SRAC Publication No. 401

Southern Regional Aquaculture Center

November, 1990

Avian Predators

Frightening Techniques for Reducing Bird Damage at Aquaculture Facilities

Gary Littauer*

Bird predation at aquaculture facilities can often be reduced by use of a variety of frightening techniques. These techniques rely on noise and/or visual stimuli to convince bird predators that an area is unsafe. Repeated harassment with frightening techniques can sometimes condition local populations of birds to avoid areas where they are unwelcome.

Success in using frightening techniques can vary depending on a number of factors. These include bird species, the mix of techniques used, frequency and duration of use, availability of other food sources, location of ponds in relation to roosting and loafing areas, and whether the birds have established regular feeding patterns. To be effective, producers must commit to using a variety of techniques and changing them often.

Audio frightening techniques

Pyrotechnics – These include several fireworks devices used for scaring wildlife. Bird bangers (Bird Bombs®), screamer sirens (racket bombs), and whistle cartridges are 15mm cartridges that are fired from handheld .22 caliber blank pistols (Figure 1). All are fired into the air toward the birds to be frightened. Bird bangers travel 10 to 30 yards and explode in force similar to an M-80 firecracker. Screamer sirens travel about 100 yards emitting aloud screeching noise. Whistle cartridges travel about 100 yards emitting a whistling noise. It is best to use several kinds of these devices so that birds do not acclimate to anyone noise.

Figure 1. Flare pistols are effective when used in conjunction with other scare devices.

Shellcrackers produce a noise similar to bird bangers but are fired from a 12 gauge shotgun and travel 50 to 100 yards before exploding. They have greater range than bird bangers and are easier to use, particularly from a vehicle, since they do not require the separate step of loading a .22 blank to propel the device. However, they are more expensive and a 12 gauge shotgun is required. Short barreled single shot shotguns with open cylinder chokes are recommended for using shellcrackers. Barrels should be checked before each shot to assure the wad from the previous round did not lodge in the barrel. The powder in some brands of shellcrackers is especially corrosive and incomplete burning of powder is common. Shotguns should be cleaned after each session of firing.

The rope firecracker is a noise device that uses 3/8- or 5/16-inch cotton fuse rope and large waterproof firecrackers. The fuses are inserted into the rope at intervals. The rope is lit atone end and hung from a stake or other object. The rope burns (smolders) at the rate of about 1 inch per 10 minutes depending on the weather and ignites each firecracker which then falls to the ground and explodes. These can be hung at strategic locations around

* Animal Damage Control, Uvalde, TX

the farm and do not require a constant human presence to function. To magnify the sound and reduce fire hazard, they can be hung inside a suspended section of stovepipe with a wire basket on the bottom.

There is some fire hazard in using pyrotechnics. Care should be taken to assure they do not come into contact with explosive or flammable materials when being used. Also, eye and ear protection is strongly recommended. Local laws and ordinances may restrict use of pyrotechnic devices, and local authorities should be consulted before using them.

Automatic Exploders – These devices utilize propane gas or acetylene and an automatic timer to emit loud explosions at controllable intervals. Some models emit a variable number of blasts (one to three) at each time interval to reduce the predictability of the noises. This is intended to reduce the chances that birds will lose their fear of the noise. Rotating mounts are available for some models to change the direction of the blasts to enhance effectiveness. Automatic timers are available for some models to turn them on and off each day. Using exploders in conjunction with scarecrows and other control techniques probably enhances their effectiveness. Older automatic exploders sometimes have a tendency to catch on fire. Although the fire is usually small, producers should avoid locating these devices on or near equipment.

Birds can become accustomed to the noise of exploders. The devices should be moved to new locations at least every 1 to 3 days and the interval of explosions varied to increase the time it takes for birds to lose their fear of the sound. When large numbers of birds are ignoring exploders, it may be a good idea to turn them off and resort to more aggressive techniques such as patrolling ponds with pyrotechnics and/or live ammunition. Continued use in those situations probably just reinforces the birds' tolerance of loud noises.

Recorded Distress Calls/Electronic Noises – Many species of birds communicate fear or distress by alarm or distress calls. Broadcasted recordings of these calls can frighten some species and cause them to avoid areas (Figure 2). Distress call tapes are available for great blue herons, snowy egrets, gulls and double-crested cormorants. The response of fish-eating birds to these noises has been variable, and success probably depends on the situation in which they are used.

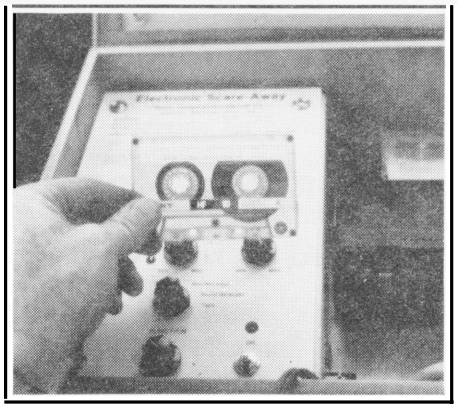

Figure 2. Control box for broadcasting bird distress calls from a pickup.

