

Do you stay where you are born or do you leave?

Stay: **Natal Philopatry** = offspring remain in natal area/group, often share area with parent(s), siblings

Leave: **Natal Dispersal** = offspring move from natal area/group to a new area, usually where breeding will occur.

	Benefits	Costs
Philopatry	<ol style="list-style-type: none">1. Adaptation to local conditions.2. Familiarity with area.3. Decreased aggression.	<ol style="list-style-type: none">1. Increased chance of inbreeding.2. Reproductive suppression3. Increased competition for resources.
Dispersal	<ol style="list-style-type: none">1. Reduced chance of inbreeding.2. Reduced competition for resources.	<ol style="list-style-type: none">1. High energy demands2. Increased predation risk.3. Increased aggression from residents.



Blue Jays

Inbred pairs – fewer eggs and fewer nestlings survived

Males disperse, females philopatric



Females disperse, males philopatric



Habitat Selection

Goal = highest quality area

Abiotic Factors = physical and chemical properties

- Temperature
- Light
- Water

Biotic Factors = interactions with other organisms

1. Resource availability
2. Presence of conspecifics (individuals of the same species)
3. Competition (two species trying to use the same resource)

Territoriality = occupation and defense of an area

4. Predation

Migration

The periodic movement from one place to another and back again.

Dispersal

- one way
- permanent, only happens once

Migration

- round-trip
- may occur several times over a lifetime

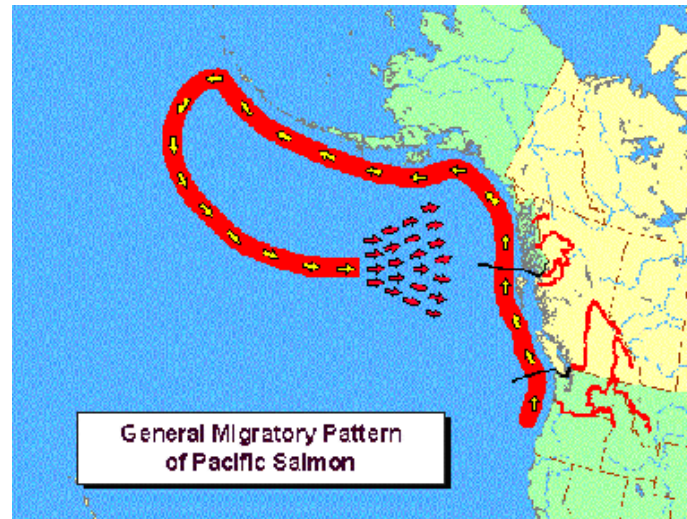
Patterns of migration:

1. Return migration = A to B to A

- typically seasonal, for breeding
- usually **obligate** = individual always migrates



Grey Whale



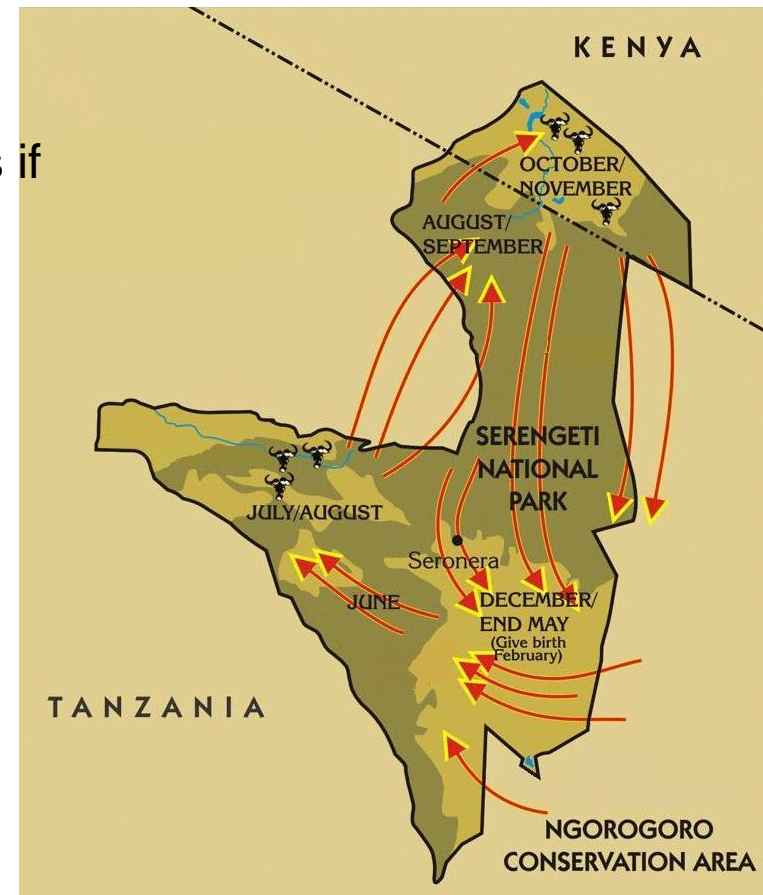
Patterns of migration:

1. **Return migration** = A to B to A

- typically seasonal, for breeding
- usually **obligate** = individual always migrates

2. **Nomadic migration** = irregular movement

- driven by temporary changes in local conditions
- usually **facultative** = individual only migrates if necessary, stays put if conditions are stable



Triggers?

1. Annual biological clock
2. Environmental cues
3. Physiological cues

Navigation

Process by which an animal uses cues to determine its position as it moves through the environment.

1. **Piloting** – utilizes fixed reference points, landmarks
 - constructs a mental map via learning
 - best for local movements



Digger Wasps



California Gray Whales

Navigation

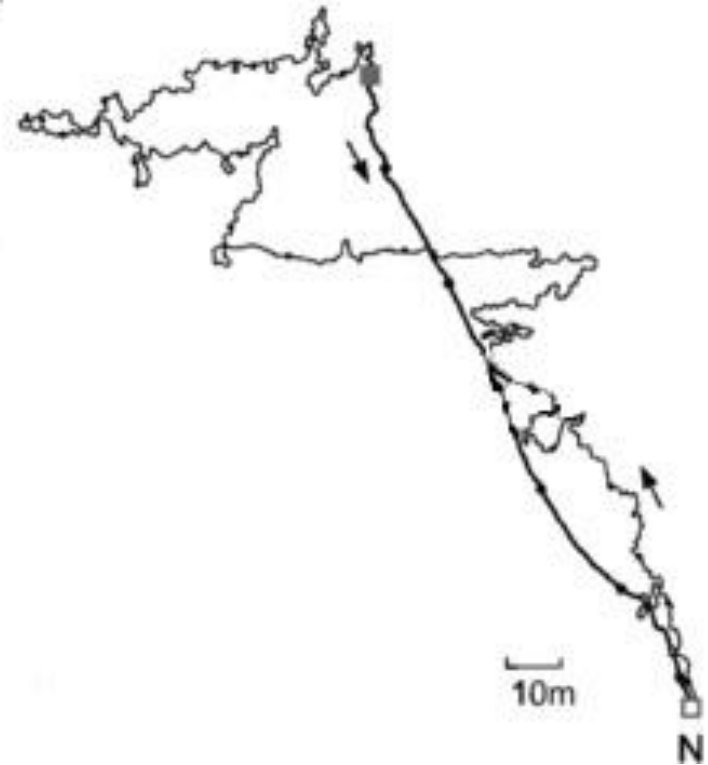
Process by which an animal uses cues to determine its position as it moves through the environment.

1. **Piloting** – utilizes fixed reference points, landmarks
 - constructs a mental map via learning
 - best for local movements
 2. **Compass Orientation** – utilizes celestial cues (sun, stars) or earth's magnetic field to orient in a particular direction
 - requires internal clock
 - useful in local and long-distance movements
- A) Path integration = dead reckoning
- local movement

- A) Path integration = dead reckoning
- local movement



Desert Ants



Navigation

Process by which an animal uses cues to determine its position as it moves through the environment.

1. **Piloting** – utilizes fixed reference points, landmarks
 - constructs a mental map via learning
 - best for local movements
2. **Compass Orientation** – utilizes celestial cues (sun, stars) or earth's magnetic field to orient in a particular direction
 - requires internal clock
 - useful in local and long-distance movements
 - A) Path integration = dead reckoning
 - local movement
 - B) Vector navigation
 - long distance movement
 - innate program with information about direction and duration

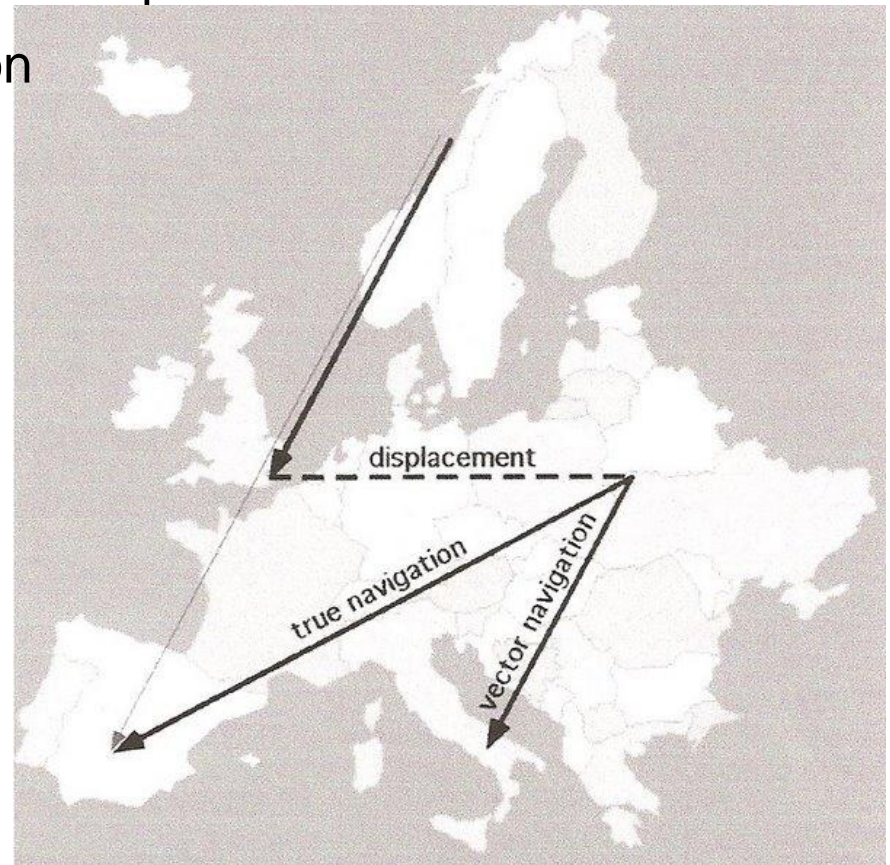
Navigation

3. **True navigation** – combines piloting and compass orientation

- requires the use of a map and a compass
- allows animal to adjust direction if it is displaced in route
- only form of navigation that allows animals to navigate through unfamiliar areas.

Where does map come from?

- a) Landmarks via learning
- b) Magnetic field
- c) Olfactory cues





1. Find the general area along the coastline
 - magnetic cues, sun, currents
2. Find the natal stream
 - olfactory cues