Rabid black bears in Ontario

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Only 7 black bears (Ursus americanus) have been among almost 50,000 animals confirmed to have rabies in Ontario since the current sylvatic rabies outbreak began in 1954. Two of these occurred early in 1992 in northern Ontario.

On April 1, 1992, a large male black bear was shot in Evanturel Township, Territorial District of Timiskaming, Ontario, near the town of Englehart. The landowner was suspicious of a bear out of its den unusually early in the season, and he claimed that the animal seemed to be stalking him. This animal tested positive for rabies by the fluorescent antibody test (FAT) (1); it was confirmed by monoclonal antibodies (2) to be infected with the arctic fox variant of rabies, which is the form prevalent in southern Ontario. Salivary glands were not submitted for examination.

An adult female bear was killed on April 25, 1992, also near Englehart. That bear approached within 2 m of a woman getting out of a car outside her home at about 23:00. The bear was attacked and driven off by 2 dogs. It was subsequently shot about 0.5 km away, having followed the dogs to their home. The arctic fox strain of rabies was confirmed by monoclonal antibody analysis (2). No rabies virus was found in frozen sections of salivary gland examined by FAT (1).

There was an intense rabies outbreak in progress in the Timiskaming District during the first half of 1992. The 1st confirmed rabies case (a cat) occurred in October 1991. From October to December 1991, there were 4 cases, of which 3 were red foxes (Vulpes vulpes). During 1992, there were 61 cases (55 foxes) during the 1st 3 mo, 84 cases (42 foxes) in the 2nd 3 mo, 22 cases (9 foxes) in the 3rd 3 mo, and 5 cases (1 fox) in the 4th 3 mo. Red foxes are the most frequent vector of rabies in southern Ontario (3).

An interesting question is raised about the time of infection of these 2 black bears. Over a 5-year period, most bears in a study area 120 km SSE of these cases entered dens between October 18 and November 5, and emerged from March 23 to May 1, with a peak around April 5–20 (4). There are 3 possibilities for infection. First, infection may have occurred before denning in the fall, but the virus must have developed very slowly. Second, a rabid fox may have infected the bear by entering its den during the winter. Large doses of arctic fox strain virus were required to produce clinical rabies in black bears (5). The incubation period was 16 to 25 d for animals that received doses of 5000 mouse intracerebral lethal dose 50 (MICLD50), but 65 d for 1 bear that received only 1000 MICLD50. The 3rd possibility, that the bears were infected after emerging from their dens, seems unlikely, especially in the 1st case. The time from probable emergence to clinical rabies was shorter than recorded incubations (5).

There have been 5 rabid black bears recorded in Ontario prior to the 2 reported here. These were in May 1970, Algoma District; November 1970, Leeds County; March 1972, Carleton County; May 1979, Hastings County; and May 1986, Bruce County. The fact that most are early in the season suggests a link between hibernation and clinical rabies. Possibly, the stress of coming out of hibernation during a time of scarce nutrition (6) either triggers the onset of clinical disease from a latent, pre-hibernation infection, or makes the individual more susceptible to infection.

Most rabid black bears in Ontario have been described as being aggressive toward humans. In addition to the 2 cases in 1992, the bear in Bruce County chased humans who were riding an all-terrain vehicle, and was found to have porcupine quills in its muzzle. In Hastings County, the bear tried to enter an occupied tent, chased 1 of the occupants up a tree, and finally was shot while hiding in the basement of a building. The Leeds County incident did not involve attack, but the behavior of the bear was sufficiently unusual to arouse suspicion. The bear in Algoma approached a man cultivating his garden, close enough to be hit with a spade. While aggression is often related to rabies, perhaps nonaggressive rabid bears would not be encountered or arouse suspicion. Black bears are very secretive, and nonaggressive individuals most probably die unnoticed. Four bears in experimental studies were not aggressive (5).

There have been 6 human fatalities in Ontario due to black bear attacks since 1977. All bears involved were tested for rabies by FAT, and none of them were positive. That was similar to observations on rabid black bears in Alaska (5).

References