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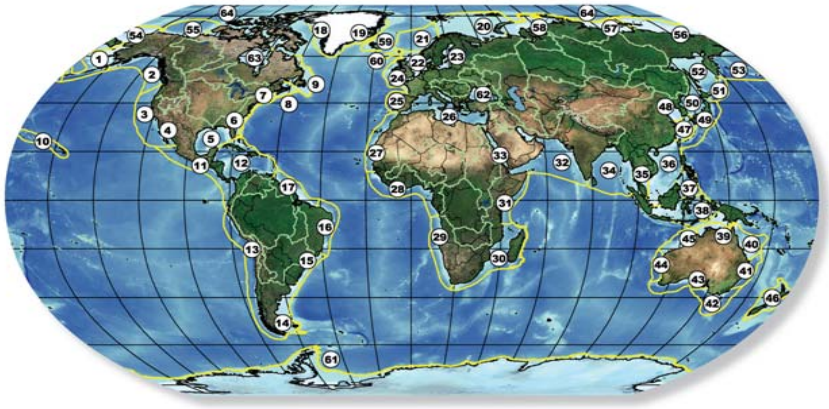
NEW UNEP LME Report Brochure

Large Marine Ecosystems of the World and Linked Watersheds



1 East Bering Sea	13 Humboldt Current	25 Iberian Coastal	37 Sulu-Celebes Sea	48 Yellow Sea	60 Faroe Plateau
2 Gulf of Alaska	14 Patagonian Shelf	26 Mediterranean Sea	38 Indonesian Sea	49 Kuroshio Current	61 Antarctic
3 California Current	15 South Brazil Shelf	27 Canary Current	39 North Australian Shelf	50 Sea of Japan	62 Black Sea
4 Gulf of California	16 East Brazil Shelf	28 Guinea Current	40 Northeast Australian Shelf-	51 Oyashio Current	63 Hudson Bay
5 Gulf of Mexico	17 North Brazil Shelf	29 Benguela Current	Great Barrier Reef	52 Okhotsk Sea	64 Arctic Ocean
6 Southeast U.S. Continental Shelf	18 West Greenland Shelf	30 Agulhas Current	41 East-Central Australian Shelf	53 West Bering Sea	
7 Northeast U.S. Continental Shelf	19 East Greenland Shelf	31 Somali Coastal Current	42 Southeast Australian Shelf	54 Chukchi Sea	
8 Scotian Shelf	20 Barents Sea	32 Arabian Sea	43 Southwest Australian Shelf	55 Beaufort Sea	
9 Newfoundland-Labrador Shelf	21 Norwegian Shelf	33 Red Sea	44 West-Central Australian Shelf	56 East Siberian Sea	
10 Insular Pacific-Hawaiian	22 North Sea	34 Bay of Bengal	45 Northwest Australian Shelf	57 Laptev Sea	
11 Pacific Central-American Coastal	23 Baltic Sea	35 Gulf of Thailand	46 New Zealand Shelf	58 Kara Sea	
12 Caribbean Sea	24 Celtic-Biscay Shelf	36 South China Sea	47 East China Sea	59 Iceland Shelf	

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The UNEP LME Report
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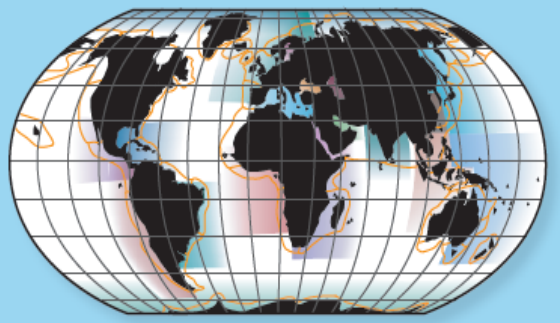
The UNEP Large Marine Ecosystem Report

A Perspective on Changing Conditions in LMEs of the World's Regional Seas



UNEP Regional Seas Report and Studies No. 182

UNEP | Regional Seas | GPA | NOAA | GLOBAL ENVIRONMENT FACILITY | INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION | UNITED NATIONS DEVELOPMENT PROGRAMME

Report

tions in Large Marine Regional Seas

itinue to be degraded by egradation, eutrophication, and emerging diseases. *recognition among world on the part of governments vironmental and resource depleted fish populations, stal pollution.*

velopment (WSSD) which ca in 2002 recognized the e toward more sustainable rces. Participating world e targets: 1) To achieve ources of pollution; 2) To arine resource assessment nate a network of marine e and maintain fish stocks 015.

ountries toward the WSSD om the Global Environment ently being applied by 110 a, and Eastern Europe in vices of 16 Large Marine egional Seas of the United (UNEP). *Large Marine e of about 200,000 km² or s from river basins and pe of the continental shelf, -defined principal current.* cological criteria, including ivity, and trophically linked

a collaborative effort with ram and five UN Agencies) to promote a global view World's 64 LMEs. It was ogramme in Nairobi, Kenya.

In the summer of 2005, UNEP and NOAA's Large Marine Ecosystem Program agreed to provide synopses of ecological conditions for each of the world's 64 LMEs. The synopses are based on the five-module LME assessment framework of i) productivity, ii) fish and fisheries, iii) pollution and ecosystem health, iv) socioeconomics, and v) governance. The synopses of LME ecological conditions include standardized information on productivity ($gCm^{-2}yr^{-1}$) and ocean fronts, sea surface temperature (SST) and anomalies in SST, 50 years of annual fisheries biomass yields, value, mean trophic levels, fisheries conditions relative to stock conditions and amount of primary productivity required to support the mean annual catch levels and information on nutrient over-enrichment and coastal eutrophication.

Chapters I through XVIII describe conditions of LMEs within the 18 Regional Seas areas, followed by Chapter XIX on the LMEs outside the Regional Seas. Three introductory background reports included in the volume are focused on: 1) A global fisheries assessment; 2) Effects of global warming on fisheries biomass yields; and 3) An assessment of nutrient over-enrichment of LMEs. The report clearly states the advantages of a standardized ecosystem-based approach that uses a generic suite of indicators to serve as the basis for assessing changing conditions within each of the World's 64 LMEs. The report provides for the first time science-based assessments relevant to the management and governance of LME goods and services.

The standardized indicator metrics allow for comparisons among LMEs of the effects of global warming on fisheries yields, where it has been observed that in conditions of accelerated warming 2 to 4 times faster than reported recently by the IPCC, half of the LMEs are showing increases in fishery yields during the past 25 years, while the other half are in linear declining trends. **Increases in fisheries biomass yields due to global warming are reported for the Iceland Shelf, Faroe Plateau, Norwegian Sea, Gulf of Alaska and East Bering Sea LMEs, while linear declines are reported for the North Sea, Celtic-Biscay Shelf, and Iberian Coastal LMEs. Evidence of nutrient over-enrichment resulting in the increasing frequency and extent of eutrophication, hypoxia, and dead zones is reported for the first time for each of the World's LMEs. Quantitative estimates are provided for amounts of Nitrogen introduced into the LMEs in relation to specific sources and amounts from atmospheric deposition, manure, sewage, fertilizer, natural fixation, and agricultural fixation.**