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Managing Wolf Predation on Livestock in Idaho Since Reintroduction: Wildlife Services Program Perspective and Summary

Layne R. Bangerter, District Supervisor, USDA, APHIS, Wildlife Services, Boise, Idaho; George E. Graves, Assistant State Director, USDA, APHIS, Wildlife Services, Boise, Idaho, and NADCA Northern Rocky Mountains Regional Director

Skeletal records indicate that Rocky Mountain gray wolves existed in Idaho for over 2000 years, the more dense populations being distributed in the east-central portion of the state. In 1915, Congress directed U.S. Government trappers to "control wolves and coyotes" to boost meat production during World War I. As a result, wolves were thought to have been extirpated from Idaho in 1925. Although scattered reports of wolf sightings occurred over the years, the U.S. Fish and Wildlife Service (FWS) listed the Rocky Mountain gray wolf as endangered in 1973. Several years prior to the 1995 reintroduction of gray wolves to Idaho, most Federal and State biologists, conservation and environmental groups, and politicians agreed that if wolf recovery was to be successful, wolf predation on livestock must be addressed. Therefore, wolf control was recognized as a vital, integral, and necessary part of responsible wolf management and was implemented in the Final Special Rules (50 CFR 17.84 (i)) which governed the reintroduction of wolves in central Idaho.



Wildlife Services (WS), a program within the U.S. Department of Agriculture's Animal and Plant Health Inspection Service, was charged with the responsibility of responding to reported wolf predation on livestock and for carrying out all control actions. Factors such as 1) WS' experience and background in evaluating predation by black and grizzly bears, mountain lions, coyotes, and other predators, 2) WS' knowledge of predator behavior and ecology, and, 3) WS' ability to efficiently work in remote areas; all were important considerations in assigning WS this responsibility.

In 1990, an Interim Wolf Control Plan was developed by the FWS in coordination with the State Departments of Fish and Game and Agriculture in Montana, Wyoming, and Idaho. This plan, along with Final Special Rules (50 CFR 17.84 (i)) provide guidance and direction to WS in responding to wolf depredation investigations and control actions. Idaho WS introduced its specialists to wolf issues,

policy, and procedures, and immediately began developing professional relationships with FWS endangered species managers and law enforcement personnel, the Nez Perce Tribe, the Wolf Education and Research Center, and other special interest groups. Experienced and qualified wolf handlers, veterinarians, forensic experts, and Federal wolf managers were invited to train and instruct Idaho WS Specialists about current and acceptable methods of capture, equipment, telemetry technology, chemical immobilization, and wolf behavior. After the initial training, five to six specialists who were located in areas that would likely experience wolf activity were provided additional training.

These specialists have equipment to capture, immobilize, and radio-collar wolves. Additionally, WS fitted one of its aircraft with telemetry equipment to locate and track collared wolves and aid in control actions.

In January 1995, 14 adult wolves from Alberta, Canada were released into the River of No Return Wilderness Area of central Idaho as part of an "experimental, nonessential" population. One year later, another 20 wolves from British Columbia, Canada were released in other remote areas of the state. All wolves were radio-collared prior to release. The Nez Perce Tribe was designated by the FWS as the agency responsible for managing the wolves (e.g., monitoring radio-collared wolves, recording pack size and counts, and disseminating information within Idaho). This arrangement occurred after the Idaho Legislature refused to adopt the Federal wolf management plan, thus precluding involvement of the Idaho Department of Fish and Game. The FWS retained policy administration and enforcement authority.

Wildlife professionals understand that it is not possible to detect all instances of wolf predation on livestock in the State. A study conducted in southern Idaho determined that only a fraction (5- 20%) of the total domestic sheep predation attributable to

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CALENDAR OF UPCOMING EVENTS

November 12-13, 1998: Workshop - Alien Species Databases: Gap Identification and Use Strategies, Hilton Hotel, Las Vegas, NV. For further information, see website <http://nas.er.usgs.gov/conference>, email Dick Ridgeway at <rlridg@ixnetcom.com>, or call Steve Yaninek at (202) 401-6702.

