POINT PENINSULA, JEFFERSON COUNTY; MOUSE RAPTOR MECCA DURING THE WINTER OF 1987-1988.

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Introduction

Point Peninsula is an approximately eight square mile area located in the town of Lyme, Jefferson County, New York. Since at least the early 1960s (Belknap 1962), the area has been noted for the large numbers of "mouse-eating raptors" that often winter there. During winters when meadow voles are present in high population densities, raptors such as Rough-legged Hawk, Red-tailed Hawk, Northern Harrier, Short-eared Owl and Long-eared Owl occur in impressive numbers. In these years concentrations observed on Point Peninsula rival those present at Wolfe and Amherst Islands near Kingston, Ontario. Numbers and diversity of wintering raptors reported from these Ontario sites (Quilliam 1973, Bell *et al* 1979) are among the highest ever observed in northeastern North America. It is likely that Point Peninsula and vicinity, if studied with the same intensity as Wolfe and Amherst Islands, would prove to be one of the premier raptor wintering areas in New York State and perhaps in the northeastern United States.

The remote location of Point Peninsula, far from areas with many active field observers, has resulted in a dearth of systematic observations of wintering raptors. During most years only a few sporadic visits have been made and the data gathered either was noted in *The Kingbird's* Region 6 report for the appropriate season or not published at all. To my knowledge no systematic survey of raptors wintering on Point Peninsula has been made since Belknap's efforts in the winter of 1961-62. Intermittent surveys of variable intensity have been conducted at irregular intervals during the last 20 years by T. Carrolan, G. Smith, R. and J. Walker and the late D. Gordon but these data have not been published. There is a need to document the current status of raptor use of Point Peninsula area during the winter, particularly in light of rapidly increasing development pressures in Jefferson County.

During the fall of 1987 I first visited Point Peninsula during mid October. The numbers of Northern Harriers and Red-tailed Hawks present, combined with observations of high vole densities (tunnels in fields, voles running across roads), suggested the possibility that hawk and owl use of the area during the coming winter would be heavy. I decided to conduct a systematic survey of wintering raptors on Point

Peninsula at a level at least equal to Belknap's survey. This paper summarizes some of the results of my survey.

Study Area And Methods

Point Peninsula consists mainly of a mosaic of active farmland and abandoned cropland in various stages of succession. Most farming is devoted to growing hay. The area is characterized by poor shallow soils. These soils result in a slow rate of succession and encourage continued hay production and pastureland farming rather than the development of row crop monoculture. Most deciduous woodlands are small "islands" interspersed with cropland and occasional conifer plantations. In some areas large tracts of red cedar mixed with various shrubs are present. Much of the shoreline is developed for summer cottages. However, the permanent resident human population of the peninsula currently is very small. The area is accessible from a series of medium gauge town highways that are little used during the winter months.

The generally open character of this area, light human use and limited road traffic make Point Peninsula an ideal location to conduct roadside censuses. This technique was first used in systematic surveys by Craighead and Craighead (1956) and has been modified by many observers since. Despite the limitations of roadside surveys (Fuller and Mosher 1987), they are useful in providing information on relative abundance, habitat use and other data for raptors in open habitats. On Point Peninsula such surveys provide a cost- and time-effective means of gathering useful data.

During the period 12 November 1987 to 20 February 1988 I conducted 19 surveys along a 25 mile (40 km) route on Point Peninsula and a small part of the adjacent mainland. The route commenced at the corner of the North Shore Road and Pleasant Valley Road and included all plowed roads in the area. Because of limited road choice, approximately two miles of road was covered twice on each survey. However, raptors were counted only during the initial passage. Each survey was conducted by one or two observers from a vehicle moving at 8-15 mph (13-24 km/h). Lower speeds were used when only a single observer was present. Surveys were not conducted on days with adverse weather (strong winds, heavy snow, extreme cold) that could limit raptor activity or detectability. All surveys were conducted between 9 AM and 4 PM EST and were approximately 3 hours in duration. When one or more raptors were detected, the vehicle was halted and a variety of data recorded before continuing. All raptors that could be identified to species were counted. Ninety nine percent of individuals observed were within an estimated three-eighths mile (0.6 km) of the observer(s).

