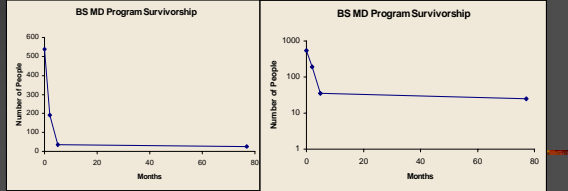


## BSMD program 'survivorship'

Month	#	%	N out of 1000
apply	0	537	100.0
interview	2	190	35.0
accepted	5	35	6.5
md	77	25	4.6

1999



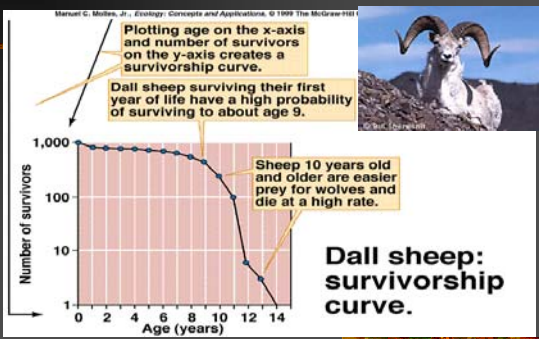
To allow comparisons to other studies, number of Dall sheep surviving and dying within each year of life is converted to numbers per 1,000 births.

Subtracting number of deaths from number alive at the beginning of each year gives the number alive at the beginning of the next year.

Age (years)	Number of survivors at beginning of year	Number of deaths during year
0-1	1,000	199
1-2	801	100-199
2-3	789	801-12
3-4	776	789-13
4-5	764	776-12
5-6	734	764-30
6-7	688	734-48
7-8	640	688-69
8-9	571	640-132
9-10	439	571-187
10-11	252	439-156
11-12	96	252-90
12-13	6	3
13-14	3	3
14-15	0	3



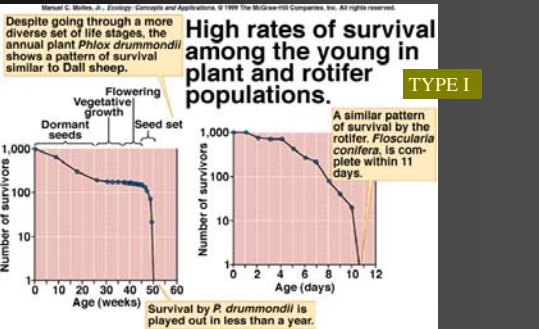
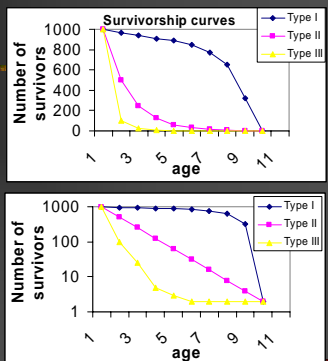
Dall sheep: lifetable.



Dall sheep: survivorship curve.

## Magic of logarithms

Age	I	II	III
1	1000	1000	1000
2	970	500	100
3	940	250	25
4	910	125	5
5	890	63	3
6	850	31	2
7	770	16	2
8	650	8	2
9	320	4	2
10	2	2	2

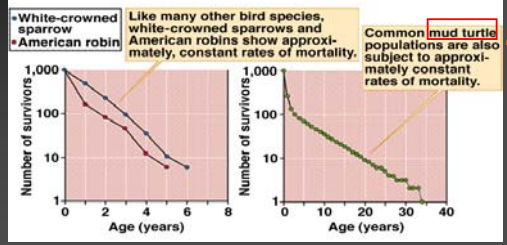


High rates of survival among the young in plant and rotifer populations.

