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Low-Powered Lasers: Another Nonlethal Tool for Resolving Wildlife Damage

APHIS Factsheet

Wildlife Services

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Each year Wildlife Services (WS), a program within the U.S. Department of Agriculture's Animal and Plant Health Inspection Service, disperses several million birds because of safety, health, and property damage concerns. To successfully disperse large numbers of birds, WS employs a combination of nonlethal measures, including the use of pyrotechnics, sound cannons, and other noisemakers. While these measures are effective, WS is constantly researching new means for resolving wildlife damage in order to give program specialists more options for addressing wildlife conflicts.

The latest tool in WS' toolbox of resources is the low-powered laser, effective in dispersing a variety of bird species. Researchers at WS' National Wildlife Research Center (NWRC) have demonstrated the usefulness of lasers in dispersing birds in a number of different environments.

How the Laser Works

The low-powered laser is most effective before dawn or after dusk when the red beam of the laser is clearly visible. Bright sunlight will "wash out" the laser light rendering it ineffective. Although researchers are not sure if birds see the same red spot as people, it is clear that certain bird species elicit an avoidance response in reaction to the laser. The birds view the light as a physical object or predator coming toward them and generally fly away to escape. Research, however, has shown that the effectiveness of low-powered lasers varies depending on the bird species and the context of the application.

The idea of using lasers to disperse birds originated in Europe, but researchers at NWRC were the first to test the concept and develop it into an actual tool for managing wildlife damage. WS researchers focused their efforts on low-powered lasers making safety a priority. At higher levels, lasers can burn tissue, causing injury to people and animals. WS' goal is to safely and effectively disperse birds without putting them or people in harm's way.

As a result of WS' research, and in collaboration with NWRC scientists, a low-powered laser called the Avian Dissuader was developed by Science and Engineering Associates Inc., for use in dispersing problem birds. The laser resembles a radar gun used by police to catch speeders. The design enables WS specialists to quickly aim the laser at a roost or cluster of birds to move them from a specific area.

Relocating Avian Species

Although WS' initial research with the laser was intended to evaluate how the technology could be applied and which avian species would respond, program specialists have since expanded the number of species known to respond to the laser beam. WS specialists attempting to relocate waterfowl, such as ducks and geese, have found great success using low-powered lasers. Increasingly, this new tool is being used to help disperse overabundant waterfowl populations in urban and suburban areas across the United States. Long-legged wading birds, like great blue herons, have also been successfully dispersed using low-powered laser light. This discovery is especially important to aquaculture producers because it gives them another nonlethal tool for combating the heron, the double-crested cormorant, and other fish-eating birds.

In addition to these successes, low-powered lasers have proven effective against crows, gulls at landfills, and vultures. In Hawaii they have been tested as a potential means for moving endangered species out of industrial areas and airports where their foraging activities put the birds themselves at risk and pose a safety threat to air traffic.

At the same time, WS specialists have found that blackbirds, starlings, and pigeons generally don't respond to low-powered lasers. The reason for this distinction in response is likely due to the very different eye structure of bird species active at night or in low-light situations. Because these species are active during the day, traditional means of dispersal are still most effective with these species.

Future Developments

As new conflicts arise, WS specialists will continue to test the effectiveness of low-powered lasers in a variety of settings with different avian species. These field tests likely will lead to even more uses for this new nonlethal tool. Although low-powered lasers can be effective when used in combination with other nonlethal methods, they should not be considered a cure-all. As with any nonlethal measure, once enforcement stops, problem birds can return to cause conflict again. In certain situations, nonlethal management efforts must be continuous to have the desired impact.

In addition to using low-powered lasers to disperse birds, WS researchers are looking at the effectiveness of using lasers to disperse overabundant white-tailed deer populations in urban and suburban areas. WS researchers are also investigating different colors or light wavelengths that might be more effective than the red beam currently in use. This research could lead to even more applications for managing wildlife damage with low-powered lasers.

Additional Information

To obtain more information about low-powered lasers and WS programs, call the WS Operational Support Staff at (301) 734-7921. You can also visit the WS Web site at http://www.aphis.usda.gov/ws.