

HINEWAIA, A NEW GENUS OF SALTICIDAE (ARACHNIDA: ARANEAE) FROM NEW ZEALAND

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Abstract.— *Hinewaia*, a new genus of jumping spiders is described from New Zealand. Its relationships are discussed and diagnostic drawings and a distributional map for *Hinewaia embolica*, the only known representative of the genus, are given.



Key words.— Araneae, Salticidae, *Hinewaia*, new genus, new species, New Zealand, taxonomy, zoogeography.

INTRODUCTION

Up to now some 50 salticid species have been recorded and described from New Zealand (Żabka and Pollard, in press), but less than 10 species are widely recognisable, usually under incorrect names (e.g., *Attus*, *Marpissa*, *Salticus*). Poor diagnoses, great intraspecific variation in size and colour, interspecific uniformity in genitalic characters and the lack of type-specimens have made the verification of old descriptions an almost impossible task. Fortunately, thanks to recent papers by Prószyński, Wanless, Żabka and others (for complete bibliography see: Prószyński 2002), much more is known about salticid faunas of other areas of SW Pacific (Australia, New Guinea, Micronesia and Polynesia), and this also makes a good and useful basis for the study of New Zealand jumping spiders.

In 2000 we initiated a long-term project on taxonomy and zoogeography of New Zealand Salticidae (Żabka and Pollard 2001, in press, Żabka et al. 2002). The current paper is also part of this project.

There are about 500 genera of jumping spiders known so far (Platnick 2001, Prószyński 2002). Some large groups (subfamilies) were established on the basis of morphological criteria, at the same time, many morphologically close (related?) genera were placed within separate groups as they were considered representatives of different continental/regional faunas, each having its own geographical and evolutionary history. For every approach, the practical consequences are different: either aggregating morphologically similar species into large genera of wide distribution, or distinguishing smaller genera within separate continental/regional

faunas. To verify the role of morphological and zoogeographical criteria, more data is required and molecular taxonomy may bring some solution.

The genus *Hinewaia* has been proposed after extensive field and laboratory research of various salticid collections (Żabka, unpublished data). It is well established and *H. embolica* seems the only representative of the genus in New Zealand.

MATERIAL AND METHODS

Material for study was provided by the curators and institutions listed below. The details of specimen examination were described earlier (Żabka 1991). The drawings were made using a grid system. Dissected epigynes were cleared in lactic acid, rinsed in distilled water and mounted in glycerine. For the study of morphological and anatomical structures Nikon compound and stereo microscopes were used. The following measurements were taken: AEW – anterior eyes width, AL – abdomen length, CL – cephalothorax length, CW – cephalothorax width, EFL – eye field length, L1, L2, L3, L4 – leg lengths, PEW – posterior eyes width.

Collections studied:

- CMC – Canterbury Museum, Christchurch (Simon Pollard),
- LUNZ – Entomology Research Museum, Lincoln University, Lincoln (Cor Vink),
- OMD – Otago Museum, Dunedin (Brian Patrick, Erena Barker, Simon Wylie),

MNZW – Museum of New Zealand, Te Papa, Wellington (Phil Sirvid),

NZAC – New Zealand Arthropod Collection (Trevor Crosby).

TAXONOMY

Hinewaia gen. nov.

Type species. *Hinewaia embolica* sp. nov.

Etymology. From Hinewai – the locality in Canterbury Province, where the species has been found. The name is feminine in gender.

Diagnosis. Differs from other New Zealand salticids by having very long and coiled male embolus and long insemination ducts and spermathecae of female genitalia.

