

The Netherlands & the World Ecology Tropical Shrimps

This map tries to assess and visualise the impacts of the Dutch import of fished and farmed (aquaculturally produced) shrimp on global biodiversity and local communities. The last few decades have shown a strong worldwide increase in the demand for tropical shrimps¹. In response to this, many countries around the globe have turned to shrimp production for export to western countries.

The Netherlands is currently a major importer and trader of tropical shrimps. Shrimp fishing and shrimp aquaculture production have considerable impacts on the environment, in many cases leading to severe degradation of marine and terrestrial ecosystems and great loss of biodiversity. Shrimp production also has substantial social implications; habitat degradation has resulted in many countries in the loss of the livelihoods of coastal communities.

This map aims to raise the awareness of the different actors in the supply/production chain that play a role in these current unsustainable practices. It calls upon those actors to acknowledge their responsibility and hopes to play a constructive role in reversing the current situation.

¹ In the texts 'shrimp' is also used for 'prawn', as these terms are often used interchangeably

This map is part of the programme "The Netherlands and the World Ecology" of the Netherlands Committee for IUCN, and attempts to analyse the impact of Dutch imports on nature and biodiversity in the countries of origin. Over the years the Netherlands Committee for IUCN has produced several publications concerning the global ecological effects of the Dutch economy:

- The Netherlands and the World Ecology (1988, 1996, 2002 substantially revised); The map assessed the amount of land used internationally in connection with the needs of the Dutch economy, with a focus on the impacts on ecosystems (also available at www.nclucn.nl).
- Mining and the Mineral Industry in Tropical Regions (1995). The map showed the impact on rain-forest and mangrove areas;
- Mining in Tropical Regions (1996), booklet on Dutch involvement in the mining sector and its environmental effects;
- The Netherlands, Nature & Tourism Map (Nederlanders, Natuur en toerisme), (2003, in English and Dutch);
- The Netherlands and the World Ecology Map: Soy and Oil palm (2004)
- The European Union and the World Ecology Map (2004)

The maps and website are periodically revised and can be ordered at: The Netherlands Committee for IUCN, Plantage Middenlaan 2K, 1018 DD Amsterdam, The Netherlands, tel. +31.20.6261732, www.nclucn.nl



The Netherlands in Key Figures

The Netherlands is a highly industrialised, high-income country:

- 17th worldwide in income
- 8th worldwide in the Human Development Index

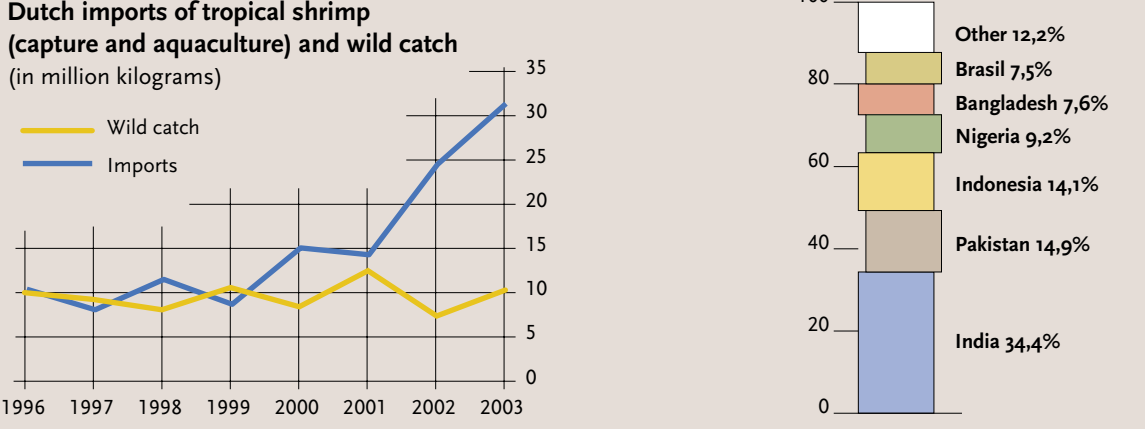
Core statistics (2003)

