Uses
Overwhelmingly the main use of undaria is as human food. It is essentially a staple of the Japanese and Korean diets and is also widely consumed in Japan.

Habitat Description
Undaria pinnatifida is described as an opportunistic seaweed able to rapidly colonise new or disturbed substrata and artificial floating structures. It occurs in dense, vigorous stands on benthic shores, forming thick canopy over the biota in a wide range of shores varying in exposure, from low tide level down to 15m in clear waters. Sporophytes are reported to degrade at temperatures above 20° C and die at temperatures greater than 23° C. Undaria pinnatifida grows in a wide range of wave exposures from sheltered marinas to the open coast, and extends vertically from the low intertidal to 18m depth (although it is most common between 1 and 3m depth). It tolerates a wide range of irradiance from full sunlight to very low light levels, but is unlikely to invade areas with a high fresh water input.

Undaria can grow on any hard surface including artificial substrates such as rope, pylons, buoys, the hulls of vessels, bottles, floating pontoons and plastic. On natural substrates, undaria inhabits stable rocky reefs, mobile cobbles habitats, mudstone, and in primarily soft sediment habitats attaches to hard surfaces such as shell. It can also grow on seagrass (while a small sporophyte), the shells of abalone and bivalves, invertebrates and epiphytically on other seaweeds (MFish, 2001).

Reproduction
Asexual/sexual. Annual heteromorphic life cycle alternative between the diploid macroscopic sporophyte and the haploid microscopic gametophyte (NIMPIS, 2002).

General Impacts
The impacts of Undaria pinnatifida are not well understood and are likely to vary considerably depending on the location. Undaria can change the structure of ecosystems, especially in areas where native seaweeds are absent (MFish, 2001). NIMPIS, 2002 states that U. pinnatifida has the potential to become a problem for marine farms by increasing labour and harvesting costs due to fouling problems on fin fish cages, oyster racks, scallop bags and mussel ropes. Heavy fouling may also restrict water flow through cages. The Department of Conservation in its brochure “Gorse of the Sea” state that undaria could foul mussel farms, salmon farms and boats. Heavy infestations of undaria may also clog marine farming machinery, slow growth of mussels and restrict water circulation. Heavy fouling of boats seriously decreases their efficiency.
Management Info
Preventative measures: Undaria has a microscopic phase in its life cycle, and it is thought that eradication of this species is unlikely to succeed. The approach to undaria management would thus be to slow its spread and reduce the chances of it reaching new locations. In addition to natural dispersal the role of human mediated vectors; ballast water, attachment to hulls, marine equipment etc plays a major role in the spread of undaria. Vector management and awareness would go a long way in slowing its spread. In the long-term, it is hoped that eventually there could be systems to treat vessel hulls with UV light or high-pressure, heated water to kill harmful spores and bacteria quickly and efficiently (MPA NEWS, December 2004/ January 2005).
A two year study was undertaken for the Department of Environment and Heritage (Australia) by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) to identify and rank introduced marine species found within Australian waters and those not found within Australian waters.
All of the non-native potential target species identified in this report are ranked as high, medium and low priority, based on their invasion potential and impact potential. A hazard ranking of potential domestic target species based on invasion potential from infected to uninfected bioregions identifies Undaria pinnatifida as a 'medium priority species' - these species have a reasonably high impact/or invasion potential.
For more details, please see Hayes et al. 2005.
The rankings determined in Hayes et al. 2005 will be used by the National Introduced Marine Pest Coordinating Group in Australia to assist in the development of national control plans which could include options for control, eradication and/or long term management.

Pathway
The accidental translocation of undaria through aquaculture and fisheries activities. The release of the species in ballast water discharged from vessels. Various types and life stages of species can be transported in ballast water. This vector can introduce species through a variety of means. Three examples are: (1) The spawning of a fouling species on a vessel in port (2) The dislodgement of fouling species from a vessel in port and (3) The sinking of fouled vessels either deliberately. The accidental release of undaria, imported for human consumption, it is a staple in the Japanese and Korean diets.

Principal source:

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ALIEN RANGE
[1] ATLANTIC - NORTHEAST
[1] AUSTRALIA
[1] ITALY
[1] ATLANTIC - NORTHWEST
[1] FRANCE
[1] JERSEY
FULL ACCOUNT FOR: Undaria pinnatifida

BIBLIOGRAPHY
39 references found for Undaria pinnatifida

Management information


Summary: Study on undaria invasion in Venice, Italy.


Summary: Study of dispersal of Undaria pinnatifida.


Summary: This publication aims to first provide decision makers and managers with information on the existing international and regional regulations that address the use of alien species in aquaculture, either directly or indirectly; and three examples of national responses to this issue (New Zealand, Australia and Chile). Available from: http://data.iucn.org/dbtw-wpd/edocs/2006-036.pdf [Accessed 22 September 2008]


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Summary: Distribution of undaria in the Pacific.

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General information


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JNCC Adviser To Government

Summary: Available from: http://www.jncc.gov.uk/marine/non_native/dns/d2_1_3_2.htm [Accessed 24 September 2004]


Sea Fishing and Aquaculture, Dept. of Primary Industries, Water and Environment