresh carcasses noticed on each trip. The spring of 1978 saw the population seemingly reduced to zero. There were almost “no” chipmunks when the days turned warm. When I finally did see one, much later than usual, it was apathetic, listless, and I would not have been surprised if it just keeled over, and gave up its ghost. (The preceding winter had been characterized by continuing ice-covers over the snow, leading to starvation or possibly depleting the oxygen supply in winter quarters. Furthermore, it was the second year of no-nuts for the red oak, our major bulk-source of mast, but extremely irregular in its acorny behaviour.) As happens with all species that do not become extinct, the strong and the wise (and the lucky) survive, to recreate a population of the stronger, the wiser (and the hopefully luckier). Human populations are managed differently.

19. ***Sciurus hudsonicus loquax***. Red squirrel. G: 103. –The behaviour of the red squirrel, (with a behaviour pattern that must appeal even to seemingly-objective data-gathering scientists) with its swashbuckling chattering self-importance, is the least abundant of the sciurids. Yet its population seems constant through the years. At the stonewall barway entrance from the town road into Woodchuck Hill, a red squirrel(s?) has been resident for at least the last five years. The site has planted Norway Spruce on each side bearing cones irregularly. Its presence is verified at least each winter, when tracks in the snow cross between the two ends of the walls.
20. ***Sciurus carolinensis leucotis***. Northern Gray Squirrel. G: 106. –The Gray Squirrel is commonly acknowledged to be the most beautiful and graceful of our local mammals, at least of the smaller mammals. (We must not forget the chipmunk.) Populations through the years and the decades are highly variable, from “none seen” to extremely abundant (though I have no evidence that Norfolk was party to the mass migration of 1933, that began in eastern Connecticut and eventually crossed the Hudson River.) I recall two and three years passing without my seeing a single gray squirrel. Animals in winter can often be sensed (if after a good acorn year) by finding holes down through 6-18 inches of snow, with a fringe of acorn shells around the opening. (Probably not because they “remember” where they buried a nut, but because they can smell a nut.) The present colony of young

oaks under, and downhill from, the large open grown oak on the side of Woodchuck Hill is due not to the implementation of (Clementsian dogma,) but to a coincidental sequence of highly coincidental events: There was an extraordinarily prolific acorn year in the 1950's. A gray squirrel was passed by; he came, and saw, and conquered, endlessly burying nuts both under the crown, and 20-30 feet downhill from the tree (easier than going uphill)—I watched him do so. The squirrel that winter may have met with a mishap. At least he did not return. Seedlings survived and grew. My spot herbicide spraying was totally ineffective in rootkill of the oaks; and brush cutting was equally so. Ergo, a relatively pure stand of Red Oak seedlings, all because another animal (me) decided to leave that one Red Oak (rather than any one of the other woody-plant individuals, at that spot. Thus it became a Sigmatic-etum in its own right, eligible for the descriptive and hierarchic taxonomic treatment that good Sigmatisms would bestow upon it in the lands of Sigmatisms. In pace requiescent. The nuts germinated in their position just under the surface. Summer moisture was favourable. Mouse populations were low in several subsequent years. In the late 1950's, a winter population was extraordinarily illuminating. Usually we had one or two squirrels who were minor nuisances at the bird feeder near the east windows. But that winter we found twelve determined beautiful and hungry animals. With sympathy for the feathers rather than the furs, I played one card (after another) to outwit them. To conquer the standard large inverted aluminium bowl, under which hung the feeder, was kindergarten game for them. The stakes went ever higher. I played all the known (and several unknown) tricks. Check; and countercheck. Greased poles merely meant greased bellies, and rapid foot-action. Hanging the feeder on a wire merely developed their innate talent for tightrope walking. Stringing the wire through revolving tin cans merely developed their gymnastic ability to jump the cans, or to run quickly along a series of them, like along rotating logs in a river. (I drew the line at using the pigeon-deterrent strips of erect 4-inch needles, when I found them ready to jump upon such places, and impale themselves.) Moving the wire-strung feeder farther and farther from tree and house, out into open space, only challenged them to develop their high-diving capacities, as they learned to sail through the air from greater heights, to greater distances, to land directly upon the feeder. I shall never forget the morning watching one beautiful ball of beauty at the base of the tree, quivering with an intensity that was more than physical. I clearly saw him look out at the feeder; then I saw him look at the nearest branch; then he looked at the trunk of the tree. His eyes really seemed bright with understanding. With almost

no hesitation (the parameters had been measured, the computer had received the input, he read the print-out) he shot up the tree, out to the farthest branch, and sailed through the air to land directly on the feeder. That day I let him eat to his heart's delight. (Would that I could see the same look of intelligence on the student faces in the classroom or field, or on adult faces amongst utility corporation personnel.) And so we played games all winter, until spring came; the feeder was withdrawn; and I acknowledged a worthy intellectual adversary. (But then, these friends have one advantage over us. They do not believe in equal rights, only in equal opportunity. They do not save the runts of the litter, to breed more runts.)

21. ***Glaucomys volans volans***. Flying Squirrel. G: 113. –The Flying Squirrel is known as a nocturnal and arboreal species, and thus not readily observable. In the late 1950's, I had a bird feeder on the angled side of the house, at the kitchen door, readily watched from inside. That summer, every day at dusk, the remaining seed was enjoyed by a compatible group of four big-eyed balls of fur, that did not seem to mind being under flashlight surveillance. They never adjusted however to opening of the door, on which action they would scamper up the shingles towards the attic, and out of sight. But there was never any evidence of them actually in the attic. This has been my only experience with flying squirrels in 50 years on this property.
22. ***Castor canadensis canadensis***. Beaver. G: 117. –The story of the beaver, locally and throughout the state, is one of extinction, and recently a remarkable comeback. It is probably that the beaver maintained a relatively steady population (a beaver climax) throughout postglacial and Indian times—not because the Indians were ecologically wise in their managed harvesting, but because there were not enough Indians, or enough economic incentive, to extirpate the beaver. Through several millennia, shallow valleys must have silted up, in a process that was geomorphically significant. Enter the colonials, with improved trapping technology, and with enticing markets for fur. Then the beaver population throughout North America suffered a drastic decline. By 1842, the species was said to be extinct in Connecticut (Goodwin 1935), though a few pockets of animals may have continued to exist. It should be remembered that farmers had additional reasons to remove the beaver: Without the beaver, and drained by ditches, if need be, these lands were excellent soils both for pastures and for croplands, far superior to adjacent stony, steep thin-soiled tills. Then came the decline of farmlands, and forests developed on the abandoned meadows. By 1929, beaver were again reported from northeastern Connecticut. There were no beaver in Benedict Pond when Dave Curtiss left for military service in World