Flocks of certain fish-eating bird species such as cormorants. gulls and even great blue herons have" occasionally been observed flying toward broadcast distress calls, perhaps out of curiosity or an instinctive desire to mob the "predator" that has "caught" one of their members. Although this may seem to be an indication that distress calls cause the opposite effect of that desired, it may be a good time to reinforce the birds' fear by shooting pyrotechnics at the birds.

Electronic noise generators (capable of emitting noises of variable frequency and modulation), loud music and timed siren devices have been tried for scaring fish-eating birds with varying degrees of success.

Playing distress calls or electronic noises may not show an obvious direct effect on bird predators. However, they may reinforce other scaring techniques. If a local population of birds is conditioned to be afraid of distress calls or electronic noises, broadcasting these sounds may mean fewer rounds of pyrotechnics or live ammunition will have to be used, resulting in lower overall costs for bird control.

Live Ammunition – Shotgun and rifle fire is effective in scaring bird predators from pond complexes. Many farmers use live ammunition because it is less expensive than pyrotechnics.

These various noisemakers have all been used successfully in bird control.

Rifle bullets can ricochet off water so extreme caution must be exercised. Many agricultural facilities will not be suitable for using rifles to scare birds because of safety considerations. Cartridges in .22 caliber rimfire are inexpensive and can be used to frighten bird predators from long distances. High powered center-fire rifle cartridges can have a dramatic effect on birds when fired in their direction. This is because bullets fired from a high powered rifle often produce a loud cracking noise similar to a bullwhip as they pass by. There is a greater risk of inadvertently killing a protected bird when using a rifle for frightening purposes than when using a shotgun. If high powered rifles are used, it is advisable to use smaller caliber, high velocity rounds with one of the super explosive brands of bullets so that bullets have a greater chance of breaking up without ricocheting when they impact the ground or water. Full-metal jacketed bullets should be avoided since they are prone to ricocheting.

Many producers use inexpensive small game shotgun rounds fried into the air to frighten birds. Pyrotechnics, although more expensive, are generally more effective because there is greater variety in the types of noises they cause and they get the noise closer to the birds. However, when birds are regularly flushing from hundreds of yards away, there is probably less difference in effectiveness between pyrotechnics and live shotgun ammunition. In general, it is a good idea to intersperse pyrotechnics with shotgun and rifle fire for maximum effectiveness.

Use of live ammunition can pose a risk of inadvertently killing an occasional bird. Producers must have permits before killing fish-eating birds, whether intentional or not (see section on Supplemental Killing).

Visual frightening techniques

Scarecrows – Human-shaped effigies or scarecrows have shown some effectiveness in deterring cormorant flocks. Scarecrows seem to work best when birds are easily frightened by a person walking or a vehicle driving on a pond levee from long distances (200 yards or more). They seem to be more effective when used in combination with noise producing devices such as propane exploders. Scarecrows appear less effective against great blue herons. Inexpensive silhouette scarecrows can be jigsawed from 1/2-inch plywood and wired to steel fence posts. A realistic human shape and facial features enhance its scaring ability, and brightly colored paint adds visibility. Hanging the arms so they sway in the wind adds motion to the scarecrow (Figure 3).

Vehicles parked on pond levees are sometimes effective scarecrows when birds are scaring easily from a vehicle driven by a bird control employee. They should be moved every few days to reduce the chance of birds becoming accustomed to them. Intermittent use of propane exploders and/or human-shaped scarecrows next to parked vehicles may increase their effectiveness.

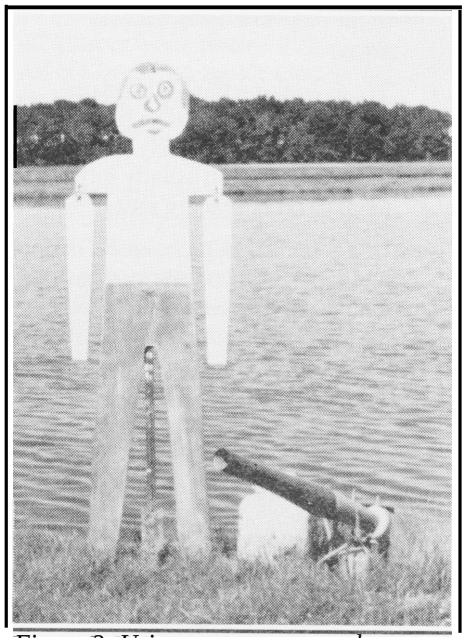

Figure 3. Using a scarecrow and propane exploder is sometimes effective if moved regularly.

