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The Probe of NADCA
ISSUE 198
MARCH 1999

NADCA benefits its members

The National Animal Damage Control Association (NADCA), like many organizations, depends not only on the commitment, enthusiasm, and tireless effort of its volunteers, but also on its silent and satisfied members. Let's face it, an organization with 1000 members has more political and professional "muscle" than one with 300 members. Members are vital to the health of NADCA, and our members must be satisfied with the relationship.

This means that NADCA has to have meaning for its members. There is always the satisfaction with being involved in a professional organization, knowing that you are a member of a professional community. And, of course, there is THE PROBE, a vital link that connects members with information from around the country. THE PROBE continues to be an important benefit to NADCA members. NADCA also provides the framework for networking. Remember to contact your fellow members!

I want NADCA to provide even more direct and indirect services for its members. For this, I need your help. What do NADCA members want from their organization? What can NADCA develop that makes it worth your membership dues and your loyalty? I want to hear from you because you are important! Send your comments to: Robert Schmidt, Department of Fisheries and Wildlife, Utah State University, Logan UT 84322-5210, or e-mail me at rschmidt@cc.usu.edu.

What can NADCA develop that makes it worth your membership dues and your loyalty?

It is also important for NADCA to attract new members. We need your ideas to accomplish this. I'd like to encourage the development of a special publication featuring "The Best of The Probe" to offer to new members. NADCA member Stephen Vantassel is assisting me with this task. Send your suggestions for your favorite articles, hints, reviews, and editorials from past issues of THE PROBE to Stephen (admin@wildliferemovalservice.com) or myself, and be part of the member recruitment effort.

NADCA is what its members make it. Let's work together to make it an even better representative of the wildlife damage management profession.

Robert H. Schmidt
President, NADCA

Fifth Annual Wildlife Control Technology Instructional Seminar

Wildlife Control Technology magazine held its fifth annual wildlife damage management seminar February 1-3, 1999, in Las Vegas, Nevada. One hundred registrants, primarily Nuisance Wildlife Control Operators (NWCOs), listened to presentations on bird and bat control techniques, coyote trapping and beaver snaring, and prairie dog, raccoon, and skunk damage management techniques. There were also presentations on maintaining a professional image, business organization, and effective advertising for small business owners. As is becoming a tradition with these WCT seminars, there was a very strong focus on applied management techniques, with most of the presentations made by NWCOs for a NWCO audience.

NADCA was well represented in both the agenda and in the audience. NADCA President Robert Schmidt welcomed the attendees and discussed emerging issues that are or may be affecting NWCOs and other wildlife damage managers now and in the future. NADCA member John Consolini presented information about bird control techniques.

Other active NADCA members present included Stephen Vantassel, Richard Daniotti, Jr., Jim Soper, Tim Christie, Jerry Pickel, and others.

Attendees were very interested in the presentation by Tim Julien on the formation of the National Wildlife Control Operators Association (NWCOA). The NWCOA was born at the fourth WCT seminar held in 1998 in New Jersey. It is structured to act as an umbrella organization for the growing number of state NWCO organizations. The by-laws have been drafted, and there was considerable discussion throughout the seminar on the organizational format and mission of the NWCOA. A number of committee assignments have been made, a membership drive is underway, and there is a call for nominations for officers.

This new organization hopes to serve the specific needs of NWCOs. The first NWCOA newsletter has been published and was distributed at the WCT seminar (copies available from NWCOA, 1832 Brazil Ave., Indianapolis IN 46219). Further

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CALENDAR OF UPCOMING EVENTS

April 11-14, 1999: 55th Annual Northeast Fish & Wildlife Conference, Holiday Inn, Manchester, NH. Contact: Judy Stokes, Conference Coordinator, phone (603) 271-3211 or email <info@wildlife.state.nh.us>.

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 by calling (800) 268-1133.

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Fifth Annual Wildlife Control Technology Instructional Seminar

organization details will be finalized at the meeting of the Michigan Animal Damage Control Association on March 13, 1999.

In an article in the NWCOA newsletter entitled "NADCA or NWCOA?," Tim Julien writes that he was told "NADCA has experts that study the principles of wildlife damage management and NWCOA has experts that practice these principles commercially to control wildlife causing damage." He then recommends that "The long and short of it is to join both and be active and contribute to the best of your abilities."