War II. When he returned, 1945 presumably, he reported that beaver had arrived. From then on, beaver populations rapidly expanded, drowning out the forests that had appeared on “their” lands, flooding homes that had been built on “their” lands (with all the conflicts of interest), and harvesting 90-year-old trees from adjacent slopes up to 500 feet from the impoundments. When I flew over the area of the 1977 tornado, a 40-mile swath, it appeared that beaver had “reclaimed” about every reclaimable lowland suited for their activities. At the Beckley Bog area of The Nature Conservancy, beaver were already present at the time of the first purchase in 1957. The beaver-vegetation situation became the object of a special study through a small NSF grant to TNC-national in the mid-1960’s. (The bog floated with the rise in lake level; the marginal parts, tied to the bottom, became a moat; and “classical bog succession” was shown to be ridiculously nonexistent—but TNC bungled the financing, and I never finished what was always intended to be a long-term study). Spaulding Pond was purchased in 1962. Beaver moved in 1964. The population has fluctuated; lodge sites are constantly changed; and deforesting of the lakeshore vegetation even of hemlock is still progressing, with much increase of mountain laurel. There have been other impoundments on the Mad River within the property, but such areas have been illegally trapped out. For the swamp south of the Botelle School, first the beaver were trapped out by the Corps of Engineers (on building of the flood control dam—the two kinds of engineers are incompatible). Beaver have since returned. At Aton Forest, with the purchase of the Laitinen tract, we obtained large areas of shrub-overgrown and forested meadows along upper Brummagen Brook, the outlet of Benedict and Doolittle lakes, but unfortunately owning only to the middle of the stream. By the early 1960’s, beaver had moved into the entire area, with the first dam (going down stream) near to the Two Kames. This impoundment flooded out a forest of elm, ash, and some pine. The second and third dams were possibly built upon old farm-road crossings. The fourth dam is just above a man-made stone channel at a road crossing, and may have been a mill site. These impoundments are very close to the Caretaker Cottage of Doolittle Lake Club. The beaver vanished in the early 1970’s, presumably trapped out by caretaker. At one time, there was a considerable amount of yellow waterlily at the south end of Spaulding Pond. This all vanished; beaver eat the rhizomes. The dam (built in 1901, then a section broken, and rebuilt about 1960) was leaking badly when the property was bought in 1962. The beaver, within a decade, had plugged up all the leaks, and had piled mud and small stones against the dam to form a graded mass of material along

the entire length of the dam. Bob Oen. There were no beaver in early summer 1979. New beaver were in the lowest impoundment by December 1979; but the new caretaker is known to be a trapper. There was also a small impoundment at the upstream Lossin line; the dam had been broken, and has not been repaired. In all these four Laitinen Impoundments, the trees and shrubs have been drowned out. *Calamagrostis* is now most abundant, with local cattail and *Carex stricta*. The shore vegetation has been much opened by the beaver. At the little Estes Pool, about 70 feet in diameter (500 feet upstream from the House—made by Carol Estes about 1960), a beaver moved in in the mid-1960's; depleted the woody vegetation adjacent, built a lodge on the north shore, and disappeared about three years later. The C-50-C-53 impoundment was bought in 1974 (to prevent cottage development by Ross Williams). The entire area in earlier times had been ditched and drained farmland. The 1934 air photo shows a distinct vegetation difference between the east and west ownerships, and one can see in that photo the three major ditches in the eastern half. The beaver dams have flooded large trees at the western end, bringing water levels close to the level of the adjacent South Sandisfield Road. Curiously, when the beaver started damming the culvert under the road, someone on the Town road crew ran a semicircular wire fence about six feet from the culvert mouth. The beaver have built against this fence, and no longer dam the culvert. (This is a policy I have long recommended to the Town (that of starting a dam at a short distance from the culvert, and letting the beaver build it up, thus leaving the culvert free.)) I cannot see that the Town has learned from their own accidental act. The large C-16 impoundment, north of the Tows Caretaker House, I had not known existed until I was arranging to buy the property in 1975. There is a low upper dam impounding a relatively small area, east of the ancient Stone Culvert on the road north of the Tows House. The main dam is built upon an old stone dam (still to be seen), with ancient building sites on the north side, a channelized outlet, and a road going down stream on the south side. The vegetation before beaver had been a shrubland, probably succeeding pasture land, which in turn had succeeded the millpond. We found a trapper at the lodge on a winter day of 75-76 who claimed to be the boyfriend of a daughter of tenant Elms in the Caretaker House. He said he had been told by Mrs. Elms that "it was all right with the owner to trap"! We gave him fair warning. Nonetheless, there were no beaver in the entire impoundment, with its three lodges, in the spring of 1978. Apparently they had been trapped out during the winter of 77-78. The beaver is an animal that locally, as elsewhere, has a truly remarkable impact

both upon land surfaces (sedimentation in valleys), and upon the vegetation. The present beaver populations are producing drastic alterations with respect to impoundments, and to temporary drawdowns, each situation with its own fauna and flora, as well as on adjacent foraging areas. Control of illegal trapping is difficult, and sometimes impossible. Furthermore, such illegal trappers are not likely to “manage” the beaver (“Take them all; if you do not, someone else will”.) Beaver lands, to be preserved by naturalists, need a resident custodian. If the beaver were again to disappear from the region, there is no question but that their effects could be read from the landscape for the next two or three hundred years, by discerning naturalists (but not by data-gathering technician-level hacks, on short-term inventories).

23. ***Peromyscus leucopus noveboracensis***. Northern white-footed mouse. G: 120. –There have been no mouse-trapping projects at Aton Forest. In the early 50’s, a mammalogist at UConn Storrs showed some interest in doing such trapping himself, and I continued to think that this was an ideal opportunity for some professor or student. Not so. Knowledge of the local mice has been obtained mainly from house-trapping in attic, cellar, Study, and Coop. If not so controlled, mice would soon become abundant, unwanted, and destructive in their nesting activities. In the Coop, their night-time activities in its attic during good acorn years made the place sound like a Cricetid bowling alley (for acorns are apparently hard to bite into; they slip out; roll over the floor, with a mouse unsuccessfully chasing after it). Of the mice so trapped, *Peromyscus* has been 95% of the total catch. (The others have been red-backed voles, and shrews.) Cricetid populations vary tremendously through the years. After 50 years of observations (year round, after 1945), I can see nothing that could be called a pattern or a cycle. Evidence is from three sources: indoor trapping; garden activity, especially in terms of winter damage under accumulated leaves; and surficial damage in the fields. Cricetids are active throughout the winter, feeding below the snow, and only rarely tunnelling out to the surface. When the snows melt, forage areas can be seen 5 to 30 feet across, where all the surface vegetation has been worked over, and one can comb the surface with one’s fingers, collecting a kind of macerated mulch. The total such area may be 10 to 15% of the entire field. Each area may center around a small highbush blueberry, with a mouse nest at its base. The effect on the plant-community is minor, however, and by late spring is unnoticeable. The winter of 1962-63 was especially severe in such mouse damage, with damage minimal the following winter. 1966-67 saw little such damage; 1971, severe, with damaged spots

still apparent into June. Indoor catches are irregular, from year to year. In some seasons, there will appear to be no mice. Then again, there are times when I have morning-found four mice in a 4-holer, even after heavy previous catches. Garden damage becomes a problem, for without mulch, research plants are badly frost-heaved. And with leaf mulch, they can be badly moused. (Merely evidence of the vicissitudes of natural pioneer populations on bare soils, and the folly of manicuring horticulturalists who recommend “seeding” or of “planting” under conditions such as transmission lines.) 1976-77-78 witnessed the greatest peak followed by the greatest collapse observed through over 50 years: 1976 saw a buildup of mice, of bowling-alley mice in the Study attic, and indoor house catches. The adjacent garden was much worked-over. Late 1976 was a heavy acorn crop. In the winter of 1976-77 populations were high. The summer of 1977 was a worst-ever year. *Microtus* were often seen in the garden in full daylight. Dead *Microtus*, with no visible signs of injury, were found in the road at least half a dozen times. Indeed, it is the first time I ever became familiar with *Microtus*! Mousetrap mice continued to be caught that fall, and into the winter. Then suddenly, February 1978, there were no more catches, no more evidence of mouse activity! The “silence” seemed almost ominous. There was no Cricetid damage in fields or gardens that spring; and no trap catches until that fall, and then they were minor. By that fall, *Peromyscus* began to be caught again. I suspect the “best” mice survived the crash, to breed a “better” race for the future.

24. ***Clethrionomys gapperi gapperi***. Red-backed Mouse. G: 129. –Data on the occurrence of the Red-backed Mouse in the fields and forests are lacking. It is an animal of much the same size and shape and build of *Peromyscus*, but less white underneath, and distinctively reddish-brown on the back. My acquaintance with it is only through its occasional invasion into the houses, and being caught in the traps set for *Peromyscus*. Less than 5% of the catches have been of this species. It is doubtful if it has played any significant role in the garden and field disturbances already mentioned for *Peromyscus*.
25. ***Microtus pennsylvanicus pennsylvanicus***. Eastern Meadow Mouse. G: 131. –*Microtus* (already mentioned in the annotations for *Peromyscus*) may always have existed commonly in the fields, but it was never observed. Doubtfully it is responsible for the subnival chewed-up patches that appear in spring, for there are no obvious runways through these areas; and it was only in the earlier 1970’s that larger tunnels and openings appeared in the garden, and these animals began to be observed. Future trapping projects should reveal its role in the Vegetation and in the more inclusive ecosystems.

26. ***Ondatra zibethica zibethica***. Muskrat. G: 137. –The muskrat has not been an obvious element of the mammalian fauna, largely because I have not kept marshes and beaver impoundments under close observation. It undoubtedly occurs in such places, though no muskrat house has been observed. In the late 1960's a muskrat was observed in the Estes Pool upstream from the house. Both here (and on one occasion at Spaulding Pond), the animal swam with much of the body submerged, but its tail rising erect—and the most conspicuous thing, riding through the water, like a mast without its boat. (This is the way they normally swim?)
27. ***Mus musculus musculus***. House Mouse. G: 140. –With my origins in New York City, and with experience in summer hotels and homes, I was very familiar with House Mice—or thought I was. I have to admit that for far too many years, I thought that every mouse in a house was a House Mouse, and every mouse in field or forest was most likely a White Foot. Far too late in life I realized that here at Aton Forest I had never, even once, seen a *Mus muscularis*, I mus' admit.
28. ***Rattus norvegicus***. Norway Rat. G: 141. –I am reasonably sure that farmer Stenman, from whom we bought the core property here in 1926, was troubled with rats. And I am reasonably sure that the Stenmans and their cats (and their dogs?) kept the rat population reasonably low, to balance their unreasonable extirpation of all the natural predators. Soon after 1934 until about 1940, my brother attempted to raise chickens in what is now the Study and the Coop. He complained of occasional rats, which he blamed our neighbour Lou Guerin ([our neighbour] now Humes) who was raising guinea pigs for the medical research trade. (Lou Guerin probably made the same criticism, in reverse.) In the 1960's a rat took up residence just outside our kitchen door, very happy with the birdseed my mother was putting out for her chickadees. And if there was one thing for which my mother had a holy horror, it was rats. (She even disliked grey squirrels, because they reminded her of rats.) The rat became bolder with success, and became diurnal. I bought several large snap traps and enticingly baited them. Then followed a game that lasted several weeks. He would not touch a baited trap. Then I tried various foods, to see what he liked, and to addict him to such delights. Then I set a trap with those morsels. No touch. I put out a trapless morsel (to check his conditioning). Gone in a gobble. I would bait unset snapped traps; the goodie was snapped up (and he probably thought me a fool). I placed a Smorgasbord item in such a way that he had to walk over a snapped trap to get to it; and he did. I laid a delight upon a snapped trap in such a way that he had to walk over a second

snapped trap to get to it; and he did. I did this for several days. At last I played my final trump card (and I knew it was my last; if this failed I would admit his intellectual superiority): Conditioned to walking over a snapped trap, to get food laid on the pedal of a second snapped trap, I set that second trap (which he could only approach from the innocuous-looking pedal end; I had been covering the far end of the trap with leaves; now I covered the set spring bar on that end in the same way). One hour later, my rat had met his demise. I was not proud of myself; I was ashamed of my treachery. I buried him with honors; and was sad for many days. I had really developed a respect for that fellow. He was the last rat I ever saw on this property, thus becoming a Rare and Endangered Species, if not locally extinct. Now, we just put out D-con.

29. ***Zapus hudsonius hudsonius***. Jumping Mouse. G: 145. –In 1928 at the age of 17 I found at the forest edge what I then keyed out to be a young jumping mouse of this species. In every way he was an animal that delighted me, in body, beauty, apparent brains, and temperament. The kind one wants to make a pet of. I provided him with food and water. After a week he went to his heaven. In September 1948 another *Zapus* was seen at a forest edge.
30. ***Erethizon dorsatum dorsatum***. Canada Porcupine. G: 153. –The Porcupine is still another animal whose population was decimated in farming days by the rural people. Firstly, it was easy to kill, with only a club, or an iron rod or pipe. Secondly, no farmer or hunter is other than wroth when his dog comes back with a face full of quills. And some dogs do not learn, but will attack a porcupine week after week, until that porcupine is finally removed. I never saw a porcupine in the early days. The first was in the fall of 1948. Since then, the population seems to have increased to a relatively stable situation. It is possible that disease, not predators, are a major controlling factor. Once in the early 50's, and once in the early 70's, I have found an animal (the second time a small one, presumably young) that was so lethargic, so unresponsive, I knew something was wrong. On killing the animal, in pity, one found the abdominal skin clear of quills, excessively thickened and hardened, and cracked through to the raw flesh underneath. To my knowledge, there has been no shooting or control of porcupines on these lands since 1926 (or since date of purchase of other lands). Yet there has been no widespread damage to forest trees, as known from other parts of the country, such as debarking in wide swaths of certain pines. Porcupines have been seen at widely separated points, but they appear to be wanderers, from dispersing families, looking for mates or for territories. Having watched these animals for several decades on

the same lands, I can say that not only have I seen no dens established in hollow trees, or in the ground (save one for a short time in the 50's, in what may have been an ancient woodchuck burrow from earlier pasture days, on the B39-C48 line). Dens (quickly recognized by the heavy accumulation of droppings at the entrance, and in winter by the urine-stained trails leading to the food tree of the time) are in rock "caves" (caves formed by tumbled rocks, of small-mammal sizes). These dens seem to be "permanently" occupied by porcupines, at least as long as my observations. Thus it can be said that the population appears to be conditioned by available den-sites. These are remarkably few at Aton Forest. One is man-made (an enormous pile of large field stone, from Tows days, from field-clearing, and home of the porcupine that is sadly damaging Tows' Music House. There are two dens in the Porcupine Ledges (near the Town Line, north of the town road, in C-47). There are three below The Ledges (south of Ivy Knoll, C-46). There are one or more in the rock pile below the cliff on Knapp Hill (in the tract given to The Nature Conservancy, the site of the legendary cave and seat of Local Yokel stories involving outright lies and gabbling gullibility). The effects on the Vegetation near these dens is quite remarkable, for even here there seems to be a "balance" albeit on an extremely long time-scale, though I believe the present cycle only started since the middle of this century. There is quick attrition of beech (they are girdled; porcupines cannot climb them); slow attrition of hemlock (see below). In Clementsian dialect, the two "climax species" are thus eliminated. Also eliminated are many "pioneer successional" species. Red oak is not touched. Thus a good Clementsian, were he a good bioecologist, has every reason to create a Porky-Oak Disclimax. When in the proper mood, I may do so. It is extremely curious the way a porcupine will fall in love with a single large overtowering hemlock, and proceed day after day, all winter long, feasting on the twiglets of that one tree, ignoring all other hemlocks, even smaller ones that require less or even no climbing. Eventually, it may take two or three years, the tree dies, even though monarch of the climax. There are at least ten such huge hemlocks, now standing, or fallen, dead and gaunt, around the Porcupine Ledges of C-47, even though an adjacent stretch of new hemlock is untouched. "Good intelligent conservation" you may call it. (I would agree, if you adopt the same rationalization for some of man's conservation-behaviour). At Spaulding Pond, this attachment to certain trees one winter led to a porcupine daily travelling 500 feet from his den to feed on an especially tasty Smorgasbord. In summer one finds similar specific food attachments, not just to species, but to definite individuals. Trembling Aspen is a preferred food, and when a

porcupine finds one to his taste, he will return day after day until the tree is shorn of its smaller branches. The effect is noticeable for years after that. Pussy Willow is another delectable, and I suspect that one year we silently accused a neighbour's child of gathering pussy willow for sale (although maybe both animals were operative). In the early 70's the plant at the Coop door was found when in full flower. All long flowering branches were cut off, and then the catkins eaten from the ground. The plant was essentially pollarded. This happened again in April 1976, at which time our friend (operating in the dark) was dubbed Porky the Pussy Eater. The Rowan Tree (European Mountain Ash) is another desirable. In the mid-70's, one large planted specimen was a *veni vidi vinci* operation, and by the time the animal left it, it looked sad indeed. How much a porcupine does eat in the experimental Playground I am not sure (for woodchucks and deer are also involved). In August 1979 (no woodchucks), it became apparent that he was cleaning out the few milkweeds I was allowing to grow (for my own food). And then, one day, 6 PM, from inside, I heard a distinctive low soft chuffing grunt, twice repeated; a pause; then again. I saw plants moving; *Eriogonum*. We have one Yellow Delicious summer apple tree, planted in the late 1920's. In one good-fruited season of the mid 70's, we were watching for maturing fruit, yet they always seemed to "disappear" before they fully ripened. We also noticed small 12-18 inch branchlets on the ground. Then one day we looked into the tree, and there was Porky, totally content. We brought out our wickedly spined "pigeon repellent" and swathed the base of the tree, figuring it would be easy to out-quill the Quill Pig. Apparently he rode over them as easily as a male Porky could ride over a female. We removed that barrage of pricks; and he removed the remaining apples. Mission still unaccomplished.

31. ***Lepus americanus virginianus***. Snowshoe Hare. G: 156. – In all these years, the snowshoe hare has not been seen more than 10 times. Most of these situations were in lowlying hemlock stands, so-called Lower Slope, and seasonally wet flatlands. On the other hand, one animal was seen in (Headquarters Alpha) March '72, close to the planted Spruce edge. And for several days in August, 1974, a snowshoe hare took an interest in the *Plantago* major plants growing beside the flagstone trail to the Study (which I consider a nuisance species, inedible as a potherb, unattractive to look at, yet favoured by my own trampling feet). His manner of eating was precise. A leaf was bitten off; then with the stem-end in his mouth, the jaws would start working, and the leaf would slowly but regularly disappear, until finally the very tip would disappear. Then another leaf. And another. And so on. We gave him all verbal encouragement to remain, and be

our Plantago Controller, but like me, he never came back for a second meal.

32. ***Sylvilagus floridanus mallurus***. Eastern Cottontail. B: 162. –The story of the Cottontail (I assume we do not have *Sylvilagus transitionalis*, the New England Cottontail) is one—like fox, woodchuck, beaver, and deer—that has shown a remarkable change in population numbers, with such remarkable influences on Vegetation Change that I am not sure whether I have pity or contempt for those simplistic souls among the plant-lovers (i.e. botanists) whose ecological (environmental) sophistication is limited to a mere two-factor edapho-climatic causationism. They seem totally unknowledgeable about the documented situations in Great Britain, Australia, and many Pacific Islands, tales that should be obvious even to mental deficients. In pre-1926 farming days, rabbits must have been not only abundant (because of predator kill-off), but a nuisance (in croplands of tender vegetables), plus a source of meat (from the family hunter). In the late 1920's I remember asking our predecessors-in-title about several places where the well-built storm walls seemed to be pulled apart. "Oh," was the reply, "that is where the oldtime rabbit-hunters" probably meaning himself "would have to break the wall, to get at a rabbit they had shot." (I tried to repair one such wall—but never attempted a second. Stones are not lifted up as easily as they are pulled down). In the late 1930's rabbits were sufficiently plentiful to attract Rabbit Hunters from Winsted to whom my brother gave permission for such hunting. Through the late 1940's and even early 50's rabbits remained plentiful. Hunters continued to vie for the privilege of getting rabbits, and I would favour those who would leave a prepared carcass at my doorstep, to supplement my meat-intake. The effect on the vegetation was not invisible. Selective girdling during the winter was common, above the snow line. Such effects seemed to be "local", implying no great size of Territory, or of wandering. Yet over the years, coverage was extensive. I remember that in the northwest part of Big Heath (south of the Laitinen House Site) ringing of a 100-foot stretch of 1-1 ½ -in. red maples was complete, while the accompanying gray birch and choke cherry remained untouched. ("If the rabbit population continues", I thought, "I shall write a paper on the graybirch-chokecherry stage of oldfield secondary succession being instead a rabbit-desylva-ed climax *Sylvilagus*-scrub." I was saved from that embarrassment by having the rabbit population diminish.) I seem to have encouraged their local presence, however. They were often in the experimental Playground. And about 1950, one lady had her family in the chimney corner beside the door to the Pump Room. As late as the early 70's, there was a

rabbit one winter near the Plum Clump at the Laitinen House Site. He carefully ringed every stem within reach of the locally massive invasion of Wisteria. I am sure if we could keep such an animal on a tether that Wisteria control would be feasible. The population (once locally so abundant, we named a few areas Bunny Clubs) dwindled. Today the Cottontail is a rare (and thus endangered?) animal, even in the damaged lowlands, shrublands and young forests. I feel quite certain that the increased populations of carnivorous predators has effected the change, and thus indirectly subtle changes on the Vegetation, all the more difficult to interpret because of concomitant changes in the populations of other selective herbivores.

33. ***Odocoileus virginianus borealis***. White-tailed Deer. G: 170. –Following the recession of the glaciers, White-tailed Deer and the relatively low Amerindian populations, together with other predators, probably maintained a dynamic balance. With the coming of European settlers, and their firearms, deer populations took a nosedive. By 1642, special laws were in effect in Connecticut concerning sales of meat. In 1698, deer were “protected”. Populations continued to drop until 1842, when only one deer was reported killed in the state. Henry David Thoreau is said never to have seen a deer! By the turn of the last century, however, the population was beginning to increase. By 1915, landowners were permitted to take crop-damaging animals. A deer was shot on Aton Forest in 1928. From then on, the population has been increasing until, in my opinion, it is probably the greatest of any time since the glacial recession. As my rabbit hunters vanished about 1950, deer hunters came on the scene. For the last ten years I have been very fortunate in maintaining a limited amount of very high-quality control on what is clearly an overpopulation of deer, with a worsening of the food resources. The elimination of natural predators has apparently not compensated for the “take” by both legal and illegal hunters, even though both farming operations and reforestation on abandoned fields generally increased available browse. (Lumbermen loudly proclaim that “lumbering is good for the deer.” There is much bluster and blarney in that statement of self-interest. To cut ancient trees in order to get two or three years of browse from quick-growing sprouts is, per se, a questionable practice, except as a way to get quick cash. And even that wildlife advantage is uncertain if the new browse is unpalatable. The lumbering of a mixed beech forest, for example, is often followed by a dense regrowth of unpalatable beech root-suckers. There have been varying opportunities to observe the effects of deer on Vegetation, and the behaviour of the deer themselves. In general, it may be said that one should be very cautious about making

generalizations, especially from short-term observations in small areas. Individual deer may be as variable as people, with respect to food, local territories, fear of man, tendency to be diurnal or to prefer night-life, and even in respect to behavioural carry-overs from mother to child, and probably to grand-children. If you do or don't like some specific things the deer are doing, lay it to the individuals, not the species. Yet on the other hand, broad effects on the Vegetation are critical, important, and astonishing. We were fortunate in having a group of up to 9 deer utilize Epsilon-Zeta-Eta fields for feeding through the 1972-76 snowless seasons. Study, Skydome, and Coop are observation posts for these areas, and the deer provided countless hours of deep interest during desk work and meal times. Individuals became clearly recognizable not only by size and behaviour, but by colour (from reds to browns to greys—which vary by seasonal change), and by such distinctions as a torn ear. “Spooking” and flight of the whole group was common, often by passing cars on the Town Road, 400-500 feet away across open fields. Caution, impatience and fear were frequently expressed by an unusual movement, or by sound from indoors (though they had fully adjusted to our classical music, and to ordinary conversation.) At such times, one deer would stand facing the house, alert, tense, and often pawing with one foot in obvious fear-edged impatience. At such times, we would freeze to immobility; and she would return to eating. Evergreen dewberry was the favoured food in early spring. The relationships of does to fawns and to yearlings was observable. Frequency was apparent. Fawns were dropped nearby. (We had fawns dropped in this Headquarters Clearing in previous seasons, and roots in this territory probably gave rise to this local herd). In May, the fawns would be brought out. Differences between fawns were observable. If one was too fearless, and approached the (dangerous) building too closely, the doe would chase it back. In another case, one sibling would sedately eat, while her twin (dubbed Skitterbug) would cavort and gambol and kick in her heels in obvious expenditure of excess energy and joy. At one time we had two sets of does and fawns, coming out at different times, but with one set dominant, and chasing the other off the field. Then there were reactions to strange single deer, who were tolerated at various distances, or not at all. Most interesting was the relationship of the does to their yearlings. At first the yearlings stayed close to the mother, and all seemed happy. When the spotted fawns claimed her attention, the doe's attitude clearly changed. “Keep your distance! Git!” became the order of the day, as she would nip and chase them, often out of the field. Clearly a traumatic experience, when a once-devoted parent kicks you out, in order to make you grow up, and you

sense sibling rivalry. Only once did we observe copulation, at the end of the field, in Zeta. Several deer were feeding. Then a buck strode in from the south, antlers high, pace slow and measured. (Clearly he was not browsing, he was “cruising”.) Some of the deer left the area, and disappeared in the forest. The last doe started walking away, and we thought “oh-oh; too bad”. But no. Twenty feet distant from him she stopped; no change of leg or body position (i.e., hindquarters facing him); her head twisted around; neck lowered, she looked back at him. Unquestionably she seemed to demurely say “Okay. Come and get it.” He strode up in measured dignified paces; mounted her; it was all over in a matter of seconds, with no thrusts or other expected movements. He removed himself; she walked off into the woods without even a backward glance. There was one other aspect to these behavioural observations. Years before, I had tried to fertilize an experimental plant in the field with human urine; I overfertilized and killed the plant. Independently, I was trying to kill out certain clumps of seedling-spreading *Andropogon scoparius*. Stonemulching with flagstones, then with asphalt shingles, was not totally satisfactory. Why not kill by overfertilization, leaving a spot that would be healthily reinvaded? (I had long been saying that pollution was an unutilized natural resource). For at least a year before, I had realized that such spots seem to have become bared, and I finally had to admit that some animal was eating the material. Mice, I (wrongfully) presumed. So in the fall of 1975, and through that winter, I “salted” ten clumps of *Andropogon* in Eta field. By spring the spots had not only been eaten down, but the soil had been so licked off that last fragments of the stalks were above the general level. From then on, the project was in full force. At first, the nozzle technology was personally biological, pure male chauvinism: a nozzle that allowed directional application, with force and quantity controlled by two fingers. Then I found that 50% dilution with water, in a plastic watering “can”, was equally efficient. I could make otherwise-unpalatable plants into items of deer enticement, such as summer goldenrod (*S. juncea*, an abundant species that locally I wished to eliminate), and lowbush blueberry (a clonally spreading shrub that is more aggressive than I like). I found out that these salted P-nuts were as superlatively attractive as unsalted ones were objectionable. So precise was this distinction that I would spray designs on a low groundcover of blueberry, and the next morning the design would be perfectly carved out in bare blueberry stems. My design was once a large letter P in a smooth low-blueberry clone. (I explained this to several visitors as a matter of teaching my deer how to spell—but one lady was too much of a lady to appreciate firstly the deadpan gravity with which I told the spoof—and which she