Data recorded on each hawk or owl sighted included species, age,

sex, morph where applicable, habitat association, behavior when sighted and any other comments. All data were taken by the author to maximize consistency of decisions on age/sex/morph for all surveys. Great care was taken to avoid counting individuals more than once in the course of a survey. However, with species such as Northern Harrier which hunt on the wing, some duplication is possible. Any duplication is more than counterbalanced, however, by failure to detect harriers perching on the ground (see Craighead and Craighead) and other hawks perched along wood edges. Thus, survey counts are conservative samples of the total number of birds present in the area.

Short-eared Owl totals were obtained at the close of roadside surveys by counting birds as they left known roosts. Since time limitations prevented a thorough search of Point Peninsula for roosts, it is likely many more individuals than noted here were present. No systematic effort was made to locate nocturnal owls but a few sporadic daytime searches resulted in the limited data reported here.

Results

A total of 2782 raptor sightings were recorded on the 19 surveys conducted between mid November and mid February. Of the raptors observed, 54.5% were Rough-legged Hawks,17.7% were Northern Harriers, 15.9% were Red-tailed Hawks, 8.6% were Short-eared Owls and seven other species comprised the remaining 3.3%. The total number of sightings of each species, the number of surveys on which each species was observed, and age/sex/morph data for selected species are provided in Tables 1 and 2. The seasonal pattern of abundance for the seven most common species is provided in Figures 1 and 2.

Each species of raptor present at Point Peninsula during the winter of 1987-88 exhibited its own abundance, occurrence, habitat use, age/sex/morph structure and behavioral patterns. Some of the more obvious and interesting of these are summarized as follows:

Bald Eagle: A single first year immature was present for most of January but disappeared when the inshore waters of bays surrounding Point Peninsula froze late in the month. Although seen foraging on dead fish and one Greater Scaup along the lakeshore this eagle was also observed on several occasions perched on the ground and on trees in hayfield areas of the peninsula's interior. When present in these areas the eagle was frequently, vigorously and repeatedly dived upon by groups of Northern Harriers and Rough-legged Hawks.

Northern Harrier: The age/sex structure of wintering harriers is particularly interesting. The very low proportion (4.4%) of adult females is especially striking when compared to adult males (24.7%). Northern New York and southern Ontario are near the extreme northern edge

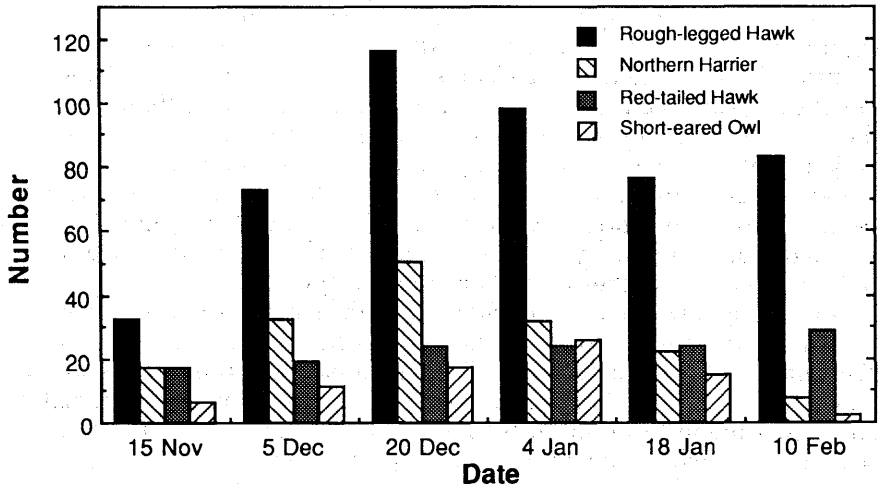

Figure 1. Three-visit means of the commonest raptor species, Point Peninsula, winter 1987-88

