

FW662 — Final Exam 1997

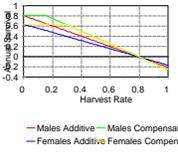
March 21, 1997

Based on the attached article by F. A. Johnson, et al., 1997, *J. Wildl. Manage.* 61:202-216, answer the following questions. These questions are general, and probably have no “right” answer. Rather, the intent of the questions is for you to demonstrate to me a thorough understanding of the issue, and provide reasonable support for your answer.

- A. (20 pts) If harvest is assumed to be zero, does the population model described in this article result in logistic population growth? Explain your answer.
- B. (20 pts) Do the additive and compensatory mortality models in equations (7) and (8) seem reasonable? Explain your answer. Hint: Graph the additive and compensatory mortality functions as a function of harvest rate. Why is the term α_s in equation (8)?
- C. (10 pts) Is there any demographic stochasticity in the population model? If so, what is it?
- D. (10 pts) Is there any temporal stochasticity in the population model? If so, what is it?
- E. (10 pts) Do you see any major problems with not including individual heterogeneity and genetic variation in the population model? Explain your answer.
- F. (10 pts) Explain why the value of 2.2 is included in equation (11).
- G. (10 pts) Why is stochastic dynamic programming used in this problem? Explain your answer.
- H. (10 pts) Does waterfowl management as described in this article meet the intent of adaptive management as described by Carl Walters? Explain your answer.

FW662 — Final Exam Answers 1997

Name:

Question	Answer
A 20 pts	Yes Young/Adult = $0.8249 - 0.0547 \times 10^{-6} \text{ Adults}$ = linear function = logistic No Random variation included in model — not a strict linear function
B 20 pts	<p style="text-align: center;">Survival Rates</p>  <p style="font-size: small; text-align: center;"> — Males Additive — Males Compensat — Females Additive — Females Compensat </p>
C 10 pts	Yes No None
D 10 pts	Yes Ponds are random variable and affect Young/Adult (A_t) Young/Adult = $0.8249 - 0.0547 \times 10^{-6} \text{ Adults} + 0.1130 \times 10^{-6} \text{ Ponds}$ No
E 10 pts	Yes hunting exerts selection which may lead to changes in survival No
F 10 pts	1.2 males/female means $\frac{1 \text{ female}}{1.2 + 1 \text{ ducks}} = \frac{1}{2.2}$
G 10 pts	To provide a tool to make decisions on harvest levels in the face of uncertainty from environment (ponds), harvest levels from season structure, and the biological mechanisms.

H 10 pts	Yes Monitoring provides feedback to learn about system, harvest levels manipulate system No
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Other comments: