

Social Behaviors of Captive Fruit Bat Species

Jake Schwartzman & Jamie McNellis

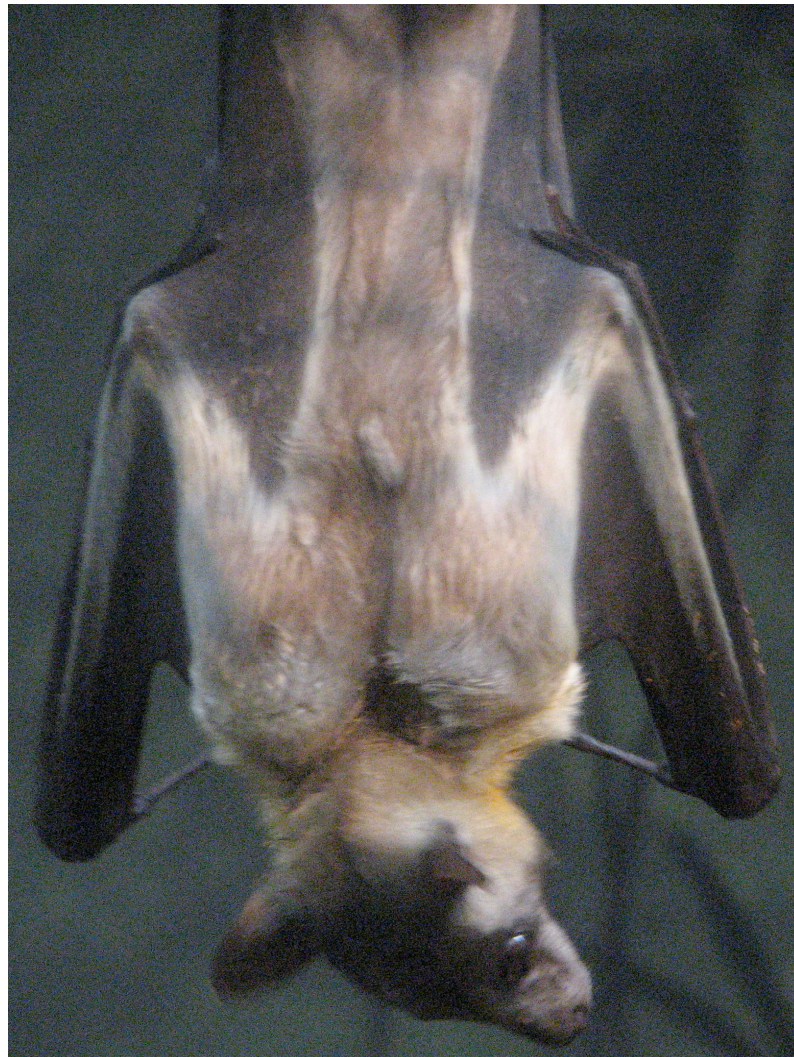


Photo by Jennie McKee, 2006

We developed an ethogram to describe and examine the social interactions of three species of fruit bats at the Oregon Zoo. The enriched zoo exhibit includes a majority breeding population of Straw-colored fruit bats (*Eidolon helvum*), eight male Egyptian fruit bats (*Rousettus aegyptiacus*), and a nonbreeding population of Rodrigues flying foxes (*Pteropus rodricensis*). While the Egyptian and Straw-colored bats are morphologically similar and have overlapping habitats (sub-Saharan Africa), the Rodrigues bats are an endangered species native to Rodrigues Island near Madagascar, and were imported as part of a conservation program. We therefore hypothesized that there should be detectable differences in interspecies behavior in the exhibit. We observed that most interactions were either inspection (sniffing) or aggressive behaviors such as “wing boxing” or grappling. Though the exhibit provides a convenient arena in which to track individual bats, our analysis was hampered by the rapidity of interactions and the difficulty of determining species and/or sex of the target of an individual’s behavior. Despite this, we have identified significant differences in the behavioral patterns of species and sex.

