DISTRIBUTION AND NUMBERS OF THE FRESHWATER PEARL MUSSEL *MARGARITIFERA MARGARITIFERA* IN SWEDEN

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The freshwater pearl mussel *Margaritifera margaritifera* is widely spread in Sweden from the southernmost to the northernmost part. According to an enquiry, it is present in 551 streams. The mussel streams are more common in large catchments than in small ones. All streams are situated below 600 m a.s.l. Densities are mostly less then 5 specimens/m^2. Approx. 1/4 of the populations have less than 5,000 mussels and the largest population comprises 1.4 million mussels. Recruitment, i.e. smallest mussel < 50 mm, has been reported from 234 streams, but mussels shorter than 20 mm were present only in 60 streams. Lack of small mussels indicates poor recruitment which may be a great problem for the survival in the long run. Most mussel streams, greatest population size, highest population density and small mussels are found in the north of the country, probably due to lower human impact.

Key words: Sweden; *Margaritifera margaritifera*; freshwater pearl mussel; distribution; status.

INTRODUCTION

Scandinavia and Scotland are the core areas for the remaining populations of threatened freshwater pearl mussel (freshwater pearl mussel) *Margaritifera margaritifera* in Europe. Modern documentation of freshwater pearl mussel in Sweden started in the 1980s, and today the knowledge of the occurrence and distribution is quite good, apart from some parts of northern Sweden.

The objective of this paper is to give a short overview of the distribution of freshwater pearl mussel in Sweden. More details are found in Söderberg *et al.* (in press).

METHODS

An enquiry was sent to all county administrative boards in areas with freshwater pearl mussel. The objective was to get answers on locations for freshwater pearl mussel, smallest mussel found, population size, population density and methods used. The time deadline was 2006.

The studies were made with different objectives, from just documentation of occurrence to more advanced studies. All inventories and more detailed studies were made by visual observation of the mussel. In addition, length measurements of some of the individuals were done. All numbers and sizes refer to visible mussels, i.e. no digging for hidden mussels was done.

RESULTS

Geographical distribution

Freshwater pearl mussel occurs from the southernmost to the northernmost part of Sweden, a distance of approx. 1,500 km, according to the enquiry. It is present in 551 streams. Most of freshwater pearl mussel streams are situated in the northern 2/3rds of Sweden (Fig. 1).

Freshwater pearl mussel streams represent 52 % of the 118 main catchments (larger than 200 km^2 and ending in the sea), and 7 % of 128 coastal catchments (smaller than 200 km^2). Among the smaller main catchments (< 1,000 km^2) the percentage of records is 34 vs. 80 among the larger ones.

All freshwater pearl mussel streams are situated below 600 m above sea level. In most (approx. 80%) of the streams freshwater pearl mussel populations occur in less than 6 km of the stream, according

to data from 123 streams. Ten streams (8%) hold mussels in more than 10 km, the longest distribution being 29 km.

Population size

Judging by 126 streams, the populations size is less than 5,000 specimens in 29 % of the streams, 5,000–10,000 – in 11%, 10,000–50,000 – in 27%, 50,000-100,000 – in 13%, 100,000–200,000 – in 11%, and >200,000 – in 9%. The largest population is 1,400 000 specimens. All but one streams with >200,000 mussels are situated in northern Sweden.

Population density

Judging by 123 streams, the mean population density is less than 5 specimens/m^2 in 70%, and higher than 10 specimens/m^2 in 14% of the streams. The highest density found is 40 specimens/m^2. Most of the streams with highest densities (90%) are situated in the northern part of Sweden.

Size of the mussels (age)

In 60 of 465 streams the smallest mussel found was <20 mm, in 174 streams it was 20-50 mm, and in 234 streams the smallest mussel was >50 mm. There is a tendency that more streams with small mussels are found in the northern part of Sweden. Mussels <10 mm were found in 10 streams, all but one in northern Sweden.

DISCUSSION

The inventories and studies show that Sweden has quite many, at least 551, freshwater pearl mussel streams. This is more than what is known from other countries, compared to most other countries. However, the species was even more common 100 years ago. Eriksson *et al.* (1998) estimated that freshwater pearl mussel had gone extinct from approx. 1/3 of the streams known to hold freshwater pearl mussel around 1900 (cf. also Fig. 1).

Fig. 1. The distribution of freshwater pearl mussel in Sweden. Red dots = localities with living mussels after 1980, white dots = no mussels found after 1980. Map by Ted von Proschwitz, Natural History Museum, Gothenburg.

Although freshwater pearl mussel is still found all over Sweden, it seems obvious that the northern 2/3rds of Sweden hold most freshwater pearl mussel streams, feature the largest in-stream distribution, the greatest populations, the highest densities, and the smallest (youngest) mussels. The reason for that is probably that northern streams in general are less affected by human activities than southern ones.

The coastal catchments and the smallest main catchments have a lower percentage of freshwater pearl mussel streams. Once again, the likely reason is more human activities in these areas.

No freshwater pearl mussel streams are found above 600 m a.s.l., probably because the temperatures there are too low.

In most streams, only large/adult mussels are found. Only in 13% of the streams there are mussels smaller than 20 mm, corresponding to an age of approx. 10 years. Of course, the presence of small mussels is underestimated as only visible mussels have been counted, not the mussels within the substrate. However, the studies indicate that recruitment in general is very poor.

In conclusion:

- Sweden has fairly many freshwater pearl mussel
- Most of the streams are situated in the northern part, due to lower human impact
- Lack of small mussels indicates poor recruitment, which is a huge problem for the survival in the long run.

References

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