Population dynamics
Understanding change

Lecture outline
- Age distributions
- Life tables
- Survivorship curves
- Dispersal

Age structure
- AKA age distribution of populations
- Reflects natality and mortality
- Baby boomers
  - Born between 1946 and 1964
  - About 76 million of ’em

A useful type of age structure
- **Stable age distribution**: proportions in each age group are?
  - If so, birth and death rates for each age group are?
- Assuming this stability, how will the abundance of a population change through time?
  - Up? Down? No change? Can’t tell?

Age pyramids

Age structure issues in plants
- Continuous age distribution?
- Age = size?
- Role of seed banks

* About 76 million of ’em

Bristlecone pine (Pinus longaeva)

Germinating seeds from restored wetland soils
Life tables
- Putting mortality data together to
  - Determine probabilities of survivorship
  - Determine ages with highest mortality
  - Predict population growth
- Ideally, follow a cohort

Types of life tables
- Cohort or Dynamic: follow a single cohort
  - Shows ________ survivorship
  - When would this kind of life table be a challenge?
- Dynamic-Composite: follow a composite of multiple cohorts and then treat the data as one group
  - One critical assumption?
- Time-specific or Static: only sample once and age everything you encounter
  - Shows ________ survivorship
  - Many assumptions
- Leads to survivorship curves…*

Survivorship examples (I)
- Fig. 10.13; Dall sheep Ovis dalli
- Fig. 10.14

Survivorship examples (II)
- Fig. 10.16 top

Survivorship examples (III)
- Fig. 10.17

Dispersal movements
- Immigration and emigration
  - Linked; depends on point of view
  - Can be passive, active, or both
**Dispersal: follow the food**
- Numerical response

![Graph showing dispersal patterns](image1)

Dispersal: ballooning
- St. Andrew's Cross spiders
- Australia

**Dispersal: Population expansion**
- Africanized honey bees
- *Apis mellifera*

![Map showing dispersal of Africanized honey bees](image2)

**Migration**
- Eastern Wood-Pewee
- Ebird.org