Automatic pop-up scarecrows have been developed to scare birds. One model uses a mannequin head on a steel rod that is propelled 30 inches into the air by a propane exploder adapted for the purpose. Another model uses an inflatable human-shaped bag, a battery powered electric fan, a siren-like noise maker, and a system of timers with a photo cell switch. The timers periodically turn on the fan motor inflating the scarecrow which rises up presenting a human shape where none was present shortly before. The photocell switch can be set to start the device at dusk or dawn. An initial field trial of this device indicated deterrence of cormorants from catfish ponds.

Scarecrows should be moved often to new locations to reduce bird habituation. When birds show little or no fear they should be removed and aggressive scaring techniques should be used.

Radio-Controlled Aircraft – Skilled operators of radio-controlled airplanes have frightened cormorants and other fish-eating birds from aquaculture ponds. The birds can be hazed with the airplanes as they attempt to arrive at pond complexes. Observations suggest that one operator and plane may be required to effectively cover 200 to 300 acres of ponds if the ponds are blocked into one contiguous unit. Problems with this technique include weather limitations, having suitable taking off and landing places, and refueling. Even skilled operators occasionally crash radio-controlled planes. Costs for using this technique may be substantially greater than using unskilled labor with pyrotechnics and/or live ammunition.

Other Frightening Techniques – Highly reflective mylar ribbon (flash tape), hawk silhouette kites, and helium balloons have been shown to be effective at times in scaring birds in other damage situations. Their effectiveness in scaring fish-eating birds from aquaculture facilities has not been determined, however. Limited attempts to use helium balloons on catfish ponds identified problems in keeping the balloons up in winds of as little as 5 to 10 mph and in keeping them inflated sufficiently to remain aloft for more than a day or two. Beach ball type balloons with large eye spots to mimic the stare of a large bird of prey have been positioned around cattish ponds with no noticeable effect on fish-eating birds.

Water sprays from rotating sprinklers placed around ponds or raceways have been found to repel certain birds, particularly gulls and herons. Apparently, the sprays reduce the visibility of the fish in the water. They seem to work best when adequate water pressure is used combined with an automatic on-off cycle.

Flashing lights have been used with mixed results to frighten night-feeding birds such as night herons and great blue herons. Aircraft-type strobe lights have an apparent blinding effect, confusing the birds and reducing their ability to catch fish. Flashing amber barricade lights and revolving lights have also been tried with some success. Most birds reportedly become rapidly accustomed to lights, however, and other techniques must be employed.

Supplemental killing

When birds become accustomed to frightening techniques, it is often advisable to kill a limited number of birds to reinforce the others' fear. Certain legal restrictions apply. Consult SRAC Publication No. 404 for information on the legality of killing fish-eating birds and obtaining necessary permits. In general, it is wise to obtain necessary permits and to conduct limited, supplemental killing as soon as possible after the effectiveness of frightening techniques has diminished. Be sure you have both **federal** and **state** permits if required in your state before killing any protected species. When using live ammunition to frighten birds, producers must be careful to avoid killing any birds unless depredation permits have been obtained.

Control strategies using frightening techniques

In most situations, larger flocks of fish-eating birds will be easier to scare from aquaculture ponds than small scattered numbers. Producers should expect a **reduction,** but not necessarily total **elimination** of bird use of their ponds from the use of frightening techniques. Key points to remember when using these techniques for bird control are:

- Begin frightening programs **before the** birds have established regular feeding patterns. The longer they are accustomed to coming to a facility, the more difficult they will be to frighten away.
- Try to frighten the birds before they land at the facility. If you can scare them off early in the morning, you can usually move them to other feeding areas.
- Use a **variety** of techniques; do not depend on just one or two devices or techniques.
- Frequently **change** locations of passive frightening devices such as scarecrows and exploders, and **change** the combination of techniques being used as often as necessary.
- Be **aggressive.**
- Pursue limited kill permits promptly if frightening techniques become inadequately effective.

SRAC Publication No. 402 provides further information on strategies for controlling bird damage at aquaculture facilities.

Technical assistance

The Animal and Plant Health Inspection Service (APHIS) of USDA can provide technical assistance to aquacultural producers experiencing losses to bird predators. On-site evaluations of predation problems, recommendations on control techniques and strategies, and sources of scaring equipment and supplies are available from APHIS Animal Damage Control personnel. To find the nearest Animal Damage Control office in your state contact your local county Extension agent or call the USDA, APHIS, ADC Regional Office in Nashville, TN at (615) 736-5095.

This publication was supported in part by grants from the United States Department of Agriculture, Number 89-38500-4516, sponsored jointly by the Cooperative State Research Service and Extension Service; The United States Fish and Wildlife Service and The United States Department of Agriculture, Animal and Plant Health Inspection Service-Animal Damage Control.