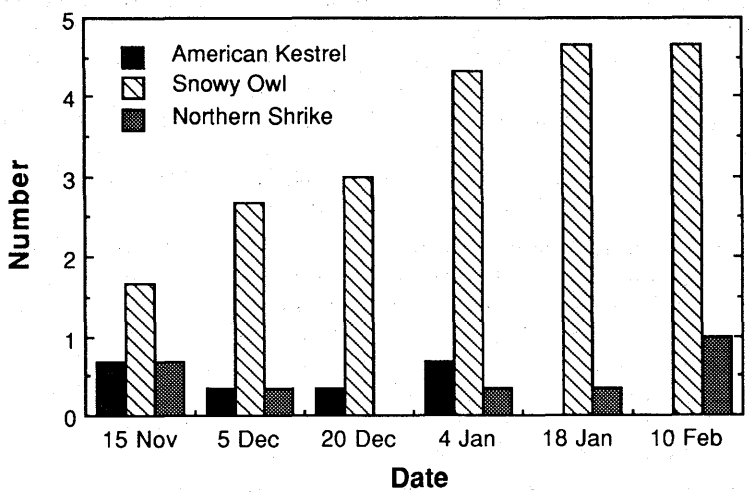

Figure 2. Three-visit means for three rarer raptors, Point Peninsula, Winter 1987-88

of this species' wintering range (Palmer 1988). Adult males of many species winter farther north than females and immatures. This may account in part for the greater frequency of male harriers on Point Peninsula. The very high numbers of immature harriers present at these northerly latitudes is very unusual and may reflect the "holding effects" of a superabundant food source. Three communal roosts of Northern Harriers were located during the winter. All were in old fields containing a mixture of low brush and herbaceous vegetation. Two of these roosts were also used by Short-eared Owls. At their peak from late December to early January these roosts contained 36 and 21 harriers and 30 and 8 owls, respectively. The peak roadside survey count of Northern Harrier was 57 on 18 December. Belknap (1962) considered a harrier noted on 23 December to be late. During the last four winters I regularly have observed small numbers (one to four per day) in Point Peninsula-Cape Vincent area during January, with occasional birds present in February. These records suggest that this species regularly winters in small numbers in parts of northwestern Jefferson county.

Accipiters: A total of five sightings, probably involving three individuals of three species were recorded. Since the roadside survey method is not suitable for detecting hawks using woodland interiors, it is possible that accipiters were more numerous than these data suggest.

Red-tailed Hawk: The seasonal abundance pattern of this species contrasts sharply with those of the other three common wintering raptors at Point Peninsula. Red-tailed Hawk numbers remained remarkably constant through the winter and did not decline during January and February. The ratio of immatures to adults also remained constant at 3:1 throughout the winter. Observations of locations of Red-tailed Hawks, particularly of the less numerous adults, suggested that many birds maintained consistent hunting ranges for much of the winter. The apparent stability of Red-tailed Hawks on Point Peninsula may be partly related to this species' tendency to hunt largely from perches. Rough-legged Hawks, Northern Harriers and Short-eared Owls frequently hunt on the wing and range over larger areas than Red-tailed Hawks (Craighead and Craighead 1956). Three apparent pairs of Red-tailed Hawks persisted through the winter. These birds were consistently observed as sets of two in close proximity to one another. Territorial defense by pairs against immature Red-tailed Hawks occurred intermittently during December and January and frequently during February. Close perching and courtship behavior was noted in all three pairs beginning in late January. The maximum

one day survey count for Red-tailed Hawk of 33 was obtained on two dates.

