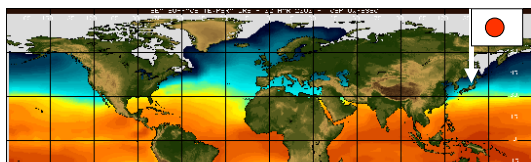


海は銀行、魚は預金



21世紀の漁業の目指すもの



東京海洋大学 有元貴文

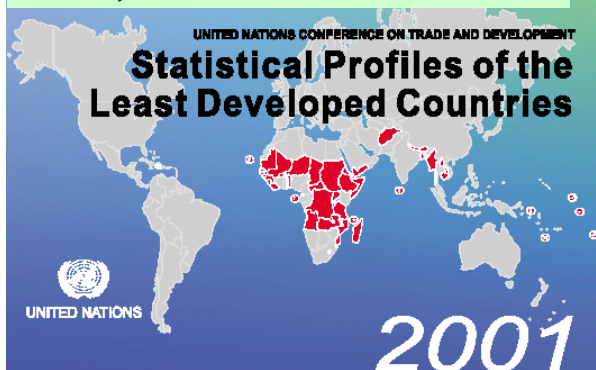
Our Globe is now Sick !



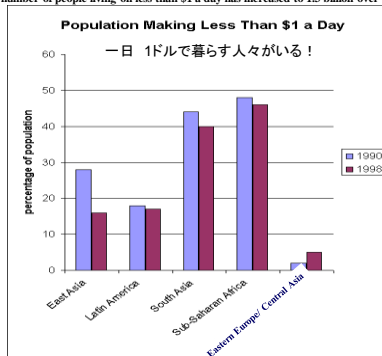
COP10

地球は重病である。
環境の時代への対応が必要！

And, we are Poor....!

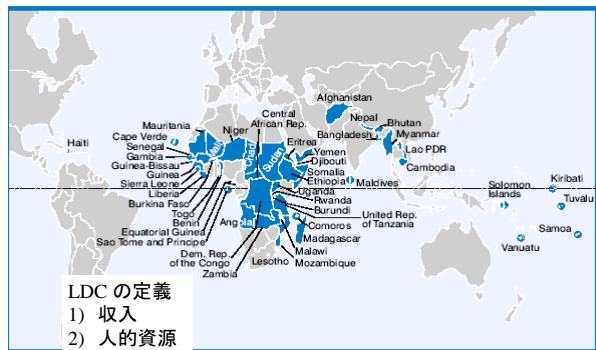


Population Making under \$1 a Day (1990 - 1998)
In spite of the expansion of global capitalism all over the world, the World Bank reports that the number of people living on less than \$1 a day has increased to 1.3 billion over the last 10



Least Developed Countries (もっとも開発の遅れている国々)

The LDCs: 49 States, 10.7% of the world population, 0.5% of the world GNP



- LDC の定義
- 1) 収入
 - 2) 人的資源
 - 3) 経済

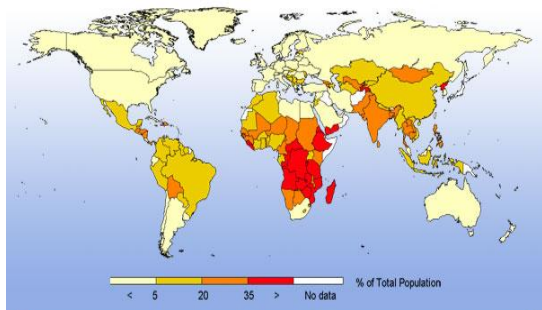
(Source: United Nations 2001)

We are HUNGRY!



FAOSTAT (www.fao.org)

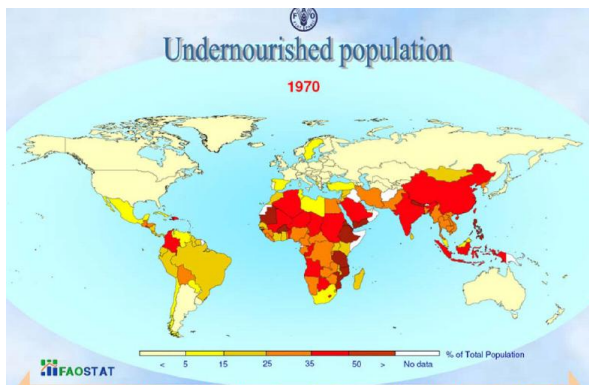
栄養が十分でない人口の割合 (2000 - 2002)