November 17-19, 1998: Annual Meeting of Western Coordinating Committee - 95, "Vertebrate Pests of Agriculture, Forestry and Public Lands," Circus Circus Hotel, Reno, Nevada. An informal meeting, designed those involved in research, extension, teaching, and regulatory activities related to wildlife damage management to share information in an informal setting as well as coordinate research and plan for future needs. Those planning to attend should RSVP by Nov. 6. Registration fee, approx. \$30. Contact: Dr. Desley Whisson, chairperson, phone (530) 754-8644, or email <dawhisson@ucdavis.edu>.

December 6 - 9, 1998: 60th Midwest Fish and Wildlife Conference, Hyatt Regency Hotel, Cincinnati, Ohio. Conference theme: "Reflections on a Century of Accomplishments." For further information, contact Dave Risley at (614) 265-6331, or see web site: <<http://www.dnr.state.oh.us/odnr/wildlife/workshops/midwest>>

January 31 - February 3, 1999: Fifth Annual Wildlife Control Technology (WCT) Instructional Seminar, Imperial Palace, Las Vegas, NV. For further information, contact Lisa at (815) 286-3039.

March 17, 23, & 25, 1999: Vertebrate Pest Control Workshops, California (Salinas, Ontario, and Sacramento, respectively). Co-sponsored by Vertebrate Pest Council and Pesticide Applicators Professional Assoc. (PAPA). Three one-day workshops providing basic information and pesticide applicator certification credits, covering bird, rodent, and predator damage control techniques. For further information, contact Dr. Desley Whisson at (530) 754-8644, or visit web site <<http://www.davis.com/~vpc/welcome.html>>.

April 27-29, 1999: 14th Great Plains Wildlife Damage Control Conference and Feral Swine Symposium. Holiday Inn, Manhattan, Kansas. Conference theme: solving conflicts between people and exotic wildlife. See "Call for Papers" in this issue of *THE PROBE*. Sponsored by USGS-Kansas Fish & Wildlife Research Unit, KSU Research & Extension, APHIS-Wildlife Services, and Kansas Dept. of Wildlife and Parks. Con-

tact: Charles D. Lee, phone (785)532-5734, fax (785) 532-5681, email <clee@oz.oznet.ksu.edu>.

May 9-13, 1999: Bird Strike Committee USA / Bird Strike Committee Canada, Delta Pacific Resort & Conference Center, Richmond, British Columbia. For information on call for papers, registration, and field trips contact: Bruce MacKinnon, Transport Canada, phone (613) 990-0515, or email <mackinb@tc.gc.ca>. Exhibitors wishing to display products should contact Jeff Marley at Margo Supplies Ltd., phone (403) 652-1932. Book hotel rooms prior to Feb. 8 by calling (800) 268-1133.

May 23-27, 1999: North American Aquatic Furbearer Symposium, Mississippi State University, Starkville, Miss. Presentations (papers and posters) will be given on ecology, economics, human dimensions, policy issues, population estimates, or techniques related to aquatic and semi-aquatic furbearers (beaver, mink, otter, nutria, muskrat, and raccoon). A variety of field trips to view local historical, ecological, and wildlife management areas are planned. Peer-edited symposium proceedings containing full papers and poster abstracts will be published. For conference information and registration forms, visit website at: <http://www.cfr.msstate.edu/naafs/naafs.htm>, or contact Richard B. Minnis, MS Coop. Fish & Wildlife Research Unit, phone (601)325-3158.

June 28-July 2, 1999: 2nd International Wildlife Management Congress, Hungary. To include a plenary session "Issues in Wildlife-Human Conflicts." Contact: Dr. E. Lee Fitzhugh, Extension Wildlife Specialist, UC Davis, phone (530) 752-1496, email <elfitzhugh@ucdavis.edu>.