Rough-legged Hawk: The hordes of Rough-legged Hawk was the most spectacular feature of the winter population of raptors. After late November, it was virtually impossible to be anywhere on Point Peninsula, except the interior of the thickest woods, and be out of sight of one and usually more of these birds. Almost every extensive open area had it's attendant Rough-legged Hawks perched on fence posts or trees and soaring or quartering overhead. The maximum count of 130 on 18 December is the highest total of wintering birds ever reported in New York (Spahn 1988). The ratio of light to dark morph birds of 3-4:1 recorded on Point Peninsula this winter is consistent with my observations of the species elsewhere in central New York during the last twenty years. Three night roosts of Rough-legged Hawks were found, two in conifer plantations and one in a natural stand of red cedar. The interior of these roosts were littered with *Microtus* remains hanging from branches and whitewashed with excreta. My observations of the timing of evening arrival at roosts, flight behavior when approaching roost, and pre-roosting and roosting behavior are in general agreement with those of Schnell (1969) from Dekalb County, Illinois. The Rough-legged Hawk population wintering on Point Peninsula was almost exclusively immature birds. This high proportion of immatures contrasts sharply with my observations of migrating Rough-legged Hawks at Derby Hill, Oswego County, New York, during the spring of 1988, where over the course of the spring the ratio of immatures to adults was 1.5-1.7 to 1. At Derby Hill, as usual, adult Rough-legged Hawks were most frequent before mid April and immatures predominated later. This pattern suggests immatures may winter farther south than adults. Point Peninsula with its superabundant food source and overall favorable wintering conditions may have induced many immatures that otherwise would have continued farther south to stop short, thereby creating the skewed age ratios observed during the surveys.

American Kestrel: This species was very scarce with a total of two males and four females observed. No kestrels were noted following the heavy snows of late January. This species is usually very uncommon to rare as a wintering bird in much of northern New York. Apparently no more kestrels than usual were induced to linger at Point Peninsula by high vole populations.

Great Horned Owl: A minimum of five resident pair of this species were found on Point Peninsula during the survey period.

Snowy Owl: This magnificent arctic owl occurred after mid November. The maximum Snowy Owl count for any Point Peninsula survey was six. However, on three occasions 12 Snowy Owls were counted on 40 mile (64km) surveys between Point Peninsula and Cape Vincent. Migration was noted through mid December, as several owls were seen on one or two surveys at locations where none were present subsequently. After mid December three to six individuals were seen per survey and these birds occupied mutually exclusive territories. These territories were quite constant through the winter and on several occasions owls were observed in boundary chases with each other and with other raptors. Five of the six territorial Snowy Owls were large dark individuals believed to be immature females. The sixth owl was a small light individual believed to be an immature male. The apparent stability of the wintering Snowy Owl population is similar to the pattern observed by Belknap (1962) during the winter of 1961-1962. It is interesting to note the Snowy Owl population of 1987-1988 was concentrated on the mainland between Hardscrabble Road and the isthmus that joins Point Peninsula to the mainland. Snowy Owls were infrequent on the peninsula proper throughout the survey period. In the interior of Point Peninsula, where large concentrations of other raptors occurred, there were only a few sporadic sightings of this species, mostly during the migration period.

Long-eared Owl: Although systematic surveys for nocturnal owls were not made, roosting groups of this species were found during several walking transects. Groups of four, six and 12 as well as three scattered singles were located. It is likely detailed searches would have produced many Long-eared and N. Saw-whet Owls as well as possibly other species. Hopefully in the future more observers will be available to conduct searches for nocturnal owls during years with high wintering hawk populations. Based on past results at other locations (Bell *et al* 1979) the possibilities are intriguing.

Short-eared Owl: The maximum roost count of 30 on 3 January probably represents no more than 30% of the total number of this species present on Point Peninsula at that time. This crepuscular species, as with nocturnal owls, was severely under-sampled by the surveys. During December and January six roosts of this species containing 6, 8, 12, 14, 18 and 30 birds were located. It was impossible to count more than one roost in an evening with the personnel available. One can only speculate on how many roosts occurred on Point Peninsula, how much interchange of birds occurred between these roosts and

how many Short-eared Owls were actually present at the population peak.

Northern Saw-whet Owl: Two individuals were located in red cedar stands during January and February.

Northern Shrike: A total of two adults and six immatures were observed during the survey period. All were associated with either brushy old field or mixed brush and red cedar habitat.