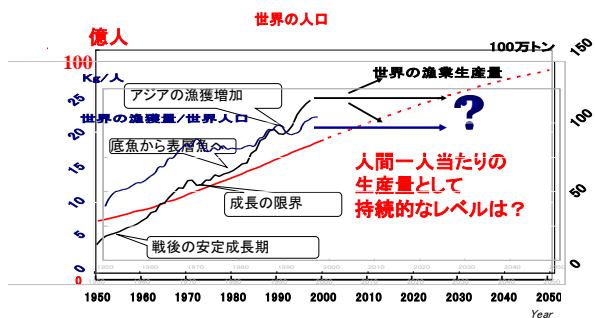


FAO Statistics Division, FAO Statistics Yearbook 2004 Vol.1

© FAO, 2005

http://www.fao.org/es/ess/faostat/foodsecurity/FSMap/flash_map.htm

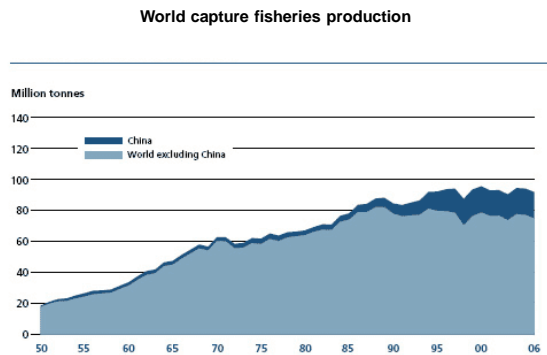
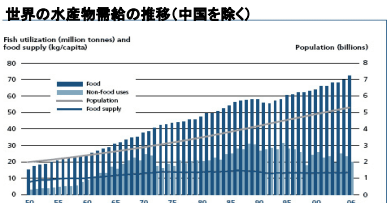
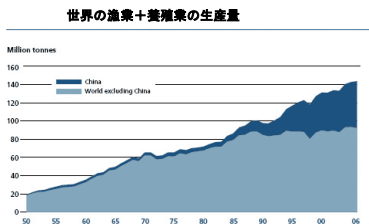


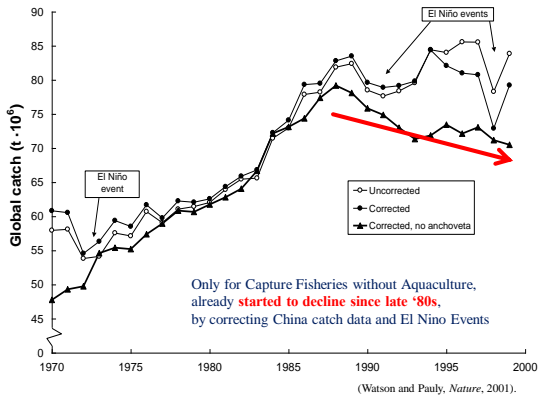


FAO WORLD REVIEW OF FISHERIES AND AQUACULTURE

	2000	2001	2002	2003	2004	2005
(Million tonnes)						
PRODUCTION						
INLAND						
Capture	8.8	8.9	8.8	9.0	9.2	9.6
Aquaculture	21.2	22.5	23.9	25.4	27.2	28.9
Total inland	30.0	31.4	32.7	34.4	36.4	38.5
MARINE						
Capture	86.8	84.2	84.5	81.5	85.8	84.2
Aquaculture	14.3	15.4	16.5	17.3	18.3	18.9
Total marine	101.1	99.6	101.0	98.8	104.1	103.1
TOTAL CAPTURE	95.6	93.1	93.3	90.5	95.0	93.8
TOTAL AQUACULTURE	35.5	37.9	40.4	42.7	45.5	47.8
TOTAL WORLD FISHERIES	131.1	131.0	133.7	133.2	140.5	141.6
UTILIZATION						
Human consumption	96.9	99.7	100.2	102.7	105.6	107.2
Non-food uses	34.2	31.3	33.5	30.5	34.8	34.4
Population (billions)	6.1	6.1	6.2	6.3	6.4	6.5
Per capita food fish supply (kg)	16.0	16.2	16.1	16.3	16.6	16.6

Note: Excluding aquatic plants





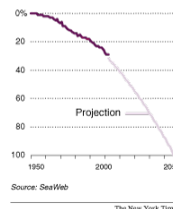
2048年に魚がいなくなる・・・！

Impacts of Biodiversity Loss on Ocean Ecosystem Services

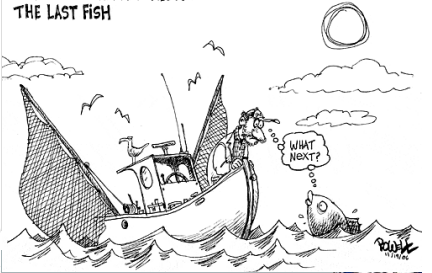
A Future Without Fish

A new study suggests that overfishing could lead to a catastrophic loss of marine species as soon as the middle of the century.

