

Fisheries Biology (BIO 458)

- Lectures MW 2:00 – 3:15pm in Friday 1014
- Text: Marine Fisheries Ecology by Jennings et al.
- Other readings: papers that I will assign and place on website
- Grades: Exams, assignments, research paper, presentation, attendance/paper discussion, participation
- Attendance is essential

Fisheries Biology

- Reading: Chapter 1
- Review basic definitions
- Introduce aspects of management issues
 - objectives
 - strategies
 - regulations



Fisheries biology

- Applied ecology
 - Effects of harvesting on natural communities on a large scale
- Emphasis on Population Dynamics
 - Sustaining a maximum yield
- Fisheries management
 - Fish biology vs. human behavior
 - Social, economic, and political factors
 - fishers and fisheries systems conflict often

Fisheries biology

- Why is this important/relevant?
- Increasing importance to 'everyday' life.
 - Evidenced by increased media coverage



FOCUS

GLOBAL FISHERIES

Detention in the Fisheries War

How governments are using the threat of trade sanctions to force compliance with international fisheries agreements

RESEARCH ARTICLES

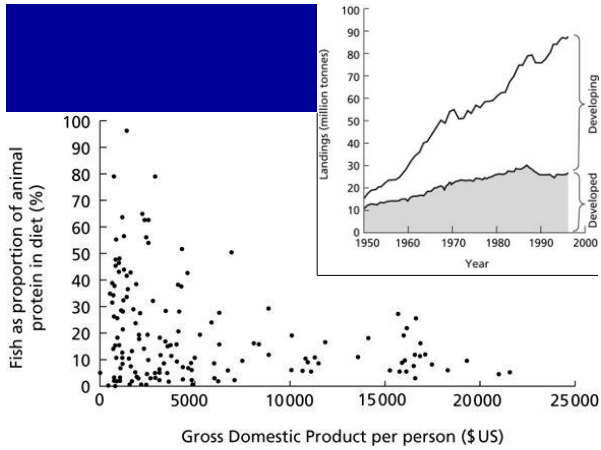
Rebuilding Global Fisheries

How to manage fisheries sustainably

STILL WATERS THE GLOBAL FISH CRISIS

How the world's fisheries are being depleted

Why governments are using the threat of trade sanctions to force compliance with international fisheries agreements



Common Terms

- Fishery
- Stock
- Stock assessment
- Fishery science
- Fishery management

What is a fishery?

The human and biological components of a fish harvest system

Who are the participants?

- | | |
|-------------------|------------|
| Fish | Fishermen |
| Other fish | Processors |
| Biologists | Retailers |
| Resource managers | Public |

What is Fishery Science?

The mathematical and statistical approach to the study of fisheries

- ultimately research utilized for an assessment of the stock (management unit)

Fishery Management?

The regulation of fishery stocks to achieve some pre-determined objective

Types of Fisheries

- Artisanal
- Recreational
- Commercial
- Industrial
- Inshore
- Offshore
- Distant water



Jennings, Kaiser, Reynolds
Marine Fisheries Ecology

Common Terms

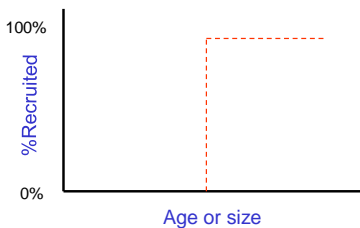
- Bycatch = unintended catch
- Biomass = total mass (kg) of a stock (determined by $N \times \text{avg. weight}$)
- Spawning stock biomass (SSB) = biomass of mature fish
- Spawning stock biomass per recruit = the contribution to the spawning stock biomass expected for an individual fish

Common Terms

- **Recruitment**
 - addition of new members to a group
 - can be very specific (recruitment to a given life stage or size)
 - e.g., recruitment from egg to larval stage or recruitment to the fishery based on minimum size

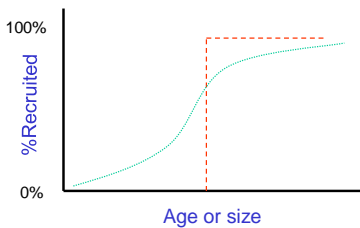
Common Terms

- **Knife-edge recruitment**
 - addition of new members over a very short period of time or ages



Common Terms

- **Recruitment ogive**
 - addition of new members to a group over an extended period of time or age groups.



Common Terms

- Selectivity = capture of fish of certain species or sizes
- Growth overfishing = increased harvesting causes reduced yields
- Recruitment overfishing = increased harvesting prevents population from replenishing itself

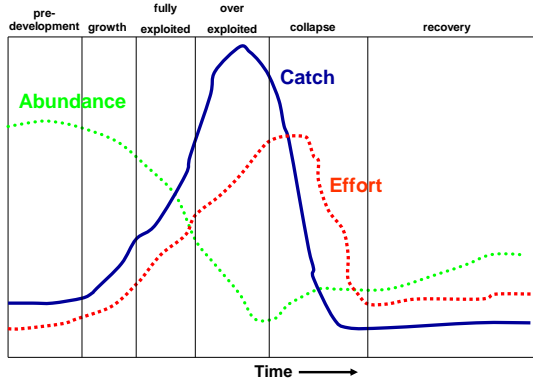
Common Terms

- Maximum sustainable yield (**MSY**)
 - maximum average yield obtainable from a single population on a continual basis without affecting the biology of the stock

Common Terms

- Pelagic fish = in the water column
- Demersal fish = associated with the bottom
- Benthic fish = on the bottom (e.g., flatfish)

Phases of Fishery Development



Limitations of the current approach to fisheries management

- Inability to deal with inherent **variability**
- Failure to define **specific long term** management goals
- Lack of **accountability** in decision making
- Misuse of **biological** advice
- Lack of effective involvement by **stake holders** in decision making
