

# Exploited Fishery Resources

Reading: Chapter 3

Invertebrate and vertebrate fisheries

- > Diversity and life history
- > species important globally
- > species important locally



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## Fisheries involving Invertebrate Phyla

### Mollusca

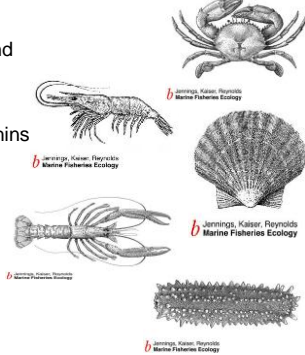
- Bivalves, Gastropods and Cephalopods

### Echinodermata

- sea cucumbers and urchins

### Arthropoda

- Sub-phylum Crustacea:
  - shrimps and prawns
  - clawed lobsters, crayfish
  - clawless lobsters
  - crabs



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## Phylum Mollusca: Bivalves

### Fisheries

- Oysters, Scallops, Mussels, and Clams
- World catch > 1 million MT
- Ideal for aquaculture (mariculture)
- Comm. and rec. in shallow water



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## Phylum Mollusca: Gastropods

### Fisheries

- Snails, whelks, abalone
- Largest number of species
- Most harvested from coastal areas
- Food & ornamental shell trade
- Depletion of stocks (e.g. abalone) due to **habitat destruction & overexploitation**



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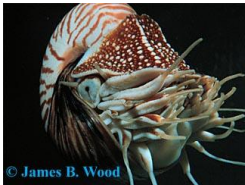
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## Phylum Mollusca: Cephalopods

### Fisheries

- Squid, octopus, nautilus
- 70% of world mollusc catch = squids
- Inshore squid caught with baited jigs, purse seines, & trawls
- Oceanic: gill nets & jigging



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## Phylum Echinodermata

### Fisheries

- Sea cucumbers and sea urchins
- Sea cucumber fisheries**
- Indian & Pacific oceans, cultured in Japan
  - slow growth rates, difficult to sustain
- Sea urchin fisheries**
- roe (gonads) a delicacy
  - seasonal based on roe availability



➤ Both Easily Overexploited



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## Sub-phylum Crustacea: Shrimps & Prawns

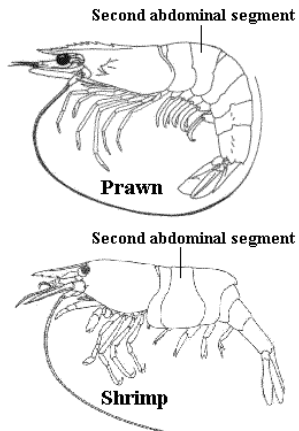
### Prawn fisheries

- extensive farming (high growth rate & fecundity)
- Penaeids with high commercial value
- stocks in Australia have **collapsed** due to overfishing & destruction of inshore nursery areas



### Caridean shrimp fisheries

- slow growth, delayed maturity, few eggs
- overexploitation causes quicker decline
- include Pandalids and Crangonids




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## Sub-phylum Crustacea: Crabs and Lobsters

### Crab & lobster fisheries

- adapted to benthic habitat
- large clawed lobsters & freshwater crayfish
- clawless lobsters (slipper & spiny)
- True crabs (Brachyurans), include blue crab
- king and snow crab are valuable fisheries
- coconut crabs (land crabs)




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## Sub-phylum Vertebrata

- Over half of all Vertebrates are fish
- Approximately 26,000 species
- Tremendous diversity & abundance
- Chondrichthyes (sharks and rays)
- Osteichthyes (bony fishes), 25,000 spp.
- Diverse in size, habitats, life history




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## Fisheries involving Vertebrates (fishes)

### Clupeidae & Engraulidae (herrings and anchovies)

- pelagic, typical occur in upwelling areas
- very large fisheries
- 27% by weight of world catch
- primarily canned or pickled, or ground



### Gadidae (cods)

- large demersal fish
- cool temperate waters in northern hemisphere
- exploited for centuries



