



2009 Annual Summary Ohio Raccoon-rabies and Oral Rabies Vaccination Program

2009

Background

Rabies is a viral disease that affects animals and people, and is almost always fatal. Since the mid-1970s, a unique rabies variant associated with raccoons has spread rapidly through the eastern United States and first threatened northeastern Ohio in 1997. This variant is of particular concern because it affects many other wild and domestic animals, especially cats. In newly infected areas, raccoon-rabies variant (RRV) results in a tenfold increase in human rabies exposures and treatments. In 2003, a human death due to this

variant was confirmed in Virginia. The Ohio Department of Health (ODH) is working with federal and local partners to contain RRV by distributing an oral rabies vaccine (ORV), Figure 1, to wild raccoons to create an immune barrier along the Pennsylvania and West Virginia borders. Partners include the United States Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services (USDA APHIS WS), the Ohio Department of Natural Resources (ODNR)



and local health departments (LHDs). The vaccine is delivered by airplanes and helicopters in rural areas and by vehicle in urban areas. The target density is 75 baits per square kilometer, which is equal to one vaccine-laden bait per 3.3 acres, or 194 baits per square mile. Treatments have been conducted once or twice per year to create a minimum 25-mile-wide immune barrier from Lake Erie to Monroe County. In 2004, there was a breach of Ohio's immune barrier and a new focus was detected in Lake County, centered about seven miles west of the established barrier. All of Lake and Geauga counties, plus parts of Cuyahoga, Summit and Portage counties were subsequently added to the ORV treatment zone.

Raccoon-rabies Surveillance

Although ORV has successfully suppressed infection in raccoons and prevented the spread of RRV through the rest of the state, the virus continues to persist in northeast Ohio. Since 2004, more than 94 percent of the RRV animal cases (120 out of 127) have been found within the outbreak or breach area of Cuyahoga, Geauga and Lake counties. In 2009, three skunks and one raccoon were RRV positive, compared to nine animals (five raccoons, three skunks and one coyote) in 2008. Three positive skunks were clustered in the western third of Lake County within the Mentor-Kirtland-Willoughby Hills areas (Figure 2); plus a raccoon in Columbiana County.

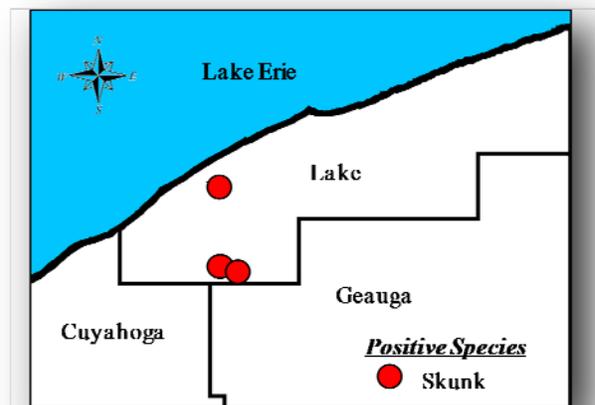


Figure 2, 2009 RRV animal cases in Lake County.



Zoonotic Disease Program

Bureau of Disease Investigation and Surveillance, Ohio Department of Health

<http://www.odh.ohio.gov/odhPrograms/dis/zoonoses/rabies/orv/orv1.aspx>

Phone: 614 752-1029 • Toll-free Ohio (888) 722-4371 • E-mail: zoonoses@odh.ohio.gov

ORV Operation Summary

Sixteen counties were involved in the three ORV operations in 2009 (Figure 3). In May, vaccine-laden baits were distributed in Cuyahoga, Geauga, Lake, Portage and Summit counties. In September, this area was baited again, along with the ORV barrier area along the Ohio border. As part of a special pulse baiting study in Wayne National Forest, additional baits were distributed in Monroe, Noble and Washington counties by USDA APHIS WS in September. A total of 845,800 vaccine-laden baits were distributed in Ohio in 2009 covering 11,451 square kilometers (4,421 square miles). This is a reduction of 506,622 baits (34 percent), compared to 2008 and was the first time since 2004 that fixed-wing aircraft were not used in the spring aerial operation in the Lake-Geauga outbreak area.

