

Wildlife in Space!

Types of Movement

Localized daily activities
(home range / territory)

Establishment of new home range
(dispersal)

Shifting between seasonal home ranges
(migration)

Definitions

Home range: an area repeatedly traveled by an individual in its normal activities

- Must be large enough to meet biological needs
 - home ranges tend to be larger when food is scarce
 - home ranges of males often larger than females

Definitions

Territory: part of a home range that is actively defended against other individuals

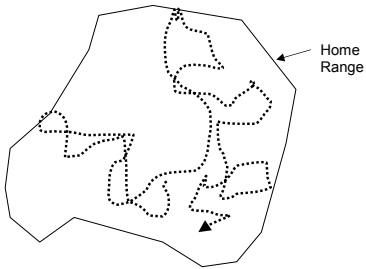
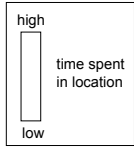
- implies interference competition
- males often defend females or nesting sites against other males
- females often defend offspring or food against other females
- fixed vs. roving

Why Study Home Ranges or Territories?

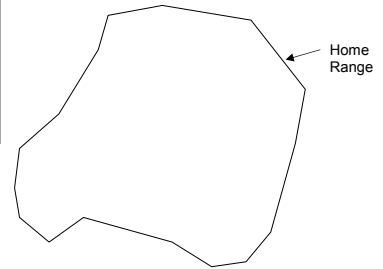
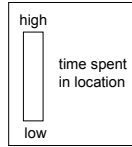
- Indicates what habitats & resources the animal needs or prefers
- Size provides a rough idea of population density
- Indicates scale for local management efforts

How Do Animals Use Their Home Ranges?

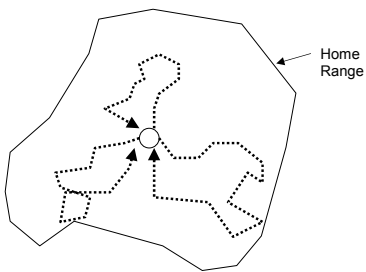
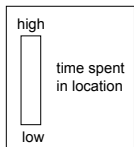
Randomly?



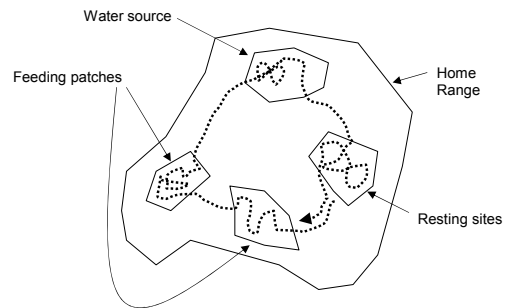
Core Area



Core Area: Central-place Foraging



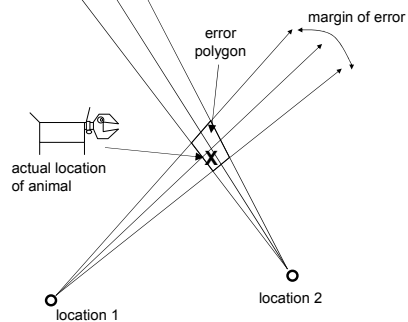
"Trap Lining"

