

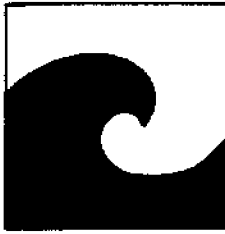
# MINIMIZING GULL DAMAGE TO COASTAL AGRICULTURAL CROPS

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**Fact Sheet**

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TO  
COASTAL AGRICULTURAL CROPS  
ALONG NEW YORK'S GREAT LAKES COAST

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INTRODUCTION

During the summer of 1982, Sea Grant began receiving an increasing number of inquiries regarding "seagulls\*". One theme that seemed to dominate these questions was, "Why are there more 'seagulls' than in the past?" This interest seemed to stem from several factors: (1) boaters were finding their vessels "spotted" by gulls more often than in the past; (2) shore recreators were observing more gulls or evidence of gulls on jetties, piers, and docks than they remembered in the past; and (3) more people were noticing more and larger flocks of gulls coming inland than they remembered in other years. Most of this interest, though, was more out of curiosity than any other reason.

One group of gull observers, however, had more than just a passing curiosity in the apparent increase in the number and activity of gulls along western Lake Ontario -- coastal fruit and field crop growers. More gulls were reported observed in fields and orchards and crop damage was being directly attributed to those gulls. Economic losses were being blamed on the gulls, and farmers were looking for ways of controlling such gull damage on future crops.

To determine how significant a problem gull predation on field and fruit crops was, Sea Grant, with the cooperation of Cornell Cooperative Extension Fruit Specialists and county Agriculture Extension Agents, undertook a random sampling survey of coastal growers along Lakes Erie and Ontario in September and October 1982. In brief, the survey showed at least \$15,000 economic loss suffered by 18 respondents working over 9,000 acres in 8 coastal counties.

\*NOTE: The term "seagull" is a misnomer. The correct term would be gull. To term a gull a "sea" gull is comparable to calling a crow a "farm" crow.

The problem was seen as significant enough for Sea Grant to try to ascertain: (1) are there more gulls along New York's western Great Lakes' coast; (2) if yes, why; and (3) what can fruit and field crop growers do to protect their crops from gull predation?

Sea Grant contacted the staff of the Cornell Laboratory of Ornithology, the United States Department of Interior Fish and Wildlife Service, and the Canadian Wildlife Service to gather the relevant information both explaining the "why's" of this situation and to determine what alternatives farmers might be able to try to control gull damage to their field and fruit crops. This paper is the result of those investigations.

I particularly wish to thank Dr. Hans Blokpoel of the Canadian Wildlife Service and Dr. Donald McCrimmon of the Cornell Laboratory of Ornithology Colonial Bird Register for their cooperation in assembling this information and sharing their expertise with us.

## BACKGROUND

### Gulls of the Lake Ontario/Lake Erie Region

Sixteen species of gull have been observed in the area of Lake Ontario. Only two are frequently seen around human habitations: the Herring Gull and the Ring-billed Gull. The Ring-billed Gull is the more numerous of the two in the coastal farming area with which we are concerned.

The Herring Gull is the larger of the two, measuring about 20 inches from the tip of its bill to the tip of its tail, with a wide wingspan of up to 55 inches. The adult is mainly white with a pearl-grey back and black wing tips. It has a yellow bill with a red spot near the tip and flesh-colored legs. These gulls are year-round residents of the Lake Ontario area.

In the 1970s, toxic chemicals such as DDT and PCBs were blamed for a decrease in Herring Gull populations. Unhatched eggs and deformed young were the main indicators of reproduction problems. Numbers of this species of gull have shown only slight increases over the past decade.

In contrast, the Ring-billed Gull is far more numerous in the Lake Ontario/Lake Erie vicinity (in fact, this is now the most common gull in the area). The Ring-billed Gull is smaller than the Herring Gull. It's about 16 inches long and has a wing span of only about 40 or so inches. Its coloring resembles that of the Herring Gull except that it has a black ring at the tip of its bill and has grey to yellow legs. This gull usually does not winter along Lake Ontario, instead migrating to the Atlantic coast as far south as Florida. A small remainder do, however, spend their winters along the Niagara River and southern parts of the lakes. Ring-bills did not have the reproductive problems of the Herring Gull and are exhibiting a dramatic growth in population numbers along the lakes.