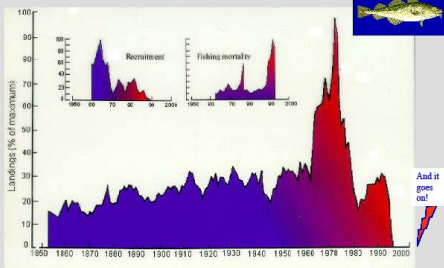
Percentage of species collapsed (defined as less than 10% left)



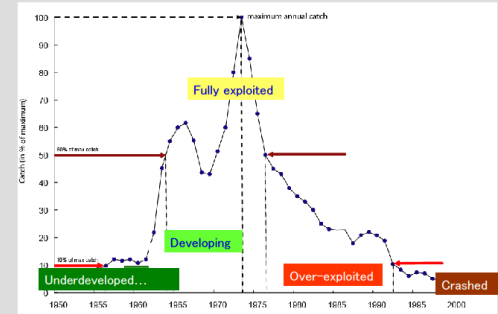
THE LAST FISHERMAN MEETS THE LAST FISH



This graph, illustrating a Canadian tragedy, leads to several questions. One of them is: how typical is the story of the Northern cod fishery? Can we generalize?

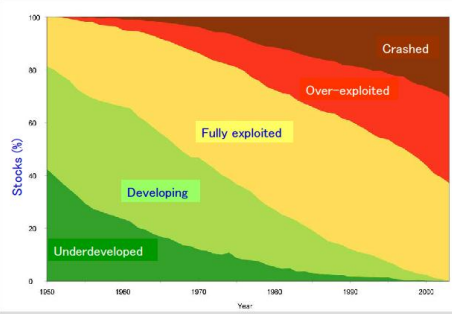


We can define...

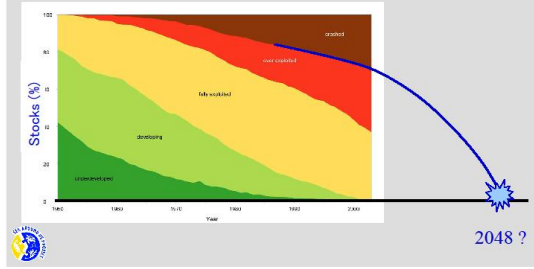


Now let's apply these definitions to the global FAO catch statistics...

Our first generalization is bleak indeed.



Also, it is tempting to project these trends...



CNN interactive

Year of the Ocean Visit yolo.com for more info

Factoids: World fisheries in crisis 世界の漁業は危機的である!

By Environmental News Network staff

July 10, 1998
Web posted at: 11:21 AM EDT (1:33 GMT)

July 1998

(ENN) — World fish production reached an all-time high of 121 million tons in 1997, and yet 11 of the world's 15 most important fishing areas are in decline and 60 percent of the major fish species are either fully or overexploited.

Anne Platt McGinn has written a Worldwatch Paper titled *Rocking the Boat: Conserving Fisheries and Protecting Jobs*, in which she concludes that the crisis in marine fisheries is being masked by the taking of younger and lower quality fish, massive imports from the developing world to the industrial world, and the rapid growth in fish farming. Some of the problems we're facing:

Approximately one third of the worldwide catch of 53 million tons is wasted — thrown back into the sea dead or dying.

Copyright 1998

CNN WEB SITES:
[HOME](#) [NEWS](#) [POLITICS](#) [SPORTS](#) [LIFE](#) [TECH](#) [ENTERTAINMENT](#) [HEALTH](#) [TRAVEL](#) [STYLE](#) [IN-DEPTH](#) [CUSTOM NEWS](#) [NEWS SUMMARY](#) [DAILY ALMANAC](#) [CNN NETWORKS](#) [GO! SEARCH](#) [NEWS SATE](#)