TYPE I

## Constant rates of survival.

TYPE II

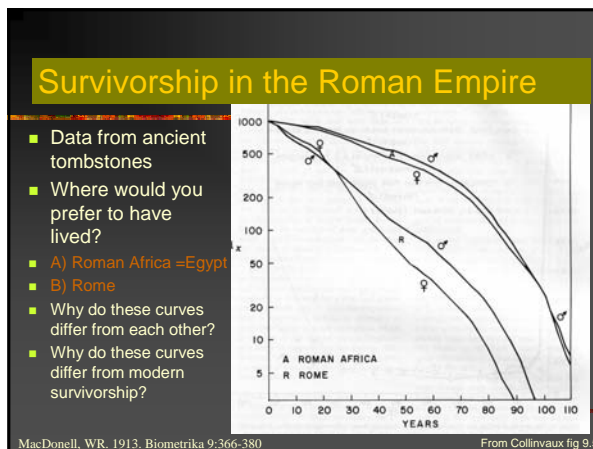
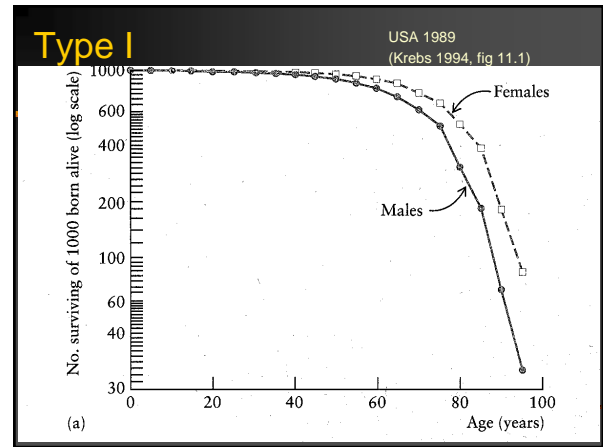
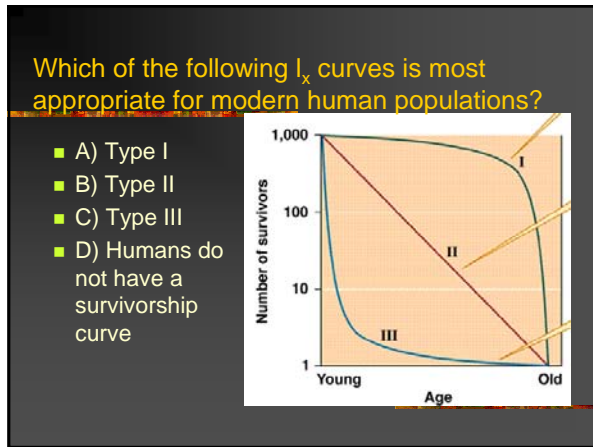
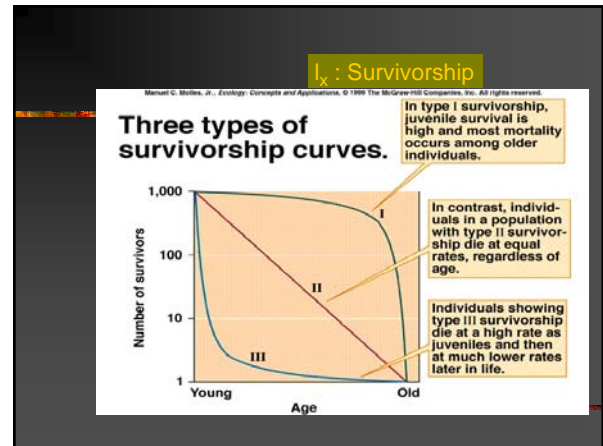
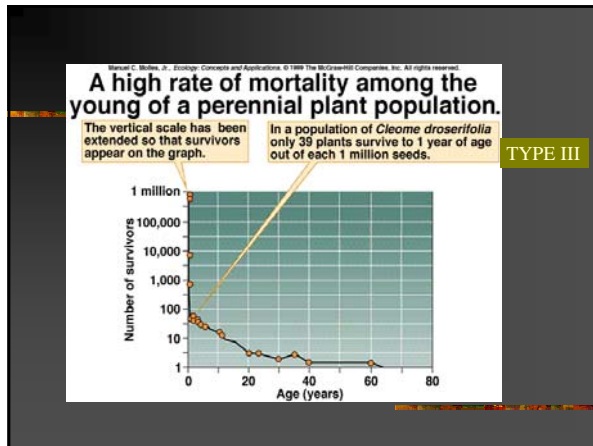


White-crowned sparrow, American robin

Like many other bird species, white-crowned sparrows and American robins show approximately constant rates of mortality.

