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SIGNAL CRAYFISH ON THE MOVE

Illegal introductions, crayfish plague and distance to Lake Vättern

BACKGROUND

Sweden has two species of freshwater crayfish, the endemic and Critically Endangered noble crayfish, and the introduced signal crayfish. Signal crayfish, once thought to be immune, has turned out to be a chronic carrier of crayfish plague, a disease fatal to noble crayfish.

Today illegal introductions of signal crayfish are regarded as the most serious threat to the noble crayfish. We used the Swedish Crayfish Data Base to explore this phenomenon.

Large noble crayfish

Illegally introduced signal crayfish with crayfish plague on the tail.

SUPPLY OF ILLEGAL STOCKING MATERIAL

Lake Vättern is the second largest lake in Sweden with a strong signal crayfish population. It is the only lake, out of 4 000 in Sweden, open since 1999 for public fishing during 5 weekends in late summer.

Ninety-six sites of signal crayfish occurrences without permit were found in the counties of Värmland and Dalsland 1999-2005 (Fig. 3). With increasing distances from Lake Vättern occurrences decreased (Fig. 4). This indicates that the fishery in the lake has served as a main source of stocking material for illegal introductions in middle Sweden.

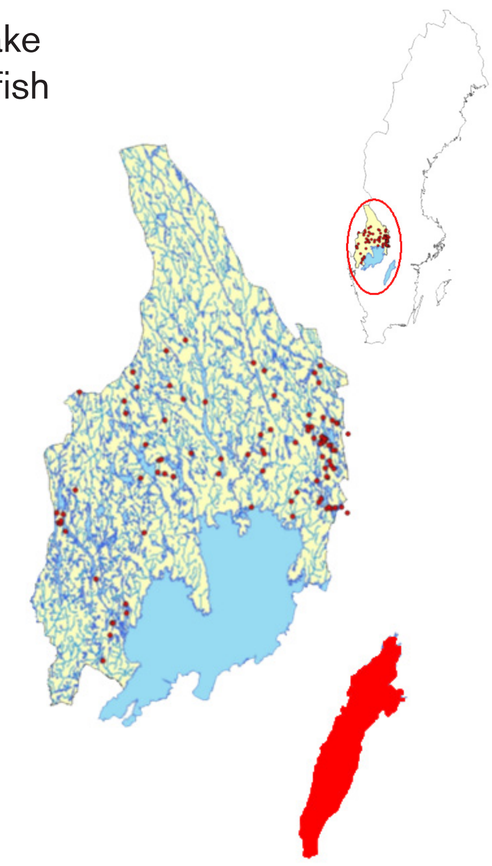

Figure 3. The distance from Lake Vättern (in red) to sites of signal crayfish introductions (red dots) in the counties of Värmland and Dalsland.

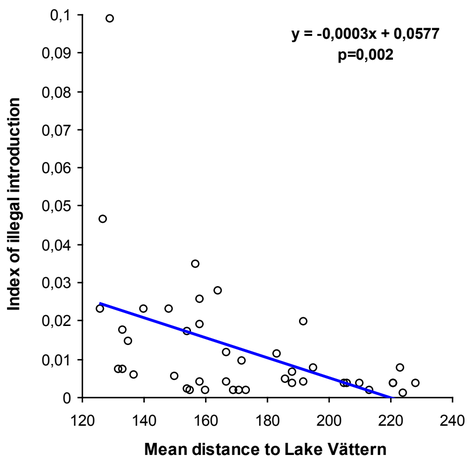

Figure 4. Relationship between distances from Lake Vättern to sites of signal crayfish introduction.

DRASTIC INCREASE IN CRAYFISH PLAGUE

There was a 10-fold increase in plague outbreaks in Sweden during 2007 (Fig. 1). Localities with crayfish plague were matched with localities of illegal introductions north of the River Dalälven. This is the northern border for legal introductions.

Twentyfour illegal introductions of signal crayfish were discovered. More than 400 lakes and rivers with noble crayfish were declared plague struck by the regional authorities (Fig. 2). In all cases of plague, apart from the northernmost one, the outbreaks of plague were connected to an illegal introduction of signal crayfish ($p<0.05$, binomial test).

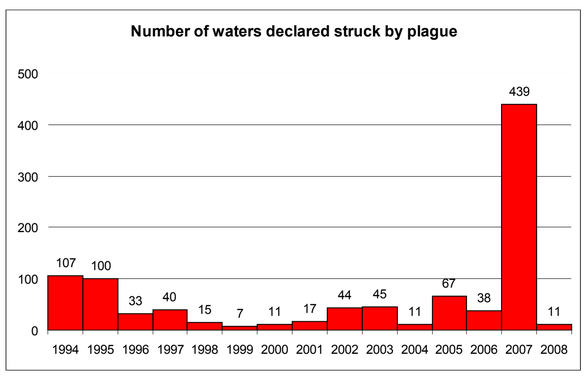

Figure 1. Number of waters declared struck by plague 1994-2008.

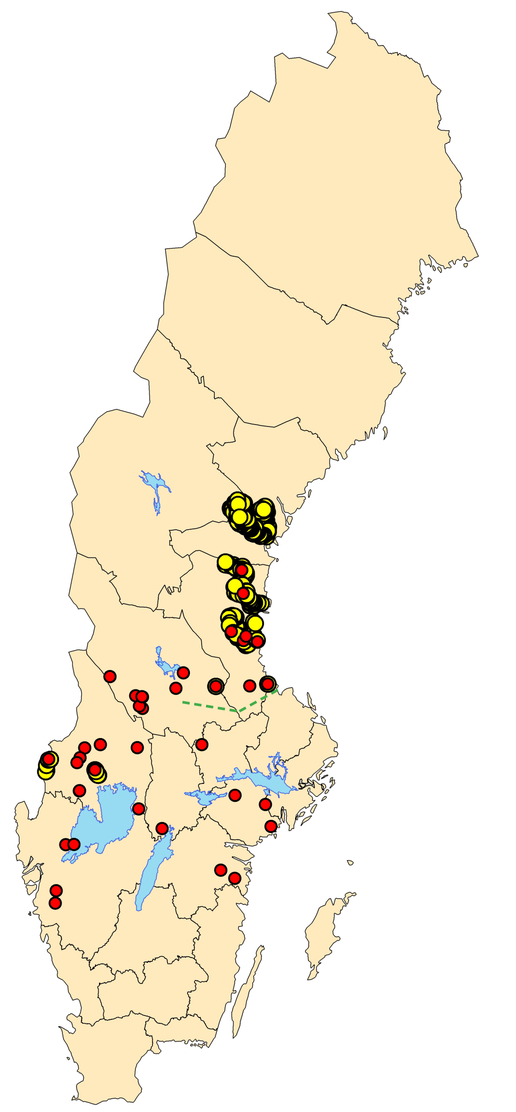

Figure 2. Crayfish plague outbreaks coincide with illegal introductions in time and space. The green line indicates the northern border for legal introductions.

LAST WORDS

The role of signal crayfish as a vector for crayfish plague and consequently their fatal effects on noble crayfish is beginning to be recognised. There is still a general belief that the signal crayfish has been a great success improving the fishery and resulting in economic benefits. On the contrary, however, the net effect of the introduction of signal crayfish into Sweden has recently been estimated to a cost of 5,3 EURO/person/year.

READ MORE

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