

Table 1 Ctenosaur Head Bobbing Rates (bobs/min)(sample sizes in brackets).

	small	large
1020-1200 hrs.	.005 [6]	.34 [3]
1400-1600 hrs.	.033 [8]	3.92 [1]
Total	.021 [14]	1.24 [4]

Literature Cited (A.S.)

- Janzen, Daniel H. Costa Rican Natural History. University of Chicago Press, Chicago, 1983.
- Krebs, J.R. and N.B. Davies, An Introduction to Behavioral Ecology, Oxford Scientific Publications, Boston, 1987.

THE CASE OF THE MISSING HERONS

Jon Kohl

Abstract (J.K.)

Insufficient data was attained in this experiment, possibly as a result of increased human activity.

Introduction (J.K.)

Do herons and egrets attract each other to better feeding patches? According to Stiles and Skutch (1989) little blue herons often associate on the periphery of snowy egrets, and tricolored herons are seen sometimes accompanying other herons and egrets (Stiles and Skutch, 1985). Snowy egrets form groups to drive fish. Casual observation demonstrated general intra- and interspecific intermingling of herons and egrets.

And as vultures attract other vultures and passerines other passerines at bird feeders, I hypothesized that are feeding behavior of herons and egrets - which hunt similar prey items - attract each other to higher density prey patches. More specifically, there should be a decrease in distance between two feeding herons or egrets as the feeding rate of one increases.

Methods (J.K.)

I attempted to locate a pair of herons or egrets (snowy egrets, great egrets, tricolored herons, or little blue herons).

The species involved were also recorded. I then measured the number of feeding strikes or lunges during five two-minute intervals or until one or both herons flew off (which they did during samples one and two). At the termination of every interval, I measured the distance between the two birds and played them into a rank scale of distances.

Rank Distances #(meters)

- 1 0-2
- 2 2-5
- 3 5-10
- 4 10-20
- 5 20-40

I attempted to conduct this a minimum of five times, but only three such samples

could be acquired.

For analysis of each feeding sample, the greater of the birds' feeding rates was used to determine a correlation between feeding rate and distance between the two birds.

### Results (J.K.)

I do not have a sample size (n=3) of sufficient number to use a non-parametric correlation test. But I do have sufficient points for graph a which shows no correlation .

### Discussion (J.K.)

Though there are no results to discuss, I have learned that in La Laguna, Palo Verde, one needs sufficient time to conduct an experiment on herons and egrets with pronounced human activity in the area. I had underestimated the wariness of the birds as the increased activity (two SIFP groups tourist hordes, park scientists wading and in blinds, and me) may have accounted for the relative infrequency of heron and egret activity on the stationside of La Laguna.

In previous days, casual observation revealed multiple herons frequently within 100-200m of the bird tower and snowy egrets common on the left edge of La Laguna. Also during this period most of the above human activity was as lacking as the birds when the day of the experiment.

From my own stalking attempts, I discovered how very easy it was to scare away herons and egrets.

Today (1/12/90) casual observation again reveals the herons have returned.

Table 1 Sample species ---> Class Distance/Time Interval.

			0-2		2-4		4-6	
1	Snowy	2	5	2	17	4	10	5
	Snowy		9		5		0	
2	TRI	4	0	4	0	4	0	4
	Snowy		0		0		0	
3	Snowy	5	0	5	0	5	0	5
	TRI		0		0		0	

### Literature Cited

Stiles and Skutch. The Birds of Costa Rica. 1989.

## VIGILANCE & FORAGING IN NORTHERN JACANAS

Abby Bergholtz, Vijay Vaswani, Greg Goldfarb, Tara Grabowsky, Geoff Kunz

### Abstract (G.K., G.G.)

Immature Northern Jacanas (*Jacana spinosa*) forage more when accompanied by an adult male. We observed a group of Northern Jacanas which consisted of four chicks and an adult male. We hypothesized that (1) as the male's distance to the furthest chick increases the proportion of time he spends vigilant increases and (2) as a chick's distance to the adult male decreases, the proportion of time it spends foraging increases. Statistically significant correlating coefficients were obtained for a negative relationship between the two variables in hypothesis 1 and a negative relationship in hypothesis 2.

### Introduction (G.K., G.G.)

Polyandry is a well known trait of the Northern Jacana (*Jacana spinosa*) (Janzen, 83). In this system, mated males solely care for the eggs and chicks. Adult males often can be seen foraging near three or four juveniles. It has been documented that chicks feed more effectively when they are with an adult male (Janzen, 83), thus decreasing their own fitness and possibly the male's fitness as well. This adult-chick relationship is significant enough that chicks are likely to starve in its absence (Janzen, 1983). In this study we questioned how the adult enables the chicks to forage more effectively. Perhaps, then, the male decreases this risky by watching for predators while the chicks forage. We formed two hypotheses based on this theory: 1) As the distance between the adult male and the farthest chick increases, the proportion of time the adult spends in vigilance increases, and 2) As the distance between a chick and the adult male decreases, the proportion of time the chick spends foraging increases.

### Methods (AB, TG)

We conducted our project from the boulders at the edge of the marsh at Palo Verde, Costa Rica. We were near nest box #36 and collected data from 0700 until 1200 hours on 8 January 1991. We chose one family of jacanas, consisting of a mature male and four chicks. Working in three pairs, we observed and recorded jacana behavior.

We examined hypotheses 1) and 2) simultaneously. Pair (A) watched the male, recording the time he spent in vigilance, foraging, preening, and traveling. Pair (B) recorded the same data for an arbitrarily designated focal chick. Both pairs conducted 14

Figure 2 Chick distance to male vs. proportion of time chick spent foraging.

