

Male behavior is expected to be under intense sexual selection in polygynous species. In colonial weaverbirds, this tendency should be particularly evident and strong, because of the density and proximity of competing males, and because virtually all sexual selection occurs near the nest. We observed a colony of village weavers (*Ploceus cucullatus*) in Ethiopia at the height of the breeding season to test this expectation, to determine how males balance behaviors that function in mate choice versus male competition, and also to test the frequent claim that male weavers display in synchrony. We found that male village weavers (1) spent most of their time on behaviors related to reproduction rather than survival; (2) spent a greater proportion of time on behaviors involving female choice (i.e., nest building and display) vs. male-male competition (i.e. territory defense and stealing nest material); (3) often performed their mating displays in synchrony; and (4) differed consistently between individuals in the suites of behaviors that were performed. These results suggest that weaver colonies function as arenas for intense and integrated courtship behavior, and that a continuous range of male strategies might be present within a colony.



## QUESTIONS

- How do male African Village Weavers partition their behavior between behaviors that function in survival vs. reproduction, and between sexually selected behaviors that function in mate choice and male competition?
- How does the number of mates a male has affect his behavior?
- Do males differ in the behaviors they tend to perform (whether because of individual strategies or differences in breeding stage or success)?
- Do males perform their displays in synchrony?

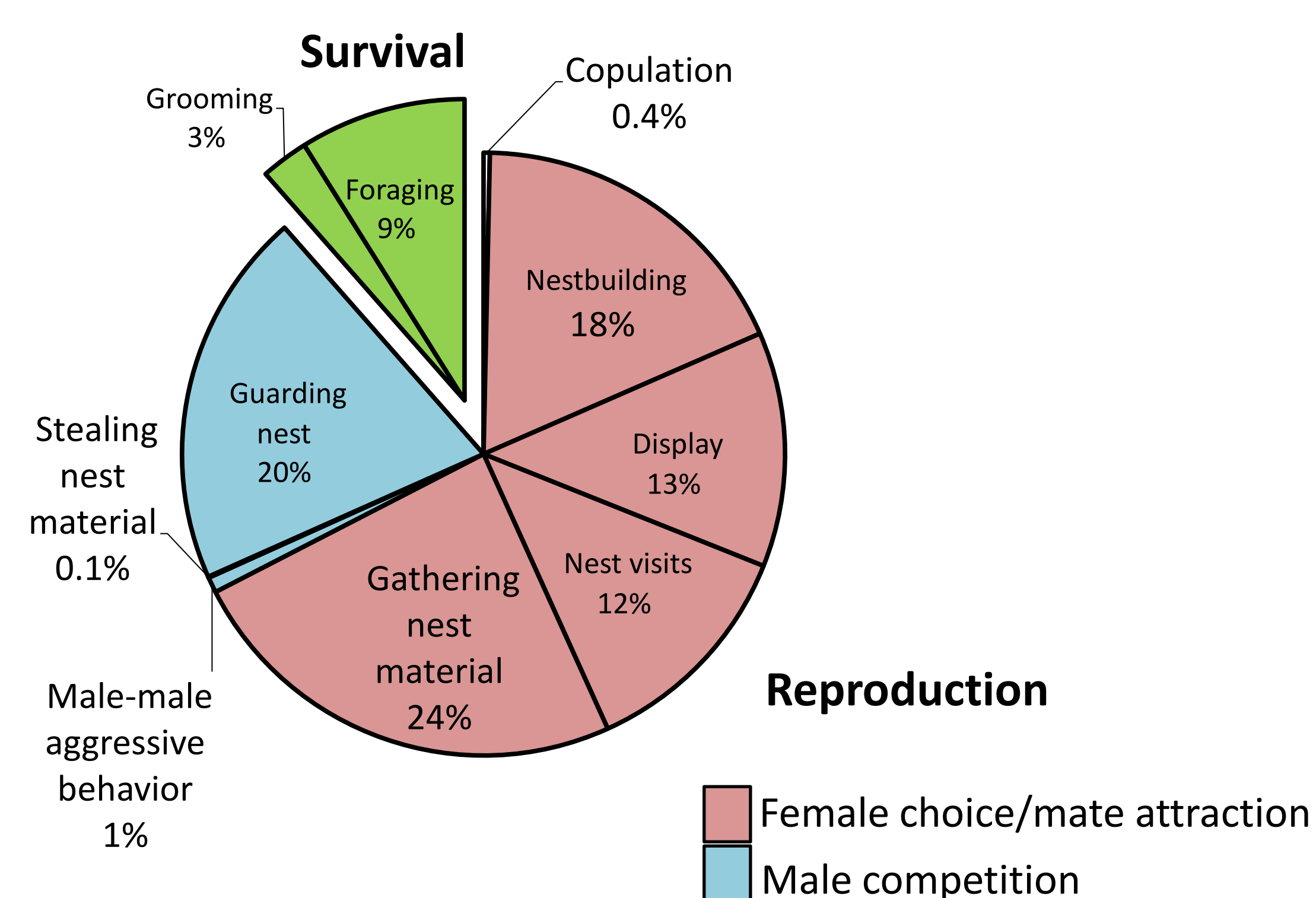
### Male breeding display synchrony:

We developed a 0 – 1 display synchrony index

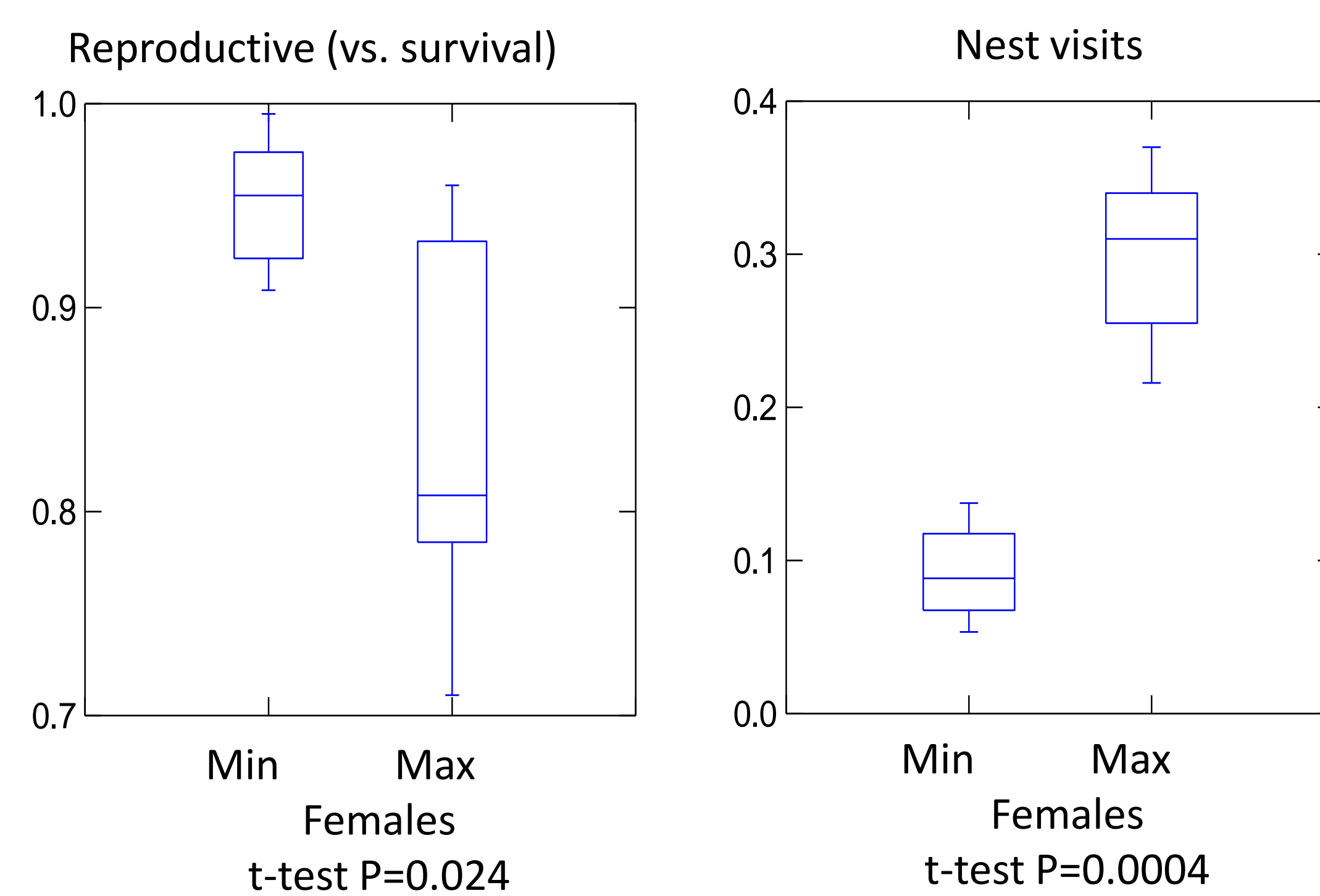
$$S_i = \frac{\sum_{t=1}^T \frac{n_{d(t)}}{n_{tot}}}{T}$$

Where  $S_i$  is the synchrony of display between male  $i$  and  $n_{tot}$  neighbors during time period of duration  $T$ , and  $n_{d(t)}$  is the number of neighboring males in display at time  $t$  while  $i$  was also displaying. Males in this colony displayed with a synchrony of 0.170, as compared with 0.007 predicted by chance alone.