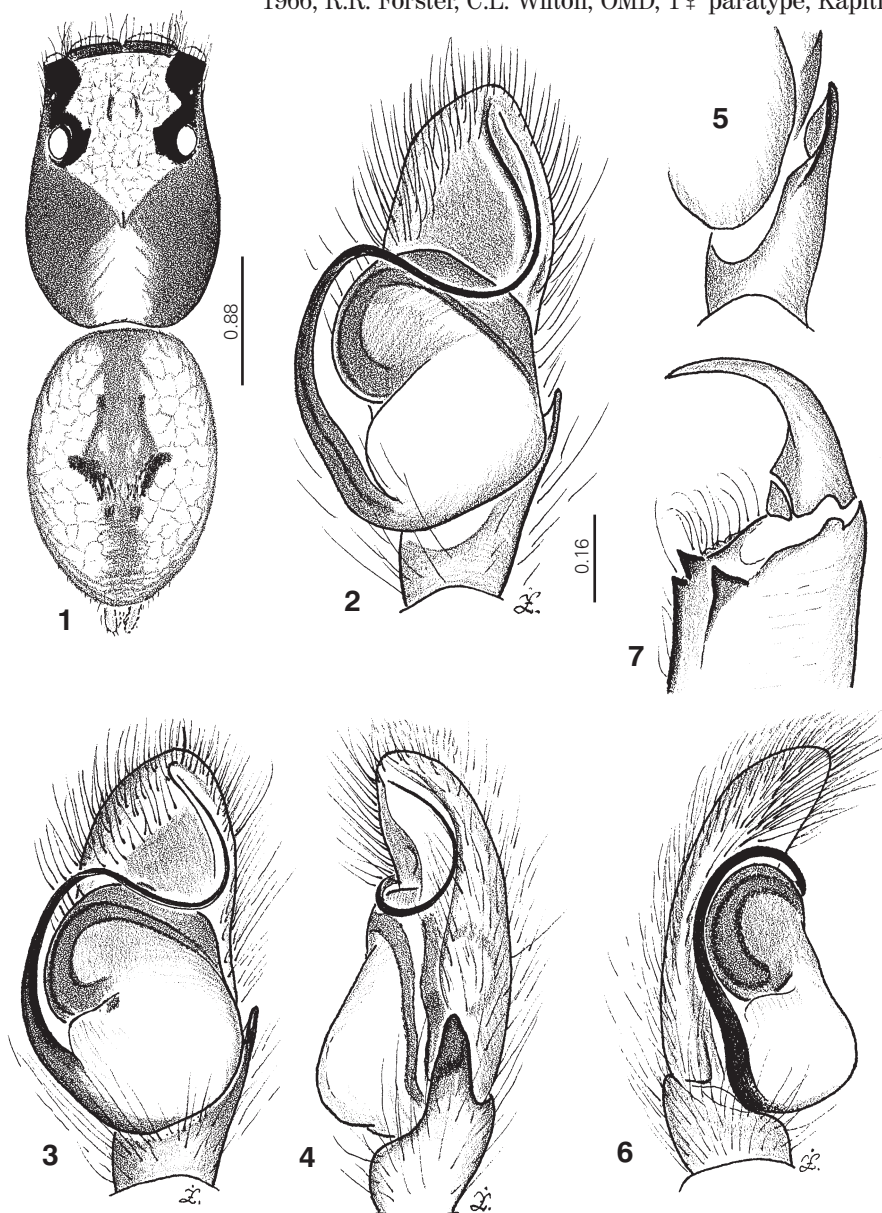
Affinities. The relationships of *Hinewaia* are rather obscure. *Holoplatys carolinensis* Berry *et al.* from the Caroline Islands (E of Borneo, Micronesia) (Berry *et al.* 1996) seems congeneric: both share similar body form (rather flat) and genitalic structures (long, thin embolus, long insemination ducts and spermathecae) but none of them is related to *Holoplatys sensu stricto* (see Žabka 1991). There are few geographically distant genera, each sharing some morphological characteristics with *Hinewaia*, however, it seems to be the result of convergence rather than real relationships. To solve the problem other than morpho-geographical criteria have to be considered, including molecular analysis.

Description. Spiders ca 4 mm long. Cephalothorax rather flat, elongate, with gentle posterior slope. Eye field comprises some 40% of carapace length. Anterior eyes slightly wider apart than posterior eyes. Abdomen elongate, spinnerets not distinctive. Clypeus narrow. Chelicerae of unidentate pattern, vertical, with two promarginal teeth and one retromarginal tooth. Maxillae twice as long as labium, both not distinctive. Sternum not distinctive. First legs definitely the longest and strongest, tibiae with 2 delicate proventral and 3 retroven-

tral spines, metatarsi with 2 proventral and 2 retroventral spines. Legs formula: 1-4-2(3)-3(2) in males and 3-1-2-4 in females. Palpal organ with thin, long, "S"-shaped embolus, tegulum oval, with membranous lamella at the base of embolus, seminal duct not meandering. Tibia with single retrolateral, spatulate apophysis. Epigyne large with central dividing dam. Copulatory openings located medially, insemination ducts membranous, lead to thick-walled, sclerotised ducts/spermathecae.