GDP	€ 454 billion (€ 28.04/capita)
Imports	€ 205 billion
Exports	€ 232 billion
Economic growth	0.3%
Population	16.2 million
Surface area	41.000 km ² (475 people/km ²)



The Netherlands and fisheries

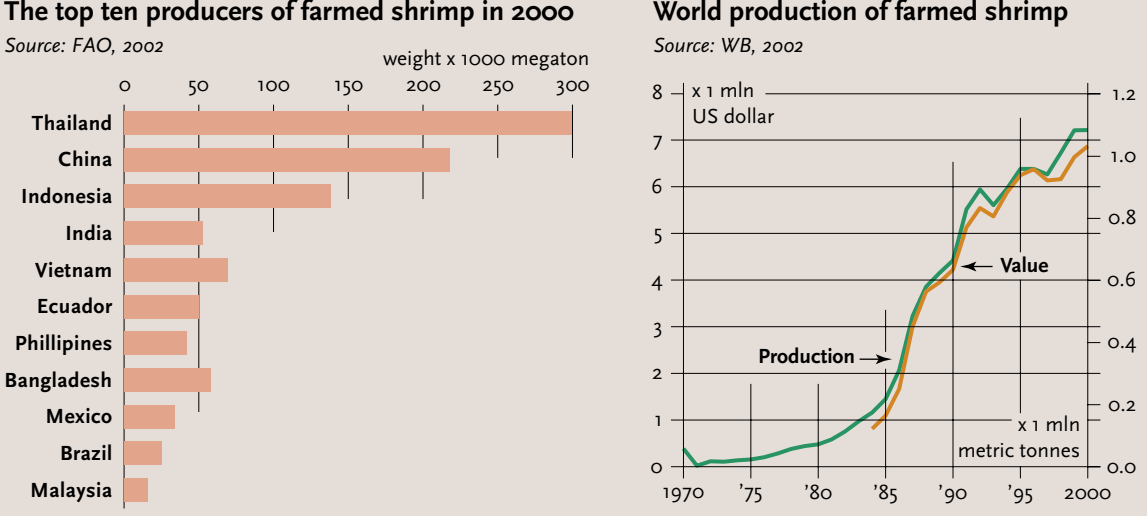
As a result of increasing demand for tropical shrimp over the last few decades, the Netherlands has become a major importer and trader of shrimp. Dutch imports have soared to over 30.000 tonnes annually, worth more than 80 million Euros. During the last decade, imports more than doubled. In the Netherlands the shrimps are defrosted and cooked, refrozen and packed. Consumption in the Netherlands is relatively small; about 80% of the imported shrimps are exported to other countries, mainly to other countries in Europe. Imports per country fluctuate considerably from year to year, due to price changes, health requirements, diseases etc. The majority of the shrimp are bought from local traders or producers in the countries of origin, although Dutch companies are also involved in shrimp fishing operations along the West African coast.



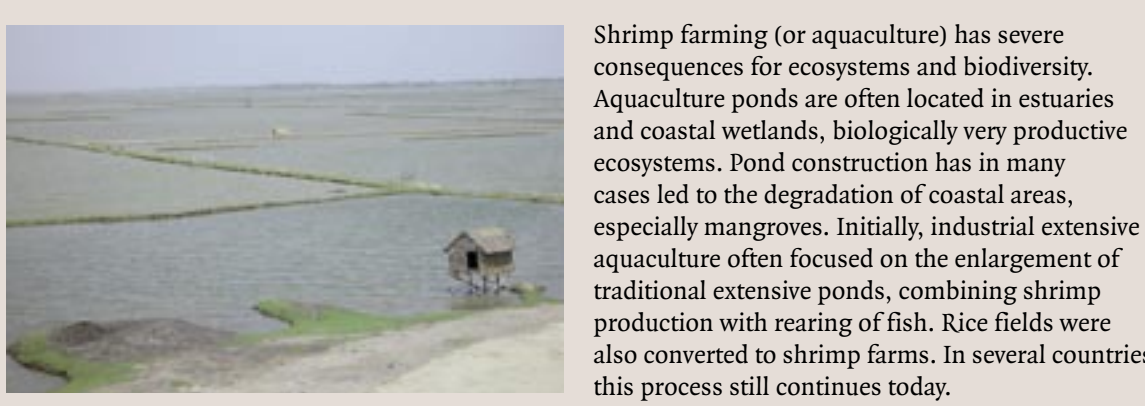
The Netherlands and Global Tropical Shrimp Production



