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Secretariat**

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Conference Services

Please find attached the presentation by Dr. Stephan Gollasch, GoConsult Germany, delivered at the Plenary Session 4 – Protecting the environment and enhancing co-operation, First Preparatory Conference to the 16th OSCE Economic and Environmental Forum “Maritime and inland waterways co-operation in the OSCE area: Increasing Security and protecting the environment” held in Helsinki, 10 - 11 September 2007.

Bio-invasions Impact of Ballast Water on the Environment

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OSCE Preparatory Conference, Helsinki, Sept. 2007

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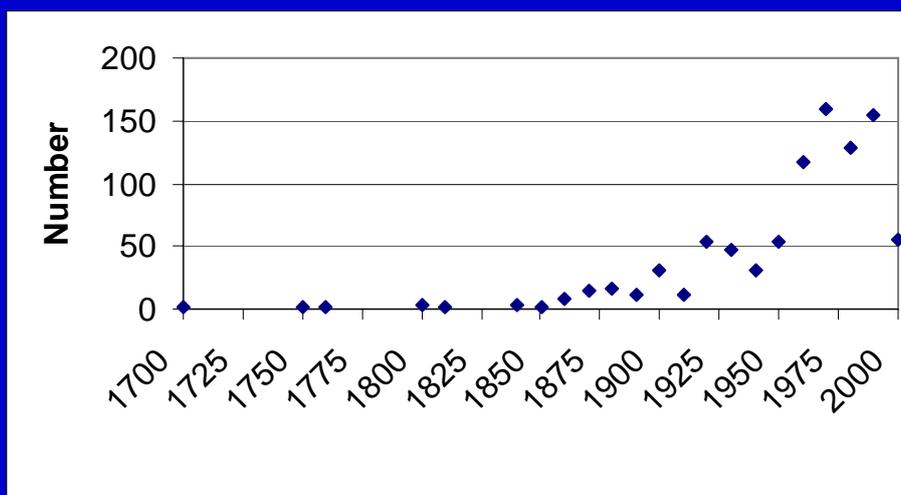
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Why bother?

- More than 1.000 introduced species in European coastal waters
- Once established, almost impossible to remove
- Each invader has an impact on ecology or economy (e.g. water intake clogging, aquaculture, tourism)
- Whole ecosystems are changing
- People are falling ill and even die from alien pathogens or harmful algal blooms
- The economic impact world-wide exceeds billions of Euro!!!

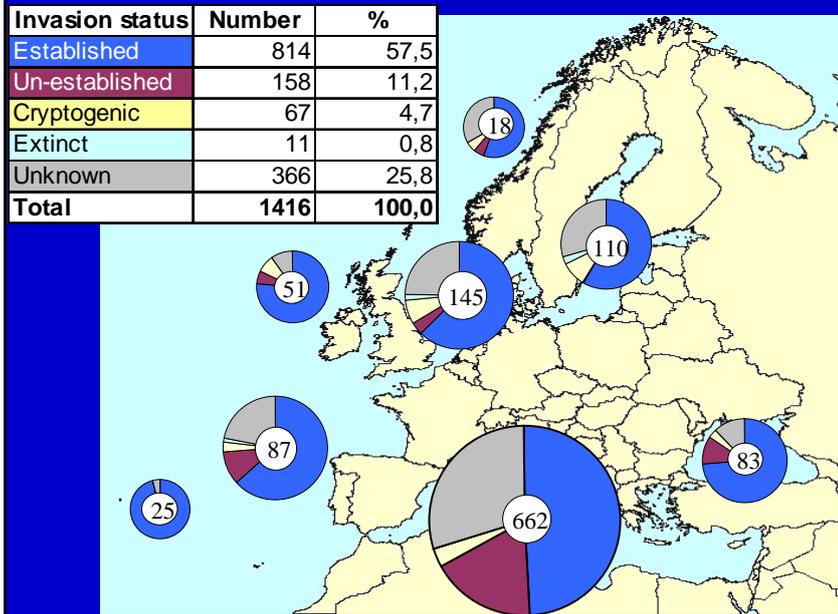
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Timeline of Invasions in Europe



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Invaders per Region



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Chinese Mitten Crab

- Occurs in all northern European Seas
- Spreads in the UK at a rate of up to 450 km annually in recent years - now on the UK west coast
- First mitten crab records from Ireland in 2006
- More than 500 individuals were caught the Guadalquivir estuary (Spain) in recent years
- *E. sinensis* was found in the St. Lawrence estuary, Canada and also in the Chesapeake Bay, USA. This species finding is of concern noting the negative impacts caused in Europe and along the west coast of the USA

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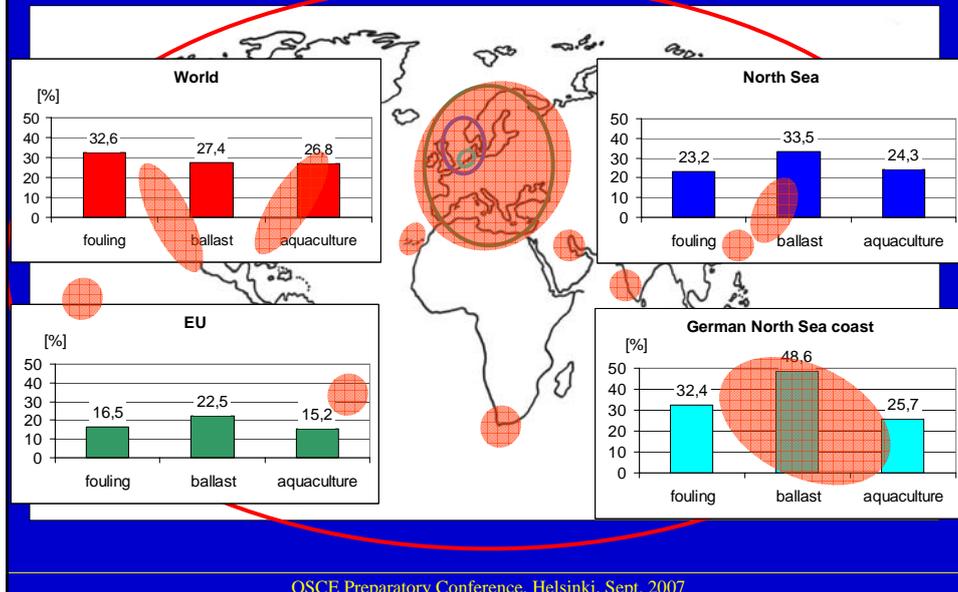


Chinese Mitten Crab



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Relative Vector Importance

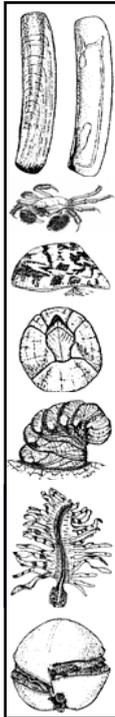


What can we do?

- Ballast water exchange at sea
- Ballast water treatment (during uptake)
- 15 to 20 ballast water treatment systems are currently tested
- great business opportunity
 - treatment systems cost approx. 0.5 to 1 million €
 - there are more than 40.000 commercial vessels in international trade; of which more than half need such systems



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Summary

- 1,032 aquatic invaders have been found in European Seas - predominantly zoobenthos species
- Region with the highest number of invaders is the Mediterranean Sea (662 species)
- The invasion rate is increasing towards the end of the last century
- Ballast water, hull fouling and aquaculture are the most important invasion vectors
- Ballast Water Treatment Systems are currently developing

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