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GULL EXCLUSION

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ABSTRACT: This paper reports on work carried out in a variety of sites and installations that have required active gull control. The methods used are a result of observations by a variety of researchers and attest to the effectiveness of a behavioral control technique with the use of thin steel spring wire or monofilament fishing line.

Gull populations have been increasing at an exponential rate (Blokpoel 1983a). This does not appear to be an isolated phenomenon but a general trend. It may relate to a behavioral modification by the ring-billed gull (Larus delawarensis) in response to man's waste disposal and agricultural methods; i.e., fast-food outlets, garbage dumps, monoculture habits in agriculture, etc. From the view of the public, officials responding to complaints from farmers having crops destroyed or economically damaged, city officials with complaints from fast-food outlets, or concerned air safety regulators, the population increase cannot be ignored (Leslie Spit, Toronto Harbour 1973-20 pairs to 80,000 pairs in 1982).

All species of gull come under the protection of the Migratory Birds Act Convention (1917) which implements a joint U.S.-Canada convention (1916J to safeguard most migratory birds. Special permits to control ring-billed (Larus delawarensis) and herring gulls (Larus argentatus) must be obtained from either the Canadian Wildlife Service, Environment Canada or the U.S. Department of the Interior (Fish and Wildlife Service), depending on jurisdictional territory.

These permits are at best a band-aid treatment for an epidemic or near-epidemic situation. Methods of gull control are as varied as the people facing the problems. The use of models (Stout et al. 1979) as a control technique confirms the importance and attentiveness gulls place in the cues received from the environment. The likeness of models must be exact to detail. The use of chemicals such as avicides or pesticides (Weatherbee 1967, Woulfe 1970) does provide a means of control by population reduction, either through chemosterilants on the embryo or egg or acute pesticides that target on the adults. Chemosterilants will work, but this use is labour-intensive and demands several years of application before overall results are noticeable. Where risk to aircraft requires immediate results, this use is unacceptable, unless it is part of a broader program. Acute pesticides such as 4-aminopyridine do kill, if ingested by the target birds (Schafer 1978). Its action on the bird causes involuntary distress calls and related flight actions, which act as a repelling or warning signal to the other gulls in the immediate area. The immediate effect may be dramatic, but it is often short-term and needs continued reinforcement. It may create potentially unsatisfactory social ramifications with groups such as the humane society and various associations bringing forward accusations of inhumanity.

We have also used many types of physical devices such as noisemakers, acetylene cannons, streamers, screamers, scram rockets, shotguns, distress calls, model airplanes shaped like hawks, kite hawks, etc. The use of live peregrine or other falcons has proved beneficial in reducing the numbers of bird strikes at Toronto, North Bay and Trenton airports.

In each case, whether chemical or physical applications are made, the effects are limited in duration and effectiveness. The most successful control measure takes into consideration the behaviour of the species, and with this understanding, applications can be devised to accommodate these requirements for our benefit. The observations made on the effectiveness of any control measure and its usefulness depend on the observant control person noting and determining behavioural responses (or lack of responses) and thus developing a control technique which can build upon the pest species' own biologic requirement. The use of light to repel bats is an example (Laidlaw and Fenton 1971). The use of wire by itself as a means of reducing the numbers of ring-billed and herring gulls from areas associated with man's activities is a natural progression in our understanding of the species.

Wire is not a new technique (McAtee and Piper 1936). Its use as a physical barrier over reservoirs and fish ponds is documented. The use of monofilament lines at 41-cm intervals strung 20-cm over the water was effective over fish ponds (Ostergaard 1981). The modification and use of wire as a behavioural method, as opposed to a physical barrier, was reported in use over water reservoirs (Amling 1980). Gulls were using water reservoirs in California as loafing and feeding sites. The use of wire with spaces from 40-160 feet (average 80 ft) in an area of 20 acres eliminated gulls from using it as a recreational retreat. Their garbage deposits and fecal contributions increased the need for water treatment and reservoir maintenance (i.e., dredging.)

A modified technique with monofilament fishing line was used to exclude gulls from public places (Blokpoel and Tessier 1983b). Toronto City Hall Square and Ontario Place (a recreational showplace for

tourists during the summer months) were plagued by gulls. The chaos from raucous gulls, their noise, filth and deplorable table manners, reduced the enjoyment of the clients at outdoor restaurants and created public dissatisfaction. Reports of potential disease dissemination by gulls supports control measures (Coulson et al. 1983, Butterfield et al. 1983). The use of monofilament lines in a spoke or wheel pattern over the outdoor eating areas eliminated the persistant harassment of customers and established areas or oases where gulls seemed reluctant to fly into or through. Occasional foraging from the sides by walking gulls was noted, but its duration was short and fraught with hesitation. The Toronto City Hall Square site was also wired with monofilament lines at distances or intervals of 2.5m. Nineteen lines were strung 8-10 metres above the ground. Control and treatment counts were as follows: 64.3 (range 31-100) pre-wire gulls and 3.75 (range 0-6) gulls with the wire. The Ontario Place situation effectively eliminated the gull problem within or under the wire umbrellas.