Trap, Vaccinate, Release (TVR) Activities

In TVR programs, animals are humanely trapped, hand-vaccinated (by injection), ear tagged and released at the site of capture. This labor-intensive strategy successfully supplements ORV in difficult areas. USDA APHIS WS conducted two TVR projects in 2009 to address the continued persistence of RRV in areas of Lake County. The goal was to trap and vaccinate 65 percent of the estimated raccoon population using a grid system for trapping. The TVR effort, around Mentor, ran from May to August and targeted 39.4 square miles of residential and urban habitat. Overall, 2,704



Figure 4, USDA Wildlife Services employees performing TVR.

raccoons were captured and vaccinated in a

16-week period. Sixty-seven raccoons and 57 striped skunks were euthanized and tested. None were positive. However, on Sept. 11, a striped skunk was identified with RRV in Kirtland, so a second TVR effort was implemented in September and October. An additional 868 raccoons were vaccinated. Sixteen raccoons and 11 striped skunks were euthanized and tested and of those, one positive rabies case was identified. Three RRV-positive animals in 2009 were contained within the two TVR project areas.

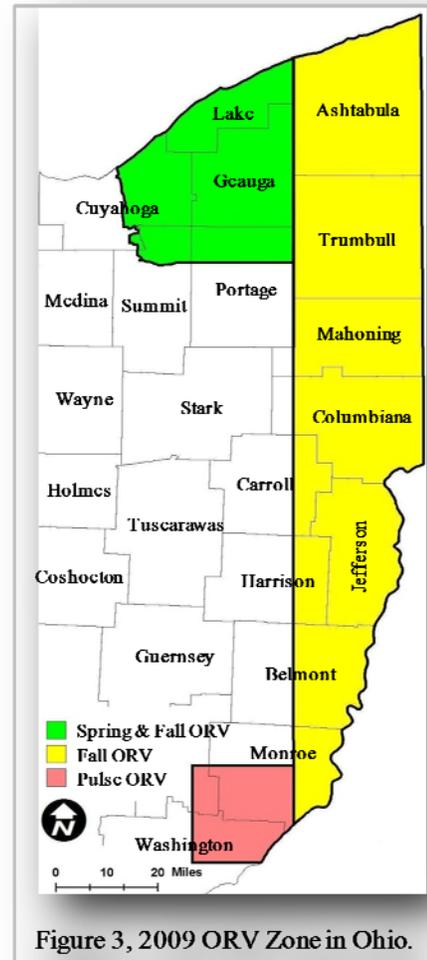
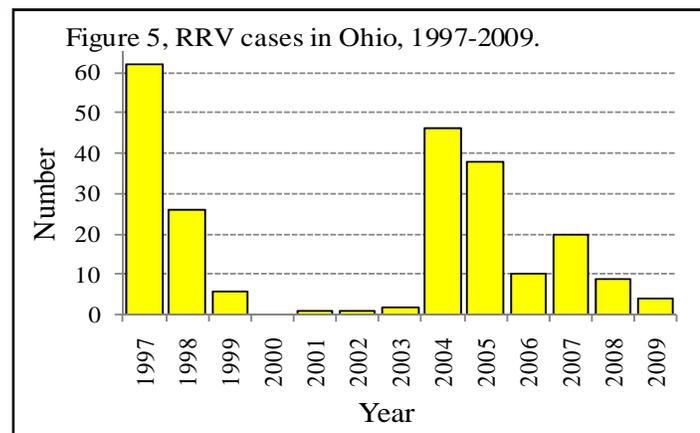


Figure 3, 2009 ORV Zone in Ohio.

Summary

Although persistence of RRV in Lake County is a concern, the good news is there has not been a significant spread of the virus into areas outside this new breach/outbreak ORV zone. Continued ORV treatments and aggressive surveillance must be continued to keep the raccoon-rabies epizootic in check. The long-term goal of the national and Ohio ORV programs continues to be elimination of RRV in Ohio (Figure 5).



Operation Detail: May ORV

The purpose of the spring ORV operation is to reinforce an immune barrier to prevent further spread of RRV in Ohio. The vaccine effort targets five northeastern Ohio counties (Cuyahoga, Geauga, Lake, Portage and Summit) where 119 animals have been confirmed with RRV since July 2004. USDA APHIS WS provided 135,000 vaccine-laden baits for the operation, of which 105,120 were distributed via ground and 29,880 delivered by helicopter (Table 1). Baits were distributed over 2,472 square kilometers (955 square miles) of Ohio. Fishmeal polymer (FMP) baits were exclusively used.

