

Fish Behavior

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Fish Behaviors

Outlines

- Schooling
- Shoaling
- Migration

Fish Behavior

- Behavior refers to the observable or measurable actions or reactions of an organism in response to a stimulus originating from its environment
- The stimulus may be some environmental change such as day-length or temperature.
- or it can be the activity of another organism, often a potential predator.
- Fishes behave in ways that maximize their fitness

Cognition

- Consciousness and awareness.
- The capacity for brain function is commonly assumed to be related to brain size.
- Spatial orientation and mapping
 - Migration: Piloting, orientation (directional headings), navigation (relative location)
 - The role of learning in migration

Learning

- Learning implies the transfer of information from other organisms such as parents, siblings, prey or predators.
- Change in behavior based on experience
 - Maturation is behavior change based largely on ability due to development (eg. Use of tool



Schooling



Definitions

- School - a polarized, synchronized shoal (has coordinated, directed movements)
- Shoal - any group of fishes that remains together for social reasons

Fish Behavior

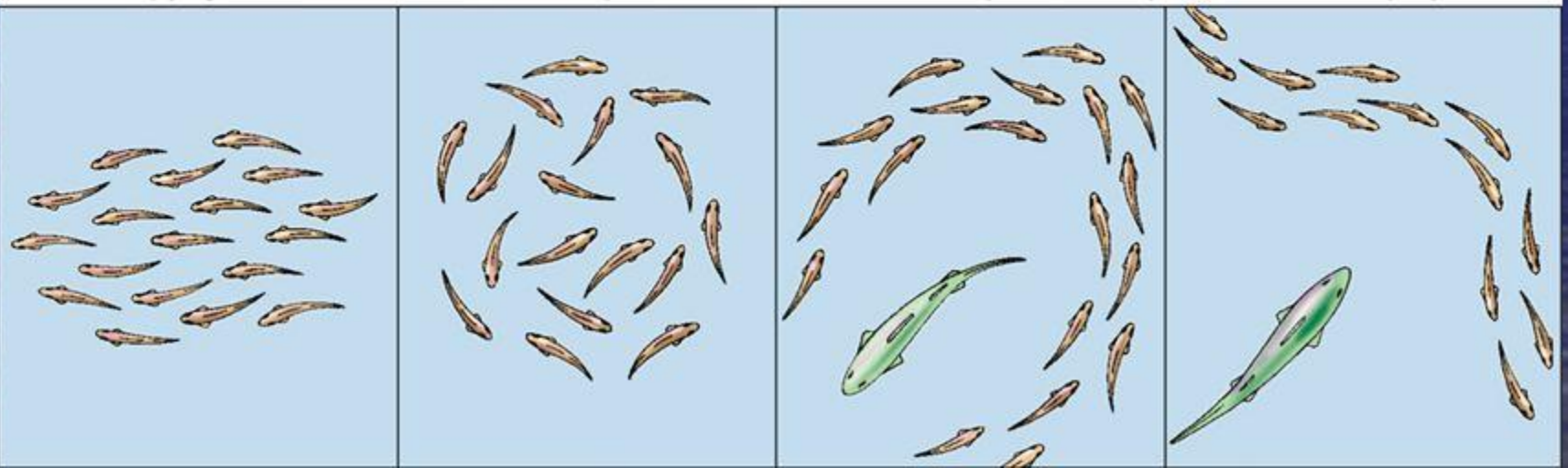
- Schooling

- Widely used (+4000 species school)

- Why school?

- Predator deterrent
- Spawning aggregation
- Migration
- Enhanced foraging

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what are the characteristics of a school