Common mud turtle populations are also subject to approximately constant rates of mortality.

See Table 10.2



**Muddy Point Chp 11.**  
**Due Monday Feb 23, noon**

- After you've read Chapter 11, identify one important point that was unclear ("muddy") to you. Write out and send to me a sentence or two that explains
  - which concept is muddy
  - what is muddy about it
  - why this concept is important.
- Send your assignment to me
  - email: [rm2@uakron.edu](mailto:rm2@uakron.edu), put the words "MUDDIEST POINT" in the subject line;
  - or drop off at my office – ASEC 177; or my mailbox in the biology office)
- I will summarize these responses and prepare class based on your responses.
- If you have more than one muddy point you would like to have addressed, you may do so, but please clearly identify the one that is "most muddy".

### $m_x$ : age specific birth rates (see Chp 12)

How does the pattern of reproduction vary with age for most creatures?

- A) it doesn't
- B) it increases
- C) it decreases
- D) intermediate peak
- E) it varies among species

### Salmon

### Mud Turtle example from text Table 10.2

age	$m_x$
0	0
1	0
2	0
3	0
4	0.96
5	0.96
6	0.96
7	0.96
8	0.96
9	0.96
10	0.96
11	....

### $m_x$ : age specific birth rates (see Chp 12)

- Iteroparous – Season after season
  - Constant with age
  - Vary with age
  - Perennials
- Semelparous – Big Bang
  - Annuals
  - Other

### What would the $m_x$ curve for humans look like?

- A) Iteroparous
- B) Semelparous
- C) Neither
- D) Humans do not have an  $m_x$  curve

Sketch out what you think the curve would look like, and why you think that.

### US

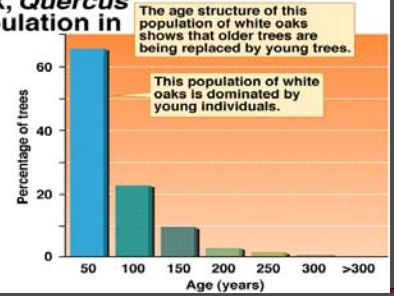
1999 Births / 1000 women

Age	Births / 1000 mothers
10-14 years	0
15-19 years	50
20-24 years	110
25-29 years	120
30-34 years	90
35-39 years	40
40-44 years	10
45-49 years	0

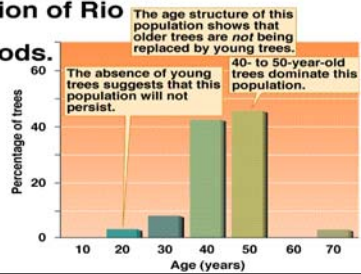
## Age structure

- Populations can be characterized by the number of individuals in each age group
- For example – age structure for our class: CPS
  - A) < 19
  - B) 19-21
  - C) 22-23
  - D) 24-25
  - E) 26-27
  - F) >27

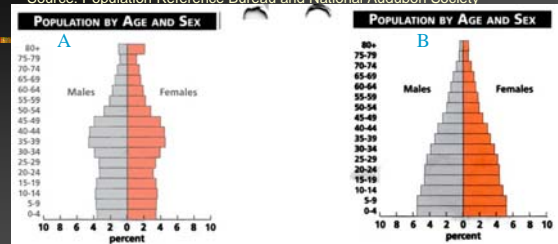
### The age distribution of a white oak, *Quercus alba*, population in Illinois.



### The age distribution of a population of Rio Grande cottonwoods.



Source: Population Reference Bureau and National Audubon Society



- Which is likely to be growing fastest: A or B?
- Think about why
- What other patterns do you see?