To demonstrate the growth of Ring-billed Gull populations, in 1973, the Canadian Wildlife Service counted 20 pairs of Ring-billed nesting at the eastern peninsula of the Toronto Outer Harbour (Blokpoel, 1983). By the 1982 count, this colony had increased to 75,000 to 80,000 pairs. Other colonies have shown similar growth patterns. On the American side of Lake Ontario, at Little Galloo Island (just off the coast of Jefferson County, near Sackets Harbor), the Ring-billed colony was numbered at 73,780 nesting pairs (Blokpoel and Weseloh, 1982), making these possibly the largest such colonies in North America. The total Ring-billed Gull population on Lake Ontario is now estimated at 350,000 pairs (Blokpoel, 1983).

### Natural Gull Food Sources

Haymes and Blokpoel (1978) found in their Canadian research

that gulls prefer six major categories of food: fish, insects, earthworms, refuse, birds, and mammals. Fish were found to account for about 50% (volume) of a samples collected from gull chicks. Early in the season (mid-May), insects made up about 41%, decreasing to around 20% later in the season (late-June, early-July). Early in the season, earthworms only accounted for about 8% of the gulls' meals, increasing to 28% by July. Refuse, birds, and mammals combined accounted for only about 1-6% throughout the season.

In the early part of the season, the gulls preferred Rainbow smelt and alewife. By the late part of the season, alewife and smelt had switched places in terms of importance, but were still the primary fish in gull diets. Minor amounts of shiners and yellow perch were also consumed throughout the season.

Refuse appeared to contain high amounts of bread and sliced meat. Mammals were mostly voles and mice, and various eggshell fragments were noticed.

Gulls are very opportunistic when feeding, and will go for almost anything edible during periods of the year when their preferred food sources are not readily available. For perhaps eight months of the year, gulls will therefore tend to eat what they can find, where they can find it. This can mean garbage (the explosion in gull population in some areas appears to be linked directly to the number of landfills and dumps in those areas), dead fish that are floating on the surface of the lakes or which have floated into shore, fish being brought in by anglers or by commercial fishing boats, and, it appears, certain farm crops.

## GULL DAMAGE

### Gull Predation on Farm and Orchard Crops

The 1982 Sea Grant survey of western New York coastal fruit and field crop growers resulted in responses from Chautauqua, Erie, Niagara, Orleans, Monroe, Wayne, Jefferson, and Wyoming Counties, with the worst problems noted in Erie, Niagara, Orleans, and Monroe. A total of 2,092 acres in fruit production 5,349 acres of vegetables, and 1,567 acres in miscellaneous field crops were reported, for a total reported acreage of 9,008.

Of the 18 growers responding, eight reported that they saw more gulls coming inland in recent years than in the past. Six reported a loss of produce which they felt was the direct result of gull activity. Five reported crop losses in the past resulting from gulls. The crops most affected were cherries, blueberries, cabbage, and corn.

One grower in Niagara County reported a loss of 5% of his ripe, unharvested cherry and blueberry crops (worth about \$2,000)

in late-July and early-August. Another Niagara farmer reported a loss of about 5% (about \$10,000) of his recently planted cabbage crop when seedlings were pulled from the ground and trampled underfoot by flocks of gulls feeding on worms and insects in his freshly-worked fields. Other cherry and cabbage crops were also reported damaged by gulls.

Suggestions that perhaps redwing blackbirds or other birds were doing the damage and that the large flocks of gulls observed along the lake were mistakenly receiving the blame were rapidly discounted on the basis of numerous first-hand reports by growers who saw gulls doing the damage. The blueberry bushes of concern tend to be low-bush and the gulls can often stand on the ground and pick ripe berries from the lower branches. In the case of cherry trees, gulls' feet structure do prevent them from roosting in the trees to feed, but this does not seem to deter these ambitious feeders. They've been observed to "dive-bomb" into a tree with ripe cherries, try to roost on the branches (flapping their wings to retain balance) and "harvest" two or three cherries before being forced to fly out of the tree. In the case of cabbage, the gulls are not eating the plants, simply destroying them in their search for other foodstuffs in the fields.

