Overview of important issues when using lasers for bird control

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Safety considerations

Only class 3B lasers should be used. Any laser over 100mWatts in power presents too high a risk of unintentionally harming others or the operator if the beam is accidently shown into the eyes, even for a very brief time if the operator is not wearing safety glasses. It is also possible to burn the birds targeted when class 4 lasers are used. Indeed, it is possible to kill birds targeted with lasers above 300mWatts if they happen to be close enough.

Lasers with a very narrow beam are more dangerous than the ones designed for bird scaring that have a much larger beam. The narrow beam concentrates the energy/Photons delivered to the target and increases the nominal hazard zone by as much as 150%. The narrow beam is also less effective for bird scaring as it makes the beam easier for the targeted birds to not see it, especially in large flocks.

All operators and those tasked with supporting the operator's activities should wear laser safety glasses during laser operation to mitigate eye damage risk if the laser strikes a highly specular surface that reflects back toward those involved with the bird scaring operation. Announcements should be made and/or signage used to alert possible passers by that laser operation is taking place.

Laser Color

Red lasers are optimum for many aquatic and nocturnal birds, but not all. Crows, Geese, Cormorants, Raptors and Ducks are good examples of birds best managed by red lasers. Green lasers are best for all Diurnal birds and extended field use over 15 years has shown that Vultures, Gulls, Geese and some Raptors react as well to green as they do red. In fact, Vultures and Gulls react better to green lasers.

Context

Effectiveness of lasers to cause birds to move away from areas where they are not wanted can be highly influenced by context of the situation the birds perceive where the birds are located. Early tests of laser effectiveness by the Air Force were to control bird populations in hangers. The tests ran at 5 different bases and 4 of the 5 reported very satisfactory results. About 15 minutes of harassment twice per day was enough to keep the bird populations to acceptable levels even with the doors open. The 5th base reported that they were required to harass the birds often – as much as once per hour or more if they left the doors open. When I went to investigate, I found that there was a garbage dump within 100 yards of the hanger. The birds were highly motivated to remain close to the food source. Everybody wants to eat.

I was demonstrating how well the red laser worked to move Crows in northern Indianapolis several years ago. The parks department folks were very impressed and wanted their director to see the demonstration so we agreed to return the next evening. When we started, the Crows refused to move. Only later did I find that some Great Horned Owls (a natural predator of Crows) were roosting about 500 feet away. Although the Crows saw the laser as an unknown predator, they saw the Owls as a known predator and decided to risk staying in the trees until the unknown predator attacked.

How much laser power is needed?
Power output needed for the job can fluctuate with the topology of the area and when and for what reason the birds arrive.

First – birds are not frightened by the laser beam. It is the beam spot reflected back off trees, grass, buildings or other birds they are frightened of. Laser effectiveness is determined by the contrast of the laser versus ambient light. The greater the contrast between the light of the beam spot and the ambient light of the area the easier it is for the birds to see and be frightened by the beam spot. However, this desire for increased effectiveness must be tempered with the understanding that greater power brings greater risk to the operators, passersby and even the birds targeted. Because of this we do not offer lasers with greater than 80mWatt output. Most of our military and commercial airport customers use our 50mWatt models. Some, like airports in Scandinavia, use our 30mWatt models.

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