During the last decade, shrimp production has become one of the fastest growing global food producing sectors. Internationally, shrimps are the most traded seafood, accounting for 22% of internationally traded fishery products. Global shrimp production reached 1.2 million MT, valued at US\$ 7 billion in 2000, imported mainly by Japan, the US, and the EU. The EU imported € 3.8 billion of shrimp in 2000, 28% of the world total. Although most shrimp are caught at sea, during the last decade shrimp aquaculture has become a rapidly growing industry and an important economic activity in the coastal areas of many countries. Shrimp aquaculture production currently yields roughly 30% of total shrimp production. Large-scale industrial shrimp farming mainly takes place in South East Asia (80% of production) and South America (20%). The shrimp sector has attracted large public and private sector investments.



The Netherlands and the Environmental Impact of Shrimp Aquaculture



Shrimp farming (or aquaculture) has severe consequences for ecosystems and biodiversity. Aquaculture ponds are often located in estuaries and coastal wetlands, biologically very productive ecosystems. Pond construction has in many cases led to the degradation of coastal areas, especially mangroves. Initially, industrial extensive aquaculture often focused on the enlargement of traditional extensive ponds, combining shrimp production with rearing of fish. Rice fields were also converted to shrimp farms. In several countries this process still continues today.

These ponds need large quantities of fresh water, which has led in several instances to shortages of fresh water supply for local communities and agriculture. Shrimp aquaculture has also caused severe salinisation of groundwater.

Pollution

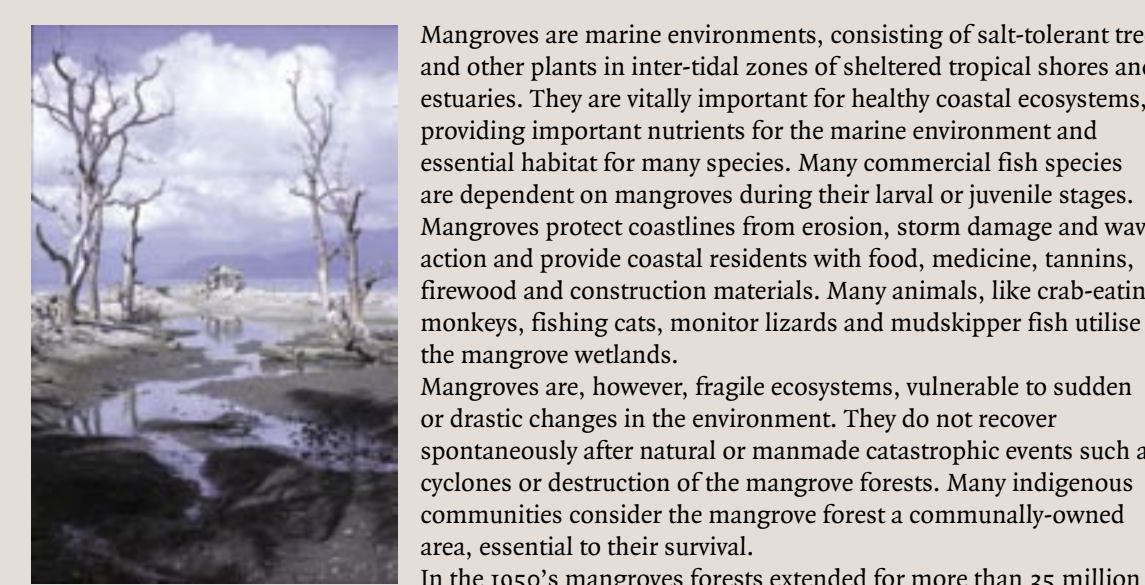
The (semi) intensive production methods require large quantities of antibiotics, fungicides, parasiticides, algicides and pesticides. It also necessitates heavy feeding and the removal of considerable quantities of waste. In Thailand, for example, over 1 billion m3 of effluent is discharged each year from intensive shrimp farms. In (semi-) intensive shrimp farming systems special shrimp feed is provided. This contains, among other ingredients, fishmeal and soy bean oil. A large amount of the shrimp feed is wasted, as that part of the feed which is not consumed is discharged to the surrounding environment. Due to the use of chemicals many ponds are only productive for a limited period. The toxic sludge at the bottom of the ponds renders them no longer useful for shrimp production. In Asia, the average intensive farm has a productive life of around five years. The ponds are then abandoned. They cannot be used for other purposes such as agriculture as a result of salinisation. Initiatives for restoring abandoned land are still limited.

