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NOTES ON THE REPRODUCTIVE BIOLOGY OF A WEB-BUILDING JUMPING SPIDER, *PORTIA FIMBRIATA.*

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Cutler (1979) and Richman (1980) provided data concerning batch sizes for 16 species of salticids. Elsewhere (Jackson 1978), I provided data for *Phidippus johnsoni* Peckham and Peckham. Similar data will be provided here for *Portia fimbriata* (Doleschall), along with other remarks about the reproductive biology of this unusual web-building salticid from Queensland, Australia. Although behavior is discussed elsewhere (Jackson in press, Jackson and Blest in press) in detail, data concerning batch sizes are provided for the first time.

Salticids are generally envisaged as cursorial hunting spiders, and web-building is highly aberrant behavior for a member of this family. In addition, the predatory behavior of this species is very unusual. Individual spiders employ several distinct predatory tactics, each adaptively tailored to different categories of prey. Insects are captured both on and off webs, and webs of other species are invaded and vibrated on by means of specialized leg- and palp-movements. *Portia* vibrates the alien web while luring the occupant to within striking distance or slowly stalking across the silk. Outside webs, other species of salticids are stalked in a specialized manner different from the stalking of insects. Also, *Portia* eats the eggs of other spiders, and flies are taken from the webs and sometimes directly from the fangs of other spiders. The predatory versatility of *P. fimbriata* is more pronounced than that of any of the animals recently reviewed by Curio (1976).

The large webs (ca 4000 cm^3) built by *Portia* consist of three inclined sheets converging at the bottom and forming a concavity at the top, although variations on this theme occur. The concavity contains a three-dimensional tangle of threads and usually one or more suspended dead leaves. Females actively hoist leaves into their webs. This is accomplished by repeatedly attaching and tightening new lines of silk while breaking old ones. Choosing a leaf with a slightly concave shape, they place their eggs in the cavity and cover them with silk. Subsequently, they spend much of their time standing over their eggs on the leaf.

Many salticids and other spiders remain with their eggs after oviposition, and this is often referred to as "guarding the eggs." However, what is being guarded against is rarely evident. At least one egg predator was identified for *Portia* from observations in nature and the laboratory. Females defend their webs and eggs against conspecific females by means of threat displays and ritualized fights (Fig. 1). However sometimes an intruder defeats the resident, takes over the web, feeds on the eggs (Fig. 2), and oviposits her own eggs on the leaf.

Eight egg sacs were collected in nature and kept until the eggs hatched and the spiderlings dispersed. The number of first instar spiderlings (terminology: Whitcomb 1978) per sac was 34 ± 7.5 (mean ± S.D.), and there were 2 ± 2.4 dead postembryos per sac. Considering both first instar and postembryonic spiders, batch size was 36 ± 7.9.

The numbers of spiderlings emerging from egg sacs oviposited by females that mated in the laboratory were not counted but seemed comparable. In nature and the laboratory, spiderlings remained in webs with the adult females for at least several days after dispersing from the egg sac (Fig. 3). At least in the laboratory, they fed on insects captured in the web. Although spiderlings were not seen feeding jointly on prey with the adults, sometimes more than one spiderling fed simultaneously on the same prey item in the web.

Spiderlings seem to practice the same unusual predatory behaviors as the adults. One was seen in nature feeding on an uloborid. In the laboratory, they readily invaded uloborid webs, vibrated, and captured the host spiders. They also stalked spiderlings of other species of salticids.

In nature, the webs of *Portia* and other species tend to be cluttered with debris such as broken, dead leaves and pieces of dirt, moss, and fungi. *Portia* are moderately large (adult body lengths: males, 5-6 mm; females, 7-10 mm) salticids, colored in a mixture of black, white, brown, pale yellow, and pale orange. Wanless (1978) called them "long-legged ornate spiders which have attracted the attention of naturalists on account of their conspicuous leg fringes and abdominal hair tufts." The coloration, fringes, and hair tufts of *Portia* render these spiders difficult to distinguish

from debris in webs.

Morphologically, the spiderlings are very similar to the adults. Also, when resting in webs, all sex/age classes of *Portia* adopt a posture which improves their concealment. Usually they hang dorsal side downward with the tarsi of all legs in contact with the silk. Legs I, II, and III are held largely ventral to the body, with the tarsi angled medially and often crossing over the mid-line of the sternum.

Fig. 1. Two adult females of *Portia fimbriata* approach each other while displaying.

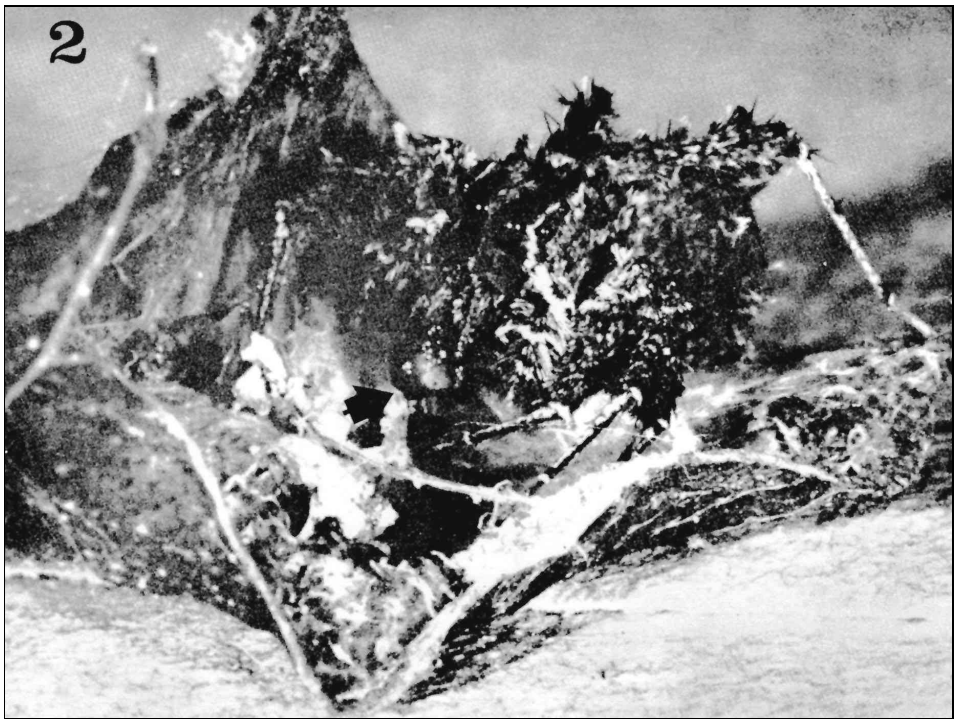

Fig. 2. Adult female of *Portia fimbriata* feeds on eggs of conspecific female defeated in an aggressive interaction. Standing on leaf, she has torn the silk away from egg mass. A partially consumed egg is in her chelicerae (arrow).

Fig. 3. Female *Portia fimbriata* (A) stands, facing downward, on leaf (L) suspended in her web while feeding on another species of salticid (arrow). Web is built in a specially designed cage with vertical sticks (S) protruding from plastic platform (Phibbs and Jackson in press). First instar spiderlings are dispersed across leaf and within web. D: *Drosophila melanogaster* caught in web. F: spiderling (out of focus) feeding on *Drosophila* in web. P: rubber stopper plugging hole in cage.

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FIGURE CAPTIONS