BIRD CONTROL ON CONTAINMENT POND SITES[2]

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ABSTRACT: Bird deaths resulting from toxic materials in containment ponds are causing authorities to insist that action be taken to eliminate this hazard to avian wildlife. Bird control at containment pond sites is achieved by two well-known but poorly understood aversion techniques: hazing systems (sound/visual) and stretch wire. The limiting condition of either approach is that resident birds rapidly habituate while some migrating species are totally unaffected. Consequently, one must be able to accept degrees of control with an understanding of the behavior of the species involved. Birdproofing is achieved by covering an entire pond with bird net. This presentation discusses several aspects of bird netting including selection of net, with consideration of UV degradation, weather conditions and species, design of support systems, installation procedures, attachment techniques, abrasion limitations, and a brief summary of hanging and stretch-wire techniques.

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INTRODUCTION

Industrial containment ponds attract migrating waterfowl in locations where they normally are not observed. The ponding basin is a welcomed loafing/resting site even in desert areas where you would not expect to see these species. Any liquid, even black, gooey oil, will cause the birds to stop and rest. The visitation rate by migrating waterfowl is determined by the migration flight path and its positional relationship to the containment basin. Basins directly under the flight path have a higher rate of visitation than those near the perimeter.

Resident birds (waterfowl, waders, passerines), in contrast to migratory birds, will visit basins looking for a food source, resting area, as well as a loafing site.

Sound and visual deterrents may significantly reduce migratory waterfowl visitation, but may not reduce that of the resident birds. Sometimes the reverse is true depending upon the species and surrounding habitat. This is why the use of any bird control technique other than netting on a containment basin will only be partially effective and frequently unacceptable to Fish and Game authorities.

BASIN DESIGN

Dimensional configuration of the basin influences the practicality, ease, and cost of installing bird control net. Rectangular-shaped basins (300 ft × 1600 ft) are much easier and less expensive to cover than square basins (700 ft × 700 ft) for two reasons. A less extensive ground support system and smaller diameter cable is used to cover the 300 ft × 1,600-ft basin. There would also be less cable whip and subsequent net undulation. Deeper basins will allow for a rectangular design without taking up more space than a square-shaped shallow basin. Dam permits are available from the State Engineer's office to encourage the construction of deep-sided basins.

Another important way of minimizing wind damage is by constructing a windbreak along the side of the pond that is hit first by the prevailing winds. A rip-rap windbreak is effective in decreasing cable whip and net undulation.

BIRD NETTING

Bird net is available in a solid-strand or chain-link configuration. Chain-link netting is a diamond mesh, stretch net. This net product is generally more expensive and more difficult to install over a containment basin than an equal weight of solid-strand net. Sections of solid-strand net can be spliced together much faster than sections of stretch nets. Heavy-duty nylon fish net (*low cost) can be coated with a weather-resistant substance. However, when all factors are considered, nothing compares to UV-treated polypropylene solid-strand net.

WEATHER

Wind-caused abrasion is the paramount factor to consider in choosing a cable. Net rubbing across a cable can be cut in half in a matter of a few weeks. Small diameter (1/8"-3/16") cable has a smoother surface than larger diameter (1/4"-3/8") cable. UV-treated coated cable is much more durable than it has been in the past and it provides the least-abrasive surface from which to suspend bird net.

The next-most important consideration to reduce abrasion is the method by which the net is attached to the cable. It is done by using hog rings or electrical bundle ties (UV treated). Hog rings are attached around the cable and net from below. This may require a boat and tripod to reach the underside of the net. Bundle ties can be attached around the cable and net in a large 4-inch loop as the net is being slid across the cable support system. The bundle ties will need to be tightened from underneath once the entire net is in place. This also requires a boat and tripod. Hog rings or bundle ties must be attached every 6 inches. One-foot spacing will rip out with a "domino effect" during high winds.

Snow and ice buildup are the next-most important variables to be dealt with. Snow will collect on a 1-inch mesh faster than on a 2-inch opening. Ice buildup will collapse any net regardless of mesh size. Most facilities in snow country have someone periodically "thumping" support cable to cause snow to fall through during a snow storm. Consider that the

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1-inch net excludes all birds while a 2-inch net will allow small birds including some shore birds to pass through. Usually they become trapped under the net. In snow country the mesh size should be determined by the probability of small birds using the ponding basin.

SUPPORT SYSTEMS

Most bird net used on containment ponds weighs only 10 to 16 lbs. per MSF so the support cable will not be bearing much of a weight load. The cable must withstand the tension required to keep sag to a minimum. As a general rule, 1/8" cable is used for a length of 100 ft or less, 3/16" for 100 to 300 ft, 1/4" for 300 ft and up. A heavy duty come-a-long and cable grip is required to tighten the cable (Fig. 1).

Cable is attached to pipe in concrete or earth anchors. Earth anchors must be inclined toward the cable end, not perpendicular. Wood or concrete blocks are placed between the earth anchor and the ground surface to keep the earth anchor shaft from bending as the cable is being tightened. Holes are drilled through the wood or concrete blocks so that a rebar rod can be driven through into the ground to keep the block from shifting (Fig. 2).

NET INSTALLATION

Method 1. Two sections of net are pulled off the master roll (Fig. 3), overlapped 6 inches and hog-ringed together every 6 inches (or laced together with solid-strand polywire). The front edge of the net is zip-tied to 1-inch metal conduit which is fastened together on top of the cable supports. Rope, tied to the conduit, is used to pull the net across the support system from the opposite, side. The conduit acts as a semi-rigid leading edge for pulling the net without ripping it. Repeat the process until the basin is covered. Hog-ring the net to the support cables at 6-inch spacing from the underside using a small boat and "A" frame stand. Attach net edge to perimeter cable laid on top of basin berm. String poly-rope above the net between support cables to minimize high wind whip (Fig. 4).