AMERICA ABROAD: THE PERILS OF PEACOCK

Newsweek
THE INTERNATIONAL NEWSMAGAZINE

April 1994

Empty Nets

U.S. News & World Report

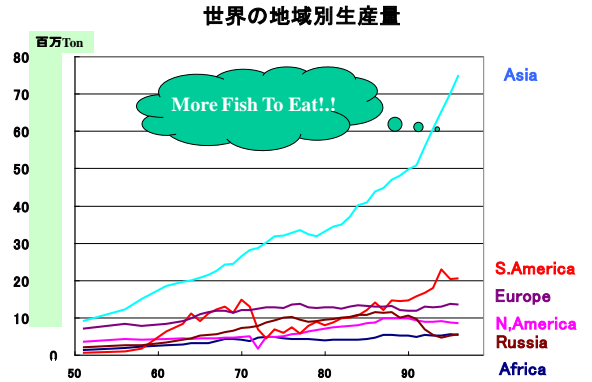
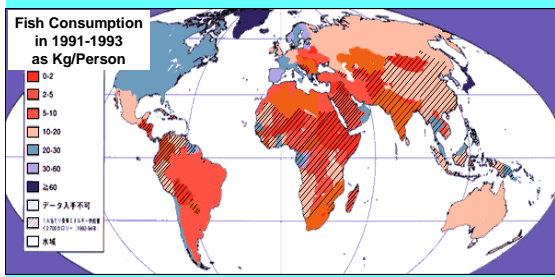
EMPTY OCEANS
WHY THE WORLD'S SEAFOOD SUPPLY IS DISAPPEARING
A SPECIAL REPORT

June 2003

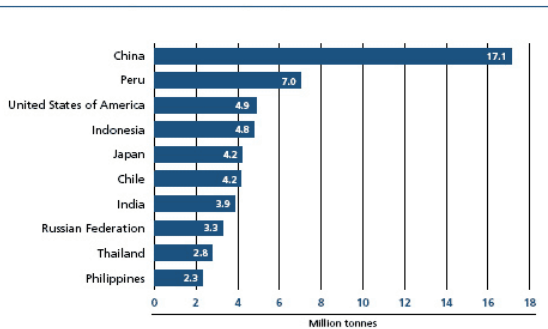
Newsweek
海の釣れる魚が減る

Too Many Fishermen, Too Few Fish

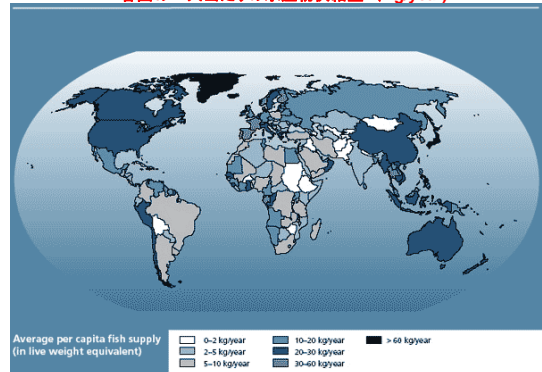
Our Problem is
 We can not give enough Fish
 for the People !



Marine and inland capture fisheries: top ten producer countries in 2006

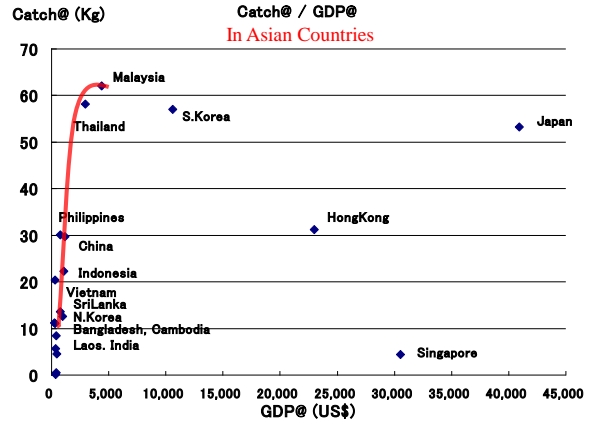
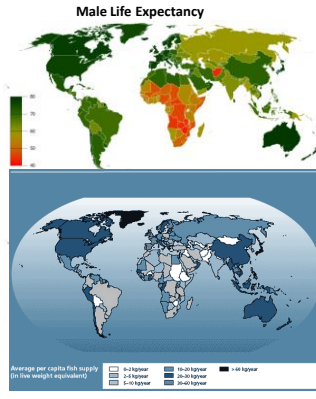
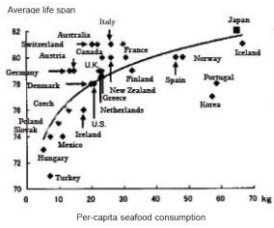


Fish as food: per capita supply (average 2003-2005)
 各国の一人当たりの水産物供給量 (Kg/year)



