Dreissena polymorpha

INFORMATION REVIEW

New York Zebra Mussel Information Clearinghouse • New York Sea Grant Extension

Volume 2, Number 2 • March/April 1991

Potential Overlap of *Dreissena* and *Mytilopsis* in the Hudson River

In the last issue of **DpIR,** comparative salinity tolerances of *Dreissena polymorpha* and a native dreissenid, *Mytilopsis leucophaeta* indicated some potential for the establishment of sympatric populations, based on a literature review. The scarcity of detailed ecological and life history descriptions of *Mytilopsis,* however, makes for some highly speculative predictions of range overlap and interspecific interactions with expanding *Dreissena* populations. Salinity data from the Hudson River, compiled by Con Edison, may facilitate making a crude prediction of potential range overlap of the two bivalve species. *Mytilopsis leucophaeta* was first discovered in the Hudson River in 1937 and was presumably introduced a few years earlier via ship ballast water.

Total salinities in the Hudson River were recorded at 3 to 4 mile intervals from river mile 14 to river mile 142. Samples were taken at surface, mid-depths, and channel bottom and were then averaged over an eight year period, 1982 to 1989. Based on comparative salinity tolerances of *Dreissena* and *Mytilopsis* summarized in the last **DpIR** issue, conservative ranges and maximum levels were assigned to each species: 0.21 to 1.5 ppt total salinity for *Dreissena* with a maximum tolerated of 3.0 to 5.0 ppt salinity; 0.21 to 3.0 ppt range with a maximum of 10 to 20 ppt for *Mytilopsis.*

Minimum and maximum salinity values recorded at each mid-depth station were used to predict ranges of the two species based on the conservative salinity tolerances above. Mid-depth salinities were used to make range predictions since they are probably representative of salinities in shallow, benthic-pelagic interface zones where the two bivalves species are most likely to colonize. Salinities suggest that *Dreissena* could successfully inhabit most suitable areas upstream of river mile 59. *Dreissena* may colonize areas down to river mile 40, having mean salinities < 3.0 ppt, however maximum salinities often exceed 6.0 ppt in these areas. *Mytilopsis* has been observed along the lower Hudson at Manhattan extending upstream adjacent to Beacon, river mile 63, according to Dr. Dave Strayer of the Institute for Ecosystem Studies. Based on salinity data worded adjacent to Beacon, *Mytilopsis* may, in fact, reach its minimum tolerated salinities in this area. Thus, sympatric populations maybe most likely established between river miles 59 and 63, with some overlap possible down to river mile 40.

Although salinity tolerances can be useful for predicting range overlap of *Dreissena* and *Mytilopsis,* other factors such as differential preferences in currents, thermal regimes, depths, substrate, food preferences and concentrations of other dissolved substances (e.g. sulfates) should also be considered. Moreover, these parameters are subject to considerable daily and seasonal fluctuations which further complicate accurate prediction of range overlap of these two species. *(David B. MacNeill)*

SUBSCRIPTIONS

***Dreissena polymorpha* Information Review** is published bimonthly by the New York Zebra Mussel Clearinghouse. The **Review** presents summaries of research, meetings, legislation, and sitings of *Dreissena polymorpha* (the zebra mussel) to encourage and facilitate communication among stakeholders.

Submissions for inclusion in the Review are encouraged. Please direct correspondence to:

Susan Grace Moore, Coordinator
NY Zebra Mussel Clearinghouse
250 Hartwell Hall
SUNY College at Brockport
Brockport, NY, 14420-2928

Telephone 716-395-2516
Fax: 716-395-2466

The Clearinghouse is a public, non profit organization established in 1990 with grant funds received from: Empire State Electric Energy Research Corporation (ESEERCO), Monroe County Water Authority, and Eastman Kodak.

Subscriptions are available for $60.00 annually. Send orders and changes of address to the Clearinghouse. Back issues and replacement copies may be available. Requests should be sent to the Clearinghouse.

Subscription Benefits:

- ***Dreissena polymorpha* Information Review**
  (6 regular bimonthly issues, and 1-2 special issues)
- Annual bibliography update
- Copies of research articles:
  - 50 pages free (reproduction & postage)
  - Beyond 50 pages - reproduction & postage $0.10/page
- Database searches: 2 free searches - including mail, phone, or fax of search results.

Postmaster, please send address changes to the Clearinghouse at the above address.

Editor, Susan Grace Moore
Technical Advisors: Charles R. O'Neill
David B. MacNeill

European Occurence of *Mytilopsis* and *Dreissena*

Overlap of *Dreissena polymorpha* and *Mytilopsis leucophaeta* populations is, at this time, only a possibility in North America. There is, however, known habitat overlap in Europe. The map on page three, illustrates the populations of *Dreissena* and *Mytilopsis* in the estuarian delta of the Rhine, Meuse, and Scheldt Rivers in northwestern Europe.

From Wolff, W.J. 1969. The Mollusca of the estuarian region of the rivers Rhine, Meuse, and Scheldt in relation to the hydrography of the area 2. The Dreissenidae. *Basteria,* 33(5-6): 93-103.

See DpIR 2(1) for a related article.