California Votes on Trap Ban

On November 3, Californians will vote on an initiative measure that would essentially ban all uses of leghold traps in the state. Placed on the ballot by a consortium animal rights and humane organizations, "Proposition 4" if passed will also amend the state's Fish and Game Code to make fur harvest and commerce in fur of trapped mammals illegal. Further, it would ban the use of Compound 1080 and sodium cyanide, which are registered and used solely by Wildlife Services personnel in California in the Livestock Protection Collar and the M-44 device, respectively. As of mid-October, the organized opposition to this initiative had fallen far below initial goals in raising funds to conduct an effective campaign to defeat this measure.

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Editor: Robert M. Timm

UC Hopland Res. & Extens. Ctr., 4070 University Road,
Hopland CA 95449. (707) 744-1424,
FAX (707) 744-1040, E-mail: rmtimm@ucdavis.edu

Editorial Assistant: Pamela J. Finnin

P.O. Box 38, Partridge, KS 67566.

E-mail: PamT481@aol.com

Your contributions of articles to *The Probe* are welcome and encouraged. The deadline for submitting materials is the 15th of the month prior to publication. Opinions expressed in this publication are not necessarily those of NADCA.

NADCA Presidency To Be Resolved

As of this writing, a decision to fill the remaining term of NADCA President has not been finalized. Treasurer Grant Huggins is coordinating communication among Executive Committee members and three potential candidates, each of whom has agreed to accept such an appointment if so asked by the Executive Committee. It is hoped that this vacancy will be resolved by early November. Look for an announcement in the December issue of *THE PROBE*.

Book Review

by Stephen Vantassel, NWCO Correspondent

"Nuisance Animals: Backyard Pests to Free-Roaming Killers" By John Trout, Jr. Midwest Publishing, 1997.
192 pages softcover (\$14.95)

Mr. Trout has provided the reading public with an informative and readable book on the issue of animal damage control. His perspective on the issues relating to wildlife damage flows from a decidedly conservationist philosophy. I derived great pleasure in reading the thoughts of someone whose beliefs so closely mirror my own. Mr. Trout correctly contends that humans have a responsibility to care for wildlife. However he is in no way an animal rights activist. He tells us that he has hunted, trapped, and even raised animals. He also seems to have a background in biology. So, unlike other books on animal damage, this author can speak from personal experience about the financial losses that can occur from wildlife.

The opening chapter establishes the issues and causes of our current problems with wildlife damage. The simplistic answer is that urban sprawl and the resultant loss of habitat is the reason for wildlife damage. Fortunately, our author isn't that simplistic. He notes that various successes of wildlife management have actually increased animal populations and the resultant damage. For example, at the turn of the century America had about 500,000 deer. Today the figure approaches 20 million. (To those who claim that this the result of urbanization—in that deer benefit from urbanization—remember that of recent conservation practices, most if not all are attributable to sportsmen and are also part of the reason).

Mr. Trout then moves to illustrate the scope of the animal damage problem. Chapter two systematically presents a great deal of statistical information on the damage caused by wildlife. Anyone interested in confronting A/R extremists need the information found in this book. A brief reading will demonstrate the fact that humans and animals really can't "just get along" because the conflicts are too great. Mr. Trout should be commended for his work in compiling this research. Unlike other government statistics, animal damage stats are not universally gathered. So Mr. Trout had to contact a variety of states and agencies to compile the stats. One interesting piece of data was a table that lists the top three predators causing damage according to each state. The table also tells you what the top two targets of those predators are.

Chapter three discusses general responses and strategies to wildlife damage. The usual resources are discussed, such as the Federal ADC program, now called Wildlife Services, and extension programs. What makes this chapter special is that this author actually talks about nuisance trappers. He provides a brief insight into NWCO activities listing even more statistics. I also need to commend Mr. Trout for raising the issue that the decline of fur trapping bears at least some responsibility for the nuisance trapping industry. On a side note, I just want to exhort state biologists and officials: If you are concerned over the rise of NWCOs, then be sure to look in the mirror. The increasing regulation of fur trapping has helped nail the coffin of the fur

industry. One need only to look at Massachusetts to see the reality and truth of this statement. These regulations have also cost jobs.

