

## final report



*A thorough survey of the port and surrounding areas could provide the best insurance against invasion by foreign marine pests.*



### Marine Invaders

Marine plants and animals can be translocated across thousands of kilometres of ocean on the hulls of recreational, fishing and commercial vessels, and in the ballast water of ships. Most of these organisms will not survive the journey. But, if conditions are right, those that do survive can thrive in their new environment and become pests.

### Marine Biosecurity in Australia

There are over 200 exotic marine species reported from Australian waters, most of which were probably introduced unintentionally with mariculture and shipping activities. Only a few of the marine species that have been introduced are considered pests. To control the spread of introduced marine pests, we need to know their distribution and abundance in Australian ports. A thorough survey can provide the best insurance against invasion by introduced marine pests.

In collaboration with James Cook University and the Cooperative Research Centre for the Great Barrier Reef World Heritage Area (CRC Reef), a survey of the Port of Townsville and adjacent marine areas was carried out in November 2000.

The aim of the survey was to describe the marine communities in the Port of Townsville and adjacent marine areas. It was also to determine whether any non-indigenous marine species, either those that were likely to become pests or not, were present. Therefore, the Port Baseline Survey was an inventory of native marine biodiversity as well as a health check for the Port of Townsville.



### Port of Townsville •••

The Port of Townsville is within the Great Barrier Reef World Heritage Area and adjacent to many pristine coastal habitats. It is the main multi-commodity bulk shipping facility servicing northern Australia and provides an international and domestic shipping gateway to many industries in north Queensland.

The international and domestic shipping trade through the Port of Townsville brings with it the risk of introducing non-indigenous species. If these species establish communities, they could become pests and affect the high recreational, commercial and natural value of the port and surrounding coast. Therefore, it was crucial to determine the location and numbers of any marine pests in the port.



Sorting a grab sample (Photo by JCU)

## The Survey

In November 2000, eight people were involved in the 10-day survey in the Port of Townsville. Fifteen sampling techniques were used during the survey. These techniques were designed to collect a sample of organisms that represented the communities on the natural and constructed habitats in the port and marina. The sampling program was labour intensive and was concentrated near the berths in the mouth of Ross Creek. Samples were also taken near the main port area so that all marine habitats were checked.

The sampling program was based on a set of sampling protocols developed by the Centre for Research on Introduced Marine Pests (CRIMP) in association with the Australian Association of Port and Marine Authorities (AAPMA). The protocols ensure that agencies and research organisations across Australia use standard survey methods during port surveys.

## The Results

**No introduced marine pests were found during the survey of the Port of Townsville.** Pest species are designated by the Australian Ballast Water Management Advisory Committee (ABWMAC) and in Hewitt & Martin (1996). Three crustaceans were found which are known to be introduced to the Townsville region. Few of these isopods were found and they are not considered a threat to the biodiversity of native communities.

The algae *Caulerpa taxifolia* was also found. This algae is invasive in temperate waters (e.g. around Sydney), but it is found naturally in tropical regions of Australia and is not considered a threat in Townsville.

During the survey in and around the Port of Townsville, more than 1037 different marine plants and animals were collected. **Some animals were found that are new to science.** These included several crustaceans - a pycnogonid from the Family Austrodecidae (*Austrodecus* sp.1) and three new species of isopods from the Families Paranthuridae (*Paranthura* sp.1) and Anthuridae (*Mesanthura* sp.1 and *Apanthura* sp.1). A polychaete worm (Family Eunicidae, *Eunice* sp.1) was collected that may also be a new species, although more animals are needed to be certain of this.

**Therefore, the Port of Townsville supports a rich and diverse community of marine organisms, including many corals, zooanthids, seastars, brittle stars, crustaceans and fish.** These communities appear to be more diverse than in similar habitats in some other Queensland ports.

## The Future

During the survey, introduced plants or animals that would detrimentally affect native communities were not found in the Port of Townsville. However, there is a high volume of recreational and commercial shipping traffic that passes through the Townsville region and the risk of introducing a marine pest remains high.

Therefore, the Port of Townsville will be monitored periodically using settlement-monitoring devices. Information gathered from these devices, and from any ongoing surveys will provide the best chance of detecting invasive species early, so that appropriate action could be taken to make sure that there is minimal impact on native biodiversity.

## How you can help

Many community groups have extensive knowledge about marine communities and so are often the first to detect changes in natural populations, such as the invasion of a marine pest. They can, therefore, provide valuable feedback to researchers about any potentially exotic species that may be moving into local habitats. If you notice any changes in your local marine environment, contact your local authorities.

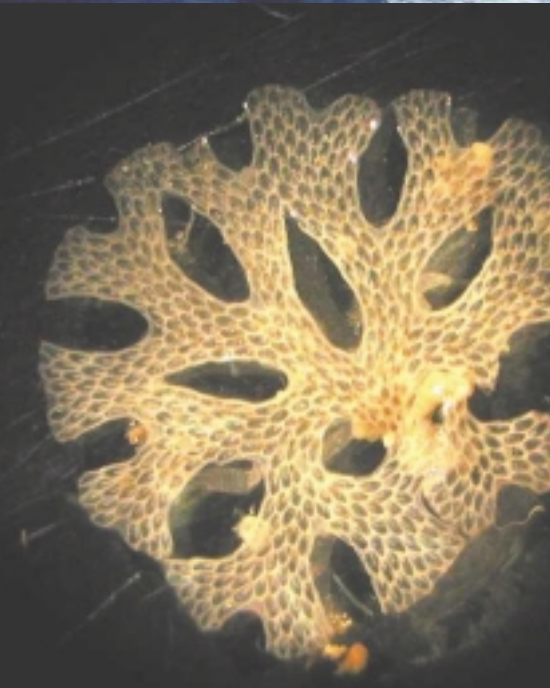
### References

Hewitt CL, Martin RB. 1996. *Port Surveys for Introduced Marine Species: Background Considerations and Sampling Protocols*. Centre for Research on Introduced Marine Pests Technical Report No. 4. CSIRO Marine Research. Hobart, Tasmania.

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A bryozoan (Photo by Kerry Neil)