Other gull problems with agricultural crops include damage to young bean plants by being trampled, and feathers and feces which must be washed off crops before processing or marketing.

Total reported crop losses among the 18 respondents directly attributed to gulls along the Lake Erie/Lake Ontario coasts was estimated at \$15,000 for the 1982 growing season.

Potential Reasons for Increased Gull Damage to Coastal Crops

While no specific research has been performed to explain gull predation on field and fruit crops, the following explanation can be made as conjecture based upon knowledge of gulls' feeding habits, normal sources of gull food, and the pattern and timing of damage to crops.

As mentioned earlier, smelt and alewife are two preferred foods for gulls. As the year progresses into summer and the lake water temperature warms up, these fish go further out into the lake away from the shore and go deep into colder waters. This effectively removes one of the primary food sources from easy reach by the gulls. Once the flocks have been attracted to the nearshore waters by the easy fishing of the earlier season, it is logical to assume that they will start looking for other easily accessible, though not as nutritious or preferred, food sources in or near the same area.

The farms and orchards which were damaged are almost all immediately on the shore of the lakes. It is at this same approximate time that fields are being worked and crops planted, so gull flock action in those fields searching for insects and



worms has the potential to damage the young crops just planted. In the case of orchards, it is also just after this time that cherry and berry crops are ripening. As already mentioned, gulls are very opportunistic when it comes to locating food. These crops could be representing a relatively easily accessed source for the birds.

Another potential attraction to the gulls which could be drawing them into the areas of the farms and orchards may be the agricultural practice of spreading the wastes from crop processing on top of fields. Until such wastes are disked under, they are taken advantage of as a food by the gulls.

### GULL DAMAGE CONTROL

It must first be pointed out that gulls are protected by the terms of the Migratory Bird Treaty Act between the United States and Canada. Killing the birds, or otherwise hurting them by direct physical intervention is illegal and should be avoided.

Ring-billed Gulls, which are more likely to be feeding on farms and in orchards, are also the least sensitive to being frightened. In fact, they can be seen landing in freshly plowed fields while plowing is still underway within the same field. They are also quite adaptable to actions taken to scare them away, thus making for an on-going battle whenever such activities are undertaken.

#### Actions Taken in 1982 to Control Gulls on Farms

Most of the growers reported that they take normal steps such as shellcrackers or other noise makers and certain chemical sprays to control other species of birds on their farms and in their orchards. These methods did not seem to be very effective on gulls. The chemicals, Avitrol and Measural, which cause throat irritation among other types of birds, apparently did not do so with gulls. This may be because gulls are able to feed in salt and brackish water and therefore have throats which are not as easily irritated as other species. This is strictly speculation, however.

#### Alternative Methods for Controlling Gull Damage

Most research into keeping gulls out of specific areas has been in connection with airports (where the danger to planes landing and taking off is obvious), and in areas such as urban public parks where the birds have become distasteful nuisances.

The alternative methods of control include:

1. visually scaring the birds;
2. scaring the birds with sounds;

3. combinations of visual and noise techniques;
4. invisible ceilings; and
5. removing food sources that attract gulls to the area.

Visual Methods: One thing that's certain, gulls do not scare easily visually. Scarecrows are next to useless. In Holland, initial success was achieved by mounting stuffed gulls in abnormal positions and placing them around the area desired to be cleared of the birds. This method only worked for daytime when the carcasses were visible and the effectiveness decreased as the condition of the stuffed birds deteriorated. Also, they had to be moved from place to place often or the live gulls would get used to them and ignore them. A variation was to have the stuffed birds swinging freely from posts, but again the same problems of decreasing effectiveness were noted. (Blokpoel, 1976.)