Discussion

The majority of hawks present in the area during the winter of 1987-88 were immatures hatched during the previous summer. Using the ageing criteria from Clark and Wheeler (1987) for those species where age determination is possible, the percentages of immatures by species for the survey period are: Bald Eagle 100 (one immature), Northern Harrier 64.3, Cooper's Hawk 100 (one immature), Northern Goshawk 100 (perhaps the same immature seen 3 times), Red-tailed Hawk 77.9, Rough-legged Hawk 97.4, and Northern Shrike 75. In addition, nearly two-thirds of the Snowy Owls seen were very large dark birds, probably immature females.

There are a number of possible reasons for this preponderance of immatures including good breeding success, more northerly wintering by immatures and other factors. It is likely, however, that the superabundant food supply provided by the large numbers of voles present is the critical factor. Craighead and Craighead (1956) in Michigan noted a greater proportion of young hawks wintering in a year with high prey densities than in a year when prey was scarce. Inexperienced young raptors, with less well developed hunting skills, are often hard pressed to survive their first winter. The survival of any raptor, especially young birds, would be enhanced by wintering in an area where prey populations are superabundant and readily available. These areas may attract and hold immature birds passing through on migration and, since birds in their first year have no site tenacity to a previous wintering area, they may be readily attracted to sites with high food supplies.

The seven most common raptors present during the survey period all hunt in open habitats where my survey methods are most effective. It is not surprising that most of the hawks and owls observed were associated with cut hayfield, pasture grassland and old field habitats. Rough-legged Hawks, Short-eared Owls, Snowy Owls and American Kestrels largely occurred in the first two types, while Northern Shrikes favored more brushy areas. Red-tailed Hawks and Northern Harriers hunted a broad spectrum of open habitats with harriers most frequent in mowed and pasture areas and Red-tailed Hawks favoring old field types. Since all observations of raptors with prey (N=51) involved small

mammals, all apparently *Microtus*, the differences in habitat use by various species may reflect partitioning of the common food resource.

The overall numbers of raptors present increased rapidly from mid November through mid December, peaking during the last ten days of the month then slowly declining to lower levels. Presumably this pattern reflects the end of fall migration and arrival of large numbers of the arctic breeding species followed by losses due to mortality and/or emigration. This general pattern reflects the large numbers of Rough-legged Hawks, Short-eared Owls and Northern Harriers. Other species, such as the Red-tailed Hawk and Snowy Owl, exhibited different patterns.

Although it is impossible to assess the relative contribution of factors such as mortality, emigration and other possibilities to the decline in raptor numbers over the winter, my observations suggest emigration was a key factor. The winter of 1987-88 was very mild and open in northern New York. The first substantial, sustained (more than 4 inches remaining on ground more than 2 days) snowfall did not occur until late January on Point Peninsula. The near total lack of snow cover left small mammal prey readily available to the wintering raptors. Species sensitive to snow depth, such as Northern Harrier and Short-eared Owl, remained numerous well into midwinter. Following the heavy snowfall during late January numbers of these two species on Point Peninsula plummeted whereas other species decreased only slightly or remained stable. After the decrease in Northern Harrier numbers on Point Peninsula, observations of this species increased to the east and northeast where the snow depth was much less. These observations are highly suggestive of at least local midwinter movements of 25-30 miles. Given the high prey density and ready access to prey enjoyed by the raptors wintering on Point Peninsula prior to the heavy snows of late January, it is reasonable to assume these birds were in good physical condition. Individuals in such condition would have the fat reserves necessary for local movements and perhaps even for longer trips to areas where snow depth would not limit access to prey.

Protection and Management

The Point Peninsula clearly is a very important raptor wintering area during some years. Point Peninsula together with a few other sites in northwestern Jefferson county, the islands of northeastern Lake Ontario, some areas near Cape Vincent and Wolfe and Amherst Islands, Ontario, form a complex of important raptor habitat. This area may be one of the most critical winter concentration areas in northeastern North America for arctic breeding Rough-legged Hawks, Short-eared Owls and Snowy Owls. Long-term land use planning in this region must include consideration of the importance of the area to wintering raptors.

