

# Community-based actions against an invasive rodent and its zoonotic parasite in Longyearbyen

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COAT has in collaboration with the governor and the local community in Svalbard just initiated actions to reduce the population of the sibling vole (*Microtus levis*) and thereby the likelihood of infection of the parasite *Echinococcus multilocularis* (EM) in Longyearbyen. The sibling vole is an invasive species in Svalbard. It was accidentally introduced from Russia in the early 1900s, and established a population with a core area in Isfjorden between Bjørndalen and Coles Bay. The sibling vole is an herbivore that is most abundant in lush grassy vegetation – in Isfjorden often nearby sea bird colonies. In 1999, it was discovered that a substantial proportion of the voles in the population's core area carried EM.

## THE SIBLING VOLE IS SPREADING

The likelihood of exterminating the sibling vole from Svalbard is very small, because the population's core areas is large and partly inaccessible due steep and unstable terrain (see photos at the top of this page and the bottom of next). The population exhibits violent inter-annual fluctuations in density and distri-

bution largely determined by winter weather. Already in the 1970s, the vole's distribution reached Longyearbyen in some years. However, during the latest years it appears that the vole has established a more permanent local population in Longyearbyen. Voles have recently also been observed at localities further east in the Isfjorden area than before. This indicates that the vole's distribution range in Svalbard is expanding – probably because of climate warming. The winters in Svalbard has been milder than ever the last years and has led to less ice on the tundra. More precipitation during winter leads to more favorable conditions of the voles due to a thicker and more insulating snow cover, and an increased likelihood of spreading of sibling voles to new localities. Telemetric studies has shown that the voles are incredibly mobile animals, able to move several kilometers in 24 hours. With a larger distribution range for the voles there will be increased contact between voles and foxes leading to an increased risk of spreading of EM. A larger number of voles with a more permanent



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A system of camera traps will be distributed within and beyond the sibling vole's present distribution range in Isfjorden. The camera traps will be of the same kind used to monitor the entire small mammal community on Varanger peninsula. The camera traps consist of a metal box (acts as a tunnel for the voles) and a camera with a motion sensor in the roof of the box that takes photos of all animals that runs through.

presence in Longyearbyen, may also lead to an increased risk of EM-infection to dogs and humans.

## ACTIONS AND MONITORING

The sibling vole is quite easy to catch in ordinary snap traps. A large number of snap traps have now been made available to the volunteer vole trappers in Longyearbyen. Given a sufficient trapping effort in Longyearbyen, the local vole population can be reduced to the extent that also the likelihood that EM establishes near human settlements becomes reduced. The trapped voles will be dissected in order to investigate whether they contain EM. Thus, the trapping will contribute to monitoring of the parasite. Next summer COAT will establish a more large-scale system of camera traps in order to monitor the sibling vole's distribution range in Isfjorden. The camera traps are active year around and will also be documenting the presence of voles under the snow during winter. A number of camera traps will be placed in bird cliff vegetation outside the known distribution area in Isfjorden in order to document the potential expansion of the species in Svalbard.



### *Echinococcus multilocularis* (EM)

EM is a tapeworm that has a larval stage in the liver of voles (photo A and B in this textbox) and adults worms in the guts of foxes or dogs. The parasite transmits when a fox (or dog) eats an EM infected vole and when a vole ingests parasite eggs from feces of foxes/dogs. EM is zoonotic: If humans ingest EM eggs larval cysts may develop in the liver or other vital organs with fatal consequences if not treated.

*The photo to the right show a dissected sibling vole liver with cysts (white), showing how damaging the parasite can be.*



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