Hinewaia embolica sp. nov.

Material. 1 ♂ holotype, Croydon Bush, Gore, 17 Feb. 1966, R.R. Forster; C.L. Wilton, OMD; 1 ♀ paratype, Kapiti

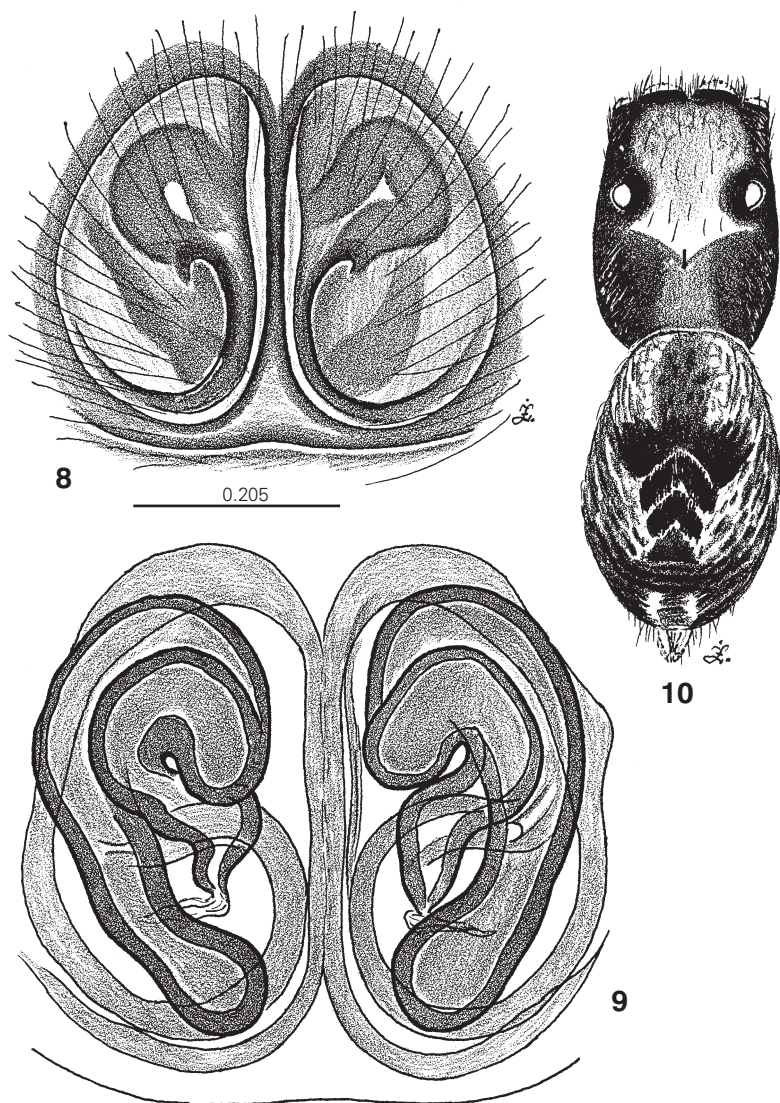


Figures 1–7. ♂ *Hinewaia embolica* sp. nov. (1) General appearance, (2–6) palpal organ, (7) cheliceral dentition (1, 2, 5, 7 – holotype from Croydon Bush; 3, 4, 6 – paratype from Hinewai).