Planning should include efforts by agencies, organizations and individuals designed to assure that the needs of large populations of wintering raptors as well as the smaller but no less important breeding populations of New York threatened species (Northern Harrier, Short-eared Owl) are fully identified and are met. Given the increasing pressures for recreational and other development resulting from the expansion of Fort Drum near Watertown, from intensifying use of Lake Ontario and from changing farming practices, this may prove to be a formidable task. Several factors that contribute to heavy raptor use of Point Peninsula including the following should be considered in planning efforts:

The area's overall habitat diversity including hayfields, old field, cedar and plantation areas and deciduous woodlands spread over an extensive area is critical. This mix provides a wide variety of high quality habitat for large numbers of open country raptors.

Favorable farming practices that include continued hay production rather than the row crop monoculture (corn desert) that now dominate many other areas of upstate New York. Hay farming and associated hedgerows and fence rows contribute to overall habitat diversity. While continuation of these farming practices is due largely to the poor shallow soil limiting row crops, this practice and the slow succession of old fields resulting from soil limitations are important factors in creating favorable habitat diversity for wintering raptors. This diverse habitat mixture also may provide a high quality environment for meadow vole populations. Another farming practice that affects raptors is the hay baling method. Currently farmers on Point Peninsula bale their hay in large round rolls rather than small square bales. These rolls are the left in the fields and gradually brought to cattle feeding areas over the course of the winter. These hay rolls in fields provide elevated perch sites for raptors in areas where none exist otherwise and may also benefit voles, as these animals were observed to burrow into the bales.

The current low level of human winter use of Point Peninsula allows raptors to function with a minimum of human disturbance. In the undeveloped interior of the peninsula, birds of prey rarely encounter humans, except for the occasional rabbit hunter, during the period November to May. This was not always the case. Prior to World War II and particularly during the late 19th century, when the area was dominated by small family farms, human-raptor interactions no doubt were more frequent. Given the prevailing human attitude toward raptors of the time (Bent 1937), the carnage,

particularly during years with high raptor populations, is not pleasant to consider. Point Peninsula of the 1980s is a much more hospitable retreat for wintering hawks and owls than it was 100 years earlier. This largely results from the lower local human population and from changes in the public's attitudes toward raptors.

The general lack of any substantial development in the peninsula's interior and the resultant isolation from human activities are important factors favoring raptor use of the area.

These and other factors contribute to maintaining Point Peninsula as a very important raptor wintering area. Some of these same factors also are important to making this and other northwestern Jefferson County areas of great potential importance as breeding areas for Northern Harrier and Short-eared Owl. While data on breeding raptors is minimal, observations from local birders and records from the New York breeding bird atlas (Andrle and Carroll 1988) strongly suggest this area may be critical to breeding populations of these state "threatened" species. My recent observations indicate there is a substantial Northern Harrier population in the region and sightings of Short-eared Owls, including a pair with young, at three locations during the breeding season suggest they regularly may nest here locally. This region should be thoroughly surveyed for these species, particularly for the more critically threatened Short-eared Owl. These surveys are needed to determine status and to identify breeding sites so that protection may be sought for these areas.

The importance of Point Peninsula and a few other areas in northwestern Jefferson County to raptors justifies increased research and management concern. These spectacular winter concentrations and breeding sites of species rare in the state are a significant regional resource. In seeking to influence land management, to stimulate research and to document further areas of particular importance to these birds, attention should be given to the following items:

Farmers should be encouraged to maintain current practices favorable to raptors. Efforts must include protection of farming over other interests through agricultural districts, etc., with resultant tax and associated benefits to the farming community. The farming community should be apprised of the value of their lands to raptors and of the positive benefits of some practices (e.g., large hay roll bales in fields) to these birds.