Many of the people involved in the organization of the NWCOA are members of NADCA as well. NWCOA was formed to address issues important to NWCOs that were not being addressed by NADCA.

NADCA wishes this new organization well, and hopes that it can develop partnerships with NWCOA that benefit both organizations.

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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.

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>.

September 7-11, 1999: 6th Annual Conference of The Wildlife Society, Austin, TX. Conference will include the following symposia: "Educating the Public on Wildlife Damage Management Issues" (1/2 day); "Balancing Social and Ecological Factors in Management of Urban/Suburban Wildlife" (1/2 day); and "Bats and Humans: Education, Conservation, Controversy and Conflict" (1/2 day). Contact The Wildlife Society national office, phone (301) 897-9770, email <lorraine@wildlife.org>, or visit website http://www.wildlife.org.

Bob Willging Fund Established

A fund to assist Bob Willging and his family with ongoing medical expenses has been established to receive contributions from friends and colleagues. Bob is a former member of NADCA and is employed as a wildlife biologist and supervisor with USDA-Wildlife Services in Rhinelander, Wisconsin. He was diagnosed with chronic myelogenous leukemia in October 1997 and now is facing a bone marrow transplant.

Bone marrow transplant has a success rate of about 2/3 in such cases. However, the procedure requires about 3 months of hospitalization, plus a year or more of recovery time. Medical insurance will cover about 80% of the cost of the $200,000 procedure plus expenses of relocation, travel, and recuperation. This leaves a need for an additional $50,000 to $75,000 to be covered from personal funds.

Bob is a graduate of the Univ. of Wisconsin-Stevens Point (B.S. in wildlife, 1983) and New Mexico State University (M.S.in wildlife,1987). He and his wife Diedre have two children, Ryan (5) and Molly (3).

Donations are being requested to relieve some of the financial stress Bob's family is experiencing while facing this life-threatening disease. Donations can be sent to: Bob Willging Leukemia Fund, Attn: Sandra Stafford, Associated Bank, Box 677, Rhinelander, WI 54501.

Abstracts from the 5th Annual Conference of The Wildlife Society (continued from the February 1999 Issue, #197)

The Prospect of Using Oral Vaccination to Control Rabies in Raccoons in the Northeast

D.H. Lein and L.L. Bigler, Diagnostic Laboratory, College of Veterinary Medicine, Cornell University

Wildlife rabies vaccination has resulted in a reduction of animal submission rates and positive cases in Niagara County when compared to the control, unvaccinated Orleans County. Presently, there are no rabies cases in the vaccination area, while Orleans County has submitted 14 positive raccoons/100,000 people in 1998. The few positive cases reported within Niagara County during 1997 were restricted to the eastern part of the vaccinated area, suggesting the movement of rabid animals from untreated areas to the east and south. In the St. Lawrence Region, the initial 1995 vaccination zone was first challenged by rabies during the summer of 1996. In spite of a lengthy challenge extending through 1997, only 4 positive cases were identified within the 1995 vaccination zone during 1997. These cases did not result in continued, gradual spread of infection, as is typically observed in unvaccinated areas. However, during May 1997, a rabid raccoon was identified north of the vaccination zone, 29 km (18 mi.) north of the nearest positive case in the region. Vaccination zones with radii of 10 km and 18km were established in May and September, respectively, around the initial case in an attempt to halt the progression of the infection. Existing vaccination barriers do not appear to be adequate to prevent new foci of infection. Recent data from Ontario indicated that 84 (13%) of 668 raccoons moved distances greater than 26km St. Lawrence Region barrier zone. To be more effective, immune barriers may have to be widened. In addition, barriers will have to be moved into enzootic areas to test the feasibility of eliminating raccoon rabies. We discuss the success Cornell University has experienced in helping establish a coalition of funding for strategic field investigations using oral vaccination, as well as short and long-term raccoon rabies management goals.