Is., 13. Dec. 1958, J. Kikkawa, OMD; 1 ♀ paratype, Spey River; Mt. beech, bark up 40', O[tago] U[niversity] Bi[ological] Soc[iety], 22 Feb. 1959, OMD; 1 ♀ paratype, Redman Ck., [at] Capleston [near] Nelson, 20 Apr. 1972, J.C. Watt, B.F. u P., moss, OMD; 1 ♂ paratype, Taumaka Is., Open Bat Is., South Is., pitfall trap in *Freycentia banksii*, 10 Feb. 1971, M.E. Miller, OMD; 1 ♀ paratype, Arthurs Pass, Upper Bealey Track, moss, 22 Feb. 1984, R.R. Forster, OMD; 1 ♀ paratype, Te Tapui Scenic Res., moss, 8 July 1984, D.J. Court, OMD; 1 ♂ paratype, Dunedin, Maori Hill, March 1968, J.I. Southerland, OMD; 2 ♂ paratypes, SE Stewart Is.: Small Craft retreat, 23 Jan. 1955, R.K. Dell, B.A. Halloway, OMD; 1 ♂ paratype, Stewart Is., Golden Bay, Jan. 1959, M.N. Watt, OMD; 1 ♀ paratype, Hollyford V., Marian V., *Miro* bark, 1500', 6 Dec. 1959, A. Chapman, OMD; 1 ♀ paratype, Little Barrier Is., Kauri [vegetation], 2 Sept. 1959, J. Kikkawa, MAC, OMD; 1 ♂ paratype, Hinewai, tree trunk, 23 Jan. 2000, M. Anstey, C. Vink, S. Pollard, M. Harvey, M. Žabka, CMC; 1 ♂ paratype, same locality, M. Anstey, CMC; 1 ♀ paratype, Arthurs Pass NP, Foggy Peak, 19 Jan. 2000, S. Pollard, CMC; 1 ♂ paratype, Mokoia Is., Lake Rotorua, BP, mossy log on ground, 8 Feb. 2000, B.M. Fitzgerald, MNZW; 1 ♀ paratype, Orongorongo Vale, (OVFS), WN, hard beach, emergence trap, 15 Nov.-15 Dec. 1993, B.M. Fitzgerald, MNZW; 1 ♀ paratype, Aorere area, Head Brown R., above 1000 m, 22. Aug. 1967, F. Alack, Fungus Fumagine [a plant?], EDD SIR, NZAC; 1 ♂ paratype, Titirangi, Malaise trap in garden, 4-11 Apr. 1980, NZAC; 1 ♂ paratype, Resolution Is., Wood, Rep. 2, May 1982, C.F. Butcher, NZAC; 1 ♀ paratype, same locality, Disappointment Cave, litter, 25 May 1982, C.F. Butcher, NZAC; 1 ♂ paratype, Stewart Is., Codfish Is., Sealers Bay, vertical rocks in splash zone, 4 Dec. 1981, B.A. Halloway, NZAC; 1 ♂ paratype, Breaksea Is., rotten wood, May 1982, C.F. Butcher, NZAC; 1 ♂ paratype, CL Little Barrir Isl., Mt. Herekohu, 513 m, on *Agathis* trunk, 4 Apr. 1984, NZAC; 1 ♀ paratype, AK Lynfiels, Wattle Bay, sifted rotten wood, 19 Nov. 1987, G. Kuschel, NZAC; 1 ♂ paratype, FD Secretary Is., Pseudowintera, Mar. 1984, C.F. Butcher, NZAC; 1 ♀ paratype, FD Bauza Is., Myrsine, 18 Mar. 1984, C.F. Butcher, NZAC; 1 ♀ paratype, RI Taihape, Hautapu River, bark & woodmould, 17 Sep. 1982, J.C. Watt, NZAC. 1 ♂ paratype, SI Fred's Camp, litter from *Pittosporum*, prickly shield fern, rata on crown fern, 10 Feb. 1991, LUNZ, 91/3.

Etymology. From embolus – the most distinctive character.

Male. Holotype from Croydon Bush (Fig. 1). Eye field with distinctive white spots, eye surrounding black.



Figures 8–10. ♀ *Hinewaia embolica* sp. nov. (8, 9) Epigyne and internal genitalia (paratype from Little Barrier Is.), (10) general appearance (paratype from Arthurs Pass).

