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Kyle Rader

Cal Poly Humboldt, kmr161@humboldt.edu

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Variation in Mallard Foraging Strategy in Relation to Flock Size



Kyle Rader
California State Polytechnic University, Humboldt



INTRODUCTION

Wildlife are believed to congregate in groups to increase their chances of survival from predation. Congregating in a flock can improve nutrient intake for prey species, and the larger the group size, the more likely it is that at least one individual is being vigilant (Pulliam 1973).

Aquatic foraging behaviors of mallards can be divided into two categories: Subsurface Foraging and Bill-only Foraging. In bill-only foraging, the mallard's eyes remain above water, and it may be a less vulnerable behavior (Guillemain et al. 2000).

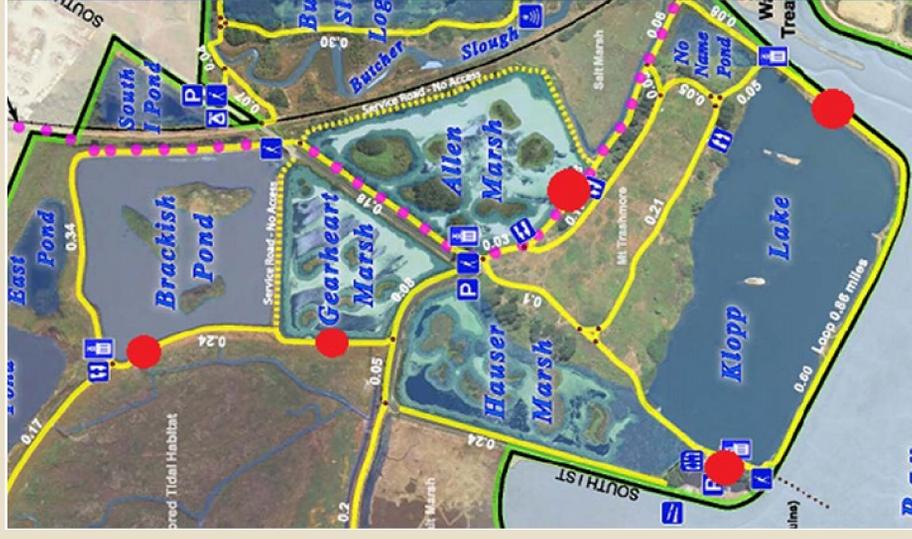
I hypothesized that mallards would exhibit the least risky behavior (i.e. bill-only foraging) while in smaller flocks, and the riskiest behavior while in larger flocks.

METHODS

I gathered flock size and foraging behavior data for mallard using point-count surveys at four bodies of water at the Arcata Marsh and Wildlife Sanctuary.

During each survey day, each location (Fig. 1) was visited. If mallard were observed foraging, data was collected from each individual in the flock for 10 minutes each.

I tested my hypothesis using foraging methods as the response variable and flock size as the explanatory variable.



RESULTS

A linear regression on data collected reveals a positive correlation between flock size and subsurface foraging instances (Fig. 2, $R^2=0.095$, $P=0.0008$) and bill-only foraging (Fig. 2, $R^2=0.119$, $P=0.0008$). And although the “risky” behavior increased in occurrence as flock size increased, bill submersions did the same, and consistently remained the most utilized foraging method regardless of flock size.

DISCUSSION

Overall, as flock size increased, foraging instances of both methods increased. Consistent with my hypothesis, subsurface foraging was uncommon in smaller groups relative to the less risky bill-only foraging.

This adheres to previous studies in which mallards showed a strong preference for bill-only foraging, and support to the claim that bill-only foraging is favored for its low energy cost and not its advantage in predatory detection (Guillemain et al. 2000).

My findings indicate mallards forage more often in larger flocks, regardless of the perceived risk of the behavior. Therefore, I recommend future management to conserve or develop large habitat reserves to support larger groups of animals to optimize foraging.

Mallard Group Feeding Variation (10 Min Intervals)



Figure 2: Mallard foraging behavior shows a significant correlation with group size.

LITERATURE CITED

Guillemain, M., H. Fritz, and S. Blais. 2000. Foraging methods can affect patch choice: an experimental study in Mallard (*Anas platyrhynchos*). Behavioral Processes 50:123-129.
Pulliam, H. R., 1973. On the Advantages of Flocking. Journal of Theoretical Biology. 3:419-422.

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