Aerial Operation

No fixed-wing aircraft participated in this operation.

Ground and Helicopter Operations

ODH's role is to coordinate the ground and helicopter operations. Between May 12 and May 29, LHD staff distributed 105,120 FMP baits in urban and suburban neighborhoods. Almost 47.5 percent of the baits were distributed the first week (May 12 to 15). By the end of the second week (May 22), 92.6 percent of the ground baiting was complete. The target ground-baiting rate was 75 baits per square kilometer (194 baits per square mile), covering 1,387 square kilometers (536 square miles). It took LHD, Cleveland Metropark and Cuyahoga Valley National Park (CVNP) personnel only 17 days to distribute all the baits. To accomplish this; 193 staff members worked 626 total hours and drove 4,151 miles.



Figure 6, Ground distribution of vaccine-laden baits by LHD personnel.

Table 1, Spring 2009 ground and helicopter baiting distribution information

| County | Number of FMP Ground Baits Distributed | Number of FMP Helicopter Baits Distributed | Total Number of Baits Distributed |
|-------------|--|--|-----------------------------------|
| Cuyahoga | 52,560 | 7,200 | 59,760 |
| Gauga | 2,520 | 16,560 | 19,080 |
| Lake | 30,240 | 0 | 30,240 |
| Portage | 7,200 | 0 | 7,200 |
| Summit | 12,600 | 6,120 | 18,720 |
| Grand Total | 105,120 | 29,880 | 135,000 |

An ODNR helicopter baited Cuyahoga County's Cleveland Metroparks, Summit County's CVNP and areas along Geauga County's western border with Cuyahoga County. A total of 29,880 FMP baits were distributed over the Cleveland Metroparks North and South Chagrin Reservations (5,040 baits), CVNP (8,280 baits) and Geauga County (16,560 baits) in 8.7 flight hours on May 12.

ORV Bait Contact Calls from the Public

Thirty-seven telephone calls were received from Ohio residents who found one or more baits. Sixty-three FMP baits were found. Twenty-nine dogs found baits and 22 people had physical contact with at least one bait. Of those, only one person reported a potential vaccine exposure. There were no adverse reactions in people or dogs. More than 75 percent of the calls (28 of 37) were about baits found around a home or in the yard; four were found in a park or public area; and five were found along the roadside.

Operation Detail: September ORV

As one of 15 states participating in the national ORV program with USDA APHIS WS, Ohio's focus is to maintain a 25-mile-wide immune barrier along Ohio's borders with Pennsylvania and West Virginia and to reinforce the spring ORV operation where the August 2004 RRV outbreak occurred. Fourteen counties (Ashtabula, Belmont, Carroll, Columbiana, Cuyahoga, Geauga, Harrison, Jefferson, Lake, Mahoning, Monroe, Portage, Summit and Trumbull) were baited with 105,599 ground, 27,000 helicopter and 514,075 aerial baits, totaling 646,674 baits (Table 2). Vaccine-laden baits were distributed over 10,485 square kilometers (4,048 square miles). FMP baits were used in ground and helicopter operations, while coated sachet (CS) baits were distributed by fixed-wing aircraft. All baits distributed in Ohio were provided by USDA APHIS WS.

Table 2, Fall 2009 ground, helicopter and fixed-wing baiting distribution information

| County | Number of FMP Ground Baits Distributed | Number of FMP Helicopter Baits Distributed | Number of CS Fixed-wing Baits Distributed | Total Number of Baits Distributed |
|--------------------|--|--|---|-----------------------------------|
| Ashtabula | 7,560 | 2,520 | 89,816 | 99,896 |
| Belmont | 0 | 1,800 | 36,319 | 38,119 |
| Carroll | 0 | 0 | 15,193 | 15,193 |
| Columbiana | 3,600 | 0 | 53,271 | 56,871 |
| Cuyahoga | 31,799 | 2,880 | 0 | 34,679 |
| Gauga | 1,260 | 14,400 | 76,442 | 92,102 |
| Harrison | 0 | 0 | 17,917 | 17,917 |
| Jefferson | 1,620 | 0 | 51,869 | 53,489 |
| Lake | 19,080 | 2,520 | 24,762 | 46,362 |
| Mahoning | 12,240 | 0 | 32,199 | 44,439 |
| Monroe | 0 | 0 | 20,867 | 20,867 |
| Portage | 5,040 | 0 | 27,726 | 32,766 |
| Summit | 10,800 | 2,880 | 0 | 13,680 |
| Trumbull | 12,600 | 0 | 67,694 | 80,294 |
| Grand Total | 105,599 | 27,000 | 514,075 | 646,674 |

Aerial Operation

USDA APHIS WS conducted the fixed-wing aerial portion of the fall operation, using five specially equipped Beechcraft King Air aircraft from Dynamic Aviation. On Sept. 9 and 10, these planes delivered 514,075 CS baits in Ohio. Ten pilots and 32 staff members from USDA APHIS WS (from Maryland, Michigan, Ohio and West Virginia), flew more than 13,689 statute miles to distribute baits. Thirty-five flights, totaling 89.2 flight hours, were needed to accomplish the fixed-wing portion of the operation.

Ground and Helicopter Operations

Ground baiting was coordinated by ODH and conducted by LHD staff. It was completed within 17 days. Helicopter and ground teams delivered 132,599 FMP baits; 27,000 by helicopter and 105,599 by ground teams. LHD staff distributed 56.6 percent of the 105,599 ground baits within the three days of receiving the baits. By the end of the second week (Sept. 18), 96.1 percent of the ground baiting was complete, and all ground baiting was finished by Sept. 25. The area covered was 1,853.4 square kilometers (715.6 square miles).

LHD and other agency personnel invest a large effort to perform ORV ground baiting in their respective jurisdictions. LHDs distributed 105,599 over 715.5 square miles. To accomplish this, 221 staff members worked 811.2 total hours and drove 5,030 miles. Cuyahoga County alone utilized 68 staff, worked a total of 201.5 hours and drove 1,041.7 miles to complete their assigned area. Cleveland Metroparks personnel also distributed 5,159 ground baits within seven Metroparks reservations (Bedford, Brecksville, Ohio & Erie Canal, Euclid Creek, Garfield Park, North Chagrin and South Chagrin).



Figure 7, ODNR helicopter performing dropping ORV baits.

An ODNR helicopter (Figure 7) and pilot distributed 27,000 baits on Sept. 11. Targeted areas were within Summit County’s CVNP (5,400 baits), western Geauga County (13,320 baits), around LaDue Reservoir (1,080 baits) in Geauga County, around Bellaire and Martins Ferry in Belmont County (1,800 baits), plus Lake and Ashtabula counties’ Lake Erie shoreline (5,400 baits).

ORV Bait Contact Calls from the Public

Forty-nine telephone calls were received from Ohio residents who found at least one bait. One hundred eighteen baits were found, of which 63 were FMP and 55 CS. There were 36 calls regarding human exposure to the bait, of which 15 were human contacts to a ruptured sachet, with no adverse reactions. Fifty-three dogs were exposed to the bait; two dogs vomited and three had diarrhea from eating a bait. More than 67 percent the calls (33 of 49) were for baits found around the home or in the yard. Four were found in a park or public area; three were found along the roadside or sidewalk; two were found along the lake shore; two were found in vacant lots; the bait location of five calls were unknown to the caller or listed as “other.”

Operation Detail: September Pulse Baiting Study

USDA APHIS WS continued experimenting with a new distribution method, called pulse baiting, in three southeast Ohio counties. During pulse baiting, baits are distributed in groups of eight baits instead of individually. This study was designed to determine if vaccinating raccoon family groups is a better distribution and uptake strategy. Between Sept. 8 and 10, 64,126 FMP baits were distributed by an ODNR helicopter in the Wayne National Forest (an area of 966 square kilometers or 373 square miles). Post-bait trapping by USDA APHIS WS personnel took place in late fall to evaluate the percentage uptake by raccoons.

Table 3, Fall 2009 pulse baiting helicopter distribution information

| County | Number of CS Helicopter Baits Distributed |
|-------------|---|
| Monroe | 19,528 |
| Noble | 17,271 |
| Washington | 27,327 |
| Grand Total | 64,126 |

ORV Bait Contact Calls from the Public

Eight telephone calls were received from Ohio residents, in Noble (three calls) and Washington (five calls) counties, who found at least one bait. Seven callers reported the bait was found around the home or in the yard, and the eighth caller reported one bait was found in a pond. A total of 22 FMP baits were found. Of the eight calls where a person found a bait, two individuals had contact with a ruptured sachet. No adverse human reactions were reported. Six dogs and one cat also found baits with no adverse reactions.