Loss of biodiversity

The main impact on global terrestrial biodiversity from shrimp aquaculture is due to the conversion of productive natural ecosystems, such as mangrove and other wetland areas, into monocultures consisting of shrimp farms and their related infrastructure.



The Netherlands and Mangrove Destruction



Mangroves are marine environments, consisting of salt-tolerant trees and other plants in inter-tidal zones of sheltered tropical shores and estuaries. They are vitally important for healthy coastal ecosystems, providing important nutrients for the marine environment and essential habitat for many species. Many commercial fish species are dependent on mangroves during their larval or juvenile stages. Mangroves protect coastlines from erosion, storm damage and wave action and provide coastal residents with food, medicine, tannins, firewood and construction materials. Many animals, like crab-eating monkeys, fishing cats, monitor lizards and mudkipper fish utilise the mangrove wetlands.

Mangroves are, however, fragile ecosystems, vulnerable to sudden or drastic changes in the environment. They do not recover spontaneously after natural or manmade catastrophic events such as cyclones or destruction of the mangrove forests. Many indigenous communities consider the mangrove forest a communally-owned area, essential to their survival.

In the 1950's mangrove forests extended for more than 35 million hectares. Estimates indicate that they currently comprise 15.8 million hectares (0.6% of all inland forests in the world), less than half of the original mangrove forest cover. Moreover, the rate of decline is still high (up to 4% per year). All over the world thousands of hectares of mangroves have been cleared for industrial-scale intensive shrimp farms. During the last 20 years, roughly one quarter of the world's mangroves have been destroyed by shrimp aquaculture.

Mangrove losses have occurred in several countries:

- In Thailand, one of the world's largest shrimp exporters, research indicates that around 65,000 ha of mangroves were lost due to shrimp farming.
- In 1991 in Indonesia, estimates indicated that in Java, Sulawesi and Sumatra between 40 and 70% had been lost already (see the part on Indonesia).
- In the Philippines, mangroves have declined from an estimated 448,000 ha to only 100,000 ha in the mid nineties.
- In Ecuador estimates of mangrove losses range from 20% to 50% of Ecuador's once 362,000 ha of mangrove forested coastline.
- Substantial losses also occur in countries such as Vietnam, India and Bangladesh.

The Netherlands and its Role towards a more Sustainable Future

Ecosystems

- Production activities causing damage to highly productive and diverse natural ecosystems, such as mangrove forests, river deltas, coral reefs and seagrasses (...) must be halted until sustainable methods are found.
- 'Precautionary approaches' should be adopted in all productive areas until Ecosystem-Based Management (EBM) approaches are possible.
- Minimum standards and sustainable methods of shrimp aquaculture must be put in place, and the true environmental cost of production reflected in the market price.
- Research and attempts to restore areas of abandoned shrimp farms should be made over converting other existing productive areas of land.



