

**WLF 419 - Waterfowl and Wetland Ecology and Management
Exam II - 2003**

SS# _____

Provide a clear and concise response to the following question. I will deduct points for extra material that is wrong.

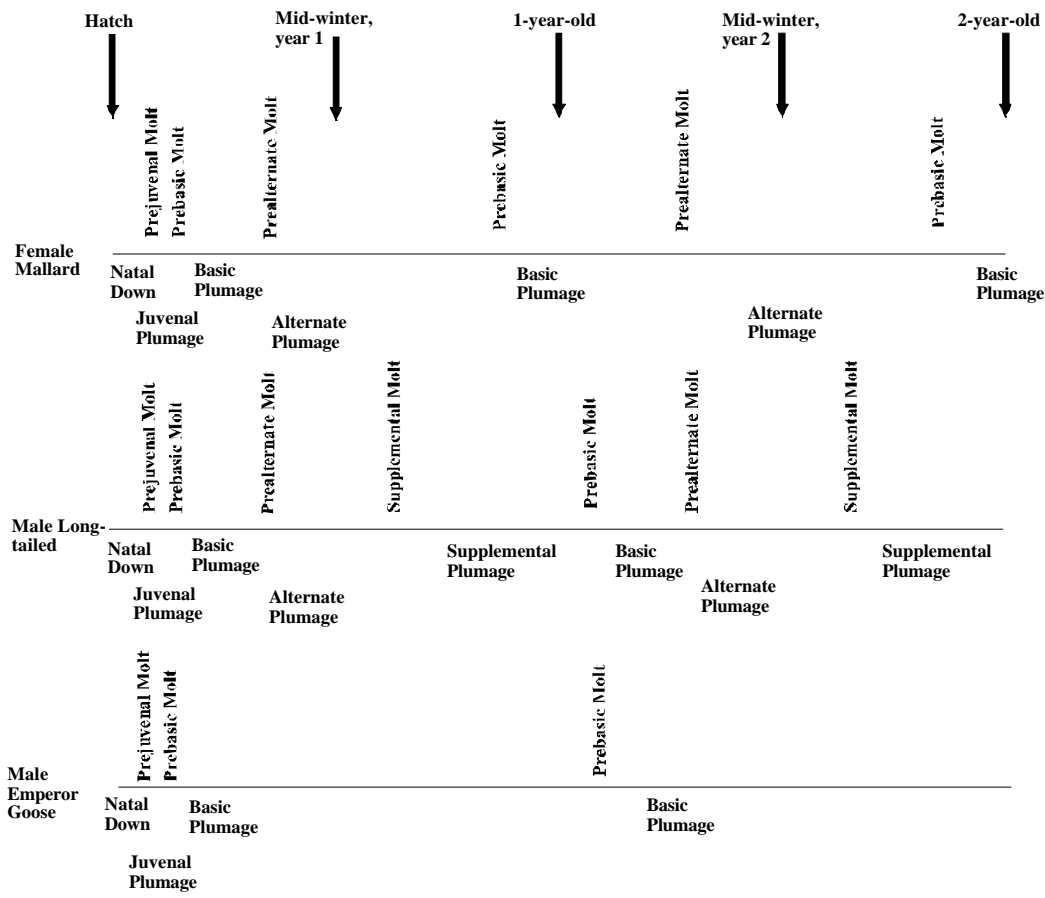
1 (6). Mortality of female Anatini during the breeding season is the primary cause of male biased sex ratios in the adult population of this tribe. Would you expect that sex ratios would be male-biased in the adult population of Anserini? Why or why not?

You would not expect the adult population of Anserini to have skewed sex ratios because the mating system in Anserini is largely perennial monogamy and both sexes are present during the entire breeding season. Therefore, males and females are not exposed to different agents of mortality, which is the case with Anatini that exhibit annual monogamy and only the females participate in most aspects of breeding.

