

COMMENTARIES

Brown Noddy Vocal Behavior

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The presentation and interpretation of behavioral data may potentially indicate more than the data allow or the author intends. In recent articles on chick and adult Brown Noddy (*Anous stolidus*) vocalizations, Riska (1986a, b) presented tables that describe the context of each chick and adult vocalization (table 2 in each article). The data were reported in such a way as to strongly imply that there was a deterministic relationship between a stimulus (context) and the response in the chick or adult. For example, the statement "Chicks that are alone on the nest Screech when an intruder appears" (Riska 1986a: 355) implies that this response always followed this stimulus. The author continues, "Chicks turn toward and face the intruder, spread the wings to the side, and Screech." Always? Seventy-two percent of the time? Or does the probability change with chick age or type of intruder? The implication that noddy chicks always behave in a certain way in this situation may be misleading. Data obtained recently from a colony on Culebra, Puerto Rico (R. D. Morris and J. W. Chardine unpubl. data) show that noddy chicks hide their bills (sometimes in their breast feathers) when approached by a conspecific intruder in much the same way as Black-legged Kittiwakes (*Rissa tridactyla*) do (Cullen 1957) and the aggressive posture described by Riska is more characteristic of the response elicited by a human intruder. It is important when reporting qualitative accounts of behavior to use qualifiers such as "sometimes," "usually," or "often" so that the stochastic nature of stimulus-response relationships is emphasized.

The interpretations of the "messages" and "meanings" (*sensu* Smith 1977) of noddy adult and chick behavior in the Discussion sections of the two articles are problematical and again potentially misleading. Throughout, Riska imputed "messages" and "meanings" to each of the vocalizations but did not provide quantitative data supporting these contentions. For example, she stated that the Harsh Cheep produced

by noddy chicks "means" to the adult that it should "monitor the chick, approach it, and provide care," yet no data were presented to show what proportion of occasions adults performed these behavior patterns upon hearing a Harsh Cheep. This is not an isolated case, and the same criticism can be levied at most of the attempts to provide "messages" and "meanings" for noddy vocalizations. "Meanings" that follow directly from behavioral context with no supporting, independent data are irrefutable and redundant. Of what value is it to state "The message of Regurgitation Vocalization may be that the caller is about to disgorge partially digested food" (Riska 1986b: 367)? How would a noddy indicate it was about to regurgitate *undigested* food?

Another example shows how the assignment of "meanings" to animal behavior can be inappropriate. The author stated without qualification that the Frequency-modulated Cheep, produced by the chick and observed in the context of a close parent, "means" the chick is hungry. Clearly, it is a very broad leap to suggest that a particular behavior such as this is a good external "marker" for an internal motivational and physiological state such as hunger. Even if data had been provided showing that the probability of a chick producing this vocalization increases with time since the last feeding or that the probability of an adult feeding the chick upon hearing this call is high, it still would indicate little about hunger levels in the chick.

LITERATURE CITED

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