The concern by air safety regulators has identified the gull as one of the primary bird species involved in bird strikes (Solman 1973). The need to reduce the numbers of gulls by any means is paramount, although the reality (from a practical and social viewpoint) of a large-scale population reduction in the Great Lakes area is presently unattractive. If the public and the politicians were faced with several large air tragedies, this view might change. The success of the ring-billed gull would suggest any large-scale population reduction would need to be carefully monitored to determine the recovery rate.

Faced with limited tools available to the airport managers (Ladd 1970), with documents clearly indicating that most strikes occur within the vicinity of the airport prior to normal flight levels, and the somewhat symbiotic relationship between airports and garbage dumps, which has been created by well-meaning city and federal authorities, the correct solution suggests the separation of the airports and the dumps. This solution is costly and slow. Land costs, land development plans, and human conflicts make the solution—-while realistic--not an easy approach.

The federal departments of Defense, Environment, Transport and Agriculture programmed a wire installation at the DND air force base at Trenton, Ontario. After completing the land survey and the engineering study, the associated red tape caused a two-year delay. Then as a cost-cutting measure, the project was suspended and finally cancelled for the foreseeable future. During this embryonic attempt, our advice on methods and directions for gull control was being solicited by dump operators, fish hatcheries, apartment managers, farmers, and despairing parking lot operators faced with a deluge of fecal droppings where their property was being used or abused by the gulls.

Further studies on the methods in situations that would severely test the wire method were carried out by the Canadian Wildlife Service (Blokpoel and Tessier 1983c). The use of wire in nesting sites on Leslie Spit provides graphic results where 80,000 pairs of ring-billed and some herring gulls vie for nesting space. In the control site, a 20 by 20-metre site was selected and the numbers of nests recorded (224 nests are indicative of the demand for space). With the use of wire on eight similar sites and having the estimated potential of the unwired site, only 22 nests were occupied (14 were deserted before or after the end of incubation), and those were established near the edges.

A progressive waste disposal company, Newco Waste System Inc. (now owned by Browning-Ferris Industries), Buffalo, N.Y., on our advice, contracted a detailed research program by L. B. L. Ltd., (an environmental research firm) to carry out a one-year test in a working facility to determine if the wire-use idea was practical in a real-life situation (Solman et al. 1983). Advice about the California reservoir installation and two small garbage sites (Ichikawa, personal communication) pointed out areas of concern, based on the topography of the sites (the sides allowed access). The difference in success between the two sites, a canyon and an open area, showed penetration was possible from the side and thus the overall success was somewhat reduced. The canyon site was a total success because there was no side penetration.

The tests carried out in the Newco's Pine Avenue site in Niagara Falls, N.Y., evolved as deficiencies were noted. The first test occurred January 17, 1983, and additional poles and wires were installed one week later to reduce the spacing from the 60 to 100-foot spacing to a 40-foot mark. The test protocol called for a two-week test with the wires to be removed on February 7, 1983. The reduction in the numbers of gulls using the site delayed the installation for the second test until March 1, with its removal April 2. Reinstallation occurred between April 12-21 and remained up to June 24, 1983.

This operation is fluid and not rigid in scientific design by necessity due to the environment of an active garbage disposal site. Modifications of site usage resulted in different gull pressures. The Energy From Waste Plant ceased operation on March 17, thus diverting up to 100 tons per day of raw household material for site disposal. The plant restarted on April 15, but did not reach its former rate of consumption, thus leaving more garbage to be handled at the site.

The initial wire installation effectively reduced the herring gull use, but, as the seasons changed, the ring-billed gull became the dominant species. Problems with achieving the 40-foot spacing over the entire active site and especially at the working face left gaps that facilitated penetration. The third wire set-up reduced the spacing to 20 feet in most cases and further reduced the use of the site by the gulls; when the wire was down there were several hundred gulls on the landfill.

In reviewing the deterrent effects of the wire, two other non-wired sites were monitored to gain an understanding of the wiring effect on their gull population. The numbers using each site, and the difference between each site as the gulls responded to the wire program, became clear. The use of each site and gull numbers and use patterns changed. Numbers of gulls under the wire reached at times to

100, although usually the numbers were less than 25 during this winter-spring-early summer time frame. The behaviour of the gulls was more apprehensive than before where no wire was installed. Duration of feeding and ease of disturbance again were observed. The changes in site usage between having the wire up and that of being removed were significant with several hundred gulls using the site when the wire was down. Similarly, numbers using the other sites varied from two to ten times that of the experimental site when the wire was installed and up. When the wires were removed, the changes in use patterns between the three sites favoured the Pine Avenue Site with over twice the population of the control sites.

This paper reports on the first half of the study. The gulls' behaviour between a non-wired site and that of a wired site was noted as increasingly more apprehensive and shorter in duration in site usage and feeding time on the wired site. There was no augmentation or use of any technique to increase the effects of the wire, such as shooting, distress calls, etc. The effects of the wire itself was impressive; a program to reinforce the apparent fear of being under a wire that is virtually invisible (0.032 inch) and thus a form of threat, would undoubtedly increase the overall results.

The use of wire has limitations which may be site-specific (such as the topography). Its use as a means of gull control as a passive method certainly deserves consideration. If the existing methods are used in conjunction with wire coverage, wire appears to be an approach which reduces gull usage and thereby reduces potential threats to aircraft and other human conflicts.

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