The middle portion of the book discusses problems and resolutions to wildlife damage. He organizes the chapters around animal classification, such as *Birds & Wildlife*, *Carnivorous Animals*, *Hoofed Animals*, and finally *Rodents and Other Mammals*. The sections provide helpful information on damage identification and possible damage solutions. Unfortunately, the information is often too general to provide a great deal of help for homeowners. I got the impression that the book was written more for farmers and rural readers than Joe Sixpack living in urban or suburban America. There is little to no trapping information contained in the book. However, Mr. Trout does give some information on electric fences that readers may find useful. I think instruction on electric fences is one area of research that needs either more development or more publicity for us NWCOs. I also appreciated the tips on differentiating woodchuck damage to a garden from other animals. One final comment on this section is that Mr. Trout covers solutions to damage caused by some rather unusual animals, such as wild pigs and elk.

Mr. Trout dutifully covers the dangers of wildlife diseases. The comments are brief and to the point. He covers nine of the most recognizable and arguably the most common diseases. Most readers of **THE PROBE** will be aware of these issues, but as always it never hurts to get a reminder.

The final chapter addresses wildlife management. But Mr. Trout takes a different approach. Rather than telling us how to ravage our landscape to reduce animal populations, he gives advice on how to create habitat for wildlife. In this way, Mr. Trout highlights the differences between animal activists and conservationists. Activists see killing an animal as a problem. Conservationists see killing an animal as a resource and opportunity. When people know that they can resolve a problem with lethal control, when things get out of hand, then perhaps people will be more willing to take risks and set aside habitat for wildlife.

I found it difficult to give an animal damage control grade to this book because it didn't seem to provide the level of how-to information that I would have like to have seen. I saw it more as a practical/philosophical approach to the issues of animal damage control. If you buy this book looking for how-to information on controlling x species, I think you will be disappointed. For that reason, I have to give the book a grade of "C." However, if you want a book that will help you understand issues in animal damage control and general strategies to resolve conflicts, I would give a grade of "B+." I think that educators looking to teach their students about the economic

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Record Attendance at Bird Strike Committee—USA Meeting

Wednesday, June 17, 1998, was a bad day to be a bird in downtown Cleveland, Ohio. About 320 aviation officials, biologists, engineers and military personnel gathered at Burke Lakefront Airport and a nearby gull colony, in the shadow of the Rock and Roll Hall of Fame, to observe 20 demonstrations of products and techniques to control birds at airports. It was a definite "Rockin' Robin" kind of day as birds on the Lake Erie waterfront were subjected to harassment by avian tear gas, radio-controlled model aircraft, herding dogs, falcons, assorted pyrotechnics, automated propane exploders, helium-filled balloons, distress calls, radar tracking and various traps. Northern Ohioans watching the evening news were given a short-course in bird control as all 3 major TV stations provided excellent coverage of the conference.

The Wednesday field trip was only one of the highlights of the eighth annual meeting of Bird Strike Committee-USA (BSC-USA) on June 16-18. In addition to the field trip, 25 technical papers were presented on topics related to reducing wildlife collisions with aircraft. Fourteen companies exhibited their wildlife management products. A military/civil training session was also held for wildlife management on airports.

BSC-USA, founded in 1991, is directed by an 8-person steering committee (see below). Committee members are selected by their agency or group for 2-year terms. The goal of BSC-USA is to increase communication and professionalism among the diverse groups dealing with wildlife issues on airports, and the 1998 meeting appeared to be highly successful in this regard.

Attendance at BSC-USA meetings has been steadily increasing (125 in 1995, 175 in 1996, 275 in 1997 and 320 in 1998). The 1999 meeting promises to be even bigger and better as it will be held jointly with Bird Strike Committee Canada on May 9-13 at Vancouver International Airport, British Columbia. If you are interested in learning more about wildlife damage control opportunities and techniques for airports, please plan to attend the Vancouver meeting. Contact Bruce MacKinnon at Transport Canada (613-990-0508; mackinb@tc.gc.ca) or look at our web page (<<http://www.lrbcg.com/nwrscsandusky>>www.lrbcg.com/nwrscsandusky) for more information on the meeting.

