EFFECTS OF MATERNAL INVESTMENTS ON EGG METABOLIC RATES, HATCHING SYNCHRONY AND OFFSPRING PERFORMANCE IN CANADA GEESE (*BRANTA CANADENSIS*)

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Abstract: Mechanisms regulating the timing of hatching and embryonic development are not completely known in waterfowl. Understanding how maternal allocations affect the development and performance of a female's offspring is essential to understanding population growth. Maternal allocation of energy may directly affect egg size, constituents or the developmental environment (e.g. location within the nest, time of incubation onset), and these factors may in turn affect offspring development, metabolism, growth and survival. In chick development, an optimal incubation duration must be reached prior to the onset of hatching. Premature hatching (relative to the optimal duration) often results in malformed chicks, while delayed hatching (relative to the optimal duration) may deplete nutrient reserves necessary in the post-hatching environment. Presumably, maternal regulatory mechanisms maximize the number of surviving offspring via differential allocation within the clutch and may favor alternative offspring development. Previous work suggests metabolic rates coordinate offspring development to facilitate synchronous hatching in waterfowl. In this project we will study how yolk steroid levels are represented in the laying sequence, the correlation of steroid levels to metabolic rates within embryo and neonate stages, and the consequence of accelerated development on offspring growth and survival in Canada geese (*Branta canadensis*) breeding in the North Dakota-Minnesota region.

NESTING SUCCESS, GOSLING GROWTH, AND ADULT BODY CONDITION OF GIANT CANADA GEESE IN SOUTHERN ILLINOIS

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Abstract: The giant Canada goose (*Branta canadensis maxima*) is widespread across the Great Lakes states, but nesting density appears to decline in more southern latitudes. Understanding the cause of the relationship between nesting density and latitude will increase our ability to manage resident Canada goose populations. We located nests across southern Illinois and trapped goslings and adults during 2003-2004 to estimate nesting parameters, gosling growth, and adult body condition during brood rearing. The overall nest success for all study sites was 57%. Preliminary results suggest that the morphological measurements of adult male giant Canada geese did not vary between the northern 2/3 and southern 1/3 of Illinois, but the body condition of adult male giant Canada geese was lower in the southern 1/3 of the state. Our results indicate that quality of brood rearing habitat may be limiting productivity of resident Canada geese in more southern latitudes.

EXPERIMENTAL EFFECTS OF NEST SUCCESS ON BREEDING SITE FIDELITY IN A CAPITAL BREEDER.

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Abstract :We experimentally manipulated nesting success of randomly-chosen female Ross's Geese (*Chen rossii*) nesting at the Karrak Lake breeding colony in Nunavut, Canada, from 2000 to 2003, to evaluate the prior experience hypothesis as an explanation for breeding site fidelity in migratory birds. Previous nest fate influenced dispersal distance; successful nesters generally dispersed shorter distances than birds that experienced nest failure, but, regardless of previous nest fate, our results indicate that fidelity rarely occurs to a previous nest site or territory. Regardless of previous nest success, some breeding dispersal within the colony was asymmetrical movement from areas of below-average to those of above-average nesting density. Contrary to the prediction of the prior experience hypothesis, successful nesters generally returned at lower rates than failed nesters, but this difference was significant during only one year. Using multistate capture-resighting models that incorporate recoveries of dead birds, we found strong evidence that return rates differed as a result of lower survival probability of successful breeders. Although observed differences in dispersal distances were consistent with predictions from the prior experience hypothesis, we suggest that geese are flexible when selecting nest sites to ensure earliest possible nest initiation and that fidelity occurs to the larger landscape-level.