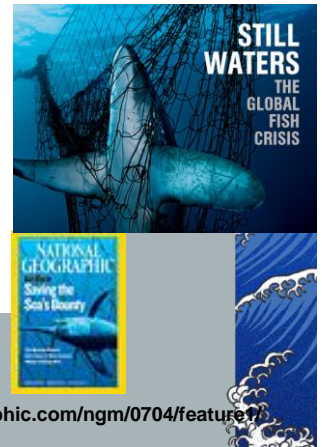
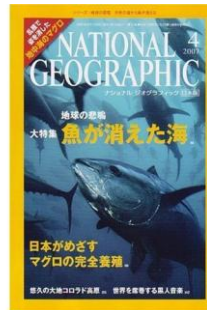
Healthy Seafood

Per-capita annual seafood consumption and average life span of major countries (Source: FAO)



食料生産の将来

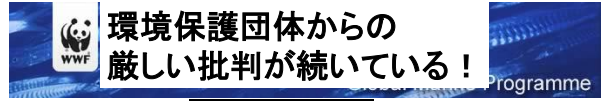
- 穀物 : 耕地面積の限界
- 畜産 : 放牧面積の限界, 穀物の供給
- 水産 : ? ? ? ?
 - 漁業 : 資源の枯渇
 - 養殖 : 餌の供給, 養殖水面の確保, 病気
 - 資源管理 : 責任ある漁業, 漁業のモラル
 - 水産食品 : 食品の安全
 - 水産流通 : グローバル化のなかでの不安



<http://www7.nationalgeographic.com/ngm/0704/feature1>



漁業において、目に余る悲惨な状況が続いている！



魚がいなくなった理由は？

- 獲りすぎ・・・？ overfishing
乱獲 ⇔ 濫獲, 過剰漁獲
- 環境悪化, 環境変動・・・？
- 資源変動・・・？
-？

1995 FAO
Code of Conduct for "Responsible Fisheries"
FAO「責任ある漁業」のための行動規範

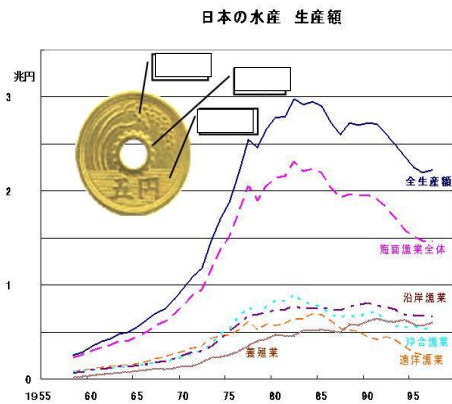
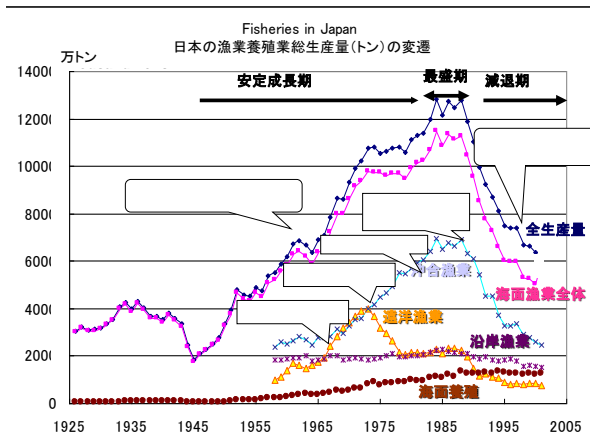
<http://www.fao.org/fishery/ccrf/1/en>



WELCOME TO THE CODE OF CONDUCT FOR RESPONSIBLE FISHERIES WEBSITE

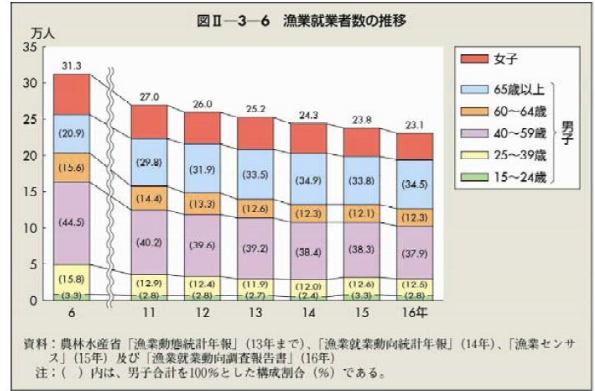
http://www.fao.org/figis/servlet/static?xml=CCRF_prog.xml&dom=org

"The right to fish carries with it the obligation to do so in a responsible manner so as to ensure effective conservation and management of the living aquatic resources."