Past and Current Methods for Controlling Rabies in Wildlife

S.B. Linhart* and C.L. Brown

**Southeastern Coop. Disease Study, College of Vet. Medicine, Univ. of Georgia*

Past efforts to control rabies in wildlife consisted of attempts to reduce carnivore population densities by means of traps, toxicants, and destruction of juveniles before dispersal from their den sites. Although these control measures were widely used, for various reasons convincing data as to their efficacy is almost completely lacking. Currently, population reduction is considered a less viable option because of questions concerning efficacy, restrictive regulations, and changing attitudes in an increasingly urbanized society. Development of effective oral rabies vaccines, delivered to wildlife populations via vaccine-laden baits (ORV), now provides an alternative, if costly, option for controlling the disease. The effectiveness of this technique had been demonstrated for several species (e.g., red fox, coyote) but little or no effort has been directed toward other terrestrial carriers of the disease such as the mongoose, jackal, and skunk, which are the primary vectors in various regions of the world. Control of rabies in non-hematophagous bats remains a widespread problem with little hope of resolution. Future research and development needs, and several limitations of ORV, are discussed. In Europe, efforts to develop and implement oral vaccination to control rabies in red foxes have been coordinated by the World Health Organization (WHO). WHO has sponsored symposia, provided guidelines for research, and recommended specific approaches for the widespread application of the technique. The situation in North America is quite different. Oral vaccination efforts have been initiated by government agencies ranging from individual counties to international endeavors between cooperating state and provincial (Canada) governments. ORV efforts have also been undertaken by state and privately endowed universities. The respective roles of these organizations as well as that of public health, agriculture, medical and veterinary officials, and thus far, the nominal involvement of the wildlife profession, are discussed.

Elimination of Fox Rabies from Ontario, Canada

C.D. MacInnes

Rabies Unit, Ontario Ministry of Nat. Resources, Peterborough, Ontario

The Rabies Unit started an experiment in 1989 to eliminate fox rabies from 30,000 km^2 in eastern Ontario, using vaccine delivered in baits. The vaccine is effective orally in foxes but not in skunks. Baits were dropped from low flying aircraft in late September each year. Target bait density was 20/km^2 and baits were dropped along flight lines initially 1 km apart, but finally 2 km apart. The treated area had averaged 248 rabid foxes a year in the period 1980-89; the last rabid fox was encountered in September 1993, the last rabid skunks were in March 1994, and a single case in November 1996. The program was expanded to the whole enzootic zone in 1994,and fox rabies was almost gone by the end of 1997. We believe that we can stop baiting after then 2001 season. The importance of skunks in maintaining fox rabies is discussed. The treatment of the whole outbreak zone cost $2.5 million/year; saving are projected to be over $3 million per year. The program has enjoyed great public and political support, but has been criticized by wildlife interests for drawing scarce funding away from wildlife programs. The funding was originally raised outside the wildlife program. Another criticism is that foxes are now abundant and causing damage to other wildlife. The program is successful, and the major criticisms are partially a result of poor understanding of the real situation.

A Computer Model for Predicting Deer Damage to Apple Trees

W.M. Mahaney, G.S. Boomer, and A.N. Moen.

Dept. of Natural Resources, Cornell University

Apples are the most widely grown temperate tree fruit and white-tailed deer are the most widely distributed wild ruminant in North America. Apple production is concentrated in states where deer populations are high, and the potential for deer damage, especially to young trees, is high. We have quantified the number (N) of new twigs on apple trees from one to five years old and express N as a function of age in exponential equations. Twig numbers increase about 20 to 30 times in the first five years of growth. We have quantified twig length and mass, and related that to digestibility to calculate the number of twigs needed by a deer to satisfy its daily requirement in the winter. Even though five-year-old trees have many more twigs, they are still vulnerable to

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Booklet Review: by Stephen Vantassel, NWCO Correspondent

"Safe and Ethical Use of the Dryland Conibear Trap" (revised 8/98)
Wisconsin Trappers Assoc. et al. 20 pages. $3.00 postpaid.

As trapping faces the twin enemies of the environment, urbanization and the animal rights movement, it finds itself struggling to keep the tools of its trade legal. One of the ways trapping seeks to preserve its heritage is by increasing education and regulation. The booklet "Safe and Ethical Use of Dryland Conibear Trap" is one example of this attempt at self-preservation by trappers. In a different time and place (like a world without animal rights activists and arrogant urban sprawl), this document would be hailed as an example of proper stewardship by trappers. Although the booklet does advance ethical trapping in the present political climate, neither urbanites nor animal rights activists will ever give the trappers credit for seeking a responsible middle ground.

