EXCLUSION OF GULLS FROM RESERVOIRS IN ORANGE COUNTY, CALIFORNIA

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ABSTRACT: Measures to exclude gulls from two coastal domestic water supply reservoirs in Orange County have included the use of shotguns, exploding shell cartridges and carbide cannons. Alternative methods were explored which hopefully would prove more effective and less costly than the harassment techniques being employed. The installation of a network of spaced wire over the reservoir water surface has successfully excluded gulls from these bodies of water.

The installation of spaced wire over ponds, small lakes and reservoirs to exclude bird species is not a new technique. Literature recounts this system was devised in Victoria, British Columbia and has been copied with success in several cities of the Pacific Coast states. The date cited was 1927 (McAtee 1936).

The objective of bird exclusion from domestic water reservoirs remains the same today as in the '20's....public health. Managers of both domestic water reservoirs in Orange County experiencing gull (Larus spp.) problems cited increased bacterial pollution of the water and intolerable fouling of structures and concrete reservoir slopes. (McDonald 1980; Bachman 1979, 1980).

Frequent water letdown to clean reservoir slopes and bottoms of accumulated debris and algae was a time consuming and costly procedure. As bacterial counts became higher, chlorine treatment was stepped up, adding another maintenance cost. Steps to mitigate the problem were discussed, centering around a practical method to decrease the inflow of gulls using the reservoir.

The two reservoirs now protected by spaced wires in Orange County are located in the southern county coastal area. They are the San Joaquin reservoir operated by the Metropolitan Water District of Southern California in Irvine and Big Canyon reservoir, the domestic water supply reservoir for the city of Newport Beach. Big Canyon is located three quarters of a mile from the ocean and San Joaquin one and one-half miles from the ocean, making both sites readily accessible to shore birds. Other bodies of water in the county occasionally have bird nuisances, but these are either recreational lakes or ponds, or sewage purification ponds where health concern is not a factor.

An element that entered into the excessive gull intrusion of both reservoirs was the close proximity of a large cut-and-fill disposal station. This disposal station is less than one-half mile from both reservoirs. The availability of food to all species of birds at this refuse station is incredible. Gulls soon learned to avail themselves of this food source and flocked in daily.

First gull arrivals were shortly after daybreak and most remained throughout the day, alternately feeding, loafing or going to water. Around 3:00 p.m. the first contingent began leaving the dump site and by 4:30 p.m. most gulls had left for their night roosts. Estimate of daily averages of gulls at the disposal station was between 10,000 and 15,000. This occurred from October through April. Many of these are migrating gulls, wintering in southern California. Gull population is very low from May through September and is of little consequence to the operation of the disposal stations or the reservoirs.

During periods of non-feeding, gulls were either resting on flat ground adjacent to dump site or loafing on the water surface at the reservoirs. Many gulls flying to the reservoirs carried with them food and non-food objects. Some food pieces were softened by water and consumed, but a great portion was dropped or discarded into the water. Non-food objects found in the reservoirs included rubber objects, plastic can holders, leather articles and many other strange items. Food particles consisted mostly of pastry products, poultry and beef bones, and fruit. This continual fouling of the reservoir water by gulls either from food and non-food particles and fecal deposits was of utmost concern to management.

Early efforts to discourage gulls were by noise producing sounds. This included shotguns, shell crackers and carbide exploder cannons. These tactics were partially effective, but were expensive to operate, required high maintenance and were objectionable to nearby homeowners due to the noise factor.

In 1971 John McDonald, Water Plant supervisor, experimented with stringing nylon fishing line across the Big Canyon reservoir. This idea was suggested to him by Mr. Nolan Neil, a Metropolitan Water District foreman. Due to the inherent disadvantages of nylon - stretching, breakage, and relatively short life, this installation was less than successful. Test installations using several types of wire were made. A wire type was needed that was exceedingly strong, lightweight and corrosion resistant. The wire that fitted these specifications was a .015 inch diameter, coated, stainless steel spring wire similar to piano wire.

Installation of the wire at Big Canyon reservoir was made by water department personnel. After working with this steel spring wire, it was quickly determined that a special device was needed to

control the wire when unreeling from the spool. If not restrained, the wire is practically unmanageable, easily cross tangling and subject to kinking. When stretching pressure was applied to kinked wire, it would quickly break. A simple spool box was constructed to hold the twelve and one-half pound wire spool. The wire was fed out through a tension brake device which eliminated quick unreeling when demand was made on the wire spool.

Both Big Canyon and San Joaquin reservoirs are enclosed at their perimeters by heavy duty chain link fencing. The fence posts are ten feet apart and are points of attachment for the wire as it is extended across the reservoir. The wire is placed crosswise to the longitudinal axis of the reservoir. The spacing of wire strands at Big Canyon reservoir is fifty feet.

Upon fastening to a perimeter post on one side, the wire is reeled from the spool and extended across to the opposite side of the reservoir. The wire supply spool is carried in a small boat and rowed across. If the span is great, small buoys support the wire during the crossing. The wire is then cut for length, wrapped loosely around the fence post then, with care not to crimp or kink the strand, pulled as taut as possible. When the wire strand is eight to ten feet off the water at mid-point, it can be fastened permanently to the fence post. Approximately three man hours per wire was required for installation. (McDonald 1979).

Most of the original installation wires are intact after eight years' service. Strong winds are the most damaging factor to this wire installation. Breakage usually occurs at point of wire attachment to the fence and averages one to three breaks per year. Other than restringing broken strands, the installation requires no maintenance.

San Joaquin reservoir followed with their installation in late 1974 and early 1975 upon our recommendation of this technique. This reservoir, being approximately two and one-half times larger, required much longer spanning of wires, still without mid-point support. Installation followed much the same procedure as at Big Canyon reservoir with attachments to perimeter fence posts, but at eighty foot intervals instead of fifty foot. The identical type of .015 inch stainless steel spring wire was used. No installation problems were encountered even with the much longer span of about one thousand feet. The reservoir, being irregular in shape, cross reservoir span ranged from six hundred feet to one thousand feet. Maintenance is minimal with four to six breakages of wire per year. Wire breakage is caused by excessive swinging by strong winds and an occasional strike by migrating Canadian geese or other large birds. (Bachman 1979).

SUMMARY

When wire installation was complete at both reservoirs, the effect on gull flocks was immediate. Scout gulls would break away from incoming flocks, descend close to the reservoir surface as if surveying the situation. After such scrutiny, the scouts would return to the circling flock and all would depart. The reason for the repellency effect to gulls of this wire network remains a mystery. The results were not a mystery, as success was complete, actually beyond expectations. Since wire installation in 1971 at Big Canyon reservoir and in 1975 at San Joaquin reservoir, no gulls in any numbers have alighted on the reservoir surface except an occasional sick or injured bird.

It should be noted that exclusion is restricted to gulls. Other waterfowl species frequent the reservoirs but in much reduced numbers and are easily frightened off by noise producing means.

Water quality is much improved since gull exclusion from the reservoirs, resulting in lowered water and maintenance costs overall. (McDonald 1979, 1980). Water letdown to clean contaminants from the reservoir floor is now done every three years instead of yearly at Big Canyon reservoir. Management expects to extend this interval by implementing new dredging methods to remove algae and sediment.

Interest in this gull exclusion technique is good, as inquiries directed to Big Canyon and San Joaquin reservoir managers are received from municipalities nationwide.

LITERATURE CITED

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