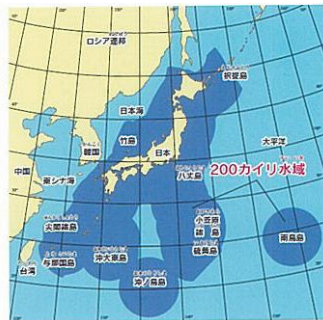


瀬戸際の日本漁業—世界の中で

- 二百海里体制の定着
- 漁業生産量の減少
- 漁業人口の減少と高齢化
- 水産物輸入の増大
- 環境保全の全地球的課題
- そして、食糧供給確保の使命
—朝日新聞 社説 1995年



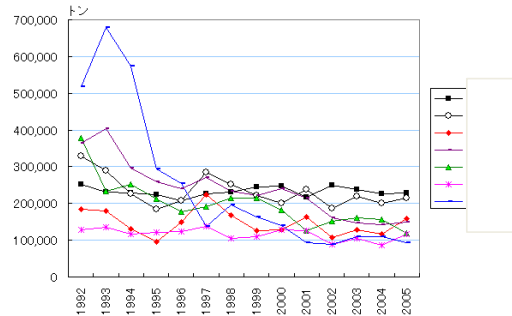
日本の200カイリ水域



排他的経済水域の広さ 単位: 万km²

1位	アメリカ	782
2位	オーストラリア	701
3位	インドネシア	541
4位	ニュージーランド	483
5位	カナダ	470
6位	日本	447

主要漁港の水揚げ高推移



(資料)産地水産物流通調査(農水省)

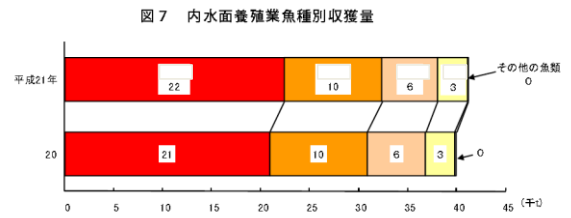
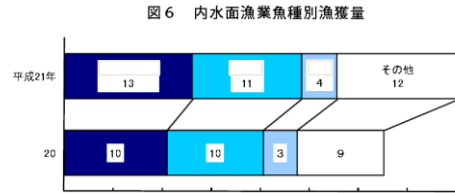
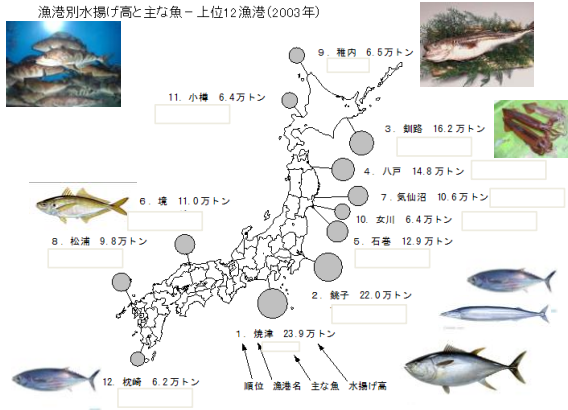


Table 4: Top ten aquaculture producers of food fish supply: quantity and growth

Top ten producers in terms of quantity, 2006			Top ten producers in terms of growth, 2004-06				
Country	2004 (Tonnes)	2006 (Tonnes)	Average annual growth rate (%)	Country	2004 (Tonnes)	2006 (Tonnes)	Average annual growth rate (%)
China	30 914 690	54 429 122	+8.0%	Uganda	5 530	32 362	+141.6%
India	2 704 636	3 123 136	+5.7%	Guatemala	4 905	16 263	+82.2%
Viet Nam	1 168 817	1 667 727	+17.0%	Mozambique	446	1 174	+82.2%
Thailand	1 259 663	1 385 601	+4.6%	Malawi	733	1 500	+43.0%
Indonesia	1 045 091	1 202 896	+11.2%	Togo	1 525	3 020	+46.7%
Russia	914 752	802 046	-1.2%	Hong Kong	43 960	64 576	+38.7%
Chile	895 421	862 410	-3.7%	Cambodia	20 975	34 200	+62.8%
Japan	776 421	733 891	-5.5%	Pakistan	76 653	121 625	+58.0%
Norway	636 802	708 780	+11.3%	Singapore	5 406	8 573	+56.9%
Philippines	612 220	623 369	+1.8%	Mexico	104 354	158 942	+52.7%

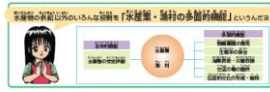
中国	3443万トン	Bangladesh	89万トン
インド	312万トン	チリ	80万トン
ベトナム	166万トン	日本	73万トン
タイ	139万トン	ノルウェー	70万トン
インドネシア	129万トン	フィリピン	62万トン