Species

- Threats caused by the shrimp industry to 'non-target' species must be acknowledged, and ways found and consistently adopted to ensure these 'non-target' species impacts are reduced, and this included in marine management processes.
- Several species included in the IUCN Redlist of Threatened Species are threatened directly and indirectly due to the activities of the shrimp industry. These threats should be addressed and reduced by the industry itself.
- Extreme care should be taken with the introduction of 'non-native' shrimp species and their related pathogens as this can cause irreversible consequences for local ecosystems and species.

Livelihoods

- Local, often impoverished, communities are those who most feel the cost of the shrimp industry. Their views need to be actively acknowledged and formally included in all decision making processes related to shrimp production, in particular to:
 - The areas accessed and trawled by large shrimp vessels and their impacts on local fisheries
 - The areas of land converted for large-scale shrimp aquaculture and it's impacts on local land tenure systems and local agriculture

The Netherlands:

- Responsibility for Sustainable Shrimp Production lies with a multitude of actors: many residing in Dutch society, including large traders and retailers, government departments, NGOs and consumers can contribute to improve the sustainability of shrimp production.



- TRADERS/RETAILERS**
- Purchase only from known sustainable production sources and strive for this as an international standard
 - Purchase from sources who have adopted a precautionary or Ecosystem Based Management approach
 - Establish more transparency in chain of production
- GOVERNMENT**
- Enforce Codes of Conduct, including UN Convention on the Law of the Sea (UNCLOS) and the FAO Codes for Responsible Fisheries and Aquaculture
 - Support transition to EBM approaches, with e.g. targeted training
 - Support establishment of more Marine Protected Areas
- NGOs**
- Provide specific scientific information in constructive dialogue on important ecosystems and habitats impacted by shrimp industry
 - Raise public awareness of shrimp industry impacts
 - Support local NGOs to voice their concerns
- CONSUMERS**
- Be aware that your purchasing decisions not only effect your immediate surroundings, but also the environments of poorer communities thousands of miles away
 - Ask more questions about the production methods of products you buy, and purchase more products that you know are produced sustainably

The Netherlands Committee for IUCN is currently in a dialogue with the Dutch shrimp importers on establishing Minimum Environmental and Social Criteria to be met by shrimp producers. It is hoped this will be a first step in eradicating unsustainable practices in shrimp production

Production: Henk Hartog, Mathew Parr and Cas Besselink, 2005
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Sources: World Bank, NACA, FAO, IUCN, UNEP-WCMC, WWF, IAL, EJJ, USA, NOAA, CREM, Statistics Netherlands/CBS and others

The Netherlands and the Environmental Impact of Shrimp Fisheries

At present wild shrimp fishing is the main source of global shrimp production, with roughly 60% of total production. The most common method is trawling, whereby beams connected to large, fine mesh nets are dragged along the seabed. Most of the commercial shrimp trawlers exploit the shallow coastal waters, but shrimp trawlers increasingly operate in deeper waters.

The Impact of Trawling

Trawling has been compared to bulldozing a forest to catch songbirds. Shrimp trawling is generally considered to have some of the highest ecological impacts amongst fishing techniques. Trawling often causes considerable damage to the seabed, crushing animals and destroying habitats. Seabed ecosystems comprise varied habitats with a wide range of marine species, and trawling in particular diminishes the structural diversity of the seabed. It also endangers the survival of juveniles, as the tropical shallow grounds act as a nursery for many fish species. These young fish are essential to maintain adult populations.