at first believed—and secondly, the scientific gravity with which I viewed the experiment. I still have no way of telling whether the bared spots frequently seen along trails in the forest, and always believed to be made by deer, have any relation to passing animals, deer or other species. There is one other feature of Project P that is of great interest, and is an indication of the superb sensory acuity of deer. I was now using this means of deleafing as a control measure for juncea leaves, young *S. grammifolia* and young *S. rugosa*, and also for low-blueberry clones. Thus, I would spray a different area each day. I became suspicious; and each day I moved the place of application to another spot a hundred or so feet away, applying the material about an hour before the deer were expected in the afternoon. Then one evening we watched very carefully. Our yearling came out early from the north in a rapid near-trot (no slow, searching, hesitancy). She passed right close to the previous day's Smorgasbord without a sniffle. She kept up the trot with seeming eagerness (no rambling, no passing snatches at other food) directly to the very spot sprayed but an hour before. She began at once to eat; and cleaned the board. Only then did she move on, to passively graze. And when other deer came out, they gave only casual attention to the new site. Use your own judgment. By July of 1976, utilization of the slated spots seemed to be lessening. In August, 1977, a deer was observed to come out, and go directly to a sprayed spot. But thereafter, clearly these deers' tastes had changed, or even the chemical product may have changed (chemical manufacturers are not to be completely trusted). I refuse to generalize unduly on this subject. There was an aftermath to these diurnal observations of 1972-76. Familiarity with us and the buildings seemed to lead to nocturnal foraging of the garden and experimental areas close to the buildings. The deer, sometimes identified as a mother and two young, but sometimes as a herd of six, sampled and liked a large number of plants that I am sure they, as individuals, and sometimes as species, had never encountered before. In the winter of 76-77, several beds of very dense *Phlox subulata*, when the snow cover was thin, were eaten down to the ground. (The beds, previously stable, were then invaded by grasses and other species in the coming season; and although kept manicured, have not yet gained—1980—their former density). Thereafter, up to but not including the 79-80 winter, there was no diurnal foraging, but there was excessive nocturnal damage to research plants. Winter evergreens were taken, unless heavily protected. Balsam seemed a preferred item. (For 20 years it has been impossible to grow balsam seedlings, unless very heavily protected, to 7-foot heights.) Planted Thuya that have grown at The Study door for thirty years were browse-lined in a few nights of

the 78-79 winter. Deer climbed up the front porch steps to chew down the yews. *Juniperus virginia* (not more than two dozen trees are on the property, all pre-1925) were browse-formed from earlier years. Browsing has increased, and debarking has progressed to the point of killing by ringing. *Juniperus communis* is highly unpalatable, yet two shrubs were liked by at least one deer, with at least 50% of the foliage eaten. Laurels never touched since planting in the late 1940's were browse-lined, as well as several old *Rhododendron carolinianum*. A *Magnolia stellata* was shorn of all flower buds within reach. So also *Rhododendron roseu*. Evergreen herbs took a beating: *Shortia*, *Galax*, *Pyrola rotundifolia* and *P. elliptica*, *Polygala paucifolia*. Most surprising of all, beds of *Vinca minor* (planted in the late 40's) that were thick stable communities, were eaten down in a few days of 78-79, and then again in the autumn of 79. Many broad-leaved forbs during these summers took a beating. *Aster novaeangilae*, which had been increasing by seedlings in nearby fields, has for several years been selectively eaten. Also *Phlox paniculata*, four *Silphiums*, *Thermopsis caroliniana*, large *Polygonatum canaliculatum*, *Helianthus tuberosus*. It was impossible to grow *Phlox paniculata* research plants, even in the garden. Pure dense stands of the aggressively clonal goatweed *Aegopodium podagraria* are eaten down in autumn (possibly eaten also by woodchucks and porcupines.) Research bracken beds have taken a beating. Several stations had developed into pure stable communities. Bracken eating has been so extensive for several years that *Dennstaedtia* (where co-present) is taking over. It is difficult not to believe that some deer are not compulsive bright-flower eaters. I have had one *Lilium grayi* that has been repeatedly lost to deer, and finally failed to appear in 1979. *Lilium canadense* flowers are neatly plucked off. The flowers of white bottle gentian, *Physostegia*, *Chelone glabra* and *Chelone lyoni* are precisely plucked. Altogether, the tidbit tastes of apparently one or a few nocturnal habitués, from the fall of 1976 to at least the fall of 1979 have raised havoc with scientific research, while illuminating the role of deer in the local plant-communities, and thus in the general food supply. Reference to Figure 1 on "changing mammal populations 1925-1980", includes three plants, of great importance with respect to both Deer Habitat, and to the regional vegetation itself: *Dennstaedtia punctilobula*, the Hay-scented Fern, is a species which spreads clonally, does not die out at the centre (is not autotoxic), is apparently allelopathic (appears to resist invasion by many other species, except for *Rubus idaeus*, the wild raspberry and the only so noticed since 1975), grows both in sunlight and in forest shade (except under hemlock), and in the last 50 years continuously and steadily extended its coverage, and gives all

evidence of not stopping. Its importance to deer is that it is totally unpalatable. Thus, the forage for deer is gradually but steadily decreasing. *Kalmia latifolia*, the mountain laurel, is unpalatable to cattle, thus had filled up pasture lands (combined with other unpalatable brush) and formed dense thickets that can be impassable to man and deer. “Poison plant people”, relying greatly on toxicologic studies claim it is poisonous to deer. Deer do not read. Nor has there ever been reports of dead deer so poisoned. Since 1960, the increased deer populations during winter, consume laurel above the snow, and up to their height of reach, around the edges of these dense clumps. Since laurel-browsing quickly kills those branches, the effect of deer is to produce a 2-story effect totally changing the physiognomy of more than 50% of our local forest. I have found it easy to show and tell wildlife professionals (except for one) that I have two species of laurel, low-bush and high-bush laurels, as with blueberries—but perhaps I am too serious in my tale. Verily, deer are “mining” this cattle-originating winter food supply. At present rates—more than half is permanently gone—none will be left in another 15 years. Then we can count on winter starvation if present population levels continue.