Despite this negative and depressing beginning, the Wisconsin Trappers Association and the various groups that supported this work should be commended for creating a fine booklet. It isn't exactly clear to me who was primarily responsible for the book. The last page contains a number of associations who supported it, including the Wisconsin Dept. of Natural Resources, so I assume they may have all played a part. The booklet is only 20 pages long with 5 1/2" x 8" pages.

It opens with an advisory that the future of conibear trapping in Wisconsin depends on trappers following the instructions of this booklet. The booklet then moves to list the regulations surround the use of the 220 conibear 7x7-inch trap (information is also usable for 160's). The regulations are specific and easy to understand. The regulations include directions on trap setting and set location. Wisconsin identifies various places that trappers shouldn't set conibears as "red zones." These forbidden sites include, trails, fencelines and other areas of human habitation where dogs and cats may roam. Bait selection is also briefly discussed. Trappers are advised that they should use caution when using flesh baits as this choice more easily attracts non-targets.

The next section details six dry-land conibear sets. These pages are very well laid out. The authors placed information on the set on the left page and line drawings and/or photographs of the set on the right facing page. Each trap system is explained by listing the tools and equipment required and detailed instructions on how to create the trap system. While these systems are designed for the 220 conibear, they do contain information on use with the 160 conibear.

These pages are very well laid out. The authors placed information on the set on the left page and line drawings and/or photographs of the set on the right facing page. Each trap system is explained by listing the tools and equipment required and detailed instructions on how to create the trap system.

The trap system information ends with tips on dryland conibear trapping. It is a brief list of simple tidbits of information that will make you a better conibear trapper and trapper in general.

Overall, I was quite impressed with this booklet. It was well written— short and sweet. The black and white photographs and line drawings are clear and helpful. Although not in the booklet, the guidelines were developed by asking the 2,000 Wisconsin trappers to take various measurements of their dogs. From these measurements, conibear cubbies were constructed that would reduce the risk of catching a canine. The results have been impressive. In the 1997/8 trapping season, over 43 dogs encountered conibears. In the 1998/9 season, only three dogs met with selection. Although I have box trapped non-target urban cats on various kinds of non-flesh baits, it would be nice to know which baits are the least attractive to cats.

Whether the booklet accomplishes the political goal of saving the conibear has yet to be seen. The same can be said of the other goal: whether this regulation properly balances the concerns of non-target avoidance and maintains raccoon trapping efficiency. One trapper who wrote a letter to *Trapper and Predator Caller* stated that these conibear boxes were inefficient. He found that raccoons tended to avoid the traps and he caught more opossums than raccoons. (December 1998, p. 9). If these comments are characteristic of others, then this law is another nail in the coffin of the fur trapping industry. For by raising the cost of fur trapping, this law will effectively eliminate some trappers and shrink the industry more. It is certainly sad that state biologists don't fight the arrogance of the pet lobby by encouraging greater enforcement of leash laws. This failure will eventually lead to the demise of conibears on land.

To get your postpaid copy, send $3.00 payable to "WTA" to Wisconsin Trappers Association, Attn: Ken Kasper, Public Relations Director, P.O. Box 367, Fremont, WI 54940. You can also call for more information (920) 446-3815.

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ADC News, Tips, Publications, etc...

Woodstream Drops Victor Traps

In a November 1998 news release, Woodstream Corporation announced it will cease to manufacture and sell its line of Victor Wildlife Traps. These include various coil spring, long-spring, Conibear, and Soft Catch trap models. Among reasons cited were the following: growing regulation in the world marketplace, necessitating large investments in R&D and retooling; and flat or declining sales of such traps. Woodstream believes its growth segments continue to be in its Havahart, Beacon, and Victor Non-Poisonous Pest Control lines. Orders for discontinued leghold and conibear traps are being filled only as long as supplies last.

Activist Gets 7 Years in Prison

Convicted animal rights activist Douglas Ellerman was sentenced to 7 years in prison for the March 1997 bombing a mink-feed plant in Sandy, Utah, causing an estimated $900,000 in damage to the Fur Breeders Agricultural Cooperative. Federal prosecutors also announced indictments against five other men who helped in the attack. One of those indicted is Ellerman's brother, who is already serving a sentence for releasing mink from a South Jordan, Utah mink farm. The 20-year-old activist was originally indicted on 16 counts including pipe-bomb charged that carried a minimum mandatory sentence of 35 years. However, through cooperation with prosecutors, he was allowed to plead guilty to three counts.