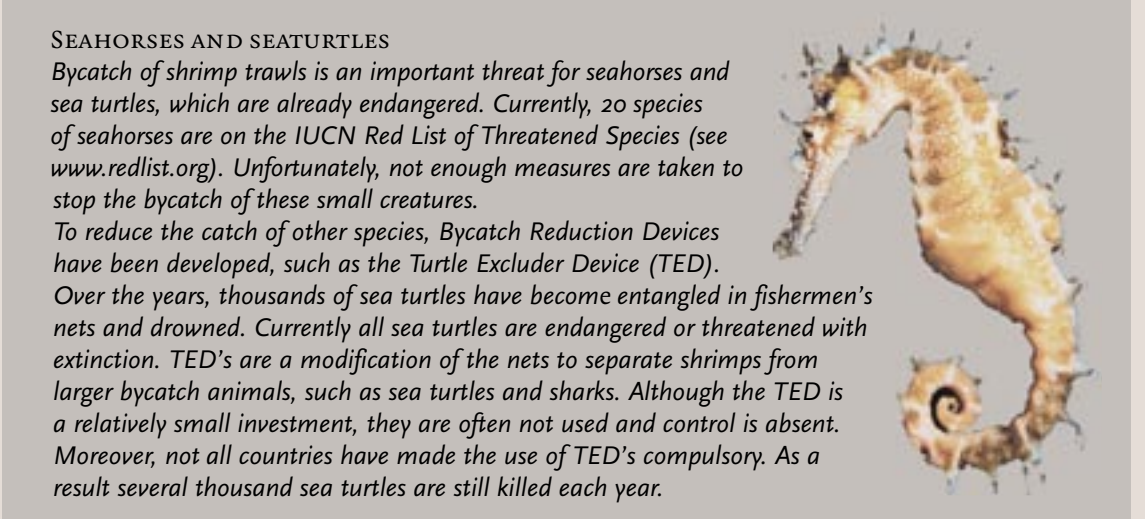
Local fish populations suffer through the practice of catching post-larva shrimp, which has a detrimental impact on other species. It is estimated that over a hundred small larval fish are destroyed to catch one larval shrimp. This practice rapidly diminishes wild fish populations. Local fishing communities have experienced a decrease of fish catches and attribute this to the industry's practice of catching larvae and destroying the accompanying habitat. The use of imported post-larvae shrimps from other countries to boost production has led to invasions of alien species, and the introduction of viruses, parasites and diseases to wild shrimp populations.

Bycatch

Due to non-selective gear, shrimp trawling is known to have large discard levels. Many non marketable shrimp and other marine species are caught in the nets. Even when returned to the sea, most fish are dead or dying, damaged by the nets. Estimates indicate that shrimp trawling in tropical waters can produce bycatch to shrimp ratios of 10:1, although other figures show higher ratios. The bycatch can consist of hundreds of species, including big animals like sea turtles, sharks and rays, but also a wide variety of small fish.

