

## Topic 3 - r and K selected species Notes

- Most natural populations fall between 2 extremes
  - o r - selected populations
  - o K - selected populations



### R- selected populations

- Organisms with high biotic potential
- Produce many offspring b/c of
  - o high mortality among young
  - o Unstable/unpredictable environment
  - o Short life span
- Going for quantity not quality
- Exhibit J-shaped growth curve
- Impacted by density - independent factors

### K - selected populations

- Organisms with low biotic potential
- Produce few offspring b/c
  - o Young require more parental care and mature slowly
  - o Environment is stable
  - o Life span is longer
- Going for quality not quantity
- Exhibit S - shaped growth curve
- Impacted by density - dependent factors



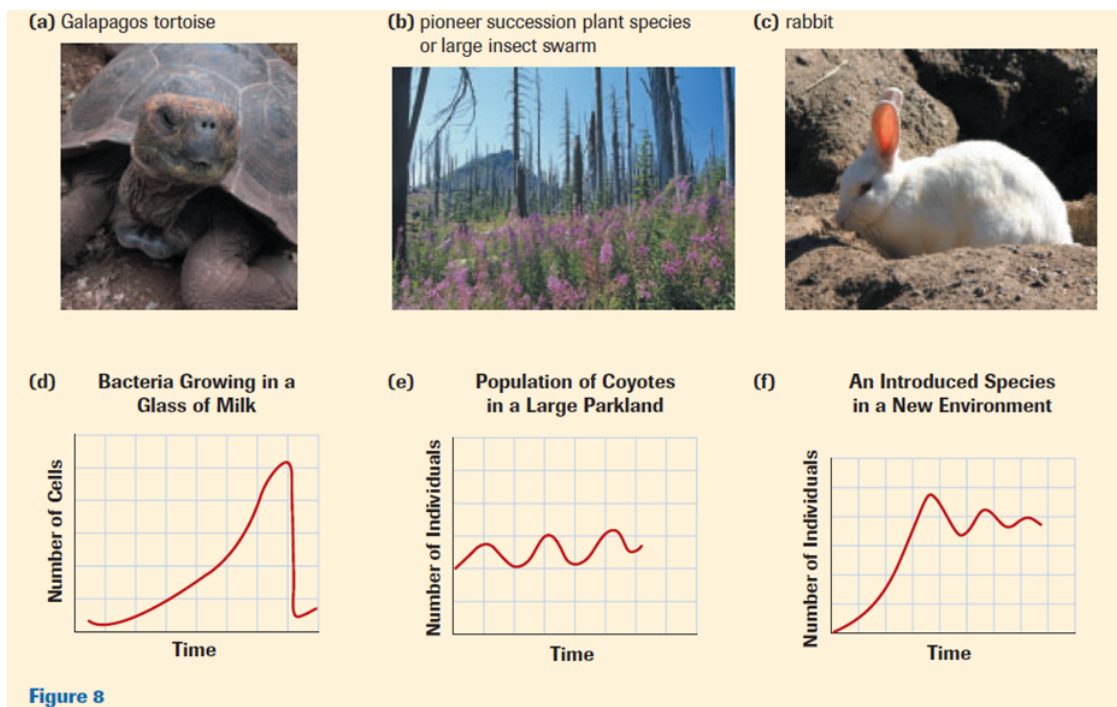
Topic 3 - Review Sheet

**Table 2** General Features of *K*-selected Species and *r*-selected Species

<i>K</i> -selected species	<i>r</i> -selected species
live in predictable, stable environments	exploit rapidly changing environments
long-lived	short-lived
population size stable	population size highly variable
density-dependent mortality	density-independent mortality
competition intense	competition low
multiple reproductive events beginning later in life	single reproductive event at a young age
prolonged parental care of young	little or no parental care of young
modest numbers of offspring	very high numbers of offspring
tend to have an S-shaped population growth curve	tend to have a J-shaped population growth curve
large body size	small body size

1. Differentiate between *r* and *K* population growth strategies. Give at least two examples of each (that we have not discussed already)

2. For each example in Figure 8, determine whether the population is made up of *r*-selected organisms or *K*-selected organisms. Justify your answer.