— excerpted from the Salt Lake Tribune, Sept. 1998

Egret Control Goes Badly

The city of Bethany, Oklahoma, a suburb of Oklahoma City, obtained a depredation permit to kill 500 cattle egrets in response to citizens' complaints about a local rookery. The U.S. Fish & Wildlife Service also agreed to allow destruction of nests of all species of birds present following the nesting season. However, things went awry when city workers and some enthusiastic residents went on a several-day shooting spree in early April 1998 that left more than 500 birds dead or wounded. Most of the birds shot were great egrets, not cattle egrets, as they had not yet returned to the area from their wintering grounds. According to a report in *Bird Watcher's Digest*, initial efforts by local groups to get USFWS to suspend the permit were unsuccessful. Even after the city ceased the shooting operation, some locals were reported to have continued the effort on their own. City officials reportedly stated they did not know the wrong birds were being shot, they did not realize the limitations of the permit, and they had been motivated by the threat of disease being spread from the colony.

Continued in next column

Foxes Threaten Plovers in Maine

Biologists with Maine's Dept. of Inland Fisheries and Wildlife are implementing a plan to trap and remove red foxes from Maine beaches to protect nests of endangered least terns and piping plovers from predation. An agency biologist was quoted, "We're trying to protect their numbers, and we're fighting a losing battle." Populations of the birds have declined dramatically over the past three years, according to the state's data. During the 1998 nesting season at several state parks, 20 pairs of piping plovers, representing nearly 1/3 of the state's total population, fledged only 21 chicks, compared to 40 or 50 in normal years. At the same time, the 30 or 40 least terns nesting at two sites, comprising 2/3 of the state's total population, experienced "complete reproductive failure." Since 1996, state biologists have tried fences, flashing lights, noise makers, and other non-lethal tools to reduce fox predation. All these measures were of little effectiveness. Officials did not rule out the need to kill the offending foxes as part of the trapping effort.

Controversy Boils In Arizona Predator Hunt Contests

At a March 20 meeting, the Arizona Game & Fish Dept. will consider banning predator hunting contests in the state. Such contests have been traditional in Arizona and received little attention, until last year. That's when two Mesa men offered a $10,000 prize for the person who killed the most coyotes, foxes, bobcats and other predators. Outrage by animal welfare and other non-hunter segments of the public caused the contest to be called off. Subsequently, proposals have been brought to the commission that would ban all such hunts in the future. In January, more than 15 organizations who oppose the ban picketed the Arizona Game and Fish Department's offices. The group was irritated because no media, except one television station, covered the event. The Arizona Wildlife Federation also has entered the fray. Its board of directors voted to oppose the ban, stating "We believe that any effort... to reduce the number of coyotes taken by varmint hunters is contrary to sound management principles."

— excerpted from The Arizona Republic, Jan. 30, 1999

The Editor thanks the following contributors to this issue: Guy Connolly, Don Stoker, Stephen Vantassel, Jane Rohrbough, and Robert H. Schmidt. Send your contributions to **The PROBE**, *4070 University Road, Hopland, CA 95449.*

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Wildlife Society Abstracts continued

severe "pruning" by deer. The potential for deer damage to newly-established orchards is so high that it is imperative that deer populations in the area of the orchard be very low, or deer are excluded from the orchard by fencing if the young trees are to be sufficiently protected. We highlight the design of the apple tree model and demonstrate the use of the model to predict the number of twigs needed by a deer to satisfy its daily energy requirement in winter.

Wildlife and Automobiles: A Deadly and Costly Combination!

T.A. Messmer, C.W. Hendricks, and P.W. Klimack.
Jack H. Berryman Institute, Dept. of Fisheries & Wildlife, Utah State University

It has been estimated that over 700,000 deer-vehicle collisions (DVCs) occur annually. The property damage attributed to DVCs exceeds an estimated $1.1 billion. Each year DVCs result in an estimated 29,000 human injuries and 211 human fatalities. The Federal Highway Administration places a monetary loss value of $1.5 million on each human fatality. Although many states have implemented diverse management strategies to address this issue, DVCs continue to increase. We reviewed over 15,000 DVC reports recorded in Utah by the Dept. of Transportation over a 5-year period (19923-1997) to identify major contributing factors. Based on this review, we provide management recommendations that may be used to reduce the risk of DVCs in areas where big game populations engage in seasonal migrations. Lastly, we report on preliminary results of an experiment conducted in Utah to reduce DVCs along a high-traffic-volume highway that bisects mule deer winter range.

Foraging Ecology of Adult Female Mountain Lions in Northeastern Oregon

M.C. Nowak, G.W. Witmer, M.G. Henjum, and J.J. Akenson*
**Dept. Nat. Resource Sci., Washington State University, Pullman*

We investigated the foraging ecology of mountain lions in the Catherine Creek Wildlife Management Unit in northeast Oregon from June 1996 through June 1998 to determine their rate of predation on ungulates and the species, age, and sex composition of their prey. Individual lions were located by ground radio telemetry each day and those sites were subsequently searched for kills. Kill date was estimated based on location data, degree of consumption, and general condition of the kill when located. Species, sex, and relative age of the prey were recorded and an incisor collected for aging of animals older than 1 year. Habitat characteristics were measured at the cache sites as well as at the actual kill sites when these could be identified. Scats were collected whenever found and analyzed to measure small mammal use by the lions. To date, we have documented 64 ungulate kills and 36 interkill intervals from 5 lions. Of these 46 were <1 year old (27 mule deer) fawns, 19 elk calves, and 18 were adults (16 mule deer, 2 elk). The mean interkill interval is 7.1 days. We have also documented 1 coyote killed and consumed by a lion and a prolonged period (22 days) of carrion feeding by an individual mountain lion.

Prey Switching and the Feeding Habits of Eastern Coyotes In Relation to the Densities of Snowshoe Hare and White-tailed Deer

B.R. Patterson and F. Messier
Dept. of Biology, Univ. of Saskatchewan, Saskatoon, SK, Canada

We investigated the influence of white-tailed deer and snowshoe hare availability on the feeding habits of coyotes in three ecosystems in Nova Scotia from 1992 to 1997. We hypothesized that coyotes would switch from deer to hare as hare abundance increased. Based on winter snow tracking of radio-collared coyotes, and the analysis of 2,443 scats, deer and hare were the dominant food items in the diet of coyotes in all study areas. Other important food items included small mammals, and fruits during late summer. There was a pronounced functional response by coyotes to changes in hare and deer abundance. In areas where they were readily available, coyotes fed predominantly on hare during winter and the use of deer declined as hare density increased. However, the response was not proportional to the changes in the relative densities of deer or hare, particularly at low deer densities, where coyotes continued to feed heavily on deer despite high hare densities. The consumption of deer fawns during June and July exceeded that of hare in all areas, regardless of hare density. Overall, high use of deer appeared to have been associated with increased vulnerability due to winter severity or, in the case of young fawns, inability to escape. During mild winters, we suspect that coyotes are forced to focus their hunting efforts on prey other than deer, regardless of density, due to low vulnerability of deer. When severe winter conditions occur, coyotes switch to feeding mainly on deer. In areas where deer and hare are the coyotes' principal food items, managers should be aware that predation rates on deer can increase sharply when hare or deer numbers decline. However, we cannot fully assess the effects of coyote predation on deer or hare until the numerical response of eastern coyotes is understood.

Tactics to Prevent Raccoon Rabies from Becoming Enzootic in Ontario, Canada

R.C. Rosatte, C.D. MacInnes, D.J. Donovan, D.J. Grieve, and M.R. Allan
Ontario Ministry of Nat. Resources, Peterborough, ON, Canada

Ontario has successfully kept raccoon rabies from entering the province, despite the presence of that variant of rabies along the Niagara and St. Lawrence Rivers since 1995. The first line of defense has been the creation of buffer zones of vaccinated raccoons (up to 78% vaccinated) using Trap-Vaccinate-Release (TVR) in areas of Ontario adjacent to infected parts of New York. The next line of defense is aimed at early detection and containment of point outbreaks beyond the border. We have documented evidence of raccoons "hitch-hiking" into the province on vehicles (8 occurrences), emigrating from Ontario to New York (4 occurrences), and "island-hopping" in the St. Lawrence (8 occasions). The third line of defense includes a plan to use aerially placed baits for more widespread outbreaks. Baiting and TVR costs are about the same— $180-$300 CDN. An experiment using vaccinia-rabies glycoprotein (V-RG) vaccine in Ontario is planned for 1998. As well, Ontario has contributed to baiting programs in the United States in an effort to slow the spread of raccoon rabies. The fourth line of de-