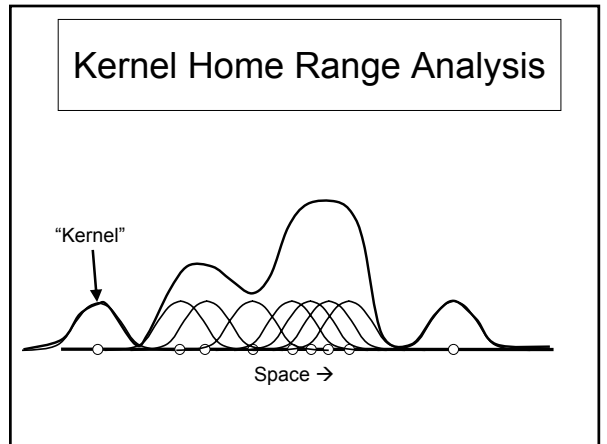
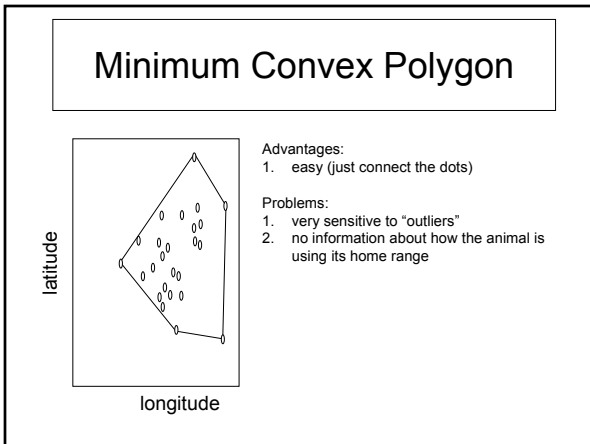
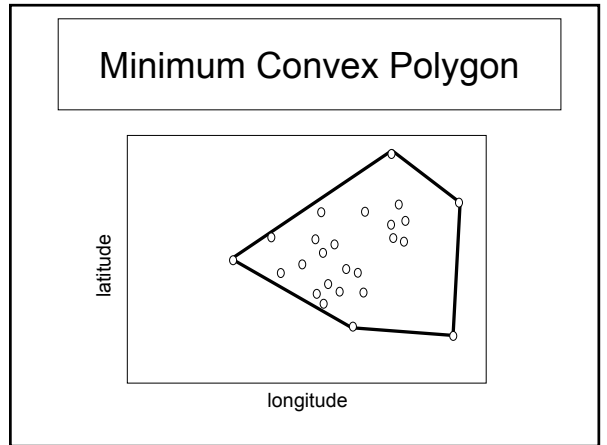
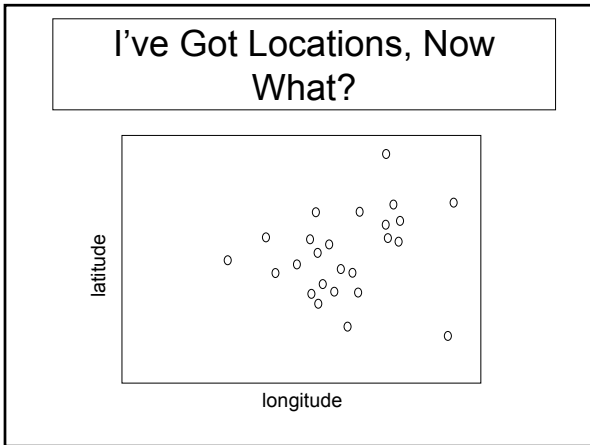
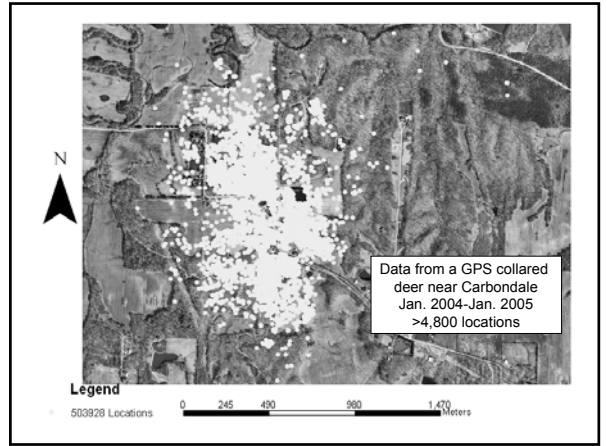
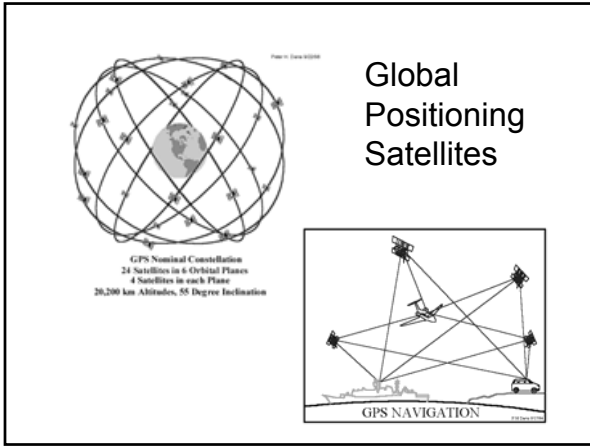


