The rise and demise of mollusk species in the Pontocaspian region – a request for help

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De bloei en het uitsterven van molluskensoorten in de Pontokaspische regio – hulp gevraagd.

Samenvatting
In het kader van een EU project wordt aan de Justus Liebig Universiteit in Duitsland onderzoek gedaan naar de schrikbarende afname van biodiversiteit in de malacofauna van zeeën en meren in het gebied van Nederland tot aan Kazachstan. De onderzoekers vragen hulp van vrijwilligers om levende vertegenwoordigers van *Ecrobia*, *Theodoxus* en *Viviparus* te verzamelen. Slakken moeten ten behoeve van DNA-onderzoek direct geconserveerd worden in 70-100% alcohol; de vindplaats(en) gedocumenteerd en de samples opgestuurd naar Giessen, Duitsland.

Fig. 1. Opgezwollen brakwaterhorentje *Ecrobia ventrosa*. Foto: Peter van Bragt.

Fig. 2. Zoetwaterneriet *Theodoxus fluviatilis*. Internet source.

Introduction

Thirty-five million years ago Europe looked far different than today. Two huge seas divided much of Europe, the Mediterranean and the Paratethys, which covered much of the continent and spanned from the Netherlands to Kazakhstan. When continental upliftment occurred these seas were forced to change shape or retreat out. For some parts of the Mediterranean and Paratethys, the only option was retreat; this left an array of ancient lakes and seas. Some remained large like the Black and Caspian Seas, while others were left just a little bigger than garden ponds. Some remained fairly salty, while others changed to fresh water. Some are connected by rivers, while some are totally isolated. Irrelevant of the conditions, this breakup or change in these two water bodies gave rise to one of the highest diversities of molluscan fauna on the planet, yet in just the last century we have seen much of this diversity disappear. Hundreds of species are disappearing before our very eyes. Some scientists are beginning to suggest this could be one of the biggest diversity crises we are facing in modern times, yet not everyone is in agreement on the factors causing this demise in mollusk species. Two scientists at the Institute for Animal Ecology and Systematics at Justus Liebig University in Germany are trying to assist in elucidating these factors by looking at the genetics of model species that are commonly found across Europe, North Africa and the Near East. In order to collect reference material, they are seeking the assistance of volunteers all over Europe in their quest to expand the sampling. If you travel anywhere interesting, on holiday or just remaining in the Netherlands, you are invited to help in the collection of *Ecrobia*, *Theodoxus* and *Viviparus* snails for their genetic analyses.

Ecrobia

Ecrobia are common in calm and shallow marine and brackish waters less than 1 m deep, particularly in estuaries, lagoons, salt ponds and marshes. They are minute, measuring 1 to 5.8 mm and weighting 1 to 4 mg. Their shell morphology and pigmentation patterns can vary (tan to dark gray) but all have an operculum. Furthermore, they are deposit feeders, which means they ingest sediment particles but also browse on solid surfaces with macrophyte vegetation. Typically communities can be found in high densities together within a limited area.
Interested species: *E. cisseana, E. grimmi, E. maritima, E. spalatiana, E. truncata, E. ventrosa* (fig. 1).

Theodoxus

Unlike *Ecrobia*, *Theodoxus* prefers slightly more fresh water lakes, ponds, estuaries and rivers, but some species can be found in brackish water systems too. Furthermore they are larger than *Ecrobia*; members of the genus can range in size from a few millimeters to around 2 cm. They are best known for their black/brown and white patterned shells, however the exact patterning varies depending on the location sampled. In some instances they can be near total black while in others vast

proportions of white spots, speckles or stripes can be observed. Typically *Theodoxus* species feed on algae on hard surfaces such as rocks, submerged walls and wooded beams, but are also commonly found on aquatic plants. They are common in shallow waters <5 m deep, with lots of plant life and especially in relatively sheltered conditions. They too can be found in high density communities, so where there is one, there will most likely be more.
Interested species: Many species of *Theodoxus* have been described based on morphology, some of which may no longer be valid species. We are looking for any and every *Theodoxus* species you can get, however a few of the more common species names are as follows: *T. anatolicus, T. fluviatilis* (fig. 2)*, T. jordani, T. danubialis, T. pallasi, T. danasteri, T. astrachanicus, T. nilotica, T. meridionalis,* among many others.

Viviparus
The genus *Viviparus* is a small group of large aquatic snails. Besides sharing a similar distribution to *Theodoxus*, they too can be found in fresh and brackish water ecosystems. Most members of the genus are brown with a faint striped patterning, however some members may lack the striped patterning or it may be less clear.
Interested species: We are interested in all species: *V. acerosus, V. ater, V. contectus, V. mamillatus and V. viviparus* (as well as the various subspecies).

Collection and preservation
Living snails can be collected with ease using nets or just by hand, however, in order to perform genetic analyses living specimens have to be preserved in 75-100% ethanol to maintain integrity of their DNA. Specimens from the same sampling locality can be placed together, however, specimens from different localities should be placed in different test tubes or collection bottles. Identification should be written on the outside of the bottle in permanent marker and in pencil on paper placed in the tube with the samples. If the alcohol becomes yellowish during the collection process, it should be changed.
When a specimen is found, please make as detailed a description of the locality as possible: the place, and particularly the GPS coordinates, are of particular importance. If you are planning a trip or are able to collect specimens, please feel free to contact either of the two scientists for a "Locality Information Sheet" which may assist you in recording information about the locality (mailing details below).

Sending
The specimens can be send by mail to the following postal address:
Justine Vandendorpe and Arthur Sands,
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Justus Liebig University,
Heinrich-Buff-Ring 26-32 IFZ,
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For further information about the project, see http://pontocaspian.eu/ or in case you would have a question, you can always contact us by phone or e-mail:

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