At a village weaver breeding colony, behaviors functioning in mate choice dominate male behavior, and most behavior is related to reproduction rather than survival.



As males (N=10) acquire more mates, they tend to divert more energy towards survival-related behaviors (grooming and foraging), and intensify their mate-related behaviors (e.g. nest visits) compared to when they had fewer mates

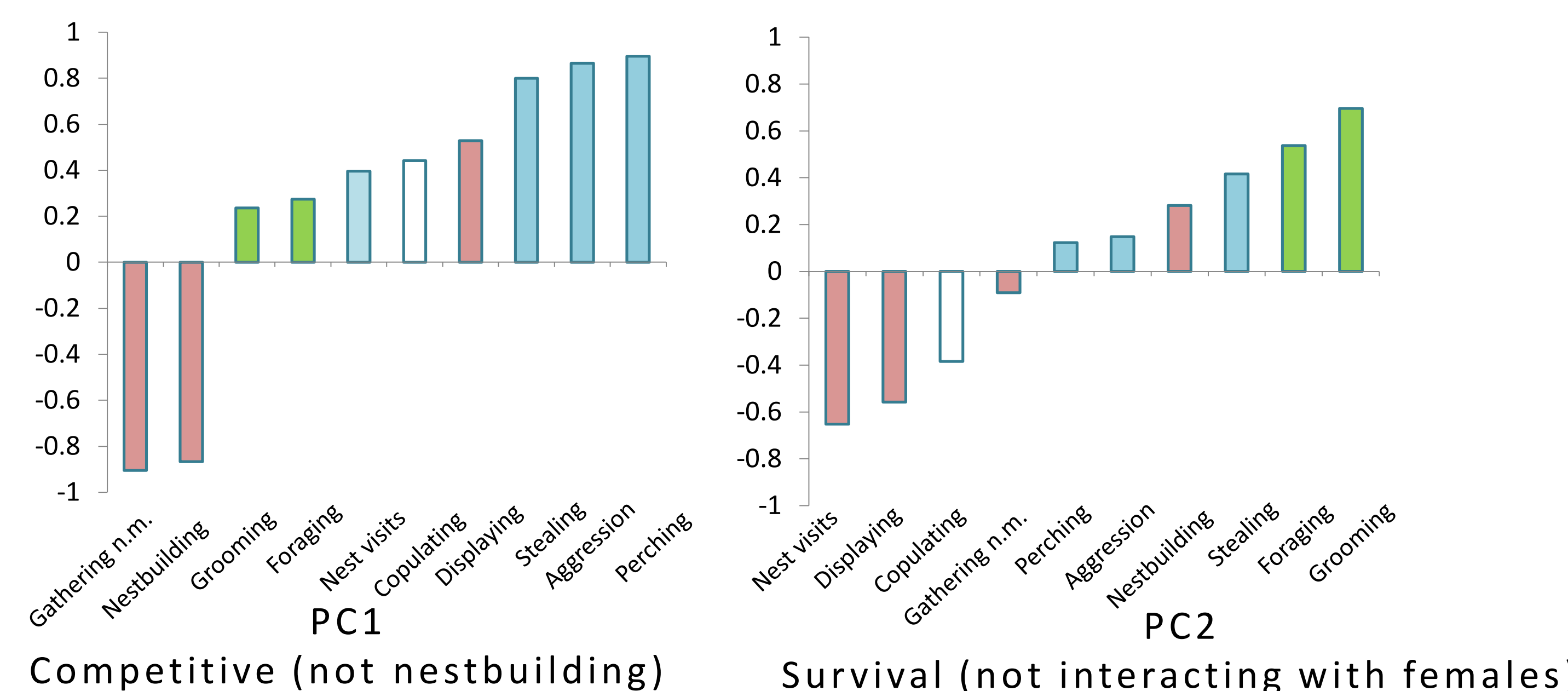


## CONCLUSIONS

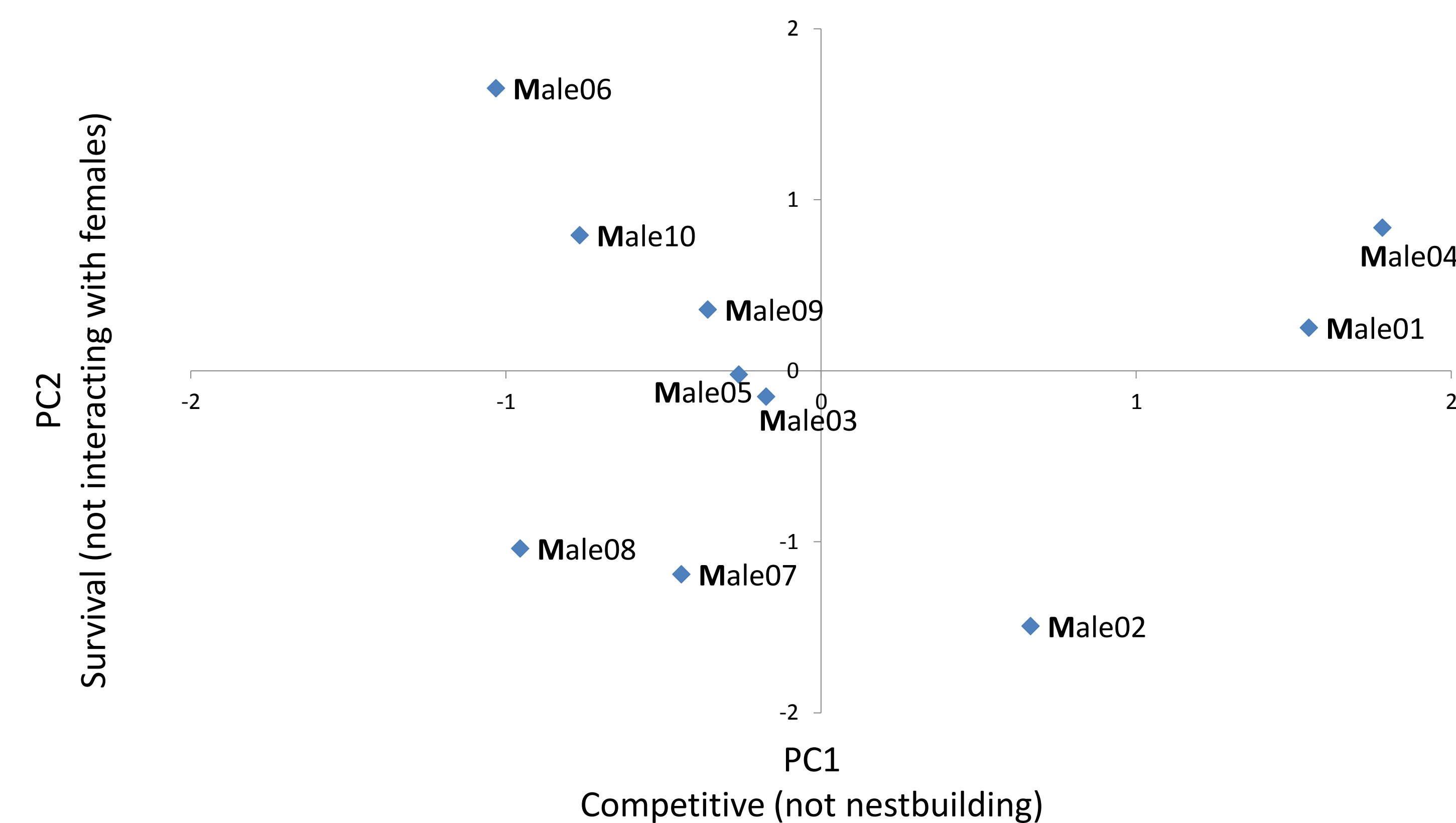
- Males spent much more time on behaviors related to reproduction than survival. Among reproductive behaviors, male behavior was dominated by mate attraction (behaviors functioning in female choice) than male competition.
- As males acquired more mates, they devoted more time to survival behaviors, namely grooming and foraging. They also shifted more energy towards mate-related behaviors, especially to visiting females at the nest.
- Males vary in the degree to which they emphasize competitive vs. survival behaviors, and nest building vs. interacting with females. Notably, males appear to have one of two mutually exclusive strategies with respect to nest building competition: building one's own nests or tearing down those of one's neighbors. Based on one week of observation, we cannot determine how stable these strategies are over time.
- Males displayed in synchrony with each other. On average, a male displayed simultaneously with 17% of other focal males in the colony at any given second. Considering the amount of time each male devoted to display, the chance expectation for this value is 0.7%.

## RESULTS

PCA distinguishes two broad components of male weaver behavior



Biplot of principle component scores for each male



Individual males either build nests of their own or tear down those of their neighbors, but not both, suggesting two strategies

