

**WLF 419 - Waterfowl and Wetland Ecology and Management
Exam I**

SS# _____

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

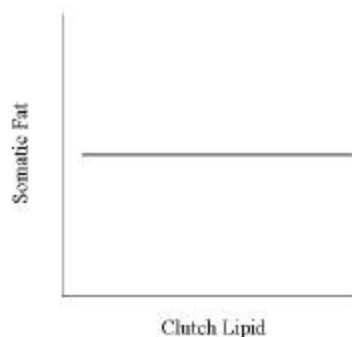
1. (9) Describe the general pattern of foraging ecology for a member of the tribe Aythyini from hatching until breeding the following year (i.e, about 1 June in year 1 to 1 May in year 2). Clearly identify seasonal and life-history factors that would influence diet.

Aythyini duckling rely heavily on protein-rich animal foods for early growth and development. Soon after fledging these birds exhibit a shift to energy-rich plant foods for to meet the demands of migration and winter conditions. Unlike dabbling ducks, diving ducks rarely exploit agricultural waste as a source of energy. In the spring, Aythyini shift to a macroinvertebrate diet as protein source for egg production. Some macroinvertebrates are also a source of lipids.

2. (9) Discuss the factors that contribute to annual monogamy in Anatini.

Monogamy is the most common mating system in waterfowl. Three main factors contribute to annual monogamy in Anatini. First, eggs and young are energetically costly and therefore require early and substantial nutrient acquisition. Early pairing and monogamy in dabbling ducks aids nutrient acquisition by females that may transport reserves to breeding areas. Second, in most species, parental care is female biased allowing no opportunity for a polyandrous mating system. Finally, although the male is often emancipated from parental care duties, early pair formation and lack of a resource-defense on breeding grounds eliminates opportunities for polygyny. In some ways, monogamy is the default mating system in this tribe.

3. (6) You collect a group of female gadwall during laying and you examine these birds using proximate analysis. If you observed the following relationship (see graph below) between somatic fat and clutch lipid for the gadwalls that you collected, what conclusions would you make about the use of endogenous lipid reserves for clutch formation.



Although correlational, this graph suggests no relationship between endogenous fat reserves and lipid devoted to the clutch. If endogenous reserves were used for formation of the clutch, the line would have a negative slope.

4. (9) A manager argues that early spring harvest of arctic nesting geese will not have negative impacts on the population dynamics of these birds, because many geese migrate and nest later than the birds shot during the early spring. Provide an argument to counter this statement.

Several studies have provided strong evidence of seasonal decline in growth and survival of goslings hatched in northern environments. Furthermore, small goslings become small adults with lower reproductive performance. Therefore, early nesting geese contribute the highest proportion of recruits to the population.

5. (21) Discuss the variation in length of care that North American waterfowl provided to their young. Please describe if both members of a pair or a single member provides care. Why does this variation exist? Answer this question at the tribal and subfamily level.

Dendrocygninae, Anserini, and Cygnini provide care to their young up to a year after hatching. In rare cases (mostly Cygnini), families may stay together through the following breeding season (superfamilies). Both members of the pair provide care. Waterfowl in these tribes and this subfamily exhibit perennial monogamy, sexes are largely monochromatic, and generally larger bodied than most duck species. Therefore, the cryptic coloration of males does not attract predators and larger bodies males can provide some defense of the nest and young from predators. Furthermore, females in these taxonomic groups have higher incubation constancy than most ducks and may be poor condition at hatch. Male presence and vigilance may aid the females' recovery from incubation. Finally, families are dominant over non-families, which increases foraging efficiency of young and adults in families.

The brightly colored males of Aythyini, Anatini, Mergini, and Oxyurini generally abandon the female during incubation. The bright plumage of these males may attract predators to the nest site. Females generally abandon their young prior to fledging. The smaller body size of the both sexes may minimize their ability to provide predator defense to older young. These birds may also face tradeoffs between their current reproductive investment and future reproductive effort.

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 The grunt whistle is a courtship display exhibited by some members of the tribe Oxyurini.

The grunt whistle is a courtship display exhibited by some members of the tribe Anatini.

Or

Bubbling or ring-rushing is common courtship display of Oxyurini.

2. F Waterfowl initiate incubation of their eggs at the end of laying.

Waterfowl initiate incubation of their eggs at the beginning of laying.

3. T All North American waterfowl are in the family Anatidae.

4. T The triumph display is performed by both members of the pair in the tribe Cygnini.

5. T Waterfowl lay relatively larger eggs than any birds.

6. F A crèche is a brood amalgamation that includes 1 parent and ducklings from multiple families.

A crèche includes any number of adults and at least 2 unrelated young.

7. F Nest parasitism is extensive in waterfowl, but it is most prevalent in the tribe Cygnini.

Nest parasitism is extensive in waterfowl, but it is most prevalent in the tribe Aythyini or Oxyurini.

8. T The tarsus is more developed at hatching than most other morphological features of goslings.

9. F Buffleheads (*Bucephala albeola*) build their nests suspended in vegetation over water.

Buffleheads (*Bucephala albeola*) build their nests suspended in cavities.

Or

Redheads and Canvasbacks build their nests suspended in vegetation over water.

10. T Gizzard content provides a biased sample of food items because soft foods are digested prior to arrival in the gizzard.

11. (1 point) T Lesser Scaup rule.

Bonus (3 points)

F The Canada goose subspecies (*Branta canadensis minima*) is often identified by a white patch on the forehead.

The Canada goose subspecies (*Branta canadensis maxima*) is often identified by a white patch on the forehead.