日本の新しい挑戦

TAC制度開始(年より)
 資源回復計画(年より)

1. 漁獲量削減と漁獲努力量削減
2. 加入資源管理+種苗放流
3. 漁場環境の改良
4. 管理方策の確立

水産業の多面的機能(年)

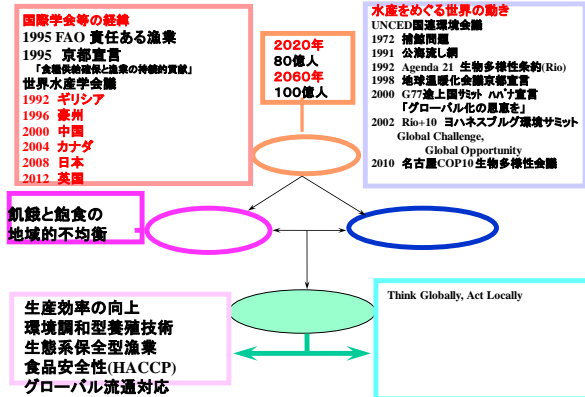


- 食料・資源の供給
 - 食料安定供給・健康増進・医薬品等原料供給
- 自然環境保全
 - 物質循環系補完・環境保全・生態系保全
- 地域社会の形成・維持, 起業化促進
 - 雇用創出・文化継承・海業/エコツーリズムの促進
- 国民の生命財産保全
 - 海難救助・災害防止・環境監視・国境監視
- 居住・交流の場の提供
 - アメニティー・国土保全・景観保全・観光資源

21世紀に起こること?

- 世界の人口はもっと増える!
- 漁獲量は増やせない!
- 一人当たりの魚の量は?

水産業と水産学の展開方向



状況を変えるために!

- 私たちはどうすれば良いのか?
- あなたにできることは何か?
- そのためにどんな努力を?
- Today can decide tomorrow !

現状を変えるための機会をつかもう

CHANCE for Change

あなた自身のために、そして海の未来のために！

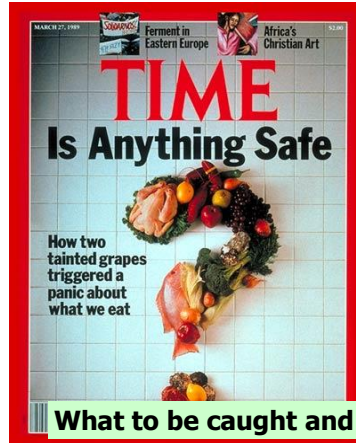
POSITIVE thinking 前向きに考えよう！

ACTIVE manner 積極的に行こう！

INTELLECTUAL approach

知的生活を楽しもう！新聞・テレビのニュース

HEALTHY life 健康第一 水産物を楽しもう！



- ... Food Safety ...
- BSE(Mad Cow Disease)
- Bird Influenza
- Pig Foot and Mouth Disease
- SARS

- and for Fish.....
- Carp Herpes
- Contamination
- Transgenetics
- Environmental Hormone

What to be caught and enjoyed safely?

Partners for Better Seafood Choices
The partners listed here have joined together to create this fish list based on their collective expertise and experience in making seafood recommendations.

In providing a Sea-Ed: Blue Ocean Institute seeks to inspire conservation rather than demand it, expanding personal choices that help restore living abundance in the oceans. www.sea-ed.org

Guided by science, Environmental Defense creates innovative, equitable and practical solutions to environmental problems including new ways to conserve fisheries and the world's oceans. www.environmentaldefense.org

Monterey Bay Aquarium's Seafood Watch program is working to shift the buying habits of consumers, seafood restaurateurs and retailers to support sustainably responsible fisheries and fish farming operations. www.montereybayseafoodwatch.org

The Seafood Choices Alliance is an association of seafood professionals and conservation and education institutions that all work together to make informed choices that protect fish and the ocean environment. www.seafoodchoices.org

THE FISH LIST

An Ocean-Friendly Guide to Making Better Seafood Choices.

You have the power to choose fish that are better for the environment and for you.