Research and monitoring of all types from basic surveys, such as this effort, to detailed ecological studies are needed. These efforts should be encouraged by all groups. Birders visiting the area might collect data in a standardized manner and transmit the same to

Table 1. Total Observations and Surveys for Diurnal and Crepuscular Raptors at Point Peninsula, Fall and winter 1987-88

Species	Total Observed	Surveys Observed (N=19)
Bald Eagle	5	5
Northern Harrier	493	19
Adult Male	122	18
Adult Female	22	13
Immature	317	18
Unidentified	32	12
Sharp-shinned Hawk	1	1
Cooper's Hawk	1	1
Northern Goshawk	3	3
Red-tailed Hawk	444	19
Adult	95	19
Immature	346	19
Unidentified	3	3
Rough-legged Hawk	1516	19
Light morph	1219	19
Dark morph	297	19
American Kestrel	6	5
Male	2	2
Female	4	3
Snowy Owl	65	18
Short-eared Owl	240	17
Northern Shrike	8	6
Adult	2	2
Immature	6	5
Total All Species	2782	19

Table 2. Age/Sex Percentages of Northern Harrier and Red-tailed Hawk and color morph percentages of Rough-legged Hawk by month at Point Peninsula, Fall and Winter 1987-1988.

Species	NOV	DEC	JAN	FEB
Northern Harrier				
Adult Male	9.8	31.1	21.3	38.9*
Adult Female	19.3	10.4	5.6	23.6*
Immature	70.9	58.5	73.1	37.5*
Red-tailed Hawk				
Adult	21.1	24.4	22.9	22.3
Immature	78.7	75.6	77.1	77.7
Rough-legged Hawk				
Light morph	72.3	81.8	82.3	78.1
Dark morph	27.7	18.2	17.7	21.9

NOTE: * Involves only a few individuals

The Kingbird Regional editor(s) as part of these efforts.

Public education efforts among local residents, particularly absentee landowners, to improve appreciation of these birds would be of long-term value. Efforts should focus on the unusual nature of these concentrations and on how people can help maintain them.

Regulatory agencies, concerned organizations and individuals should closely monitor land use patterns and development pressures in the area. Particular concern should be focused on the following:

Large subdivisions of land and residential construction.

Any substantial increase in year round residences.

Any permanent development in the interior of the peninsula.

Any substantial increase in human presence in the interior of the peninsula at any season.

Any large scale changes in land use practices particularly reduction in farming followed by development.

Any development that would substantially increase human/vehicle presence between October and early April.

The *aggregate* impacts of small scale developments in the area.

Efforts should be made to develop a coordinated long-term strategy among all interested parties for management of research, monitoring, protection, education and economic considerations related to raptors in these areas. The latter considerations should be of interest to those concerned with local tourism, as the growing number of birdwatchers gives these spectacular concentrations of wintering raptors the potential to attract visitors from throughout the northeast.

Point Peninsula and a few other areas of northwestern Jefferson County, as well as Wolfe and Amherst Islands, Ontario, probably have attracted significant wintering raptor concentrations since the clearing of the forests. The numbers of birds of prey observed during the current surveys of Point Peninsula and results of Bell *et al* (1979) on the Ontario islands indicate these sites are able to support spectacular populations of hawks and owls. These birds, fleeing from areas of food shortages, now find congenial wintering grounds here. Progress in their conservation has been made from a time not so long ago when our forebears welcomed these winter visitors with trap and gun. The level of enlightenment on the beauty and importance of birds of prey in natural systems among the general public has advanced to a point where illegal shooting in this region appears minimal. During survey visits, and despite the amazing concentration of raptors at Point Peninsula during the winter

of 1987-88, I found no evidence of direct human persecution.

Hopefully this enlightenment regarding birds of prey will carry over to less direct forms of persecution such as habitat destruction. Perhaps our society will be farsighted enough to assure a hungry southbound Snowy Owl looking for a square meal will still find grassy fields filled with voles instead of second homes, boat dealerships or bare ground and corn stubble. If so, it is likely the wandering hawk watcher of 2014 or 2088 will be as thrilled by the spectacle of raptors at Point Peninsula as Belknap and Gordon were in 1961-62 and many others were in 1987-88.

Acknowledgments

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