BSC-USA Steering Committee Members (1998)

Richard Dolbeer, (Chair), USDA/APHIS, 6100 Columbus Ave., Sandusky, OH 44870 (419-625-0242)

Tom Hupf, (Vice Chair), FAA Tech Center, ACT 434, Atlantic City Intl Airport, NJ 08405 (609-485-5841)

Ron Merritt, (Sec/Treas), Geo-Marine, 8317 Front Beach Rd, Panama City Beach, FL 32407 (850-230-5919)

Eugene LeBoeuf, USAF BASH, 9700 Ave G, SE, Bldg. 24499, Kirtland AFB, N 87117 (505-846-5679)

David Arrington, USAF BASH, 9700 Ave G, SE, Bldg. 24499, Kirtland AFB, NM 87117 (505-846-5674)

Edward Cleary, FAA, AAS 317, 800 Independence Ave., SE, Washington, DC 20591 (202-267-3389)

Paul Eschenfelder, Air Line Pilots Assoc., 16326 Cranwood, Spring, TX 77379 (281-370-3925)

Laura Henze, USDA/APHIS, 463 West St., Amherst, MA 01002 (413-253-2403)

Wildlife Strike Facts

DID YOU KNOW THAT?

- *Over 300 people have been killed world-wide as a result of bird strikes.*
- *Wildlife strikes cost U.S. aviation over \$300 million/year, 1992-1996.*
- *About 3,200 bird strikes were reported for U.S. civil aircraft in 1997. Over 2,500 bird strikes/year are reported by the U.S. Air Force.*
- *An estimated 80% of bird strikes to U.S. civil aircraft go unreported.*
- *Gulls (31%) and waterfowl (12%) were the most commonly reported birds struck by U.S. civil aircraft, 1992-1996.*
- *Over 300 civil aircraft collisions with deer were reported in the U.S., 1991-1997.*
- *A 12-lb Canada goose struck by an 150-mph aircraft at lift-off generates the force of a 1,000-lb weight dropped from a height of 10 feet.*
- *Starlings are "feathered bullets", having a body density 27% higher than herring gulls.*
- *Since 1991, at least 14 peregrine falcons and 20 bald eagles (rare/endangered species) have been struck by civil aircraft in the U.S.*
- *The non-migratory Canada goose population in the U.S. has more than tripled since 1987.*

Bird-Strike Committee -USA Abstracts

ADVICE TO FLIGHT CREWS CONCERNING THE WILDLIFE HAZARD TO AIRCRAFT

Paul Eschenfelder, Air Line Pilots Association, Herndon, VA
Since 1995, in North America and Europe, 4 large aircraft have been destroyed and over 70 people killed by collisions with birds. Currently no air carrier world wide has any advice of any nature for its crew members on how to deal with this public safety hazard, nor are they required to do so by any regulatory agency. With the cooperation of the U.S. Air Force, Transport Canada, the U.S. Department of Agriculture and the FAA, the Air Line Pilots Association has developed advice on avoiding this hazard for its members. This generic advice is applicable to all types of aircraft and crew experience levels.

THE AVIAN HAZARD ADVISORY SYSTEM USING NEXRAD WEATHER RADAR

Maj. Thomas J. Donalds, Headquarters Air Combat Command, Flight Safety, Langley AFB, VA

The Air Combat Command (ACC) Bird Hazard Working Group (BHWG), in conjunction with Geo-Marine Inc., has developed a system to use NEXRAD weather radar data, weather forecasts, and known bird distributions, to identify bird hazards to military aircraft conducting low altitude, high-speed training, and provide aircrews with hazard advisories.

Although only about 20 percent of all Air Force bird strikes occur during low-level training, they account for 65 percent of the total bird strike damage cost, or approximately \$25 million (US) annually. Currently, the only bird hazard information available to ACC aircrews is based on historical data which is very general in nature. The Avian Hazard Advisory System (AHAS) was designed to pinpoint actual bird movement to allow for more effective risk management. Phase I of AHAS implementation, the demonstration and validation phase, will be conducted during the fall 1998 migratory season in the Northeast U.S. The proposal for phase II will expand coverage to the entire East Coast of the U.S. in 1999. Although this system is designed for bird avoidance during low-level military training, there are numerous applications including monitoring migration on or near commercial airports and traffic patterns, and non-aviation related wildlife studies.

