

How many dry showers does a Cattle Egret take?: Bout criterion interval for “preening” behaviors at the Oregon zoo

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MOTIVATION: Preening is a behavior performed by cattle egrets at the Oregon zoo and may play a part in typical foraging behavior of the species.

BACKGROUND:

- In **social foraging theory**, egrets play the ‘scrounger’ role
- Behavior is dependent on resources and ‘producers’ available
- Preening behavior previously called ‘oiling’, even though the oiling action infrequently accompanies ‘bill rub’ action in preening (Rowe 1983)
- Frequency of preening instances can be reinforced with **operant conditioning**, but not duration (Hogan 1964)



<http://faculty.ucr.edu/~chappell/INW/birds1cranesHérons/cattleegret.shtml>

When behaviors are performed in ‘bouts’, there is an interval length, called the bout criterion interval, that separates within-bout intervals from without-bout intervals.

Question/Hypothesis: What is the bout criterion interval for preening for the cattle egrets at the Oregon zoo, and what does that mean biologically?



Cattle Egrets at Oregon zoo

Experimental Design and Results

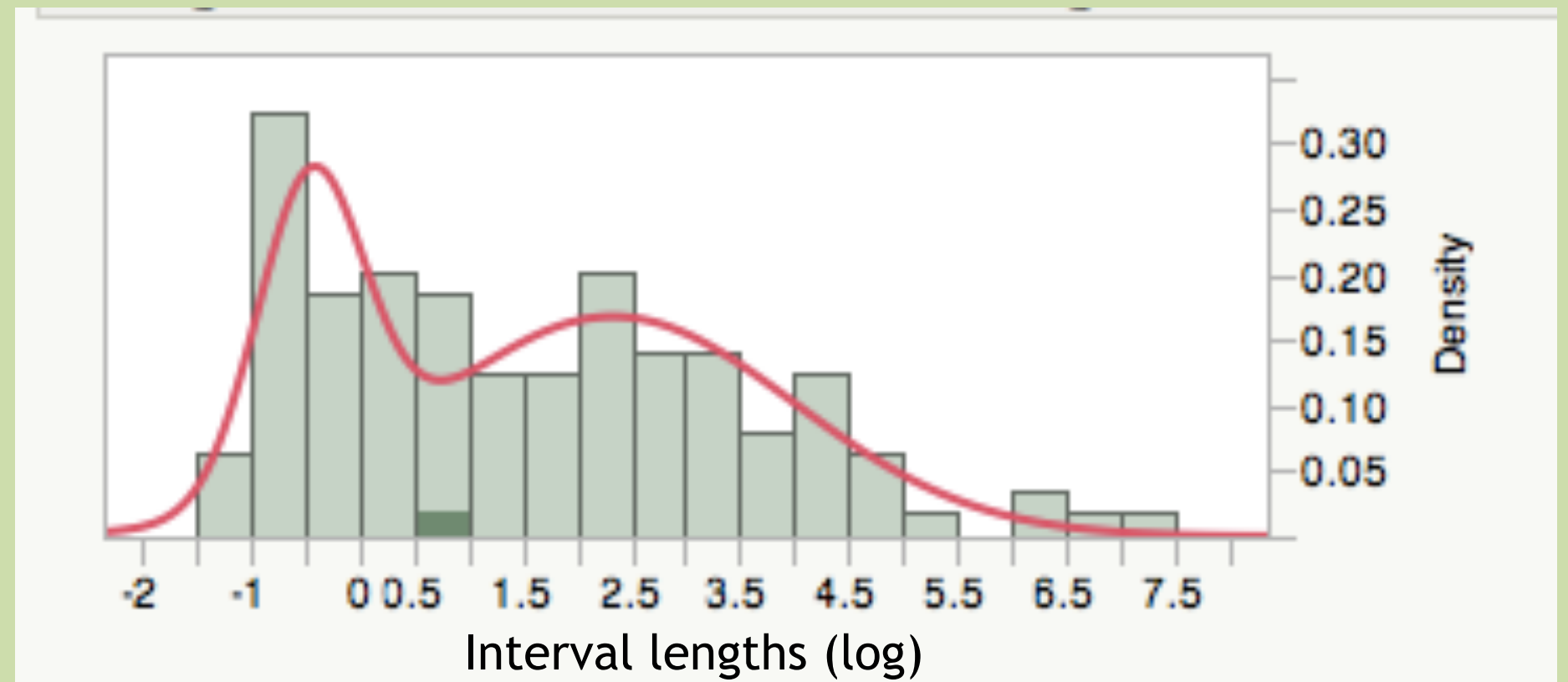
<https://holidayranch.wordpress.com/2011/09/09/cattle-birds-up-north-and-down-south/>



1. Intervals collected from focal observation of both individuals
2. A continuous fit using double log-normal was obtained
3. Local minimum point on curve (highlighted on graph - dark green) was used to back-calculate interval length of BCI

Bout Criterion Interval using log-transformed interval lengths and probability density

Log-normal of preening interval lengths



Intervals from beginning of non-preening behavior to beginning of next preening behavior for both individuals on both observation days were measured in seconds and log-transformed with the $\ln(x)$ function. A probability density graph of these values was created, and a smooth curve obtained with two log normals.

The preening bout criterion for cattle egrets at the Oregon zoo is

2.20s

Experimental Design and Results

JWatcher Ethogram

JWatcher Key	Behavior	Description
c	perch	end flight by landing
e	shake	shakes body
f	flap	flaps wings w/o flying
k	strike	extends beak to touch s/t
l	fly	changes location w/ flight
o	swallow	tilts head back and 'gulps'
p	preen	beak to body
s	step	foot to new location
t	scratch	foot to body
v	survey	turns or extends head to look

Conclusions:

For a preening BCI of 2.20s, intervals shorter are within-bout, and intervals longer are without-bout, which can be used to design operant conditioning experiments where bouts can directly be counted.

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