

OBSERVATIONS ON THE AUSTRALIAN "TWO SPINED" SPIDER *POECILOPACHYS AUSTRALASIAE* IN AN AUCKLAND GARDEN

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ABSTRACT

The Australian "two spined" spider *Poecilopachys australasiae* was studied during four years in an Auckland suburban garden. Aspects of web making, mating, egg-sac construction and predation, eclosion and dispersal of spiderlings, senescence and overwintering are recorded.

INTRODUCTION

The brightly coloured Australian orb-web spider *Poecilopachys australasiae* (Griffith and Pidgeon) was first recorded in New Zealand in the early summer of 1971 and by 1975 it had been reported from suburban gardens as far apart as Titirangi, Torbay and Papatoetoe. The species owes its common name "two spined spider" to a pair of white-fronted, pointed protuberances which stand erect on the abdomen. Synonymy and full descriptions of both male and female, together with an account of mating behaviour is given by Goodwin (1959) in Australia. A short account of the spider (as *P. bispinosa*) is given by Mascord (1970) who mentioned the way in which the colour seems to pulsate when the spider is agitated. He also stated that the male is "a tiny replica of the female". The word "replica" however, is misleading since the males seen in Auckland differ from the female in both colour and vestiture as well as in size. They are 3 mm long, greyish with a hairy abdomen (Fig 1b). Court (1974) gives notes on synonymy and on chromatophore colour changes in the female.

A Ministry of Agriculture and Fisheries leaflet issued in the 1970s includes line drawings of both sexes and describes the spiders as follows "The mature female is 8 mm in length with two dorsal yellow and cream abdominal spines. The anterior of the abdomen has a

band of cream and yellow and the posterior, a band of red and yellow. Between these two bands the abdomen is grey/green". The book "Fascinating Spiders" by Green and Lessiter (1987) is embellished with a colour photo on the front cover which shows circular markings around the five "pseudo-eyes", two in between and three in front of the white spines. These are depressions indicating internal muscle attachments (Forster 1967) which in *P. australasiae* are exaggerated, possibly to repel predators (Fig 1a). Observations made by Dorothy Gardiner in her Mt Albert garden between December 1974 and March 1978 disclosed some previously unpublished aspects of the life cycle and habits of this spider. Fifteen females and their egg-sacs and progeny were studied by her over this period. Individuals were territorial and could be located day after day. They were identified in her notebook by the names of the various trees and shrubs on which they took up residence.

OBSERVATIONS

WEBS

The orb webs (feeding snares) were made only at night, in calm, dry weather. At other times the spiders would hang on 120 cm to 150 cm threads below sheltering leaves. Males were never seen making webs.

Snare webs were usually 150 cm to 200 cm above ground level, on a wide variety of trees and shrubs. The main anchor lines were often lengthy and sometimes branched near their points of attachment; one extended 180 cm to a bush across a goldfish pond. The webs usually comprised a quarter-circle with up to 8 radial support lines and 6 - 8 lateral, concentric lines which were sticky to the touch. The spider stayed in retreat at the end of an anchor line and not at the apex of the main web. When a moth was caught, she moved quickly to the spot, wound it up lightly and either left it hanging for the time being or took it back to the retreat. One spider was seen feeding at 10.00a.m. the next morning. Most webs were dismantled before daybreak. One which was still intact at 5.00a.m. (14/1/1975) was dismantled later, except for some of the anchor lines which were left in place for several days. One female under observation made no snare webs on the two nights prior to egg-sac construction.

MATING

Mating behaviour was observed on *Coprosma* on 23/12/1977. Two males and one female were noticed on the underside of the same leaf. One male was moving around the front of the female and she was stroking him gently with her front legs. The actual passing of the sperm was not seen. The second male was circling round and two other males were nearby but not participating. The gathering of males suggests a signal of some kind, such as a pheromone, that the female was in a receptive condition.

EGG-SAC CONSTRUCTION

Egg-sacs were suspended in a nursery web or 'nest' consisting of loosely meshed filaments attached to surrounding leaves and branchlets. A female on *Mahonia* in February 1975 placed three successive egg-sacs next to each other over a period of four weeks, using the side of the first nest to extend the nursery. An egg-sac seen early in the morning on 23/2/1975 was already in place around the eggs. It was buff coloured, spindle shaped, and measured 25 mm in length by 8 mm at the widest part. The spider

was laying the outer covering of silk by patting with her abdomen, moving clockwise from base to apex.

PREDATION

Egg-sacs often disappeared for no apparent reason. The nursery webs had been torn apart and birds were suspected but never caught in the act. Ants however were definitely incriminated as predators. On 24/1/1978 *Techomyrmex albipes* were swarming over an egg-sac on *Mahonia* and chewing holes in the sides. Ants having been removed, the egg-sac was taken indoors and 16 days later a few spiderlings emerged; the following day there were approximately 100.

INCUBATION, ECLOSION AND DISPERSAL (TABLE 1)

An egg-sac, complete with nursery web was caged indoors for observation (6/3/1975). It bulged visibly during the day or so when presumably the eggs were hatching inside. The spiderlings emerged through an opening at the neck or through a small hole in the side. They were pin-head sized and pale pinky-brown. They clustered tightly at first round the neck of the egg-sac where, having scattered through the nursery web when disturbed, they once more regrouped. Outdoors, most of the spiderlings moved out of the nest within a week and hung from leaves at night on 7 - 10 cm threads. Some of them made small 3 or 4-radial feeding snares. At this stage, they either moved away or dispersed by "ballooning" on fine, floating strands of silk emitted to catch the wind. This phenomenon was seen on two occasions (20/2/1976 and 14/2/1978). There were many cast skins in evidence. When spiderlings at the ballooning stage become airborne in warm, strong winds such as those generated by bush fires in their native Australia, they would rise to considerable altitudes and could thus be blown across the Tasman, arriving in New Zealand in the same way as some Australian butterflies.

TABLE 1: INCUBATION & PRE-DISPERSAL TIMES 1974/75

	Incubation	In nursery web
Dec/Jan	22 days	7-13 days
Jan/Feb	17-18 days	4 -11 days
Feb/March	10 days	?
Mar/April	30 days	8 days

SENESCENCE

In June 1976, a female on feijoa, having produced three egg-sacs, was noticeably reduced in dimension and was making half-size feeding webs at night. On 1/7/1976 she embarked on a fourth egg-sac in the old nursery web but it was much smaller and badly distorted. By 10/7/1976 she had stopped making feeding snares and was looking progressively shrunken until she disappeared three weeks later.

OVERWINTERING

The latest hatchings recorded were on 17/2/1975 (on kauri) and 6/3/1975 (on *Coprosma*). An egg-sac completed on 19 March failed to hatch. On both these plants and also on feijoa, juveniles were found in mid-June, early September and on 10 October. On

all these occasions, the evenings were still and, around dusk, the spiders were hanging on short threads. All those seen in June measured approximately 2 mm (3, 4 and 19 individuals on separate nights). The sexes were recognisable by shape and colour, the males being fawn-brown and hairy while females were more rounded with pale yellow abdomens. In September there were 10 females. New generation egg-sacs were found from 27 October 1975 onwards.

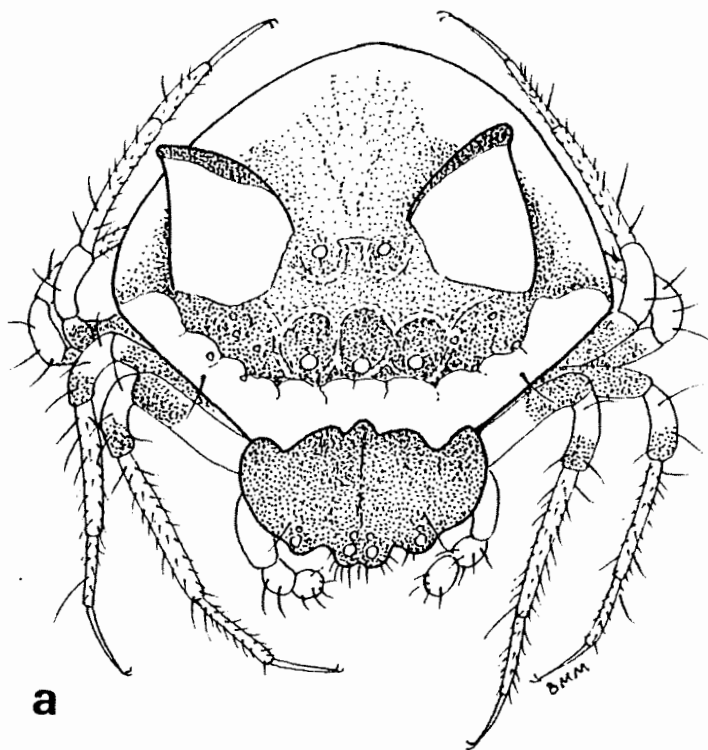
(Note. In 1994, after an unusually warm, dry summer and autumn, an egg-sac hatched successfully on 15 July. In mid-September, despite two heavy frosts, several juveniles (3 males, 4 females were found near the empty egg-sac.)

CONCLUSIONS

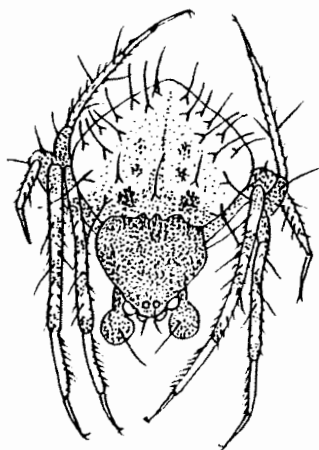
- 1 The life cycle occupies one season, i.e. the species is univoltine
- 2 Webs are made 150 cm to 200 cm (5 - 6 feet) or higher, above ground
- 3 No particular preference for host plant was shown
- 4 A signal by the female of sexual maturity was suggested by the congregation of males around her
- 5 Females produce three and occasionally four egg-sacs in a lifetime of 6 - 7 months
- 6 Ants were confirmed as predators of egg-sacs; birds were suspected
- 7 Juveniles can overwinter, maturing in early spring

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a



b

Fig. 1: *Poecilopachys australiae*. a, female; b, male. Scale represents 1.0 mm