

**NEST DISTURBANCE AS A FACTOR IN THE MATING STRATEGY OF THE JUMPING SPIDER *PHIDIPPUS JOHNSONI* (ARANEAE SALTICIDAE).** Robert R. Jackson

## INTRODUCTION

The mating tactics used by males of the salticid spider *Phidippus johnsoni* (Peckham & Peckham) depend on the type of female encountered (Jackson 1977a, b): (1) adult female outside nest, type 1 courtship (vision dependent), (2) adult female inside nest, type 2 courtship (not vision dependent), (3) subadult female inside nest, type 2 courtship followed by cohabitation. Pursuit time (interval between beginning of courtship and beginning of copulation) and copulation duration also vary with the type of female: (1) pursuit time ca. 2 min, copulation ca. 14 min, (2) 16 min, 2 hr, (3) 1 week, 14 hr. These tactics evidently entail different ratios of cost to benefit for the male with respect to such factors as predation, cannibalism, sperm competition and interference from other males (Jackson, in press). Data will be given here concerning other types of interferences.

Various events, not directed toward the interacting spiders in the same sense as predation and interference by conspecific males, might disrupt courtship, cohabitation, or mating of an animal the size of *P. johnsoni*. For example, if a male is courting or mating with a female outside her nest, a large mammal walking past might be a severe disturbance, either by direct mechanical effects or by initiating a flight response from the female, but the probabilities of disturbances of these sorts are probably slight because of the brevity of courtship and mating when the spiders are outside nests.

Disturbances of nest sites, such as avalanches, overturning of rocks by mammals searching for insects, or the accidental overturning of rocks by large mammals walking through the area might expose, damage, or destroy a nest in which a pair of spiders courts, copulates, or cohabits. Since interactions with nests involved tend to be relatively lengthy, nest disturbance seemed a potentially important factor. Since in the absence of data the importance of this factor could not be estimated, a procedure was devised for recording how frequently nest sites are disturbed in the field.

## METHODS

There were five study sites, each near and similar to the areas used in an earlier study of phonology (Jackson 1978a) and relatively inaccessible to human travel.

At each of the five habitats, 200 rocks or pieces of wood were marked. An X (1-2 cm in diameter) was made with enamel paint on the top of each. Choosing a starting point haphazardly and following a straight line from this point, each suitable rock or piece of wood was marked until reaching a total of 200. Ones that were embedded in the ground and difficult to overturn were not marked. Also, ones less than 5 cm in length were not used since the usual nest sites of *P. johnsoni* were larger than this (Jackson 1978a).

Each month afterwards, for 4 months in succession, censuses were made. Each census consisted of counting the number of upright and overturned rocks or pieces of wood in the census area four times in succession (upright: mark still on the top; overturned: mark on side or underneath). After each census the overturned nest sites were replaced in the upright position.

## RESULTS

For a given census, the total number of marked nest sites re-located on a given count might deviate by one or two; but the mean was always ca. 200 when all 4 counts were considered. However, the number of overturned nest sites was always the same for each count during a given census-day; and this number was always small (range: 0-4). (Evidently, habitats did not differ). For the five habitats, the mean number of overturns per day per nest site (sum of the No. of overturned nest sites for the 4 months/No. of days between marking nest sites and the last census/200 nest sites) was 0.000104.

## DISCUSSION

The maximum cohabitation duration recorded for *P. johnsoni* was 14 days (Jackson 1978b). The probability of a rock or a piece of wood overturning while a pair cohabits for 14 days is only 1 or 2 chances in 1000. For male-female pairs, female adult and inside nest, this probability would be at least an order of magnitude less. Physical disturbance would not seem a major selection pressure acting on the mating strategy of *P. johnsoni*.

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