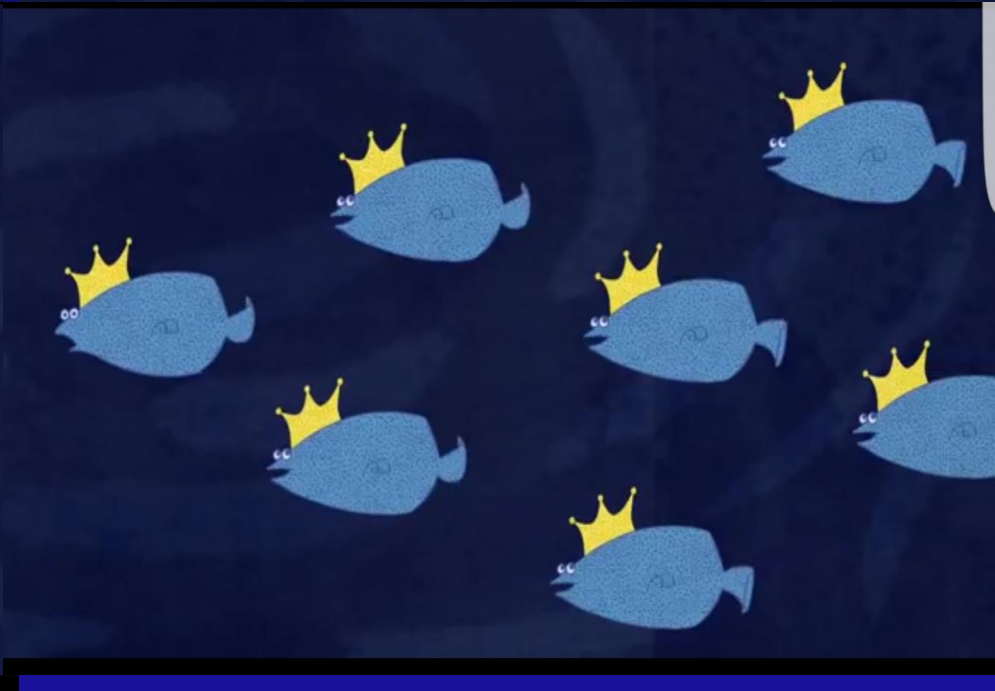
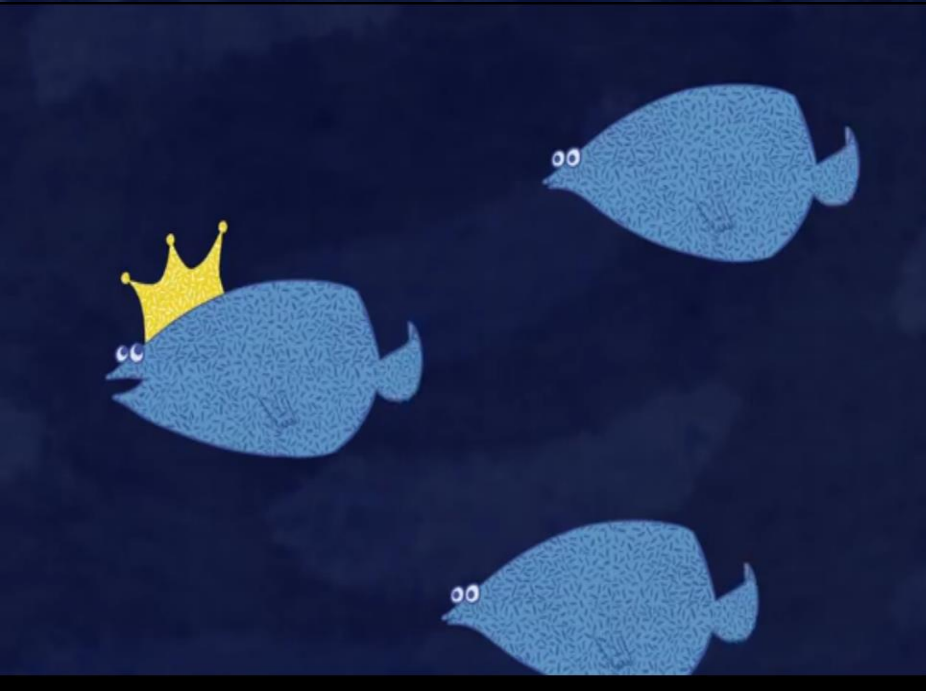
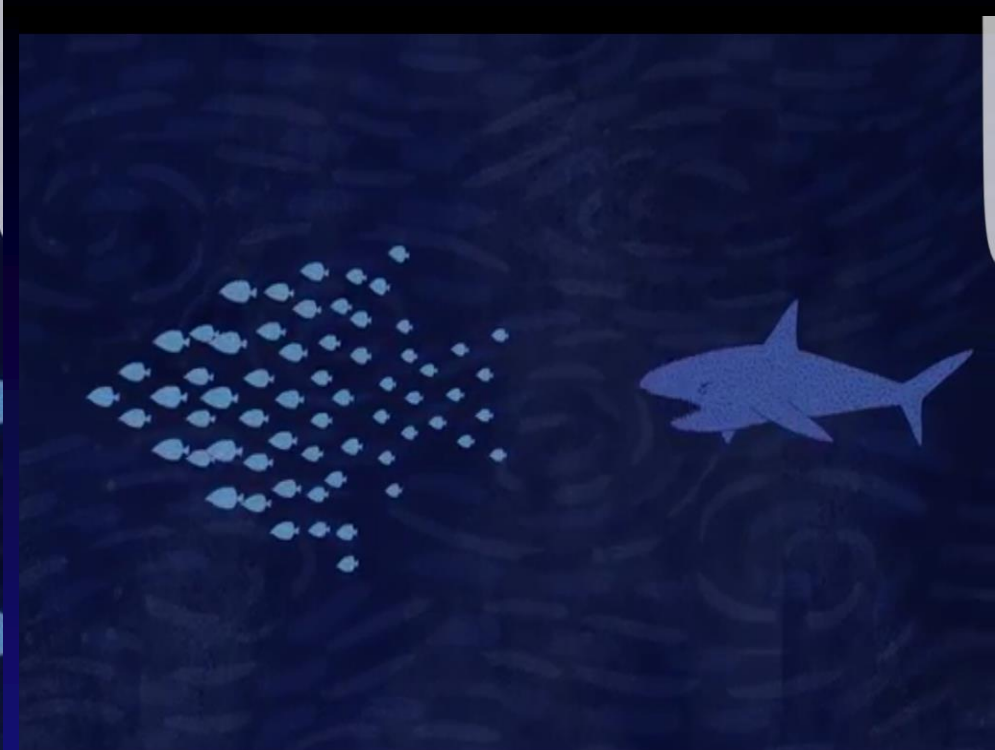
- A school is made up of conspecifics of very similar size.
- Members of a school exhibit precise spacing among themselves.
- There is no particular leader of a school
- Two of the senses that fish use to maintain a school are visual cues and their lateral line systems, which sense movements in the water

