

Reproduction in fishes



Reproduction

what defines 'male' vs. 'female' ? – reproductive investment

sexual strategies:

females must be 'careful' in mate selection due to cost

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advertisement, colors, tubercules, kypes, displays
nest building, territorial defense
parental care, brood guarding

Reproduction

sexual strategies:

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- energy investment in eggs
- migration, brooding

male investments in reproduction :

- advertisement, colors, tubercules, kypes, displays
- mate competition
- nest building, territorial defense, migration
- parental care, brood guarding

Anatomy

hagfish, lamprey: single gonads
no ducts; release gametes into body cavity



Anatomy

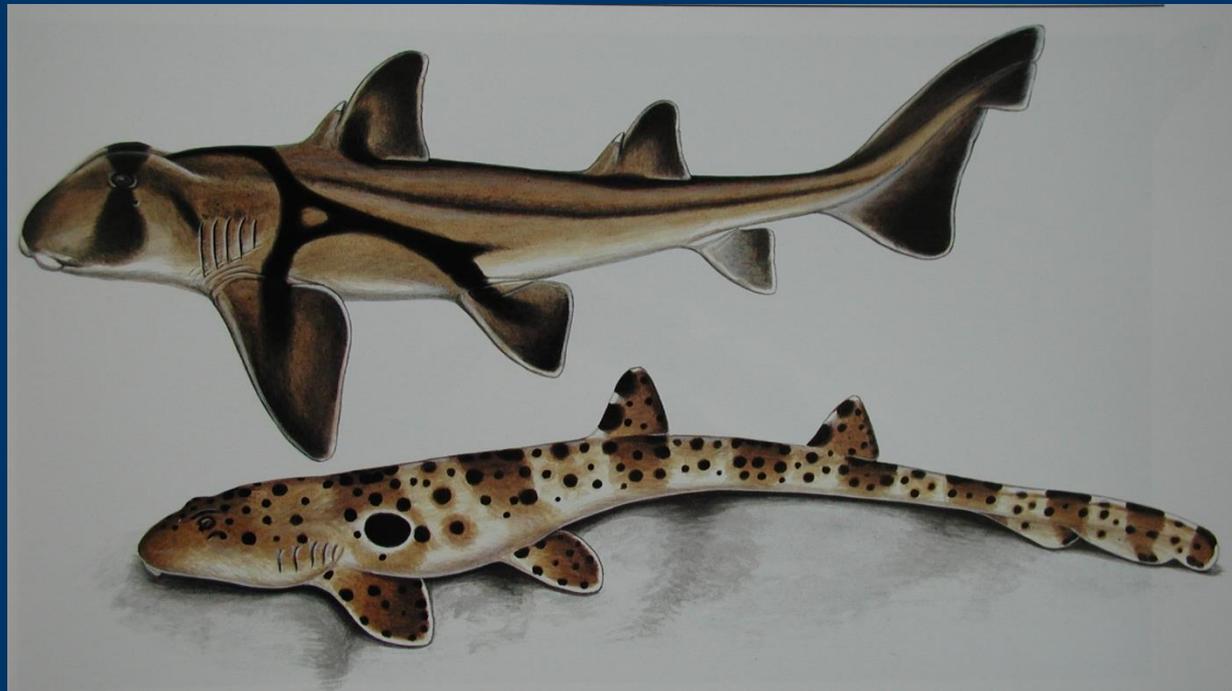
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internal fertilization

sperm emitted through cloaca, along grooves in claspers



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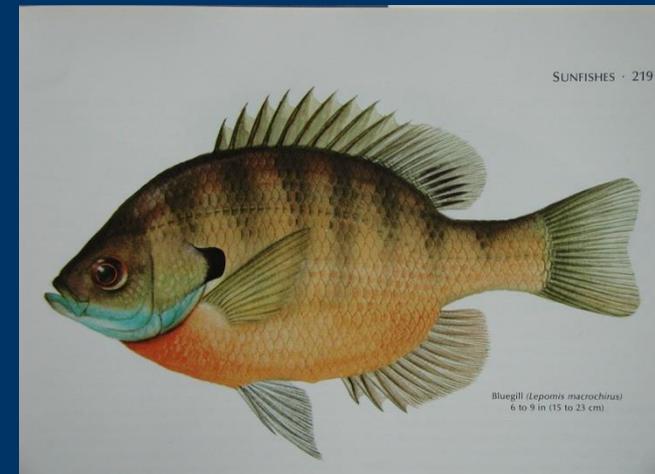
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chimaeras, bony fishes: paired gonads

external and internal fertilization

sperm released through separate opening



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most teleosts:

ova maintained in continuous sac from ovary to oviduct

exceptions: Salmonidae, Anguillidae, Galaxidae, non-teleosts

- these release eggs into body cavity when ripe

Reproduction

bioenergetics: $C = E + M + G + S + R$

C – consumption

E – excretion

M – metabolism

G – growth

S – storage

R – reproduction



Anatomy

in general:

gametes produced only during spawning season
gonads reduced during non-reproductive season



Timing and location of spawning

strategy:

avoid competition for spawning habitat

maximize access to food for offspring

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example: Lake Champlain

anadromous – salmon

catadromous – eels

fall spawners – lake trout, whitefish

spring spawners – smelt

littoral spawners – sculpins, sunfishes, basses

stream spawners – suckers, darters, minnows, sturgeon

pelagic eggs – burbot

Reproduction

fecundity

egg size and number inversely related
egg number directly related to female size (within species)
related to food supply, competition
= population-regulating mechanism



Reproduction

fecundity

fractional spawners – produce eggs continuously,
spawn frequently

batch spawners – single reproductive season
release all eggs in a short period