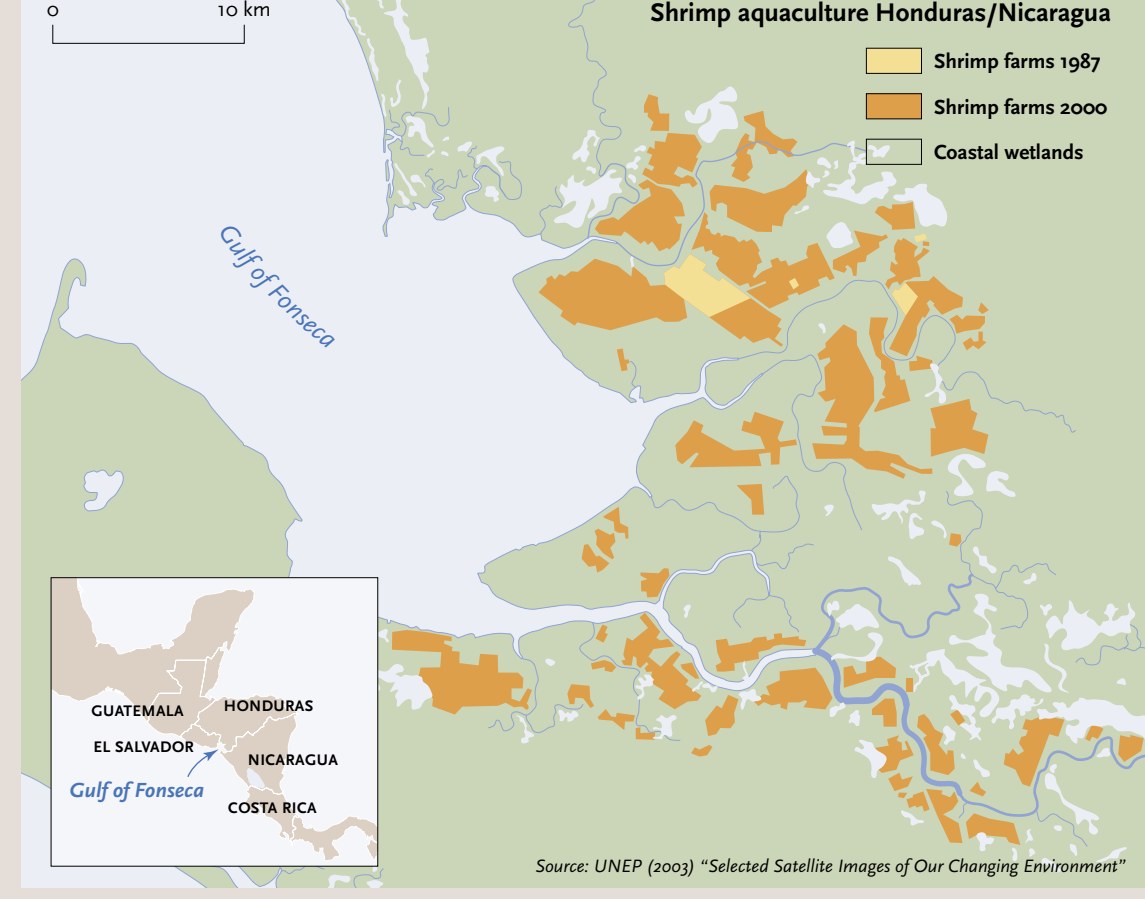
Loss of Biodiversity and Livelihoods

The more 'unseen' impacts on marine biodiversity of shrimp trawling is that particular vital ecosystems, such as sea grasses and coral reefs, are increasingly being degraded and loosing their productive status, and many species, including turtles and seahorses, are suffering to the point of extinction due to the effects of shrimp trawling. Recent studies have painted stark warnings of the effects on marine ecosystems of unchecked trawling.



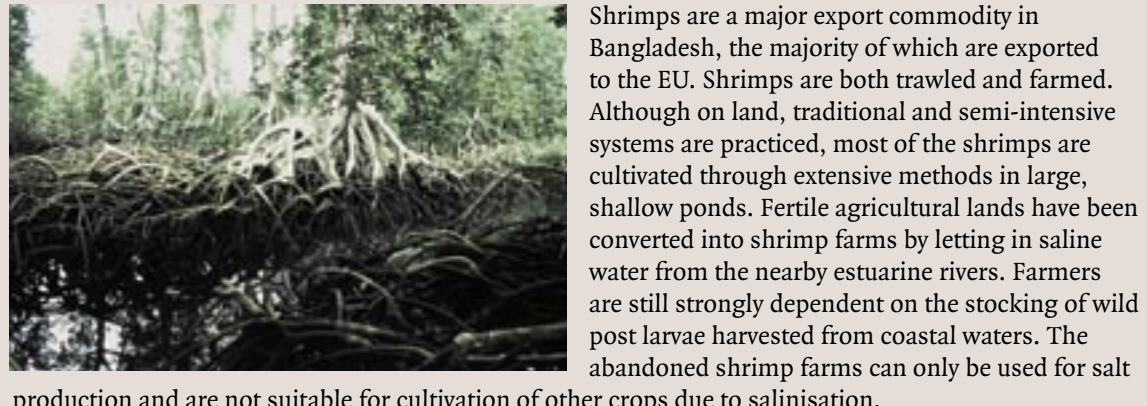
Hondurian Shrimp Farming

Below is a map of expanding shrimp aquaculture in the Gulf of Fonseca on the West Coast of Honduras, adapted from two satellite images taken in 1987 en 2000.



Estimates of mangrove loss in the Gulf of Fonseca due directly to the construction of shrimp farms range from 20 to 40 sq. km. If conservation policies are not put in place, estimates suggest that all the mangroves will disappear within 20 years.

