The thick shelled river mussel (*Unio crassus*) brings LIFE+ back to rivers

**UNIO CRASSUS for LIFE**

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Background

The unionoid freshwater mussels of Sweden, status and distribution

Sweden harbours seven native species of large freshwater mussels

Three of them are red-listed both nationally and internationally and a fourth species is on the national red-list.

In the early 1990s, work began to map and conduct environmental monitoring of mussels in Sweden.

A new standard protocol for monitoring of all native species of large freshwater mussels in Sweden is today in practice.
<table>
<thead>
<tr>
<th>Species</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Margaritifera margaritifera</em> (LINNAEUS)</td>
<td>Freshwater pearl mussel*</td>
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<tr>
<td><em>Unio pictorum</em> (LINNAEUS)</td>
<td>Painter´s mussel*</td>
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<tr>
<td><em>Unio tumidus</em> (PHILIPSSON)</td>
<td>Swollen river mussel</td>
</tr>
<tr>
<td><em>Unio crassus</em> (PHILIPSSON)</td>
<td>Thick-shelled river mussel*</td>
</tr>
<tr>
<td><em>Anodonta anatina</em> (LINNAEUS)</td>
<td>Duck mussel</td>
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<tr>
<td><em>Anodonta cygnea</em> (LINNAEUS)</td>
<td>Swan mussel</td>
</tr>
<tr>
<td><em>Pseudanodonta complanata</em> (ROSSMÄSSLER)</td>
<td>Depressed river mussel*</td>
</tr>
<tr>
<td><em>Sinanodonta woodiana</em> (Lea)</td>
<td>Chinese pond mussel</td>
</tr>
<tr>
<td><em>(Dreissenoida) Dreissena polymorpha</em> (PALLAS)</td>
<td>Zebra mussel</td>
</tr>
</tbody>
</table>

* Red-listed

Four species are on the national Sweden red-list

Maps: von Proschwitz 2012
Since the 1920s two non-native, alien-species have appeared.
Back to the actual species …

Why start a LIFE-project?

UNIO CRASSUS for LIFE

Photo: Stefan Lundberg

1 mm

Photo: Anders Warén
The thick-shelled river mussel (*Unio crassus* Philipsson, 1788) in Sweden: Distribution, ecology, status, threats and conservation

- The thick-shelled river mussel, *Unio crassus*, is the rarest of the *Unio*-species in Sweden and has a pronounced south-eastern distribution.
- The distribution is split up into several smaller isolated areas. The species has disappeared from many of its former sites.
- Due to its fragmented distribution the species becomes especially threatened.
- The reproductive success in the remaining populations is poor. Only a few populations show recruitment success.
- Extensive monitoring of the remaining populations is ongoing in a national programme.
Approximately 75 populations of *Unio crassus* are today known within the species distribution in south-eastern Sweden.

The total numbers of localities are approximately 110, when information before 1950 is included.

*U. crassus* has since then disappeared from many of its former sites, especially the peripheral ones and many of the populations are still declining.

The distribution of *Unio crassus* in Sweden as known until June 2012. Note that one dot may represent more than one occurrence. ○ = records before 1950. ● = records 1950 and later.
Disturbances & threats

Except eutrophication other effects of human activities have had negative consequences for *U. crassus*. Dredging, channelization as well as blocking and wrongly applied regulation of the water flow still exhibit severe threats.
Project started in januar 2012!

• Totally 6 partners
• Period 2012-2016
• Budget 4,9 M €
The objectives

1. Improve habitat quality for *Unio crassus*
2. Improve in-river water quality
3. Improve knowledge about *Unio crassus* ecology*
4. Improve public awareness

*Habitat requirements & host fish preferences*
12 project areas in 10 river-systems
How to achieve project goals?

- C.2 Restoration
- C.3 Re-introduction
- E.1 Op and Management
- C.1 Host fish mapping
- E.2 Monitoring
- A.3 Work plans
- A.1 Staff training
- D.2 Webb-site and blog
- D.7 Conferences (int)
- D.6 Layman’s report
- D.1 Notice boards
- A.2 Permits
- E.4 Financial audit
- E.3 Networking
- D.5 School project
- E.5 After LIFE
- D.4 Handbook
- D.3 Info and Dissemination
- E.2 Monitoring
- C.1 Host fish mapping
- E.1 Op and Management
- C.3 Re-introduction
- C.2 Restoration

Costs (€)

0 500 000 1 000 000 1 500 000 2 000 000 2 500 000
The objective with this action is to identify the functional hostfish for *Unio crassus* in seven rivers.

Check Lea’s poster!
Restoration at 12 project sites

The objective with this conservation action is to restore 267 km within the ten river systems, involving re-meandering work, removal of obstacles and building by-pass channels.

Follow up studies will be conducted ten years following the restoration work.
Re-introduction and allocation

The objective with this activity is to re-introduce *Unio crassus* at seven project sites.

Follow up studies will be conducted ten years following the re-introduction.
Information & dissemination

The objective is to organize almost 100 information events to reach 5000 people – and improving their knowledge about mussels and river management issues.
Follow our work at

www.ucforlife.se
Thanks!