Thorax with median yellow-orange stripe, sides orange-brown. Hairs not numerous, yellowish on sides, orange and grey around eyes. Abdomen with central beige stripe, 2 large contrasting dark spots and with small white spots made of translucent guanine crystals. Hairs not numerous, yellowish. Spinnerets yellowish. Clypeus orange-brown, fringed with white hairs. Chelicerae (Fig. 7) brown, long, rather delicate, vertical. Maxillae and labium orange-brown with yellow tips. Sternum yellow. Venter dirty-yellow, laterally with rows of dark-grey spots. First legs pale-orange-brown with darker sides, 3 distal podomeres darker. Tibiae with 2 or 3 proventral (males and females respectively) and 3 retroventral delicate spines, metatarsi with 2 pairs of long and strong spines. Legs II proximally yellowish, distally (especially on metatarsi) dark-orange. Legs III–IV yellow with darker distal parts of metatarsi. Palpal organ generally yellow, proximal part of cymbium darker, the structure shown in



Figure 11. Distribution of *Hinewaia embolica*.

Figs. 2, 5 (paratype from Hinewai shown in Figs. 3, 4, 6). Measurements: CL: 2.02, EFL: 0.83, AEW: 0.83, PEW: 1.04, CH: 0.83, AL: 2.08, L1: 4.47, L2: 3.22, L3: 3.22, L4: 4.00.

Female. Paratype from Little Barrier Is. Almost identical to the male (some paratypes much darker, see Fig. 10). Legs I rather stout, tibiae with 3 proventral and 3 retroventral spines, metatarsi with 2 pairs of longer spines. Femora and patellae yellow, tibiae, metatarsi and tarsi orange. Legs III–IV yellow, with darker distal parts of metatarsi. Epigyne (Fig. 8) large, made of 2 depressions divided by central dam. Sclerotised ridges lead to copulatory openings and further to insemination ducts joining long, thick-walled and coiled spermathecae (Fig. 9). Measurements: CL: 1.61, EFL: 0.73, AEW: 1.04, PEW: 0.96, CH: 0.83, AL: 2.13, L1: 2.39, L2: 2.23, L3: 2.80, L4: 2.06.

Variation. Specimens differ in colour, some with cross-like abdominal pattern (Fig. 10). In darker specimens first legs markedly darker than other ones. Also clypeal fringe may be more or less distinctive, whitish or yellowish. Minor variation concerns also palpal organ structure (compare Figs. 2 and 3).

Distribution (Fig. 11). Although the species is not common, it can be found in many localities throughout New Zealand.

Biology. Specimens were taken from bark, litter (ground), moss, fungi, ferns, rotten wood, from sea-level

or higher elevations (1000 m). The specimens found in sea-shore habitats, including rocks in the splash zone, were much darker than the others.

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REFERENCES

- Berry, J.W., J.A. Beatty and J. Prószyński. 1996. Salticidae of the Pacific Islands. I. Distribution of twelve genera, with descriptions of eighteen new species. *Journal of Arachnology*, 24: 214-253.
- Platnick, N.I. 2001. The World Spider Catalog, Version 2.0. <http://research.org/entomology/spiders/catalog81-87/INTRO1.html>.
- Prószyński, J. 2002. Salticidae (Araneae) of the World. www.mii.waw.pl/salticid/main.htm.
- Żabka, M. 1991. Salticidae (Arachnida: Araneae) of Oriental, Australian and Pacific Regions, V. Genus *Holoplatys* Simon, 1885. Records of the Australian Museum, 43: 171-240.
- Żabka, M. and S.D. Pollard. 2001. Zoogeography of Salticidae (Arachnida: Araneae) of New Zealand – first approach. Abstracts, 15th International Congress of Arachnology, p. 187.
- Żabka, M., S.D. Pollard and M. Anstey. 2002. Zoogeography of Salticidae (Arachnida: Araneae) of New Zealand – first approach. *Annales Zoologici*, 52: 459-464.
- Żabka, M. and S.D. Pollard. (in press). Salticidae (Arachnida: Araneae) of New Zealand. Genus *Hypoblemum* Peckham et Peckham, 1886. Records of the Canterbury Museum.
- Żabka, M. and S.D. Pollard. (in press). A check-list of Salticidae (Arachnida: Araneae) of New Zealand. Records of the Canterbury Museum.