### Merluccidae (hakes)

- wider temperate distribution than cods




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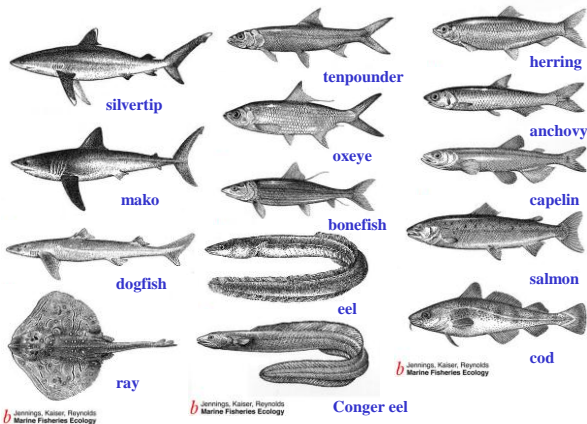
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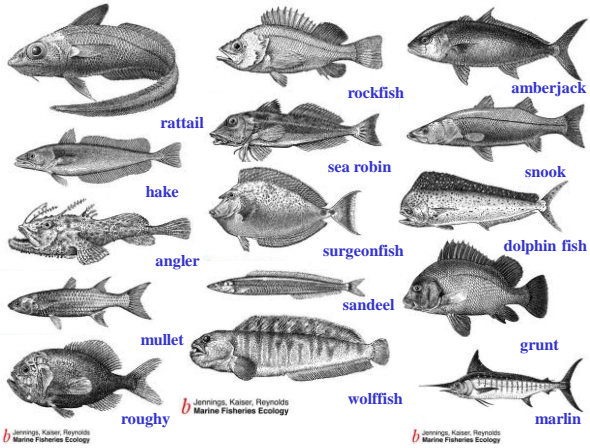
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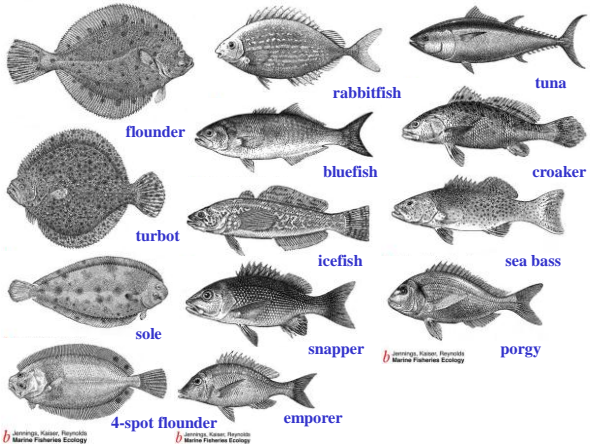
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SPECIES	POUNDS	VALUE (\$)
Amberjacks	128,762	\$95,599
Anglerfish (Monkfish)	47,345	\$60,387
Bluefish	3,216,019	\$1,129,688
Bonito	15,686	\$20,152
Butterfish	55,087	\$32,656
Carp	23,807	\$2,200
Catfishes	354,622	\$64,272
Clams, Hard (Meats)	354,961	\$2,581,033
Clams, Hard (Numbers)	18,233,183	.
Cobia	43,715	\$64,829
Crabs, Blue, Hard	29,795,512	\$23,801,421
Crabs, Blue, Peeler	568,265	\$1,197,970
Crabs, Blue, Soft	320,472	\$1,544,342
Crabs, Stone	5,593	\$19,104
Croaker, Atlantic	7,312,159	\$3,409,671
Cutlassfish, Atlantic	19,753	\$14,353
Dogfish, Smooth	1,614,844	\$503,749
Dogfish, Spiny	1,708,437	\$256,512
Dolphinfish	239,551	\$492,270
Drum, Black	69,194	\$32,805
Drum, Red	231,760	\$421,659
Eel, American	122,104	\$351,048
Flounder, Southern	1,689,493	\$3,695,756
Flounder, Summer	3,318,417	\$7,228,783
Grouper, Gag	222,749	\$766,577
Grouper, Red	231,780	\$625,224
Grouper, Scamp	60,163	\$200,970
Grouper, Snowy	35,472	\$106,298

