

Reproduction in fishes



Reproduction

onset of reproduction

males typically mature earlier and smaller than females
mature earlier if survival and growth are low
stable environment – delayed reproduction

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survivorship

high if egg production is low, and vice versa
high fecundity fish respond more rapidly to change

Reproduction

frequency of reproduction

semelparity - spawn and then die

- huge investment in egg production

iteroparity - repeated reproduction

allows compensation for a “bad” year

more common in more unstable environments

may not spawn every year (sturgeon)

Reproductive strategies

fertilization

external except livebearers (elasmobranches, Poeciliidae, etc)

mass spawning events (Clupeiformes, smelt, etc.)

several males to each female (Salmoniformes, lampreys)

several females to each male (Gobiidae)

single-pair matings (guppies)

How do fish minimize the losses of their eggs from predation?

Reproductive strategies

Spectrum from minimal to maximum parental investment

Reproductive strategies

non-guarders

- pelagic (broadcast) spawners
- semi-buoyant eggs
- high fecundity
- egg and larval 'migrations'



Reproductive strategies

non-guarders

- pelagic (broadcast) spawners
- benthic spawners
 - on coarse substrates (lake trout)
 - on vegetation (carp, perch)
 - on fine substrates (smelt)



Reproductive strategies

non-guarders

- pelagic (broadcast) spawners
- benthic spawners
- brood hiders:
 - build redd on coarse substrates (salmon, lamprey)



credit: Thomas B. Dunklin

Reproductive strategies

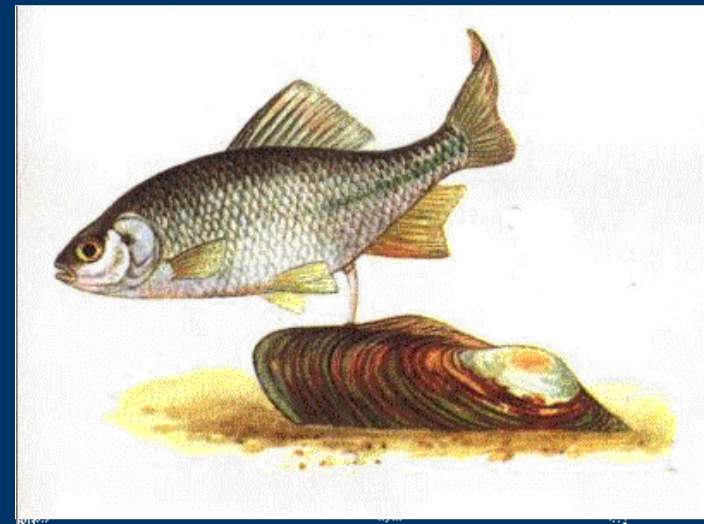
non-guarders

- pelagic (broadcast) spawners
- benthic spawners
- brood hiders

build redd on coarse substrates (salmon, lamprey)

beach spawners (grunion)

use another species (bitterling)



Reproductive strategies

guarders

- nest builders (largemouth bass)



Reproductive strategies

guarders

- nest builders (largemouth bass)

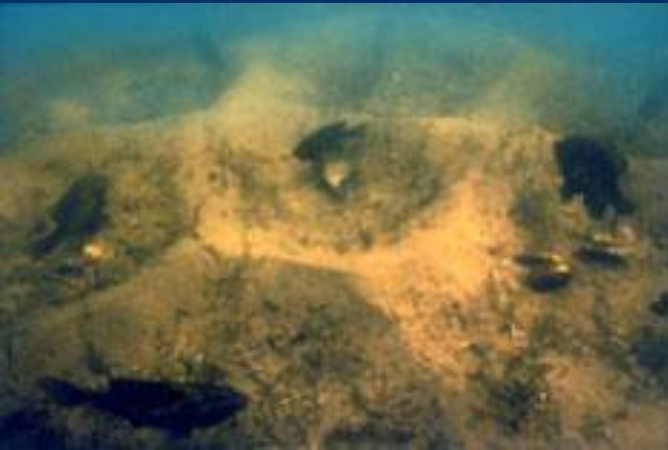
 - rock and gravel (like a lentic redd - sunfishes)

 - plant material (sticklebacks)

 - holes, crevices, cavities (gobies, sculpin, blennies)

 - froth (bettas)

 - anemones (clown fish)



Reproductive strategies

bearers - carry eggs and/or fry with them



Reproductive strategies

bearers

- external bearers

transfer: Gasterosteidae, Sygnathidae (pipefishes,
seahorses)

grade from attachment to skin, to open pouch,
to closed pouch

gill chambers, forehead

obstetrical catfish carry eggs on ventral surface