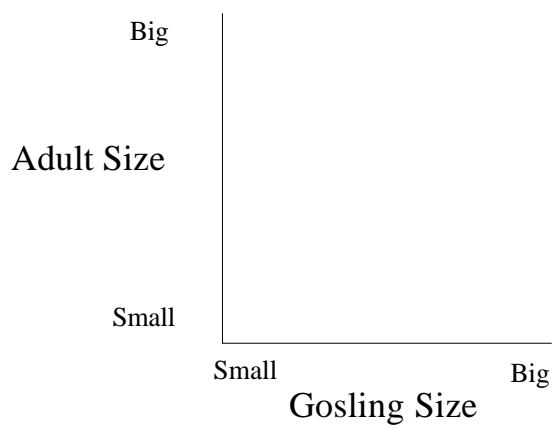
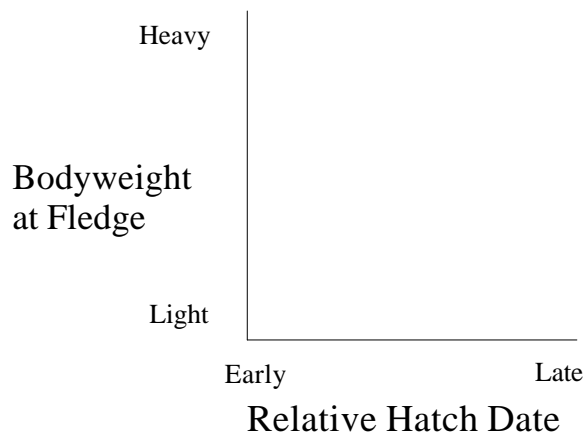
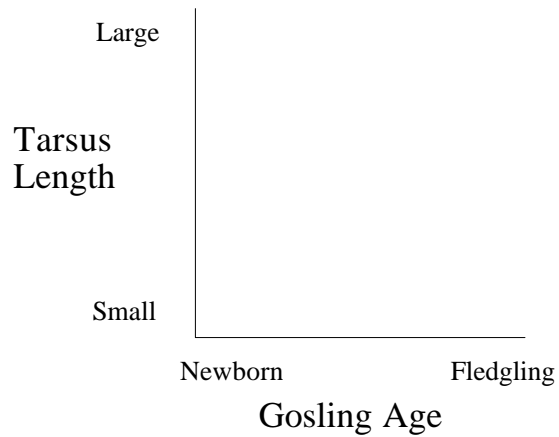
2. (15). List the North American waterfowl tribe(s) after the name of the marker type and trapping technique that are commonly used to mark or capture species in that tribe(s).

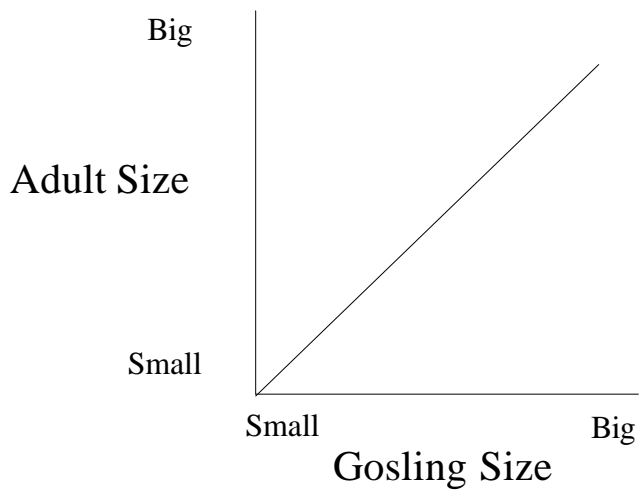
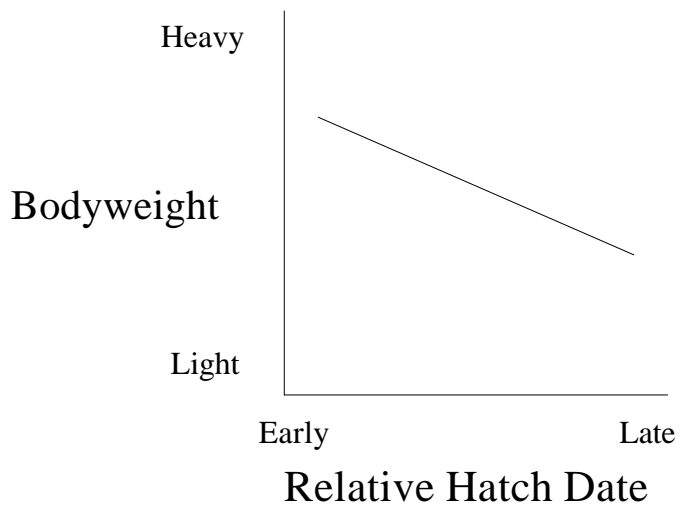
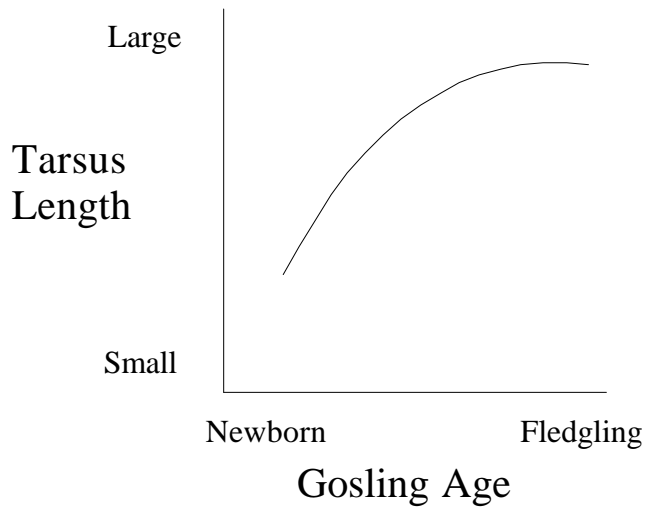
Marker/Trapping Method	Tribe(s)
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Neckband	– Anserini, Cygnini
Nasal Disc	– Anatini, Aythyini, Mergini
Weller Trap	– Aythyini
Legband	– All tribes
Decoy Trap	– Anatini, Aythyini



