

Will rabies adventure the future of the *Vulpes vulpes* or

Can the situation be stabilized by the help of humans?

By Linnea Bolang

The *Vulpes vulpes* (red fox) are one of the most world wide spread species of any canid. The fox is not an animal that has a bad reputation of being an eager killer, but after introducing the red fox to north America it has been using its instincts as the predator to hunt small rodents in such a large amount that it has jeopardized the future of some rodent species.

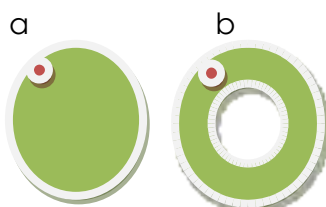
The foxes are omnivores; they mostly eat small rodents such as mice and rabbits, but also insects and fruits. The number of foxes have been increasing all over the world and in Britain the number of foxes have been estimated to 225 000 individuals (2001, The Fox Website 2008). The fox is found all over the world, they having been introduced in North America, California and Canada. Its enemies are considered to be the coyotes, wolfs and the humans (the foxes are being hunted by humans for sports mostly).

The *V.vulpes* has a big impact on the outbreaks of rabies; unfortunately the rabies virus is as world spread as the foxes, but many countries in Europe have been approved and are now rabies free.

Rabies is a virus that infects the nervous system, it can transfer from animal to human (zoonos), but the transmission is not only possible by the fox's but also by dogs, wolfs and bats. The virus can be transmitted in different ways; local contacts, neighborhood contacts and mating contacts among the foxes themselves. The foxes are responsible for 40-50% of the rabies cases diagnosed each year. This high rate makes it important to try to immunize this species against rabies. Both considering the human and fox health, since rabies is almost in every case deadly and affects all warm-blooded animals. (Smittskyddsintitutet, 2006)

In central Europe and in America disease managers have been succeeded in the matter of controlling rabies over the last 25 years. The repeated vaccinations in these areas has now ended and therefore there maybe a possibility of new outbreaks of rabies in those areas.

The foxes are territorial, and remain in the same home range for life, which makes it a bit easier to predict and follow the movements and changes of the fox stem in a certain area; even if there is an outbreak of the rabies virus it is possible to isolate the infected animals. But in what way are we going to use the vaccines, what is the best plan for vaccination of the animals? If we treat a circular area (a) around the detected case or if we just treat a "protective" ring (b) around the detected case? The circular is shown to be the most successful. (Green color represents the vaccinated areas)(BMC,2005).





A study has been made on the rabies vaccines, using both inactivated vaccines and ERA® modified live virus vaccine; and how they work best. They were introduced in the foxes intramuscular and with intestinal route (by fiberscope installation or intramuscular injection) or with ERA® rabies vaccine baits (ref.*2,*3). The tests were made so that each sex, age and class was represented, to get a reliable and true result as possible. The foxes were examined and blood tests were taken both before and after the injection to be able to see the difference and the progress of the different methods. The best and most satisfactory result was that of using the ERA® modified live virus vaccine with intestinal installation (most long lasting antibodies produced). The study also showed that the fox pups did not immunize as easily as the adult foxes when using ERA® rabies vaccine baits.

Off course the use of experts and good knowledge about the foxes is necessary to do this kind of investigations since it is not done that often the results are hard to compare with each other from time to time.

The use of the available resources has to be planed carefully so that the money can be used in a proper and efficient way, to the right place at the right time, considering both the economy and the human health.

Where I come from we have a rather high number of foxes and luckily for both the foxes and all the people living in Sweden we haven't had any outbreaks of rabies for a long time (last case was registered in 1886). But since the human population is travelling more and more we also travel around the world with the diseases. A plan of action on how to deal with eventual outbreak is therefore necessary. I can understand that it can be difficult to control the dispersal of the infected foxes but with this circular method and use of the available resources hopefully an outbreak can successfully be deleted.

I think that such investigations that have been made are for a very good purpose, displaying both successful and unsuccessful methods. Even though the result can have a wide range, the development of the methods keeps on progressing. In the future we can use the previous investigations to see and learn and go even further with both methods and vaccines.

I would say as my answer to this question is that; yes the future of the *Vulpes vulpes* can be stabilized by the help of humans. And as long as rabies is kept under control the foxes can keep increasing in number to a sufficient level.

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