A National Guide
www.thefishlist.org
lower site

ENJOY!	AVOID!
<p>These seafood choices are better for ocean conservation.</p> <ul style="list-style-type: none"> Codfish (farmed) Cover (farmed) Clams (farmed) Cod (European, from Faroe Islands, Norway) Halibut (farmed) Shrimp (farmed) Sustainable Wild (North Coast Atlantic) Salmon (wild from Alaska)* Sardines Seafood, Bay Striped bass (farmed and wild) Shrimp (farmed) Trout (EPA farmed) 	<p>These seafood choices are associated with ecological harm or poor ocean health.</p> <ul style="list-style-type: none"> Caviar (wild) Chilean Sea Bass/Torpedo Cod (Atlantic) Crab Halibut (Atlantic) Monkfish/Goosneph Orange Roughy Rockfish/Chilean sea bass Scorpaeniformes (from Alaska) Shrimp (wild) Shrimp (imported, farmed and wild) Skipjack Trout (wild) Seafood, South

How to use this Guide

Your seafood choices can make a difference. Use it all the time to equal. Make better seafood choices—because seafood might be farmed in a way that matters more to you than oceans or the environment.

Visit www.thefishlist.org to learn more about the partnership that created this list, other related programs provided by these organizations, and how to get involved with organizations that will help you make better seafood choices.



The Marine Stewardship Council

Welcome to MSC online

The MSC is an independent, global, non-profit organisation whose role is to recognise, via a certification programme, well-managed fisheries and to harness consumer preference for seafood products bearing the MSC label of approval. **Eat smart!**





Brain Storming for Sustainable Fisheries
through the Analogy
from the Global Warming Issues

- What were **Free from Charge**.....?
.....in Japan.....
 - Water
 - Air
 - Safety
 - and....., Fish in the SEA
- We must pay for fish in the SEA for Conservation!**
Pay the Money, and Pay the Efforts!
Through Global Thinking, and Local Action!

Nobel laureate Maathai confident
hold-outs will join Kyoto Protocol



- Kenya's deputy environment minister, said she was inspired by a commonly used Japanese word, "**mottainai**", which translates as "**no wasting**."
- "You can do 'mottainai' at home. You can do 'mottainai' at the office. You can do 'mottainai' anywhere,"
- "We must do what we can" to conserve limited natural resources

4R: Reduce, Re-use, Recycle, Repair



Our Tasks for Future

6 Rs

- Reduce
- Re-use
- Recycle
- Repair
- Reproduction
- Recover

3 Ps

- Pre-cautionary
- Pay for fish
- Patience
for tomorrow
- **GAMAN 我慢**

平成22年10月28日 木曜日 享月 三 薬行 陽明

我慢 「GAMAN」 お手本はハタハタ

生きもの会議で水産学会

「GAMAN」(我慢)という言葉を、世界の漁業者にかかす。国内の研究者ら約4千人でつくる日本水産学会は、水産資源を管理し、持続可能な漁業をするためには、目の利益にとらわれず、時には「GAMAN」が求められなければならないことをまとめた。国連海洋生物資源会議(生物多様性条約第10回締約国会議「COP10」)の会場で27日、発表された。(山本智之)

日本には、水産試験場や漁業者が協力し、漁獲量などの科学データに基づいて資源を管理してきた歴史がある。禁漁などを表題して資源が回復した秋田県、ハタハタ、青森県のシジミ、岡山県のサシハタなど世界の漁業者の参考になる成功事例があるという。水産学会はこうした事例を集め、世界に発信する計画。乱獲が進んだ海域や、環境が破壊されて資源の発生を阻んだケースなどの情報も集める。同学会水産環境保全委員会の清野聡子・九州大准教授は「MONTAINAI(もたいない)」という言葉と同じように、世界にGAMANの概念を普及させたい」と話す。

禁漁で資源回復 世界に呼びかけ

生物多様性条約第10回締約国会議 関連集会
環境に優しい漁業への日本の経験と責任

Higher to Lower Trophic Level for Catch and....., Farming Up with Aquaculture

Trophic Level

Watson and Pauly In: Atlas of the Ocean NATIONAL GEOGRAPHIC

Typical Family in Japan for 1946-1972

by Michiko HASEAGAWA

Full of the marine biodiversity in one family

Sazae-san
長谷川剛子

1960年代の街の魚屋さん

Variety of species as whole fish



Fish Shop in Himi City

スーパーの魚売り場 Fish corner in Supermarket

No varieties, ready to eat as fillets or sashimi packages



魚種・魚体選択についての最善の道は
Best Scenario for Species/Size Selectivity

魚体選択について 魚種選択について

考えるべき視点は..?????

- Politically correct
- Scientifically correct
- Economically correct
- Biologically correct
- Technically correct
- Ethically correct
- Locally Correct
- Globally Correct

- Bio-diversity
- Catch diversity
 - Fishing ground
 - Fishing gear /methods
- Marketing diversity
- Eating Habit diversity