APPLICATION OF RADAR TECHNOLOGY FOR BIRD STRIKE HAZARD WARNING

Joseph Bruder and Michael Wicks, Air Force Research Laboratory, Sensors Directorate, Rome, NY; Vincent N. Cavo, Research Associate for Defense Conversion, Rome, NY

Bird strikes to civil aircraft reported annually to the FAA exceed 2,200, and estimated losses exceed \$200 million annually. Recent military crashes attributed to bird strikes include a NATO AWACS in Greece and a Belgian C-130 in the Netherlands in July 1996 and a USAF AWACS aircraft in Alaska in September 1995. Primary haz-

Continued in col. 2

ards to commercial aircraft, as well as to many military aircraft, are in the takeoff and landing zones. Currently, bird hazard monitoring at civil and military airports is limited to visual detection, with no capability to monitor bird presence in take-off and landing approach zones. Airport surveillance radars, such as the ASR-9, have sufficient sensitivity to detect birds in the vicinity of airports. However, in their present configuration, the radars have intentionally reduced sensitivity within 15 nautical miles of the airport to eliminate clutter such as birds. By using a higher sensitivity channel, such as available in the planned weather signal processor modification to the ASR-9 radar, bird detection as well as weather detection can be achieved. However, the large number of potential bird detections, along with the divergent and erratic bird flight paths, exceeds the capability of presently available radar trackers. Also, bird activity is rather difficult to detect on conventional radar displays and is easily confused with ground clutter. With the greatly increased capability of low-cost computers and digital storage, digital time-lapse processing can display 1 hour of bird detections in a few seconds (similar to time-lapse weather displays). This accelerated time-lapse display makes it easy to distinguish between bird detections, clutter, and aircraft. The addition of the time-lapse digital display capability to current airport surveillance radars would enable airfield controllers and bird control

personnel to observe birds flying on or in the vicinity of airfields. The Air Force Research Laboratory is implementing digital time-lapse processing on a low cost computer. This, as well as future research, is aimed at including a multi-scan area MTI (scene change detection) operating in an accelerated time lapse mode (for operator viewing), which would overcome the limitations of conventional radar trackers for bird hazard warning. When operated in conjunction with conventional trackers, a scene change detection system would provide more complete coverage, including detection of both slow moving targets (birds) and tangentially moving aircraft, which are rejected by conventional MTI processors. A series of experiments, both in-house and at operational sites, are planned for the next 3 years. In these experiments, a PC based signal and data processing unit, designed to operate independently from the conventional processing chain, will be used to detect bird activity (while rejecting ground and weather clutter) and to warn operators about potential bird hazards. These experiments are planned using AFRL Surveillance Facility ground radars in Rome, NY and air traffic control radars at the FAA Technical Center in Atlantic City, NJ. Results from these experiments will be documented and recorded on video tape for distribution to potential users.

THE USE OF DNA SEQUENCING IN THE IDENTIFICATION OF BIRD STRIKE REMAINS

John Allan, Central Science Laboratory Bird Strike Avoidance Team, Sand Hutton, York, United Kingdom

Engineers and bird controllers need to know which species of birds are being struck by aircraft. This allows the levels of damage to be related to bird weight, and bird management to be targeted at the right species. Traditionally, identification has been achieved by visual comparison of whole feather remains or microscopic examination of feather structures. If the feather remains are limited, or if only blood smears remain, identification to species may not be possible. CSL has been developing the use of DNA sequences from the cytochrome-b

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The Editor thanks the following contributors to this issue: Layne Bangerter, Richard Dolbeer, George Graves, and Stephen Vantassel. Send your contributions to The PROBE, 4070 University Road, Hopland, CA 95449.