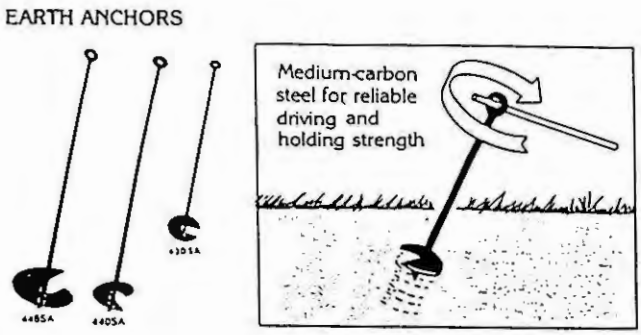

Figure 2. To install earth anchors, screw anchor clockwise into the ground so that the pull is in line with the anchor rod.

Method 2. Support cables are spaced 1 foot narrower than the net width. Each net edge is looped around the cable and hog-ringed to itself (6-inch loop). Continue the process and pull the net onto the cable using a rope from the opposite side. Some cable separation may occur after net is attached. Use black, UV-stable, polypropylene zip ties to keep cables together if necessary. Attach net edge to perimeter ground cable (Fig. 5).

Method 3. Install cables as usual but without a high-tension load. Net support cables are attached to an overhead cable after the net is in place. This approach has worked well on smaller basins.

VISUAL DETERRENTS

Flags, balloons, flashing lights, and raptor decoys may occasionally have an initial deterrent effect but it soon fades as the birds readily adapt.

Figure 1. Support cables attached to pipes embedded in concrete facilitates a tight cable stretch. Workmen overlap the net 6 in and hog-ring the edges at 6 in intervals.

Figure 3. The net roll is supported by a 6-in pipe on a brace frame with steel castors.

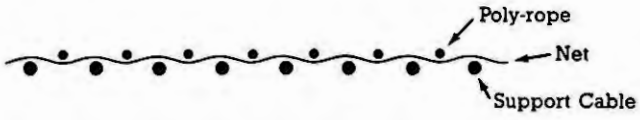

Figure 4. To minimize net whip in high winds, poly-rope is strung across the pond above the net between the support cables.

Figure 5. Each net edge is looped around the support cable and hog-ringed to itself. The outermost net edge is attached to the perimeter ground cable.

SOUND DEVICES

Generally, speaking, each bird species responds differently to a given sound pattern. Sound patterns elicit an aversion that can be rated simply as poor, fair, good, and excellent. There are three principal sound types to work with which can be easily understood with a few basic definitions (Martin 1980).

Acoustical sound is artificially produced. Sound generators produce a multitude of electronically synthesized sound from screeches to warbles to the sound of a shotgun blast. These sounds frighten birds and interfere with interflock communications or, for an undefined reason, effectively deter or repel birds. Most species can be repelled initially by some form of acoustical sound.

An Av-Alarm produces a wide range of sound and can be adapted to practically any situation. It is normally powered by a 12-V automobile battery but can be adapted to alternating current with the use of a trickle charger. Propane-powered exploding cannons, often used, produce a sound similar to that of a shotgun blast. These devices can also be modified to provide good visual movement in addition to noise. A small pistol which fires a whistling projectile nearly 200 yards can be used by personnel. This is an extremely effective tool for dispersing large numbers of birds before they establish a landing pattern.

Biosonic sound is the recorded distress or alarm to an individual species of bird. The call, which is amplified and played back through a loudspeaker, is species specific. Birds that hear their own recorded alarm call quickly respond by departing the area. However, not all species have a distress or alarm call. Biosonic and acoustical sound devices are commonly used to discourage gulls from frequenting major airports.

Ultrasonic sound cannot be heard by humans. Birds normally do not respond to ultrasonic sound to a significant degree.

Adaptation Even the most sensitive species will adapt and become nonresponsive to any sound pattern if the sound generator is placed and left unattended. The key to overcoming adaptation is to add a visual stimulus and to integrate several sound types. The visual stimulus is accomplished by using a sound generator that moves as the sound is emitted. Integrating several sound types requires the use of more than one type of sound generator which can be placed around the perimeter with good sound penetration. Occasionally, the sound generators must be placed on floating platforms for optimum coverage. Sound systems, even when combined with visual deterrents, have a limited degree of effectiveness (Martin and Martin 1984).

STRETCH WIRE

This technique is used most effectively on gulls. The idea is to use small-diameter, stainless-steel wire spaced at 50-

foot intervals, 15 to 20 feet above the site. The wire is nearly invisible to the descending gulls. After a few of them "smack" into the wires, the flock is vocally alerted and stays out of the area (Amling 1980, Laidlaw et al. 1984). The techniques does not work as well on other species as it does on gulls for many reasons. Gulls are quite vocal and communicate alarm signals rapidly. Gulls make a slow, circling descent normally. Ducks on the other hand will "scream" into landing patterns and are not as vocal. Consequently, it has been thought that a tight grid pattern of criss-cross cables would prevent ducks from landing. Not so; they can fly through small openings because the grid pattern is quite visible. Dabbling ducks, likewise, fly almost straight up off the water surface and through most grid patterns.

SUMMARY

Bird netting (approximately 1-inch mesh) over a containment basin is the only way to totally exclude birds from using the site.

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