4. (9) On the graphs below, draw lines to indicate the shape of the relationship between the variable on the y-axis and the variable on the x-axis for geese nesting in northern regions.





5 (18). Compare and contrast the patterns of mortality for female northern pintails in the prairies of Canada and female white-fronted geese from the central arctic of Canada. Describe the approximate rates of mortality, patterns of mortality, and agents of mortality that a cohort of birds would experience if you tracked them from hatching until birds of each species were 2-years-old.

Pintail

- **Highest rates of mortality of young during the 1st 2 weeks after hatching**
- **Duckling has about 30% probability of surviving until hatch**
- **Predation and environmental conditions are the leading agents of mortality during this phase of the life-cycle**
- **Survival probability during first year of life is typically lower than survival probability as an adult and is about 50%**
- **Annual survival probability as an adult is about 65%**
- **Harvest, food limitation, predation, and weather conditions can influence survival probability during the fall-spring**
- **The vast majority of mortality for breeding females occurs during the summer as the result of predation**

White-fronted Goose

- **Like ducks, the vast majority of mortality for goslings occurs during the first 2-weeks of life and a goslings has about a 50% probability of surviving until fledging**
- **Weather and predation are the major mortality agents during this period of the life cycle**
- **Annual survival probability of yearling geese is lower than adult geese and survival probability of second year geese may also be lower than survival probability of adults**
- **Annual survival probability ranges from about 50% in the first year of life to about 80% as an adult**
- **Hunting is the major agent of mortality for adult geese**
- **Mortality of geese during the breeding season is generally lower than during the remainder of the year**

True or False. Answer true or false to the following question by putting a T or F, respectively, in the space provided to the left of the question. If you answer F please rewrite the statement so it is true. Questions are worth 3 points each with no partial credit.

1. F A return rate, which is sometime used to estimate rates of philopatry, is the product of survival probability, fidelity probability, and probability of temporary emigration.

A return rate, which is sometime used to estimate rates of philopatry, is the product of survival probability, fidelity probability, probability of temporary emigration, and detection probability.

2. T The pattern of male-biased dispersal from breeding areas in waterfowl is uncommon among avian taxa.

3. T Most members of cygnini do not breed until they are 3-years-old.

4. F A relative change in a vital rate with an elasticity of 0.3 would change λ 4x as much as the same relative change in a vital rate with an elasticity of 0.1.

A relative change in a vital rate with an elasticity of 0.3 would change λ 3x as much as the same relative change in a vital rate with an elasticity of 0.1.

5. F If the probability that a duck will survive a 3 month period is 0.125, then the probability that the duck will survive 1 month is 0.6 if the monthly survival probability during the period of study is constant.

If the probability that a duck will survive a 3 month period is 0.125, then the probability that the duck will survive 1 month is 0.5 if the monthly survival probability during the period of study is constant.

6. T Adult ruddy ducks experience 2 flightless molts per year.

7. T Non-breeding geese and geese that fail at breeding in a given year frequently fly to areas north of their traditional breeding area to complete the prebasic molt.

8. F The cause of the seasonally decline in the clutch size of most species of North American waterfowl is seasonal changes in the age structure of nesting birds.

The seasonally decline in the clutch size of most species of North American waterfowl is apparent even when you account for the age of the nesting bird.

Other correct answers are possible.

9. **F** Management efforts to reduce the growth rates of mid-continent snow geese have focused on reducing the clutch size of these geese.

Management efforts to reduce the growth rates of mid-continent snow geese have focused on reducing adult survival probability of these geese.

10. **T** Predation is the primary cause of nest mortality for ducks nesting in the prairies.

Bonus (3): What are the main predictions that you would make about the differences in analytical elasticities for a population of green-winged teal and a population of trumpeter swans?