Marine Trophic Index

Focal Areas
Headline Indicators & Indicators

Components of biodiversity

Trends in the extent of selected biomes, ecosystems and habitats
- Extent of forests and forest types
- Extent of assorted habitats

Trends in abundance and distribution of selected species
- Living Planet Index
- Global Wild Bird Indicator

Coverage of protected areas
- Coverage of protected areas
- Overlays with biodiversity
- Management effectiveness

Change in the status of threatened species
- Red List Index

Trends in genetic diversity
- *Ex situ* crop collections
- Genetic diversity of terrestrial domesticated species

Sustainable Use

Areas under sustainable management
- Area of forest under sustainable management: certification
- Area of forest under sustainable management: degradation & deforestation
- Area of agricultural ecosystems under sustainable managment

Proportion of products derived from sustainable sources
- Status of species in trade
- Wild Commodities Index

Ecological footprint & related concepts
- Ecological footprint

Reason for indicator

Fish currently supply the greatest percentage of the world's protein consumed by humans. However, most of the world's fisheries are being fished at levels above their maximum sustainable yield and many regions are severely overfished. In the late 1990s it was demonstrated that the mean trophic level of fisheries is declining, i.e. that global fisheries catches increasing consist of smaller fish and invertebrates low in the food web. This process, now known as "fishing down marine food webs" has become a major concern as it means that fish stocks are being overexploited and fisheries are not being sustainably managed. This overfishing acts to severely threaten marine biodiversity.

Current status

The Marine Trophic Index (MTI) has been developed by the UBC fisheries centre and forms part of the ***Sea Around Us* project**, which was established to investigate the impact of fisheries on the world's marine ecosystems. The MTI can be used to describe the complex interactions between fisheries and marine ecosystems and communicate a measure of species replacement indices by fisheries. The concept and underlying methods to estimate the MTI have been well –tested and have undergone substantial peer-review using existing information. The MTI is calculated from catch composition data collected by the **Food and Agricultural Organization of the United Nations (FAO)**. The concept and approach is now widely accepted. For information on how the MTI is calculated **click here**.

The MTI has been calculated for the Exclusive Economic Zone (EEZ) of each country and for all Large Marine Ecosystems (LME), from 1950 to present. The data for all EEZs and LMEs can be viewed via the ***Sea Around Us* website**.

Indicator scale

The indicator can be applied at different scales from global to subnational (e.g. portion of the EEZ of a country). For countries such as Malaysia and Indonesia with EEZs in different basins, the MTI can be calculated for those sub-national areas. The data is readily available at these different scales via the Sea Around Us website.

The data, although catch based, can be disaggregated into different taxonomic classifications from very broad groupings (e.g. Fish, crustaceans and molluscs) to habitat based fish (demersal, bathydemersal, etc.) to species and genus. It is possible to report on a combination of thematic and spatial themes.

Indicator presentation

Indicator Facts

Focal Area: Ecosystem integrity and ecosystem goods and services

Headline Indictor: Marine Trophic Index

Development Status: Developed

Key Indicator Partner:

Indicator Links

Marine Trophic Index – Calculate the MTI for EEZs and LMEs

The Marine Trophic Index: A new output of the Sea Around Us website - Contains section detailing how to calculate the MTI

Other Useful Links

Sea Around Us

UBC Fisheries Centre

FAO – Fisheries and Aquaculture Department

Threats to biodiversity

Nitrogen deposition
•Nitrogen deposition

Invasive alien species
•Trends in invasive alien species

Ecosystem integrity & services

Marine trophic index
• Marine Trophic Index

Water quality of freshwater ecosystems
• Water quality indicator

Connectivity/fragmentation of ecosystems
• Forest fragmentation
• River fragmentation & flow regulation

Health & well being of communities
• Health & well being of communities directly dependant on ecosystem goods & services

Biodiversity for food & medicine
• Nutritional status of biodiversity
• Biodiversity for food & medicine

Traditional knowledge & practices

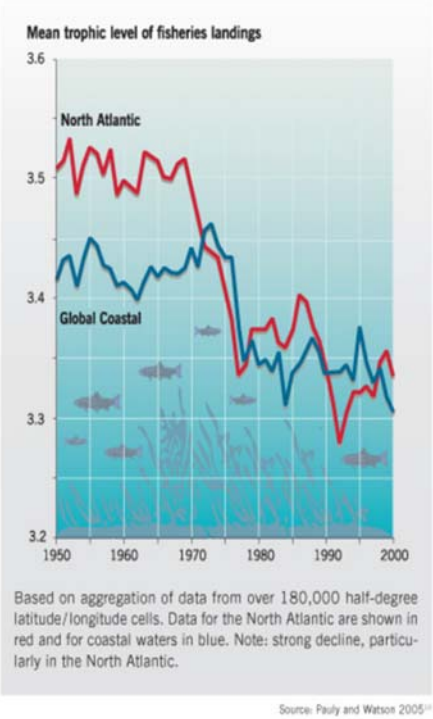
Status & trends of linguistic diversity & numbers of speakers of indigenous languages
• Status & trends of linguistic diversity & numbers of speakers of indigenous languages

Access and benefit sharing

Status of access and benefit sharing
•To be determined

Resource transfers

Official development assistance provided in support of the Convention
• Official development assistance provided in support of the Convention



Source: Global Biodiversity Outlook 2

Interpreting the indicator

If the mean trophic level of the fisheries catches (MTI) is declining, then these fisheries are not exploiting the resources sustainably. As a result the biodiversity of these resources will be threatened.

Future development

The underlying landing data are continually assessed for quality and the method for allocating the landings spatially has been peer-reviewed, and any improvements to the method is also peer reviewed. New landings data from FAO will be continuously incorporated into the database, enabling the MTI to be calculated up to the present date.

Indicator Publications

Title	Description
Background and interpretation of the 'Marine Trophic Index' as a measure of biodiversity (2005)	Journal Article: Multiple Authors. Philosophical Transactions of the Royal Society B. Vol: 360, pp 415-425.

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