Bat Behaviors



Wing Boxing or Grappling: frequently followed by screeching. Loser retreats rapidly, winner screeches at retreating loser.



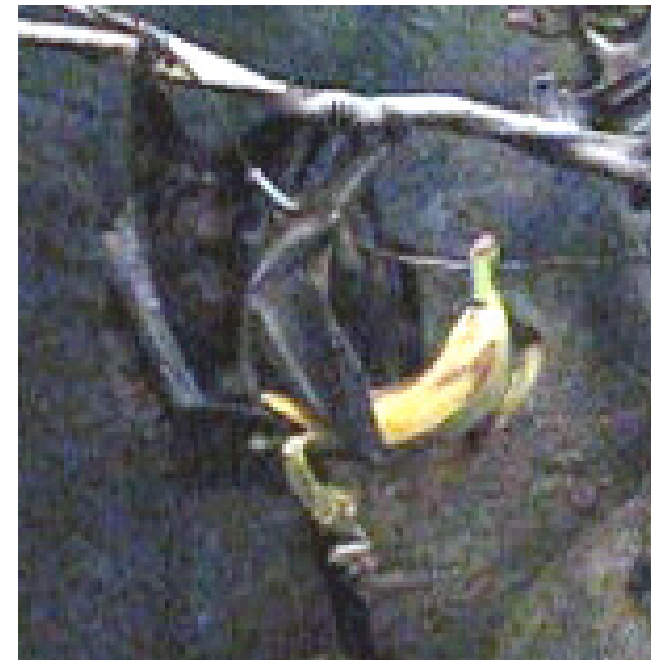
Wing Shiver: rapidly shaking wings furled close to body, looking at a specific target. Does not necessarily prompt retreat of either bat.



Inspection: sniffing or nuzzling chest, belly, or hindquarters. We did not score passive, inspection-permissive behavior.



Wing Flap: vigorous flapping directed at a specific target. Often an escalation of wing shivers. May prompt target's retreat.



Other: most often used to score feeding or interaction with exhibit enrichment.

Results

Sample Demographics:

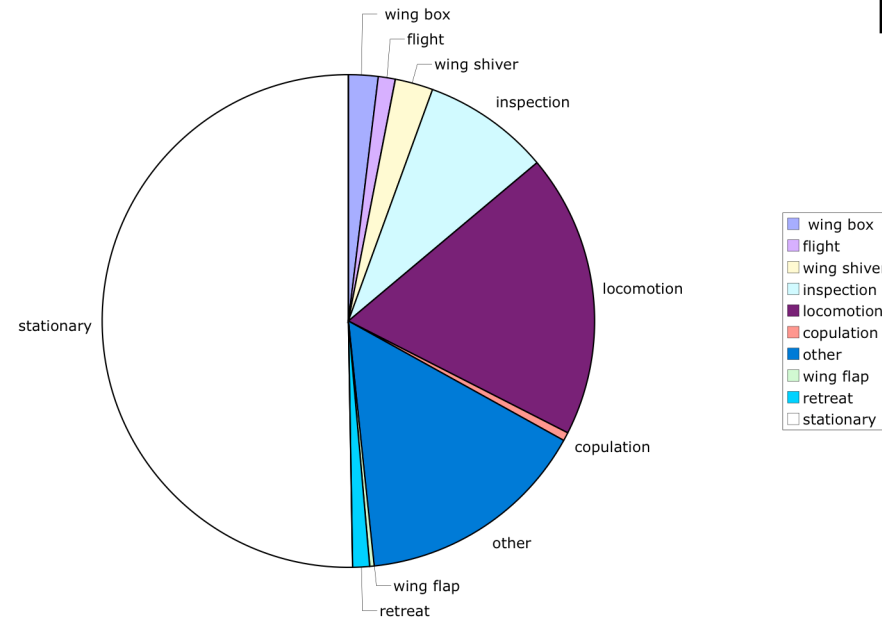
Straw-Colored: 20 Males, 7 Females.