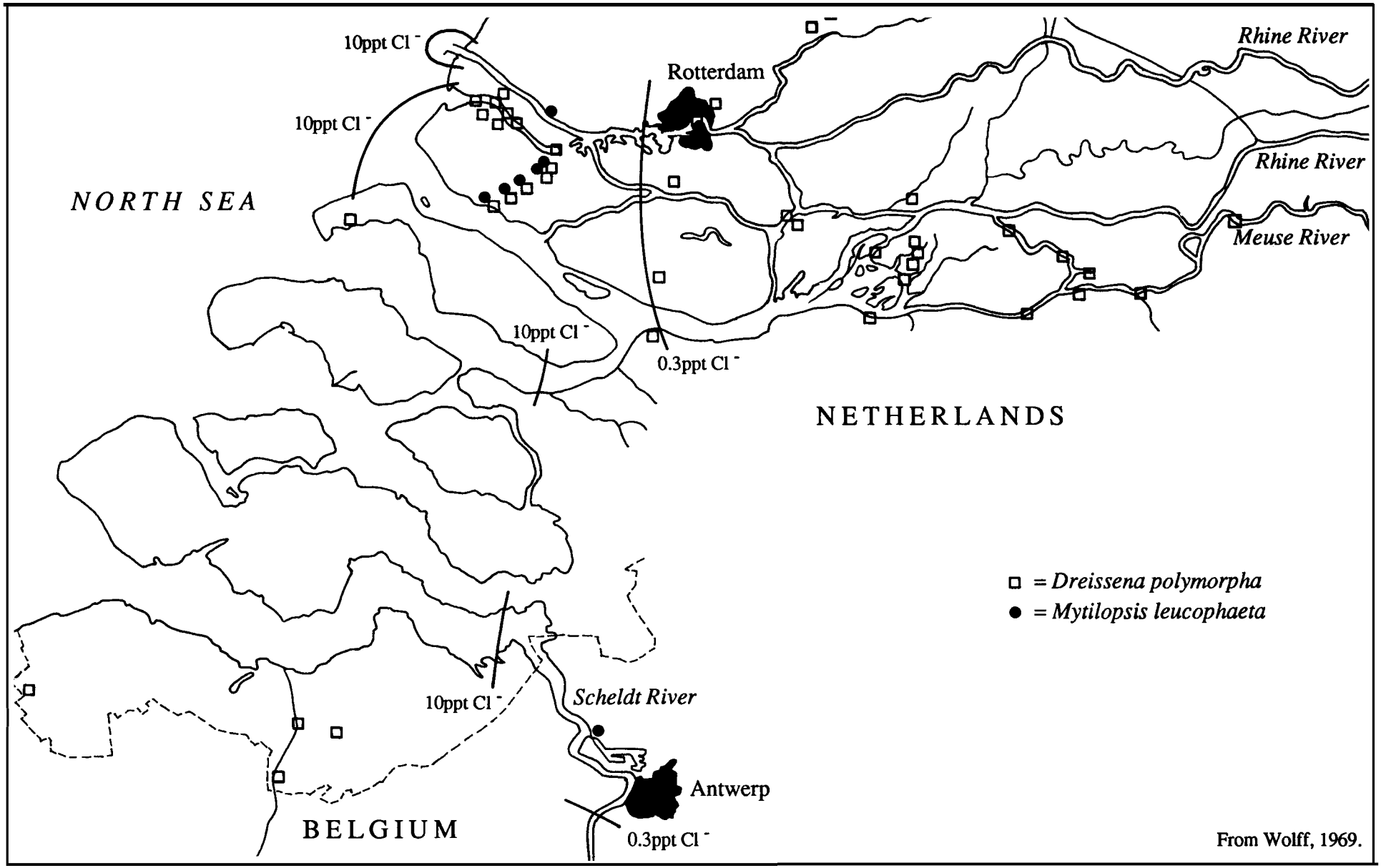
RESEARCH UPDATE

Development of a Standardized Sampling Protocol to Monitor the Spread and Density of Zebra Mussel *(Dreissena polymorpha)* Populations

Investigators: Dr. J. Ellen Marsden, Dr. Alec Aitken, Dr. Ron Engel, Dr. Daniel Molloy
Funding entity: Great Lakes Research Consortium

In March, a working draft of the *Standard Protocols for Monitoring and Sampling Zebra Mussels* was released. Several researchers will be conducting comparisons of different sampling methods during the 1991 field season. In addition, the use of the protocols for monitoring in 1991 may reveal changes which would improve the methods. Critical review and suggestions for modification of the protocols are strongly encouraged. Comments can be sent to Dr. Marsden at any time prior to October 1991. A final version will be available in January 1992.

Copies of the working draft are available, at no cost, from Dr. Ellen Marsden at the Illinois Natural History Station, Box 634, Zion, IL 60099.


10ppt Cl⁻
10ppt Cl⁻
Rotterdam
Rhine River
Rhine River
NORTH SEA
Meuse River
10ppt Cl⁻
0.3ppt Cl⁻
NETHERLANDS
□ = Dreissena polymorpha
● = Mytilopsis leucophaeta
10ppt Cl⁻
Scheldt River
Antwerp
BELGIUM
0.3ppt Cl⁻
From Wolff, 1969.