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Wildlife Society Abstracts continued

fense includes a unified communications strategy and contingency plans which have been completed in 41 of 42 Health Units. The success of the above tactics will be greatly impacted by the movement of raccoons in the target area. An analysis of TVR data suggests raccoons are mobile in Ontario with 35% of within year (1994) movements being greater than 20 km straight-line distance (median = 12.5, variance = 132.9, n = 995). However, movements during May-July (87%-97% < 10 km) were significantly less than those during August September (30% > 20 km). We recommend that the zone for raccoon rabies containment include an area defined by a 40-km radius.

Distribution and Translocation of Wildlife Rabies: Should Wildlife Professionals Be Concerned?

C.E. Rupprecht, J.S. Smith, J. Krebs, and J. Childs
Centers for Disease Control & Prevention, Atlanta, GA

A unique vocational challenge is presented tot he modern wildlife professional by rabies. It is an acute, progressive, fatal viral encephalitis, transmitted via the bite of infected animals, and is a preventable, occupational hazard. The etiological agents area global in distribution and belong to the *Rhabdovirus* family, *Lyssavirus* genus, containing six putative genotypes, only one of which, rabies virus, occurs in the New World. All mammals are believed to be susceptible to infection, but reservoirs are solely represented by the *Carnivora* and *Chiroptera.* Both genetic sequence and antigenic analysis demonstrate compartmentalized yet dynamic, viral variants that persist among different hosts. In North America, these taxa include: arctic, red, and gray foxes; coyotes; dogs; skunks; raccoons; and bats. Although neither current experimental nor epidemiologic data support the concept of a "carrier state" for rabid wildlife, the incubation period (the time between infection and clinical signs) may be extremely variable, ranging from days to months. Detection is further complicated because signs of illness may be quite subtle, unlike the stereotypic maniacal presentation. Undeniably, the relocation of certain species has played an important, historical role in both game management and conservation. However, numerous recent examples demonstrate that the purposeful translocation of infected wildlife has led to the invasion of unoccupied niches, some with dramatic consequences. Due to the public health threat posed by the local, regional, and international movement of infected animals, wildlife professionals have a key responsibility in the surveillance, prevention, and control of wildlife diseases, such as rabies, to minimize the opportunity for an unrecognized biologic oddity to emerge as tomorrow's outbreak.

The Stanley P. Young Papers at Denver Public Library

Stanley P. Young was a legendary predatory animal hunter and scientist. He worked for the USDA Biological Survey and its successors from 1917 to 1959, and is best known today as author or co-author of such classic books as "The Clever Coyote", "The Wolves of North America", "The Bobcat in America", "The Puma, Mysterious American Cat", "The Last of the Loners", and others.

Born in Astoria, Oregon in 1889, Mr. Young received his B.S. degree from the University of Oregon and a Master's degree at the University of Michigan where he was an assistant professor of geology during 1914-15. His ADC career began in 1917 as a government hunter in Arizona. He later advanced to become leader of predator and rodent control work in New Mexico, Colorado, and Kansas. In 1929 he was made Assistant Head of the Division of Economic Investigations in Washington D.C. By 1938, he was Chief of the Division of Predator and Rodent Control.

Having gone as far as he could go in Predator and Rodent Control, Mr. Young then transferred to the Division of Wildlife Research as a Biologist in 1939 and worked in this capacity until his retirement from the USDI Bureau of Sport Fisheries and Wildlife in 1959. During this 20-year period, he established himself as an authority on predatory animals by writing numerous articles as well as the books mentioned above. For more information on his career and accomplishments, see the excellent obituary prepared by Clifford C. Presnall after his death in 1969 (J. Wildl. Manage. 33(4):1056-1057).

After Stan Young died, his wife donated his papers to the Denver Public Library. Here the 23 cubic feet of materials were stored for many years, but they finally were processed in July 1998. The entire collection now is available for research use. Interested persons should contact the Denver Public Library, Western History Section, at (303) 640-6291, referring to the "STANLEY PAUL YOUNG PAPERS".

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