25% of 108 represented (34% of M, 14% of F).

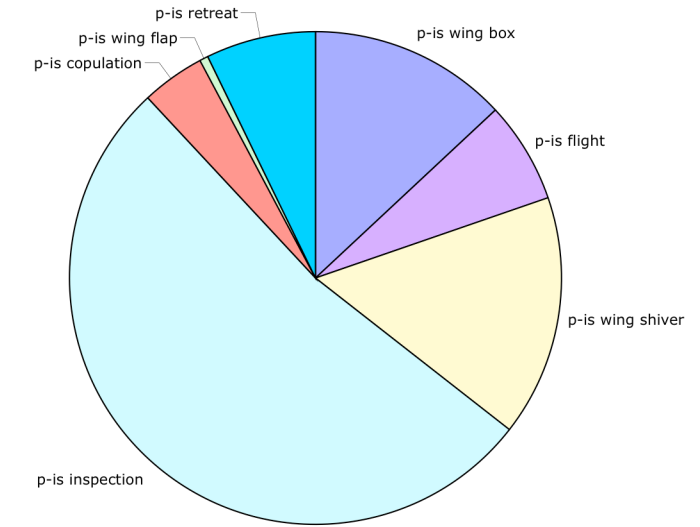
Rodrigues: 10 sex unknown. 39% of 26 represented.

Egyptian: 6 Males. 75% of 8 represented.