Blokpoel also reports that in New Zealand, preserved corpses of gulls nailed to boards have had some effect in eliminating gulls from areas as long as the corpse is not in a too deteriorated condition. Styrofoam models (high quality) of gulls nailed to boards have had similar effectiveness when tried around airports. Again, this method is only effective in the daytime and is temporary, only until the live gulls get used to the models or corpses.

Very bright strobe lights, flashing at irregular intervals have also been tried at airports, but have also been found to be of only temporary effectiveness. This method could also prove quite expensive on a large farm or orchard. It could be practical for around fruit or vegetable processing plants, however, if gulls become a nuisance in those areas.

Other visual methods, such as rubber models of owls or other predator birds, helium-filled balloons, and smoke bombs have been proven to be ineffective.

Noise Methods: Ultrasonic sound generators have been tried but have been found to be ineffective since birds cannot hear these sounds as can other pests. This method would also be impractical for large areas such as orchards or farm fields.

High-intensity sounds produced at random intervals by such devices as horns, shellcrackers, sirens, and gas cannons have been found to have a temporary effect at scaring gulls. Cannons and shellcrackers may not work too well with gulls since gulls are not hunted and therefore have not come to regard explosions as a threatening sound. As with visual methods, gulls quickly become used to sounds. The sources of the sounds and the frequency of occurrence would have to be changed often.

A variation on the theme of sounds is the use of amplified recordings of the distress calls and alarm calls of gulls, played

over loudspeaker systems in the area to be cleared of the birds (Blokpoel, 1976). This has shown some success around airports, but could be expensive for an agricultural application. By varying the sounds, the intensity, and the location, as well as by interspersing the sounds with sounds of human activity such as metallic clanging, shellcrackers, or horns, the effectiveness seems to be increased. This procedure is still experimental, but may hold some promise for the future.

Combinations of Visual and Noise: Some methods included in this category are the firing of colored signal flares which give off a flash followed by an explosion. Shellcrackers are similar in function but can be fired from shotguns rather than from special flare launchers. An important consideration is that the flash and explosion both be of sufficient intensity to frighten gulls in more than just the immediate vicinity of the device. During dry times of the growing season, open flames could be hazardous in fields and orchards, so flares and other various pyrotechnic methods may not be advisable. And, as with the use of simply sound or sight, effectiveness decreases as the birds become used to these procedures.

Invisible Ceilings: This method, described in Blokpoel, 1983, is basically a means of making an area inaccessible to the birds. It is "simply" the stringing of lines overhead at such a spacing that gulls will get tangled or confused when they first attempt to fly through. The birds therefore become frightened to continue to penetrate that airspace and will avoid the area. Tight wires or monofilament line can be used for this purpose. This method, however effective, appears to hold little usefulness for agricultural practices due to the acres of land that would have to be protected and the vast amounts of wires and poles that would have to be used. The wires could also pose a threat or nuisance to the workers harvesting the crops so protected.

Removal of Food Sources: As mentioned earlier, the process of spreading wastes from processing fruits and vegetables on unused fields may be attracting more gulls inland to these easily accessible sources of food. Once this waste is then disked under, has been consumed by the gulls, or is no longer being placed on the fields, the gulls, who are then in the habit of coming to that area to feed, will look for other nearby food sources. Frequently, these turn out to be crops which can be damaged by the gulls. It would be advisable to cut off this attractive food source by disk-ing the wastes under as soon as practical after spreading, before the gulls learn of the free handout.

### CONCLUSION

There appears to be no simple answer to the problem of gull damage to agricultural crops along New York's Great Lakes. A number of alternative methodologies do exist that may provide limited or temporary relief. These are, however, usually time consuming, expensive, or impractical for the large areas involved in farms and orchards. Little research exists or is underway dealing specifically with the topic of gull damage to fruit and field crops. Perhaps, if the problem continues or grows, new research will take place, opening new avenues for control. Until then, farmers can take advantage of whatever traditional bird controls they've found work for them, and may want to attempt, at least on a trial basis, one or several of the alternatives listed in this paper.

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