







SOLUTIONS...

Presently little is done about marine invasive species due to a lack of awareness and financial resources. International regulations to reduce ballast water transfer are currently voluntary and only reduce, not eliminate, the risk. This is a global problem that needs regional and international cooperation.

-  Prevent the introduction of non-native marine species, in particular from ballast water and hull fouling.
-  Minimise the transport and exchange of introduced marine species and research possible treatment technologies.
-  Conduct surveys to detect introduced species early.
-  Monitor introduced species and determine their impact on local environments.
-  Increase knowledge and awareness about marine introduced and invasive species.
-  Manage and control existing invasions once detected using various mechanical and chemical methods. Although eradication of marine invasive species is very difficult and expensive it is possible if detected early. For example, the Black-striped mussel was detected early and eradicated in Australia, but at a cost of \$2.2 million.



What can You do?

- Raise awareness about the problem.
- Help maintain a healthy marine habitat to prevent the spread of invasive species.
- Encourage the monitoring of your local harbours and coral reefs to catch the problem before it is too late.
- Support measures to prevent the transport and exchange of ballast water between harbours.
- Support measures to reduce hull fouling on recreational and commercial vessels.
- Read the leaflets describing specific local and global marine introduced and invasive species to look out for.
- Call Greenline: 722111 if you think you see anything suspicious in local waters.

For more information visit:

www.iucn.org/themes/marine/invasives/coralreefs/seychelles



Photo Credits: Shao Twang-Tsao-The Fish Database of Taiwan, New Zealand Ministry of Fisheries, Gregory C. Jensen-Washington Dept. of Fish & Wildlife(WDFW), Amy Benson-USGS, Finnish Institute of Marine Research, CSIRO, Emmeke Vierhout, Samantha Birch, Ameer Abdulla, Hilda Kuipers, NIWA.
Information Sources: Globallast Water Management Program, IMO, GISP, Secord (2003), Abdulla (2005), Flagella & Abdulla (2005), Dukes & Mooney (1999), Design by Seasphere: www.seasphere.org

STOP! MARINE INVASIVE SPECIES



Marine invasive species are plants or animals that have been inserted by human activity to areas beyond their natural range and once established, they can cause ecological, economical, and social impacts.

Marine invasive species are one of the largest threats to global biodiversity. Up to 7,000 species are transferred around the world via commercial vessels every day.



HOW do they arrive?

Marine species are introduced to new environments mainly through ships' ballast water and hull fouling. Ballast water is essential on ships to maintain balance and stability. This water, containing unwanted marine organisms, is loaded and released at different ports, carrying thousands of species with it. Once released at a new location, some of these species will become invasive given the right conditions.

Shipping has increased due to its importance in the global economy. This has increased the number of species being transported. It is estimated that 10 billion tonnes of ballast water is transferred globally each year.



The zebra mussel was introduced repeatedly by ballast water into the Great Lakes of the U.S. in the late 1980's and now infests more than 40% of U.S. waterways.

Introduced (non-indigenous) species also arrive accidentally through aquaculture, the live seafood trade and the use of plants for fish and bait nets. They can also be introduced intentionally, for example to enhance fishing.



What are their IMPACTS?

Marine invasive species can cause serious ecological, economical, and social impacts!

They compete with native species, threatening their diversity and abundance and altering ecosystem processes. In some harbours they now make up 80% of marine life.

By reducing the commercial and aesthetic value of the marine environment, invasive species impact commercial enterprises such as fishing and tourist activities that rely on native marine resources.



This can cause significant economic impacts. The Comb Jelly was introduced to the Black Sea and caused the collapse of the Black Sea fisheries worth \$250 million/year.



The organism *Vibrio cholerae* caused a cholera outbreak in South America that affected more than 10,000 people. Marine invasive species can pose serious health risks to humans.



What about the SEYCHELLES?

A recent study identified three introduced species out of a total of 330 species in Port Victoria and Sainte Anne Island. The amphipods *Erichthonius braziliensis* and *Stenothoe valida* and the sponge *Mycale cf. cecilia* have never been recorded before in Seychelles waters and are likely to have been accidentally introduced by hull fouling and international shipping.

The fish species *Oreochromis mossambicus* has also been identified in freshwater as introduced from aquaculture in the Seychelles and is a potential marine invasive species.



These introduced species are not recognised as invasive but must be monitored to prevent future damage to the environment and economy of the Seychelles.

Climate change has been found to favour introduced species and they are more likely to become established in disturbed habitats. The Seychelles is vulnerable to invasions due to the effects of the 1998 bleaching event in which more than 80-90% of the Seychelles inner reef was killed.

Marine invasive species must be recognised as a problem now for the future protection of the Seychelles environment.

