

*with negative results are hardly ever made known, though we can all learn a lot from failures. The Carnivore Damage Prevention Newsletter (CDP News) is intended facilitate the collaboration and to improve the exchange of information among carnivore damage prevention projects. The CDP News is meant to be a forum for scientists, conservationists, wildlife managers, and policy markers.*

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## **Education of Wildlife Damage Inspectors in Sweden**

In Sweden the Swedish National Environmental Protection Agency has the comprehensive responsibility for protected species. Three years ago the right to make decisions regarding compensation for wildlife damage caused by protected species was delegated to the County Administrative Board.

The Wildlife Damage Center develops preventive methods to protect property (such as domestic animals and crops) from species protected from hunting and inform interested groups and the public. The center also functions as a coordinator between the Swedish National Environmental Protection Agency and the County Administrative Boards, inspectors of damaged property, farmers and the public. It also educates groups like the inspectors, persons at the County Administrative Boards in charge of wildlife damage, veterinarians, sheep keepers, teachers and leaders of study circles, among others. The Wildlife Damage Center was initiated and is financed by the Swedish National Environmental Protection Agency. Today two full-time employees are working at the center.

Basically, in Sweden wildlife damage is prevented through hunting management of the populations causing damage and only secondly through grants to preventive actions such as electrical fences etc. As a last resource, damage is settled through compensation. In accordance with the hunting regulations compensation will be paid from government funds. The County Administrative Board compensates for losses only if preventive actions have been taken or if preventive actions are lacking. If an animal is found to be killed by a protected predator (i.e. lynx, wolf, bear, wolverine, and golden eagle) after examination through a commissioned inspector (see below) the owner generally is compensated. The counties are allotted a certain budget from the Swedish National Environmental Protection Agency to use for grants and compensations of wildlife damage. That same budget shall cover educating inspectors and their expenses as well as public information.

Damage on reindeer caused by large predators are compensated through a different system. Domestic animals supposed to have been injured or killed by predators have to be examined through an inspector commissioned by the County Administrative Board. He examines the body and searches the area where the animal was found before he certifies the event. The number of inspectors in each county varies between two and twelve, according to county size and abundance of large carnivores. It is important not to have too many inspectors, in order to allow each of them to gain as much experience as possible.

The inspectors are educated at the Wildlife Damage Center, which is situated at Grimsö Research Station in south central Sweden. A total of 93 inspectors have been educated since January 1997 at six separate courses. They are recruited among people who are interested in the subject, have good field experience from tracking large predators, know how to act in precarious situations, and who are trusted by both, authorities and the public. Some of them are from hunters' associations, others from predator interest groups and others still already work for the County Administrative Board with other assignments.

The basic course runs over three days. It starts with an exposition of the Swedish policy and legislation that regulates wildlife damages and management of large predators held by a representative of the Swedish National Environmental Protection Agency. The inspectors also learn about predator injury on sheep, horses and dogs in theory and practice (examining real predator kills); preventive methods against predators in general and electrical fences in

particular; statistics on compensation and grants; media and how to deal with them, etc. In addition, they learn about “natural” causes of death among sheep from a veterinarian. He also lectures about risks of infections when examining carcasses. Other topics on the programme are basic biology and ecology of the large predators and reports from the ongoing research projects on wolf, lynx and bear. After the course the County Administrative Board announce the names of the inspectors in farmers’ magazines and newsletters.

The inspectors are requested to document their examinations with cameras so that other people can study the photos afterwards. After the introductory course the inspectors are assembled once a year in order to be brought up to date, learn from others’ experiences and discuss difficult cases.

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## Preventing Wolf Predation on Livestock with Light-Mobile Barriers.

The technique known as *fladry*, traditionally used for hunting wolves in Eastern Europe and Russia, consists of driving them into a bottleneck formed by 50 x 10 cm red flags hanging from ropes stretched over the ground. The animals are shot at a narrow gap that is left in the ropes. Henryk Okarma and Wlodek Jedrzejewski (1997) have employed an adaptation of this technique to livetrapped wild wolves. I have worked with Henryk and Wlodek, and have witnessed that this capture method allows for a sudden intervention and sedation of captured wolves. We have never caused injuries to the animals. Surprisingly, other species (e. g., ungulates) don’t seem to be afraid of *fladry* and can not be captured using this method. Therefore, possible injuries of non-target species are also avoided. In 1997-1998, together with Elisabetta Visalberghi (Italian National Research Council) and Luigi Boitani (Rome University), I have conducted a study on the avoidance of *fladry* and other types of light-mobile barriers by wolves. The aim of this study was to see whether captive wolves living in two enclosures of the Rome Zoo were responsive. In particular, we explored the effectiveness of certain *fladry* characteristics (i. e., between-flag distance; rope height; scent; flag move-

ment and color), their ability to constrain wolf movement and, most important, their ability to prevent wolves from accessing food.

We found that avoidance was maximal when the flags were 50 cm apart and their bottom was at ground level. In this conditions wolves never crossed red flags (nor gray of the same brightness) intersecting their usual routes. Flags were not crossed even



Drawing: Dominique Roth

when the daily food ration was placed on the other side of them. In contrast, crossings took place when the flag distances were 75 cm, or the rope heights were 25 cm or 75 cm.

In his article on the role of behavioral studies in conservation biology, Sutherland (1998) has stressed the importance of adopting non-lethal means to reduce predation. He also mentioned the possibility of creating barriers of habitat that predators dislike crossing or that makes predation difficult. Our study concerns a possible application of this approach to wolf management. Our behavioral observations indicate the features necessary for *fladry* effectiveness, and that the occasional use of *fladry* can constrain captive wolves’ movements or exclude wolves from food sources. Therefore, this technique may be shown to protect, at least temporarily, livestock from wolf predation.

During the next months, we will carry out experiments that will further investigate the use of *fladry* for livestock protection in a more “natural” environment than a zoo. The Agriculture Ministry of Italy has already accepted a research project that will be conducted in Popoli, Abruzzo. In Popoli there are 10 adult wolves and 4 pups that are held in large enclosures in a forest area where public access is restricted. This research will use *fladry* barriers to surround food sources. Experiments will be carried out both during day and night. The results on *fladry* effectiveness by night will be particularly important, because shepherds may use barriers such as *fladry* for further protecting livestock that are kept in enclo-