

Preventing the Westward Spread of Rabies

During the 1990s, the number of reported cases of rabies among wild animals in the United States increased dramatically. This surge in the number of rabies cases is especially evident in the eastern United States where raccoons account for about 40 percent of all documented cases.

While the raccoon strain of rabies is already enzootic (endemic) in much of the eastern United States, U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services (WS) biologists in cooperation with State, Federal, university, and other partners are working to stop the westward spread of this deadly disease.

Since 1997, a coalition of cooperators has distributed more than 9 million units of oral rabies vaccination (ORV) bait in Maryland, New York, Ohio, Pennsylvania, Vermont, and West Virginia to create a barrier of immune raccoons to prevent spread of the virus. Initially, WS entered into cooperative programs with Ohio, New York, and Vermont. The need to lengthen the barrier to close off corridors where raccoon rabies could spread to the West led to the involvement of other cooperating States. This summer, Tennessee and Virginia are joining the program. Pennsylvania will be greatly expanding its involvement to include the western portion of the State.



Raccoon

Distributing the Vaccine

The ORV bait, developed and manufactured by Merial Inc. in Athens, GA, consists of a hollow fish-meal polymer cube (1 1/4 inches x 3/4 inch). A sachet or plastic packet containing the Raboral V-RG® rabies vaccine is inserted into the hollow area of the bait and then sealed with wax. Fishmeal is attractive to raccoons and the bait is strong enough to withstand distribution from airplanes flying at an altitude of about 500 feet. When a raccoon finds the bait and bites into it, the sachet ruptures, allowing the vaccine to bathe the lymphatic tissue in the raccoon's throat as it swallows. Raccoons that swallow an adequate dose of vaccine develop immunity to rabies and, as the number of vaccinated raccoons in the population increases, they act as a barrier to stop the spread of the disease to other wildlife, domestic animals, and humans.

In an effort to establish the immune barrier, WS has provided funding to purchase ORV baits and assisted in the coordination of aerial and ground distribution of baits in strategic areas to prevent the spread of raccoon rabies. WS uses the latest mapping technology and rabies surveillance to determine which areas to target in the campaign against rabies.

Fixed-wing aircraft are the most effective means for distributing large numbers of the ORV baits throughout the targeted ORV zones. Hand baiting is also important for reaching urban areas where there may be safety risks associated with distributing baits by air.

Determining the Effectiveness of the Program

After the baits have been distributed and the raccoons have had a chance to ingest the baits, WS works with its cooperators to measure the success of the ORV campaign. Live traps are set throughout ORV zones and marshmallows, vanilla, cat food, and other attractants are used to lure raccoons into the traps.

Live traps are checked regularly and affixed with labels to inform the public about WS' trap and release program. All captured raccoons are temporarily anesthetized so that blood samples can be taken and their first premolar, a small tooth, can be removed. The raccoons do not experience pain during this procedure, and they are not released back into the wild until the effects of the anesthetic have worn off. The animals are then monitored until they have fully recovered.

All samples are sent to cooperating laboratories such as the rabies lab at the Department of Health and Human Services' Centers for Disease Control and Prevention in Atlanta, GA, where the antibody level for each raccoon sample is determined. Tooth samples are sent to laboratories for sectioning to determine if they contain a biomarker that indicates whether one or more baits were ingested.

In Ohio, where the cooperative ORV program has been in place since 1997, approximately 34 percent of all raccoons tested have protective antibodies to rabies. This vaccination rate appears to be sufficient to prevent the spread of rabies across the barrier. Ohio has seen a dramatic drop in the number of cases of raccoon rabies since the program began. In 1997, Ohio reported 59 rabies-positive raccoons, but in 2000 none were reported. In 2001, Ohio documented only one case of raccoon rabies along its eastern border with Pennsylvania.

The Future

WS is committed to the principle that an educated public is better able to understand the risks imposed by rabies and therefore better equipped to participate in, and benefit from, rabies prevention efforts. Because rabies is a fatal disease in wildlife, domestic animals, and untreated humans, WS' goal is to prevent exposure to rabies. Education is the first step in achieving this goal.

Expertise from a variety of sources, including public health, wildlife, and agricultural agencies, is integral to the overall team-centered approach to rabies prevention. For many years, WS has provided a variety

of technical and operational services for rabies management, including assistance with effective disease and wildlife population surveillance, a continued commitment to the development of effective oral vaccines, and improved methodology to modify site-specific habitats to prevent human exposure to rabies.

Preliminary successes of ORV campaigns in Europe and Canada, along with recent cooperative efforts in the United States, have advanced our understanding of rabies management methods. The development and implementation of effective ORV programs promises to change the future approach to rabies management.

Additional information

For more information about rabies and other WS programs call WS Operational Support Staff at (301) 734-5175. You can also visit WS' Website at <http://www.aphis.usda.gov/ws>.

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