The advantages and disadvantages

- shoals are more conspicuous in conditions of good underwater visibility and from the air and Limited food has to be shared.
- schools remain intact during filter feeding when food is abundant

Functions of Schooling Behavior

- Hydrodynamic efficiency
- Reduced predation risk
- Feeding
- Reproduction



Signals

- Most important communication signal
- Large variety of signals
 - Different species use different “languages”
 - Some cues are recognized between species
- Visual Signals

Auditory Signals



- Most fish produce sounds
 - Uses for sound
 - Courtship singing
 - Territorial defense
 - Signaling shoal



Chemical Signals

- Reproductive cues
- Recognition
 - Schreckstoff = fear scents
- Predator avoidance
- Produced in epidermal cells

Migration



SANDRA CRITELLI / BARCROFT MEDIA

10,000 Golden Rays migrating from Florida to Mexico

what is the Fish Migration

A mass movements to move from environment to environment The other in search of environmental conditions you need at a certain stage of life of the departed,

Timing of migrations

- Annual
- Daily
- Seasonal

Reasons for Migrations

- Take advantage of different habitats
 - Feeding
 - Protection
 - Change Physical and chemical conditions
- Temperature
- Light
- Dissolved oxygen
- Salinity

Classification of Fish Migration

- Diadromous – Travel between sea & fresh water
 - Anadromous – most of life at sea, breed in fresh water
 - Catadromous – most of life in fresh water, breed at sea
 - Amphidromous – migrate between water types at some stage other than breeding
- Potamodromous – Migrate within a fresh water system
- Ocenodromous – Migrate to different regions of the ocean

Disadvantages of Migrations

- Expenditure of energy
 - Most must store energy before migration
- Risk from predation
- Exposure to the loss of eggs and larvae by the currents
- Exposed the necessity to adapt to changes in temperature and salinity

Thanks for your listening