

GIS use in oral rabies vaccine programs

Patricia R. Bright, Virginia Maryland Regional College of Veterinary Medicine, University of Maryland, 8075 Greenmead Dr., College Park, MD 20742-3711, USA

Elizabeth Schmidt, VA-MD Regional College of Veterinary Medicine, Virginia Tech, Duck Pond Drive, Blacksburg, VA 24061-0442, USA

Francois Elvinger, VA-MD Regional College of Veterinary Medicine, Virginia Tech, Duck Pond Drive, Blacksburg, VA 24061-0442, USA

Michelle M. Weisbarth, VA-MD Regional College of Veterinary Medicine, Virginia Tech, Duck Pond Drive, Blacksburg, VA 24061-0442, USA

R. F. Bulley, VA-MD Regional College of Veterinary Medicine, Virginia Tech, Duck Pond Drive, Blacksburg, VA 24061-0442, USA

Cynthia L. Mills, VA-MD Regional College of Veterinary Medicine, Virginia Tech, Duck Pond Drive, Blacksburg, VA 24061-0442, USA

Abstract: Frequent human and domestic animal exposures to rabid wildlife have raised the public's awareness, leading to an increase in the number of wildlife submissions for rabies testing as well as an increase in the number of people requiring post exposure prophylaxis treatment. During 1998 and 1999, the Health and Human Services Department of a densely populated urban/suburban county in Virginia received a total of 955 animal submissions for rabies testing. Wildlife accounted for 714 of the submissions. Seventy-nine of the submitted wildlife were found dead, 445 were killed or euthanized for testing (190 unknown). Of the wildlife submissions, 152 (21%) were positive, including 100 of 178 raccoons submitted. Human exposure, potentially requiring post-exposure prophylaxis, was recorded in 22 positive and 334 negative rabies submissions. Information was not available for 9 positive and 135 negative submissions; human exposure did not occur with the remaining submissions. To reduce the public's risk of exposure to rabid animals, the County is developing a program to distribute oral rabies vaccine to raccoons. To increase the precision of vaccine delivery to raccoons, we propose the use of geographical information systems (GIS) as a method for selecting vaccination sites. Results from trapping and tracking studies, along with hydrographic and vegetation data, were utilized in the development of GIS generated vaccine distribution maps. Also factored in was human activity, commerce, residential housing density, competition by companion animals for vaccine bait, the location of refuse facilities, and property ownership. It is expected that this GIS supported approach will improve the efficiency of the program by lessening the cost while increasing the number of raccoons immunized. The resulting decrease in the incidence of rabies will lead to fewer human exposures to rabid wildlife, a decrease in the number of healthy wildlife euthanized for testing, and a decrease in the number of people requiring post-exposure prophylaxis treatment.

Key words: geographic information system, GIS, oral rabies vaccine, rabies, wildlife