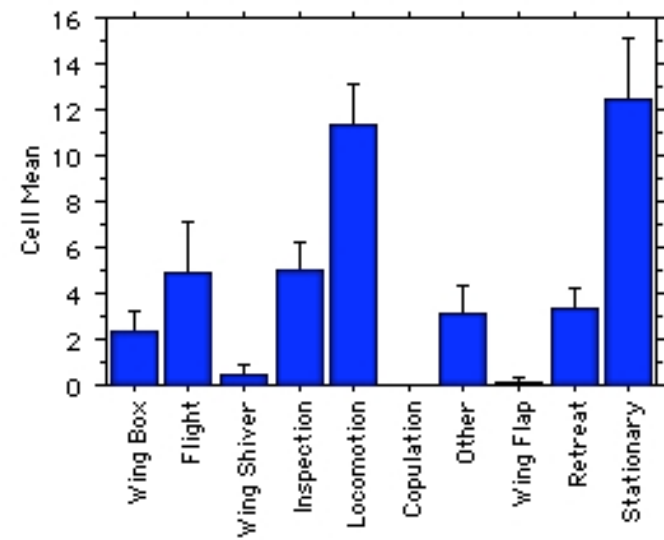
A



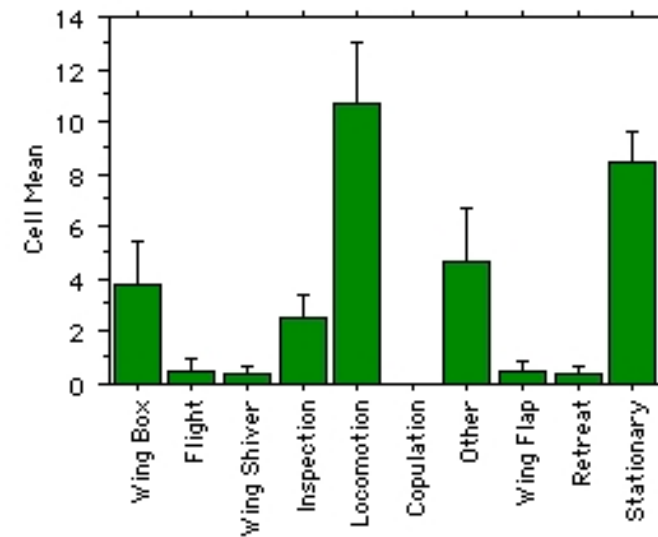
B



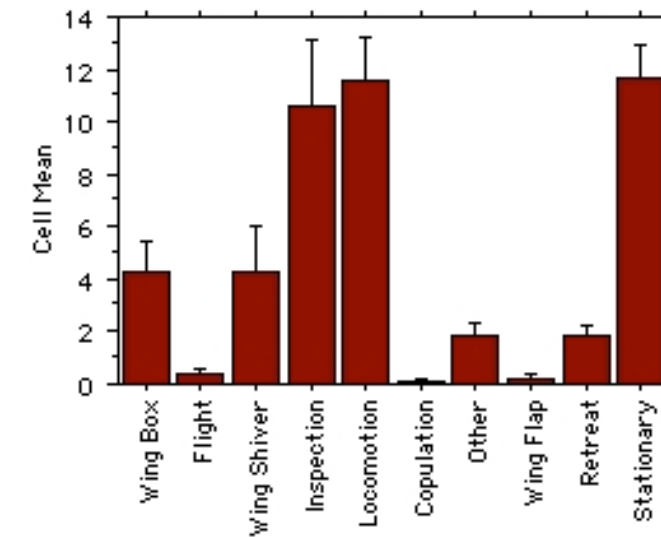
Time budget of recorded behaviors (proportion of time in sight). A: all behaviors; B: subset of social interactions.



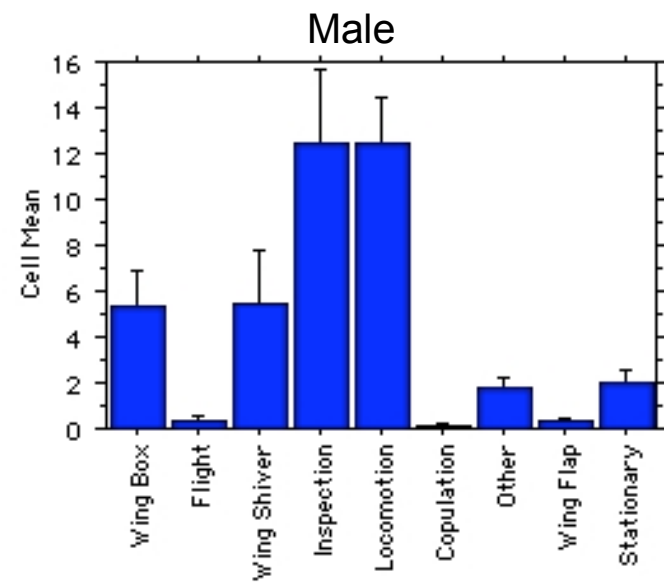
egypt



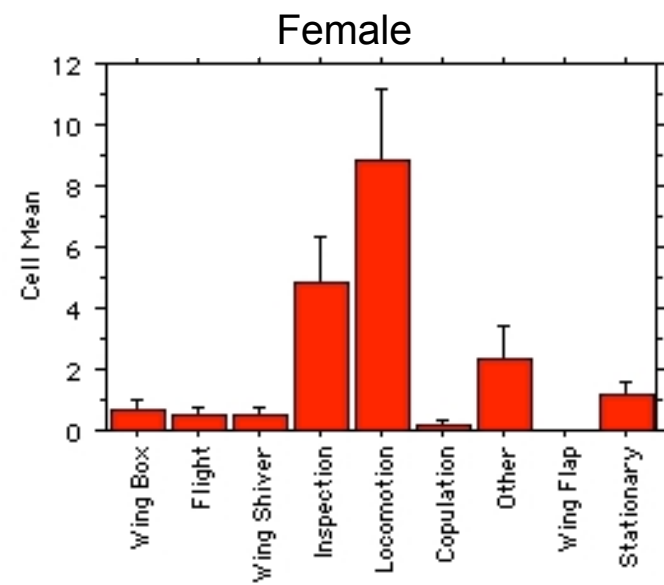
rod



straw



Markovian matrix or heat map goes here



Acknowledgements

Jennie McKee, for zoo census info & help identifying bats
 Vicky Zero, for help with JWatcher