The Netherlands and the Environmental Impact in Bangladesh



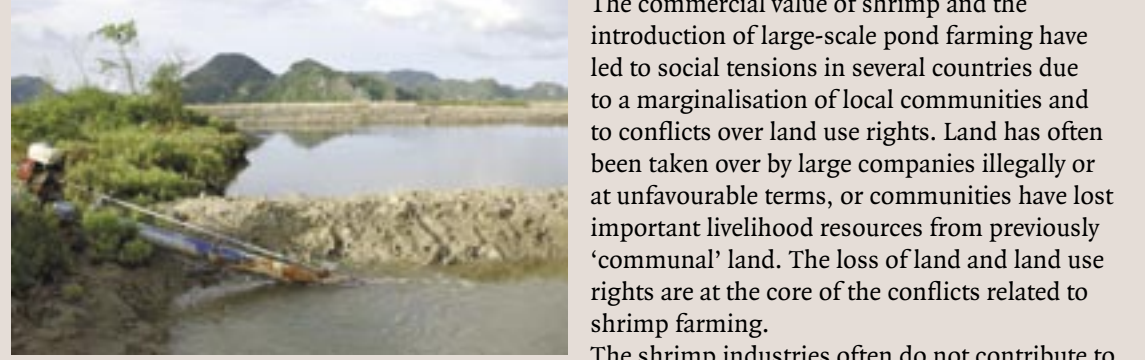
Shrimps are a major export commodity in Bangladesh, the majority of which are exported to the EU. Shrimps are both trawled and farmed. Although on land, traditional and semi-intensive systems are practiced, most of the shrimps are cultivated through extensive methods in large, shallow ponds. Fertile agricultural lands have been converted into shrimp farms by letting in saline water from the nearby estuarine rivers. Farmers are still strongly dependent on the stocking of wild post larvae harvested from coastal waters. The abandoned shrimp farms can only be used for salt production and are not suitable for cultivation of other crops due to salinisation.

The Netherlands and the Environmental Impact in Indonesia

In Indonesia shrimps have been cultivated for centuries using traditional methods without leading to the destruction of mangrove forests. During the 1980's, Indonesian economic policies strongly supported the intensification in shrimp cultivation. As a result, Indonesia has the largest area of shrimp ponds in the world. Originally, most shrimp ponds were found on Java, but due to environmental degradation, many of these ponds have been abandoned. This has also been the case in South Sulawesi, Aceh, and East Sumatra. New areas have been opened in Kalimantan and Irian Jaya (West Papua). Already by 1994, more than 16% of Indonesia's mangrove forests, not counting Irian Jaya, were converted to shrimp ponds (an increase of shrimp ponds of 47% in 16 years) and the widespread conversion of mangrove forests has continued since then.

The impact of wild-caught shrimp is also substantial. The large scale trawling of shrimps, characterised by high discard levels, has a considerable impact on marine ecosystems and habitats in Indonesian seas. Although the Indonesian Government has banned shrimp trawling since 1980 from nearly all Indonesian waters, it has continued in most waters due to lack of enforcement.

The Netherlands and Social Consequences



The commercial value of shrimp and the introduction of large-scale pond farming have led to social tensions in several countries due to a marginalisation of local communities and to conflicts over land use rights. Land has often been taken over by large companies illegally or at unfavourable terms, or communities have lost important livelihood resources from previously 'communal' land. The loss of land and land use rights are at the core of the conflicts related to shrimp farming.

The shrimp industries often do not contribute to the welfare of the local community or to the environment's rehabilitation. Industrial shrimp aquaculture by its nature employs fewer people than other agriculture or fishing activities. Shrimp pond water needs regularly replacing due to the build up of waste. This is then discharged to the surrounding waterways, resulting in salinisation and pollution of other agricultural land. The abandonment of shrimp farms after a number of years has had major social and economic implications in several countries. This has for example been the case in north Java and Sulawesi where much of the industry has been abandoned, leaving an unproductive wasteland in its wake. Livelihood resources for local communities long dependent on the productive capacity of the land have been lost. Nutrition sources such as fishes, rice, and various fruits and vegetables have been further endangered since the land was converted for shrimp farming.