Use the following information to answer the next three questions.

The 42 000 wild horses and donkeys that live in the American West are reproducing at such a high rate that they could severely damage range lands in the future. In an effort to prevent overpopulation, some mares (females) are rounded up and injected with porcine zona pellucida (PZP), a long-lasting contraceptive. U.S. Food and Drug Administration guidelines prohibit the use of PZP until after a wild mare has had at least one successful pregnancy.

—from *McInnis, 1996*

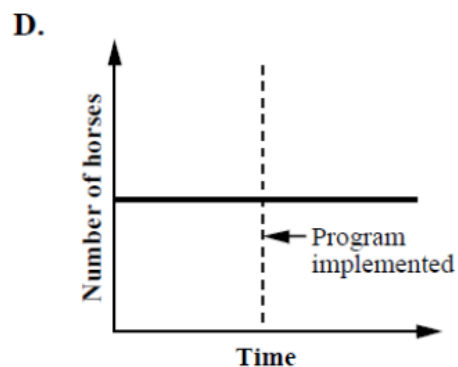
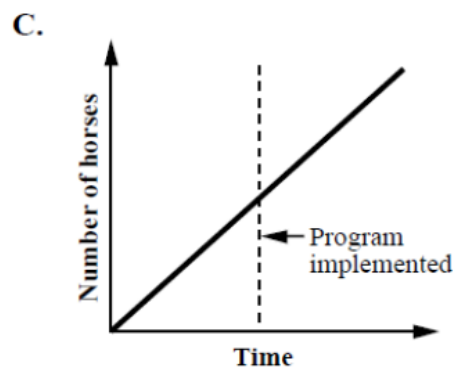
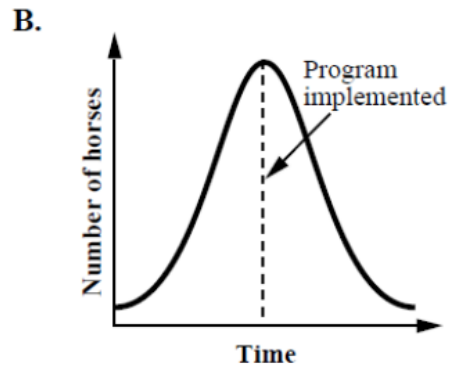
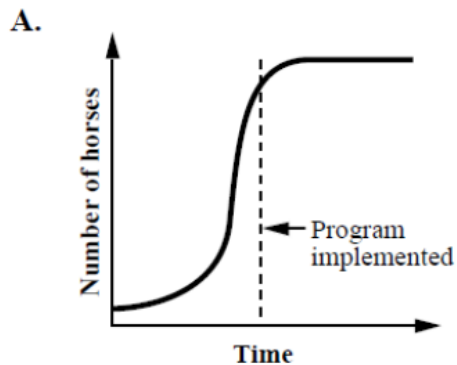
If the effect of PZP on horses is like the effect of the birth control pill on women, pregnancy is prevented because

- A. ovulation does not occur
- B. implantation does not occur
- C. sperm cannot enter the uterus
- D. sperm cannot enter the oviducts

Wild horses are considered to be a relatively K-selected species; however, one characteristic exhibited by these wild horses that is similar to an *r*-selected species is

- A. their large size
- B. their relatively long lifespan
- C. their relatively high reproductive potential
- D. the large amount of parental care devoted to their offspring

Assuming that the contraceptive program manages the wild horse population successfully, which of the following graphs would **best** represent the wild horse population growth curve over time?



## What about Human populations?

### - Pop histogram -

- shows the age distribution of a population at a given time
- Helps us determine if a pop is increasing, decreasing or staying stable

### - Used to determine if a population is :

#### 1. Growing

- Wide base. Many young in the population

#### 2. Stable

- Base is similar to the adult population

#### 3. Declining

- Narrow base and a wider adult population