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Bird-Strike Committee -USA Abstracts continued

gene for bird-remains analysis. Comparison of material from bird strike incidents with library sequences shows that a match of 97-99% is possible if a sequence from the same species or a congeneric species is available. Birds from the same family give matches of 87-95%. More distantly related species cannot be matched reliably. Thus, for this technique to be successful, a library of sequences of commonly struck species needs to be developed, so that there are at least examples of the family, and preferably the genus, of birds likely to be struck. This system has the advantage that it works on any organic material that contains DNA and gives precise specific identification if the DNA sequence is in the comparison library (double blind tests of unknown material were 100% successful). The disadvantage is the cost required to set up the comparison library. We estimate that around 100 sequences would be required to cover the families of birds commonly struck in Europe at a cost of around \$15,000. Individual samples would then cost around \$150 each to process.

AIRFIELD VEGETATION MANAGEMENT

Wayne Fordham, HQ AFCEA/CESM, Tyndall AFB, FL
Management of vegetation, especially turf grass, is a critical factor to reduce bird activity for safe airfield operation. The U.S. Air Force (USAF) now requires (AFI91-202) that grass on airfields be maintained at 7-14 inches tall. Waivers to this requirement are possible only when approved by the USAF Bird Aircraft Strike Hazard (BASH) Team.

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Vantassel Book Review

impacts of animal damage should definitely use this book. It is readable and contains real life accounts of the author's losses to animal damage.

The book has been professionally printed and compiled. Photos and line drawings are clear. Most enhance the writing, while a few are little more than window dressing. The book also comes with an index and a two-page appendix of government and private wildlife organizations. You can obtain a copy of this book by sending \$14.95 plus \$3 shipping and handling to: Midwest Publishing, 6299 Fol-Degonia Rd., Tennyson, IN 47637 (Indiana residents add 5% sales tax). You can also order the book by credit card by calling (812) 567-8948.

Stephen Vantassel
Wildlife Removal Service Inc.
340 Cooley St.
Springfield, MA 01128
Admin@wildliferemovalservice.com
<http://www.wildliferemovalservice.com>

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HABITAT MANIPULATION AND USE OF GROUND PREDATION IN REDUCING INCIDENCE OF RAPTORS IN THE RUNWAY AREA

Don Pitts, 7 CES/CEVAN, Dyess AFB, TX

Using habitat manipulation which not only discourages bird populations but also attracts ground predators which compete with raptors is the most effective BASH technique in the Great Plains regions where raptors represent as many as 50% of all bird strikes and are virtually always the most dangerous. Evaluation of available natural ground predators which do not themselves become wildlife strike candidates is an integral part of a BASH survey, and enhancing habitat for these competing predators can greatly reduce raptor incidence and therefore hazard over the runway area.

CONSTRUCTED WETLAND TREATMENT SYSTEMS WHICH DO NOT ATTRACT WATERFOWL

James Higgins, Soil Enrichment Systems, Inc., Vaughan, Ontario, Canada

Airports generate large amounts of runoff due to precipitation. Major contaminants in this runoff are small amounts of various aircraft fuels, dirt and debris, salts, and oil/grease, as well as (in colder weather) surface de-icers, and the glycols used for aircraft de-icing and anti-icing. All the pollutants found in airport runoff can be treated and removed to low levels in a well-designed constructed wetland system. Many airports in northern areas prefer to use urea for surface de-icing on runways and taxiways but are constrained from doing so because its use can lead to toxic ammonia nitrogen levels in runoff. Constructed wetlands, in addition to achieving very high removals of glycol and other pollutants, can be designed to also remove this ammonia from runoff. There are two common forms of constructed wetlands used for pollution control: Free Water Surface (FWS) or marsh-type ones where water flows over the surface among wetland plants such as cattails and reeds; and Sub-Surface Flow (SSF) constructed wetlands where the wastewater flows below the normally dry surface of a substrate such as gravel from which the wetland plants grow. FWS wetlands can attract waterfowl, and this is a liability in the case of airports because of the danger of bird ingestion by jet engines. Since SSF wetlands do not involve open water areas, they are much less attractive to waterfowl. Additionally, SSF wetlands can be planted with types of vegetation which have little or no food or habitat value for waterfowl, and other tactics can be employed so that the wetland is unattractive to birds. A SSF constructed wetland system is being designed for Edmonton International Airport in Alberta, Canada.