SPECIES	POUNDS	VALUE (\$)
Groupers, Other	11,761	\$31,473
Grunts	47,219	\$42,279
Harvestfish	80,459	\$106,592
Herring, River	1,785	\$1,785
Hogfish	13,046	\$37,897
Jacks	2,288	\$1,586
Mackerel, Atlantic	45,276	\$17,595
Mackerel, King	328,806	\$643,861
Mackerel, Spanish	911,866	\$1,026,562
Menhaden, Atlantic	1,299,130	\$111,552
Mullet, Sea (Kingfishes)	886,841	\$958,377
Mullet, Striped	2,082,636	\$1,002,386
Octopus	941	\$1,111
Oysters (Bushels)	196,661	.
Oysters (Meats)	1,040,338	\$5,044,792
Perch, White	200,472	\$162,369
Perch, Yellow	57,027	\$68,576
Pigfish	32,867	\$16,433
Pinfish	14,579	\$3,635
Pompano	14,840	\$38,124
Porgies	84,781	\$107,864
Scallop, Bay (Meats)	336	\$2,100
Scallop, Sea (Meats)	171,898	\$1,222,893
Scup	102,853	\$51,424
Sea Basses	401,517	\$947,972
Seatrou, Spotted	200,500	\$350,349
Shad, American	233,267	\$190,348
Shad, Gizzard	87,340	\$43,670
Shad, Hickory	108,032	\$20,951

SPECIES	POUNDS	VALUE (\$)
Sharks	629,421	\$325,080
Sheepshead	157,631	\$99,666
Shrimp (Heads On)	5,955,457	\$10,690,675
Skates	7,503	\$1,454
Skippers	13,937	\$3,991
Snapper, Red	419	\$320
Snapper, Vermilion	316,782	\$948,157
Snappers, Other	3,435	\$9,346
Spadefish	18,827	\$6,116
Spot	572,315	\$384,386
Squid	1,228,995	\$294,412
Striped Bass	498,740	\$1,220,542
Swordfish	629,933	\$1,897,151
Tilapia	430,394	\$917,388
Triggerfish	225,682	\$349,179
Tuna, Bigeye	96,464	\$338,881
Tuna, Bluefin	48,562	\$416,044
Tuna, Yellowfin	368,027	\$616,442
Tunas, Other	43,626	\$41,778
Tunny, Little	147,337	\$76,491
Unclassified foodfish	76,363	\$118,986
Unclassified baitfish	67,663	\$14,190
Unclassified Shellfish	66,488	\$140,450
Wahoo	12,628	\$30,329
Weatfish (Grey Trout)	106,319	\$105,282
Whelks/Conchs (Meats)	15,890	\$30,655
<b>Grand Total</b>	<b>72,027,335</b>	<b>\$79,944,148</b>

**2010 NC commercial landings:**

**Invertebrate fisheries**  
= ~\$46 million

**Finfish fisheries**  
= ~\$34 million

**North Carolina Recreational Catch (2009)**

SPECIES	NUMBER	POUNDS
Amberjacks	18,239	504,142
Barracudas	1,307	12,665
Bass, striped (ocean)	7,375	209,858
Bass, striped (internal)	12,965	40,375
Bluefish	856,405	971,132
Bonito	1,318	1,966
Cobia	7,549	186,455
Croaker, Atlantic	350,398	123,902
Dolphin	376,125	3,864,480
Drum, red	73,446	358,188
Drum, black	101,274	132,497
Flounders, southern	135,531	297,790
Flounders, summer	58,093	86,314
Groupers	32,804	320,764
Grunts	98,259	113,929
Jacks	8,182	17,925
Kingfishes	804,759	327,841
Mackerel, king	80,174	864,237
Mackerel, Spanish	703,393	892,641

SPECIES	NUMBER	POUNDS
Perch, silver	10,516	2,784
Pigfish	252,396	101,175
Pinfish	152,694	34,069
Pompano	96,681	45,383
Porgies	35,985	60,943
Puffers	72,071	36,607
Sea bass, black	115,710	145,210
Seatrou, spotted	509,416	833,577
Sharks	5,479	34,967
Sharks, Dogfish	1,054	10,044
Sheepshead	147,438	265,319
Snappers	49,576	75,574
Spot	1,168,436	401,480
Tuna, Bluefin †	135	17,112
Tuna, yellowfin	13,401	409,642
Wahoo	81,643	103,232



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