



Brochure: Preserving Wildlife and Protecting Assets



LRAD – Humane Wildlife Preservation & Cost Effective Asset Protection

The significant expense of repairing wildlife-related damage, the costly penalties and bad publicity for harming wildlife, and the ineffectiveness of cracker shells, propane cannons and other repetitive sound deterrents, highlight the need for safer, more effective wildlife control solutions.

Featuring advanced range, directionality and multiple volume settings, LRAD systems are in use around the world preserving and controlling wildlife and cost effectively protecting assets. LRAD systems are easily programmed to broadcast a wide variety of tones and predator calls to ensure against habituation and safely deter wildlife up to 3,000 meters away.

When integrated with cameras, motion sensors, night vision and radar, LRAD-RX systems are automated and operated across an IP network to provide critical asset operators a completely unmanned perimeter security solution capable of remotely responding to and safely deterring wildlife and human incursions.

THE LRAD SOLUTION

Advanced Technology

Unlike other wildlife deterrent systems that disperse sound in all directions, LRAD's proprietary audio technology focuses sound in a 15° – 30° beam while substantially reducing sound levels behind the systems and in surrounding areas.

LRAD's advanced driver and waveguide technology ensures every tone and predator call is clearly delivered over wind and background noise. By maintaining a smooth frequency response with an intensity variation of less than 5dB, LRAD prevents audio fading over distance. For human incursions, LRAD is optimized to the primary human hearing range of 1 – 5 kHz, making it unique in its ability to deliver warning tones and live or recorded messages in any language with exceptional clarity.

LRAD systems are built to MILSPEC standards and are rugged enough to operate reliably in extreme weather, temperatures and environments.

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APPLICATIONS

Airports / Air Bases



The dangerous and potentially deadly effects of bird strikes on commercial and military aircraft were demonstrated in 2009 when a U.S. Airways flight was forced to land on the Hudson River shortly after takeoff. The FAA reports that bird strikes have increased 7-fold from 1,847 in 1990 to a record 13,795 in 2015. Over 169,000 bird strikes have been reported to since 1990 costing the aviation industry more than \$1.2 billion annually in aircraft damage and out-of-service delays.



Manually operated or integrated with remote command and control centers, LRAD is a humane bioacoustic deterrent that has proven highly effective in preventing aircraft bird strikes near runways at airports and air bases around the world. When integrated with millimeter band radar, LRAD-RX systems automatically detect birds entering runway control zones and broadcast a wide variety of intense, directional sounds, including predator calls, to safely steer birds away from aircraft during takeoffs and landings when they are most vulnerable to bird strikes.

https://www.faa.gov/airports/airport_safety/wildlife/media/Wildlife-Strike-Report-1990-2015.pdf

<http://aircargoworld.com/bird-strikes-cost-aviation-industry-billions-per-year-8324/>

Oil & Gas



Oil & gas platforms make ideal areas for bird roosts creating sanitation issues and significant property damage. Birds perch, feed and nest on unmanned platforms causing guano-related health concerns for maintenance workers and expensive cleanup costs. Manned and unmanned platforms also face safety and security issues when fishing boats get too close.

When integrated with cameras, motion sensors, night vision and radar, automated and remotely operated LRAD-RX systems provide platform operators a completely unmanned perimeter protection solution capable of safely deterring wildlife and vessel incursions.

By implementing LRAD systems in oil & gas platform wildlife control programs, birds are safely dispersed and move on to more suitable nesting grounds, and fishing boats are effectively warned away.

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APPLICATIONS

Mining Operations



Drilling and mining operations that create tailings ponds and waste areas can be deadly for wildlife. These water sources contain dissolved minerals that kill birds and animals. Government agencies levy large fines and penalties on operators that fail to implement measures that curtail or prevent wildlife access to toxic waste areas.

Remotely operated LRAD systems integrated with avian radar are being used in many mining operations to prevent bird landings on hazardous tailing ponds and wildlife incursions into waste areas.

LRAD and avian radar partner, DeTect, Inc. were recognized by the Canadian Association of Petroleum Producers (CAPP) during their 2012 Responsible Canadian Energy Awards ceremony when it presented its President's Award to Canadian Natural Resources Limited for their Horizon Oil Sands Wildlife Management System.

Since 2009, Horizon Oil Sands has operated a leading-edge bird deterrent program to prevent mortalities related to the Horizon External Tailings Facility (ETF). The Merlin Detect and Deter system was deployed at the Horizon ETF utilizing technology originally developed for aircraft bird strike prevention. Radar-controlled LRAD systems and lasers prevent birds from landing on tailing waste ponds. The Merlin Detect and Deter system demonstrated 97.5% efficiency in deterring birds approaching the ETF.

Wind and Solar Farms



Wind and solar power are the fastest growing alternative energy solutions, but they are proving deadly to birds and bats. Over 573,000 birds and 888,000 bats are being killed every year by wind turbines in the U.S.

Additionally, thousands of birds are scorched or incinerated annually in the solar flux generated by heliostat mirrors installed on solar farms.

The bird strike problem is becoming so serious that measures to protect the avian population are affecting the growth of wind and solar farm installations.

LRAD systems protect birds, bats and alternative energy installations by deterring wildlife incursions and preventing trespassing, asset theft and vandalizing, saving renewable energy companies millions of dollars in wildlife and intruder-related equipment costs and damage.



<http://instituteeforenergyresearch.org/analysis/license-to-kill-wind-and-solar-decimate-birds-and-bats/>

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APPLICATIONS

Industrial Facilities



Industrial facilities attract communal bird roosts causing facility sanitation issues and significant property damage. In addition to giving off an unpleasant odor, avian fecal accumulation can infiltrate the water supply and create bacteria contamination that harms workers.

By implementing LRAD systems into industrial wildlife control programs, birds are safely dispersed and move on to more suitable roosting grounds.



When integrated with cameras, motion sensors, night vision and radar, LRAD-RX systems can be automated and remotely operated across an IP network providing facility operators a completely unmanned perimeter protection solution capable of safely deterring wildlife and human incursions.

Fisheries / Agriculture



Wildlife-related fishery and agricultural losses, and the ineffectiveness of standard deterrents highlight the need for more effective wildlife control solutions. Wildlife become habituated to the repetitive sounds of cracker shells, propane cannons and other standard deterrents rendering them ineffective.

LRAD systems broadcast a wide variety of tones and predator calls to safely deter wildlife over distances up to 3,000 meters and ensure against habituation.

Large Animal Incursions



Arviat, Canada

Polar bears are a dangerous part of living in northern Canadian villages. Over the years, polar bears have grown increasingly accustomed to man resulting in several dogs and villagers being mauled or killed.

When polar bears damage property or attack people, they are either killed or relocated. Relocating bears using trained veterinarians, tranquilizer guns, and helicopters equipped with nets is an expensive and hazardous operation.

LRAD systems are providing a new way to humanely discourage polar bears from interacting with people and moving them away from villages. Law enforcement and wildlife officers in Arviat used LRAD's long range, intense warning tones to disrupt and deter bears from approaching the village, its dump, and other areas of human activity. With its near infinite variety of tones and modulations, LRAD systems ensure against habituation and provide a highly effective bioacoustic deterrent.

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