Measuring Home Range

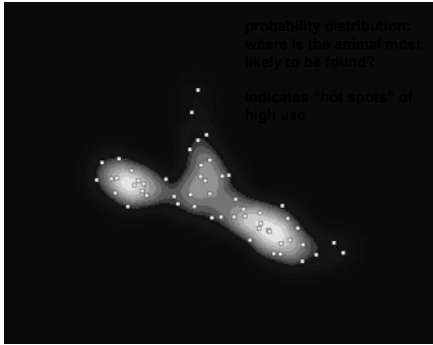
- Often estimated using radio telemetry
 - radio transmitter placed on animal
 - animal re-located many times
 - should be located when it is active.
 - **diurnal** - active during day
 - **nocturnal** - active at night
 - **crepuscular** - active at dawn and dusk

Triangulation



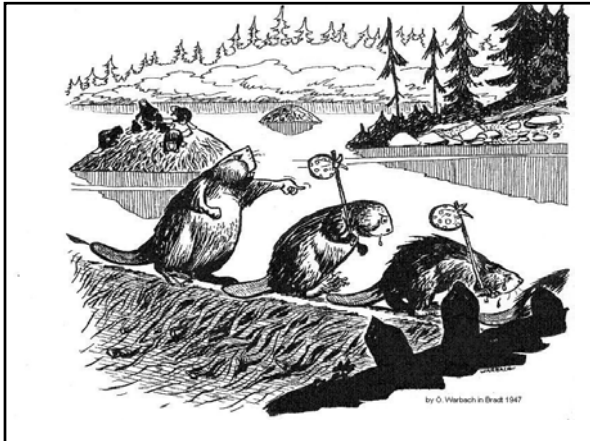


Kernel Home Range Analysis



Dispersal

- Movement of an animal away from its **natal** home range to establish a new home range
 - Usually in animals approaching sexual maturity
 - Primary cause of population spread & gene flow
 - HIGH RISK!
- Opposite = **philopatry**: the tendency of an animal to remain in its natal home range



Why Disperse?

Migration

- Cyclic movement between 2 or more distinct home ranges.

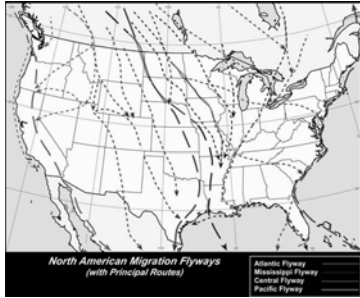
WHY MIGRATE?

- Variation in resources and conditions across space and time.
 - Exploit seasonal resources
 - Withstand or avoid harsh environmental conditions
 - examples: deer yards, snake dens
 - Avoid competition or predation

Migration and Management

- Migratory species present management challenges:
 - 2 or more specific habitats must be maintained for population to persist
 - traditional travel routes and stopover points are critical for migration success
 - often cross administrative and political boundaries, requiring coordination and cooperation of separate agencies

Waterfowl Flyways



Horseshoe Crabs and Shorebirds

- Several species of migratory shorebirds stop at Delaware Bay in late May – early June
- Coincides with spawning of horseshoe crabs
- Red knots (*Calidris canutus*) arrive emaciated from South America
- Feeding on horseshoe crab eggs, red knots can nearly double their weight in 2-3 weeks
- Energy reserves to continue migration to Canadian Arctic

Things to Remember

- Definitions
- Home range vs. territory
- Ways animals use home ranges
- Measuring home range via radiotelemetry
- Causes & consequences of dispersal
- Management implications of migration