Pinus strobus, white pine, as forest stands has an ancient and variable lineage, going back to the 16th century, related to blowdowns, fires, and since 1850 to cattle (since it also is unpalatable, and it fills up pastures (though non-zoophilic foresters were unbelievably reticent in interpreting this situation, if indeed they ever have). By dogma, New England white pine is “succeeded” by hardwoods and hemlock; hardwoods, by all textbook dogma, “cannot” be succeeded by pine. Innocence is bliss for the pine. There are several areas at Aton Forest (and elsewhere in northwest Connecticut) where there is now a sparse-to-dense 15-foot understory of white pine, below red maple, red oak, ash, and/or birches. Easily understandable, for one who has eyes and minimum understanding, and legs for walking. Excessive browsing from excessive populations of deer (besides “purifying” unpalatable *Dennstaedtia* and “mining” the existing laurel winter-food) is so reducing the competition of aggressive early-invading hardwoods that slightly shade-tolerant and essentially unpalatable white pine can now invade certain hardwood forests. Combine all these Vegetation-Change factors, and any person of reasonable intelligence can predict that—other factors remaining equal—the total food supply of white-tailed deer is decreasing, and that the Carrying Capacity of the land is lessening.

Domestic and Feral Mammals

Since populations of domestic grazing and feral animals have been exceedingly important both as historic and as contemporary factors in determining existing populations of wild animals, either directly, or through vegetational habitat, the following notes are appended.

1. ***Felis domesticus***. Cat. –Feral cats have been known. In one instance, an individual was seen for three years, and then vanished. I have had neighbors' cats from almost a mile away visit regularly, even though they were never intentionally fed. The quantitative effects of these predatory felines on native bird, mammal, and other wild populations is not known, but are worthy of investigation. Hunters dislike such animals, but whether man or native predators get them I do not know. I have not known any such cats to breed in the wild.
2. ***Bos primigenius taurus***. Cattle. (Oxen, Bulls, Cows). –All these lands (except for cliffs, steep rocky slopes, and lands under water) have been heavily grazed for more or less lengthy periods through two or three centuries. Repeatedly the pastures have filled up with unpalatable hemlock, pine, laurel, juniper et al. Existing Vegetation strongly reflects this history, and must be considered in any understanding of the present wildlife habitat, even if no cows have been around for a hundred years. It is difficult to evaluate the role of past cattle-grazing in the present abundance of “wild flowers”. Lands were so grazed, by cattle as well as by sheep, often for more than a century. They were often over-grazed, especially in spring. It is impossible not to believe that such herbs as *Trilliums*, *Anemones*, *Hepaticas*, *Allium tricoccum* (I remember one farmer commenting that sometimes the spring milk tasted like onions), trout-lily, *Maianthemum*, lily-of-the-valley may not have suffered to the point of local extinction. Concomitantly, we should realize that commercial plant-collectors may have played critical roles, as one in Colebrook has readily admitted. I do feel that in fifty years of “protection” the populations of some of these plants should have been increasing; and they have not done so. Perhaps native herbivores are playing a related role! If so, some “preservationists” would have to face up to a dilemma. (But I doubt if they would. Preservationists do not face such issues; they duck them).
3. ***Canis familiaris***. Dog. –There have been no known packs of feral dogs in this region, such as were known about 20 years ago in

northern New Jersey. The dog is a born predator, and individual domestic animals of some breeds may, as with man himself, get an uncontrollable urge to hunt. They are runners of deer, and in deep winter snows harassment can be excessive and lethal. Legally, this behaviour is classed as “trespassing” if on another owner’s land. Hunters strongly object to such animal behaviour, and through the years I find that free-running dogs tend to “disappear”. (So there have been such dogs [Oh yes!] at A.F., though not as vicious as in New Jersey?)

4. ***Capra aegagrus hircus***. Goat. –I observed two small goat pastures in 1977. It was astonishing (although I was not surprised) to see how these animals eat “everything”, debarking (thus ringing and killing) trees of six inches in diameter or more, and even large old apple trees. It does not take too much imagination to realize what this landscape would look like if large populations of unfenced goats roamed all these hills (as they have for thousands of years, in many parts of the world—though many plant ecologists of such areas are absurdly locked onto their “edapho-climatic climaxes”). Let us be glad that this mammal has not become naturalized, as it has in other parts of the U.S.A.
5. ***Equus ferus caballus***. Horse. –I know of no studies on local horse pastures. It can be assumed that some plant species are unpalatable (horses not being a ruminant are much less selective than e.g.: cattle), and will tend to become dominant, thus providing a different vegetational habitat for wildlife. In 1952 I found the garden plant *Veronica longifolia* ungrazed and abundant in a small horse paddock in Colebrook. (Brought here, it has failed to spread, either into bare soil or into herbland).
6. ***Ovis aries***. Sheep. –Over a hundred years ago there were three times as many sheep in Connecticut as cattle, then sheep all but vanished, though such grazing is currently increasing in Vermont. Sheep are firstly forb-eaters (while cattle are grass-eaters), and they graze extremely closely, and often destructively. I am not familiar with any local studies on the Vegetation of sheep pastures, or on the unpalatable species that would tend to predominate. Whatever it is, or would be, we can look for native mammal populations that reflect such variations in the habitat.

C’est fini!
7:30 PM
(Sunday, 24 February 1980)