

## Social behavior



When ornithologists are mutually attracted

- Birds may occur as solitary individuals or as members of a group
  - Strategies vary by season or age of the individual



## Spatial competition

- Dispersion - the distribution of animals in space
- Total Range - The area that an animal learns thoroughly and habitually patrols. It is not defended
- Core Area - The area of heaviest regular use within the home range
- Territory - A defended area occupied more or less exclusively by a bird or group of birds by means of defense or advertisement
- Individual Distance - The minimum distance that an animal routinely keeps between itself and other members of the same species
- Dominance - The assertion of one member of a group over another in acquiring access to any resource that adds to the genetic fitness of the dominant individual

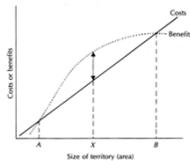
## Territoriality

- A territory is a fixed area defended continuously for some time, even if only for hours, in the breeding and/or non-breeding season
  - Simple = single resource (hummingbird and flower)
  - Complex = courtship, nesting, raising young (nesting territories of songbirds)
- Primary if not exclusive use of a territory is limited to the defending individual and, perhaps, its mate and young
- Display or defense behaviors discourage rival birds that would otherwise enter or approach the territorial space



## Defending territories

- The spatial and temporal variability of resources determine the costs and benefits of territory defense



## A moveable feast



- Sanderlings defend Willets
- Glaucous-winged Gulls defend Common Eiders

## Dominance

- Males dominate females
- Older dominate younger
- Larger dominate smaller
  - Within sex and age classes, size often determines dominance

### Benefits



Dominant Field Sparrows have higher survival rates (Fretwell 1968). Higher ranking White-throated Sparrows control more protected foraging sites (Schneider 1984).

## Coloniality

- Costs
  - Food
  - Attraction of predators
  - Parasites
  - Disease
  - Conflict
- Benefits
  - Information centers
  - Predator swamping
  - Group defense/protection
- Response to limited nest sites
  - Predator free islands
  - Cliffs
  - Stream banks



## Flocking

- Predictable, stable food resources promote territoriality
- Unpredictable, unstable food resources promote flocking
- Benefits of flocking include:
  - Increased foraging efficiency
  - Reduced risk of predation



## Foraging benefits of flocking



Cooperation



The "Beater Effect"



## Flocks reduce predation



Predator confusion hypothesis (Tinbergen 1951)



Not confused

## Optimal flock size reflects trade-offs

- Optimal flock size is the balance of fighting and scanning that maximizes feeding (Caraco et al. 1980)