This presentation describes the proposed system, its expected glycol and ammonia removal properties, and how it will be designed to discourage waterfowl.



Managing Wolf Predation

coyotes is reported or confirmed by WS (Connolly 1992a,b and USDA 1996). Factors such as high summer temperatures, variable pack and prey size, habitat type, remoteness of grazing allotments, and timely notification of predation and response time are but a few of elements affecting the ability of specialists to confirm predation by wolves.

Wildlife Services Specialists confirm wolf predation on livestock only when there is significant physical evidence to do so. A typical investigation begins with conducting a field necropsy of the livestock carcass(es) to identify signs of subcutaneous tissue trauma, internal and external hemorrhaging, bite marks (measured for width, diameter, and penetration), and the extent of feeding on the carcass. Physical evidence found at or near the site such as wolf tracks, scat, and hair; blood, bone fragments, and soil disturbance are evaluated. Other evidence used to verify the presence of wolves include telemetry signals from collared wolves, wolf vocalizations, and confirmed sightings. Results of investigations are categorized as follows: 1) Confirmed - overwhelming evidence supporting predation by wolves, 2) Highly Probable - overwhelming evidence is incomplete, but circumstantial evidence is convincing, 3) Possible - unable to positively identify the predator species responsible, little or no physical evidence available, but wolves have been confirmed in the area at the time livestock were attacked or killed, and, 4) No Wolf Involvement - no evidence to suggest involvement by wolves.

A brief summary of reported wolf predation on livestock and subsequent investigations and findings for Idaho WS during Federal Fiscal Year (FY) 1995 through FY 1998.

FY 1995

WS investigated two incidents of possible wolf predation on cattle. Wolf predation was not confirmed in either case.

FY 1996

Six investigations of possible wolf predation were conducted. In two of the cases, wolf predation was confirmed. In the other four, wolf involvement was possible, but there was insufficient evidence to confirm wolf predation. WS captured two sub-adult male wolves. One wolf was translocated, and the other one died during control actions (wolf drowned). Thirty sheep and three calves were confirmed killed by wolves.

FY 1997

WS responded to 10 complaints of wolf predation on livestock. Five were confirmed wolf depredations, and the other five were possible and/or unconfirmed. Twenty-nine sheep and one calf were confirmed killed by wolves. One sub-adult male wolf was legally shot by a rancher who witnessed the wolf killing one of his sheep on his private land.

FY 1998

During FY 98, WS conducted 15 wolf depredation investigations. Of these, WS has concluded that wolves were not involved in seven of the 15 cases. For the remaining eight cases, four were confirmed wolf predation, and four were highly probable or possible, but lacking sufficient evidence for confirmation. Total confirmed livestock losses to date are five cattle killed and one injured, seven cattle unconfirmed but "highly probable," one calf "possible," five sheep confirmed, and four sheep unconfirmed but "possible." WS' control actions in response to confirmed wolf predation resulted in the capture and translocation of three sub-adult wolves from two packs.

Conclusion:

As the number of wolf depredation investigations and control actions has increased in Idaho, WS has noted a change in behavior of wolves in two packs. When specialists are limited to using only foothold traps for dealing with depredating wolves because of terrain, Special Rules, or other factors, it appears that some wolves are becoming trap-shy. This might make capture more difficult in the future. Thus, WS is seeking additional efficient methods to deal with wolves.

With Idaho's official count of wolf packs increasing from six breeding-pair packs in 1997 to a minimum of 10 in 1998, and with an increase of about 400% in depredation investigations since 1995, it is clear that WS will be devoting an increasing amount of resources to dealing with wolf predation on livestock. During the course of wolf recovery, WS Specialists who work with wolves have become more proficient in their skills, and relationships with the FWS, the Nez Perce Tribe, and other interest groups have improved steadily. Wolves have demonstrated that their behavior is often unpredictable, but it appears that wolves will be on the Idaho landscape well into the future.

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Scott Hynstrom
Forestry, Fisheries & Wildlife
202 Nat. Resources Hall
University of Nebraska
Lincoln, NE 68583-0819

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