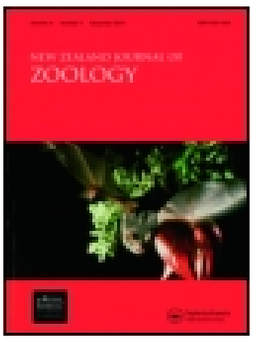

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# Descriptions of four Steatoda species (Araneae, Theridiidae) found in New Zealand

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# Descriptions of four *Steatoda* species (Araneae, Theridiidae) found in New Zealand

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**Abstract** Four theridiid spiders of the genus *Steatoda* are present in New Zealand: *S. truncata* (Urquhart) 1887 and *S. lepida* (Cambridge) 1879, which are endemic; *S. grossa* (Koch) 1838, a cosmopolitan species; and *S. capensis* Hann, 1990, a South African species. The synonymy of *S. regia* (Marples) 1956 with *S. lepida* is recognised. *Theridium truncatum* Urquhart, 1887 is recognised as a valid species within *Steatoda*, and the male is described here for the first time. The four species are described, diagnostic features illustrated, and ecological information given where possible. A fifth record, for *S. nubilosa* Urquhart, 1892, is rejected.

**Keywords** Araneae; Theridiidae; *Steatoda lepida*; *S. truncata*; *S. grossa*; *S. capensis*; New Zealand



## INTRODUCTION

*Steatoda* is a genus of the family Theridiidae. Levi (1957), in a paper on the genera *Crustilina* and *Steatoda*, combined the genera *Asagena*, *Lithyphantes*, and *Teutana* into the genus *Steatoda*, a revision which is followed here. *Steatoda* has over 100 described species (about 40% of which were described before 1920 and have not been revised since), found in all parts of the world. There are 34 species in Central and South America, and 21 in the U.S.A. and Mexico (Levi 1957, 1962). Africa has 22 species, Israel and Sinai nine (Levy & Amitai 1982), Japan eight, Europe six, Australia and New Guinea six, and China five. The last 21 species are divided between 12 other regions. Seven species are cosmopolitan: *S. albomaculata* (De Geer) 1778, *S. grossa* (Koch) 1838, *S. triangulosa* (Walckenaer) 1802, *S. erigoniformis* (Cambridge, O. P.) 1872, *S. paykulliana* (Walckanaer) 1806, *S. castanea* (Clerck) 1757, and *S. bipunctata* (Linnaeus) 1758.

New Zealand has four valid species: *S. grossa*, which has a cosmopolitan distribution; *S. capensis* Hann, 1990, only recently recognised as South African in origin; and *S. truncata* (Urquhart) 1887 and *S. lepida* (Cambridge, O. P.) 1879, which are both endemic to New Zealand. A fifth species, *S. nubilosa* Urquhart, 1892, has been listed, but Urquhart's female type for *S. nubilosa* is the only known specimen. Bryant (1933), after examining this specimen, wrote that it had lost all colour, that the legs were broken, and the epigynum impossible to see; she concluded that without a male the generic position of this species is uncertain. After examining the same specimen in 1990, I agree with this conclusion, and therefore reject this record.

This paper has three aims. The first is to provide descriptions that will allow unambiguous identification of the four valid species of *Steatoda* which live in New Zealand. At present, only *S. grossa* has been fully described (Levy & Amitai 1982), with essential diagrams of male and female genitalia. However, *S. grossa* and *S. capensis* are often confused, so diagnostic features of *S. grossa* are given here to facilitate comparisons.

The second aim is to provide information on the distribution, and the natural history where possible, of the four species. In the case of *S. lepida* and *S. truncata*, this section will be brief, indicating the need for further research.

The final aim is to draw attention to the similarities between species of *Steatoda* from New Zealand, Australia, Papua New Guinea, and South America.

## METHODS

The descriptions given are based on specimens collected in the field—*S. lepida* from Anaura Bay, *S. truncata* from Waikanae Beach (Wellington), *S.*

*Received 21 December 1991; accepted 1 November 1993*

*capensis* from Motueka, and *S. grossa* from houses in Wellington. Geographic distribution was determined by examining collections held by the Auckland Institute and Museum, the Plant Protection Centre (Ministry of Agriculture and Fisheries (MAF), Lynfield), the New Zealand Arthropod Collection (Department of Scientific and Industrial Research (DSIR), Auckland), the Museum of New Zealand (Wellington), Canterbury Museum (Christchurch), and Otago Museum (Dunedin). Collection records are not listed here but are available from the author. Few specimens have museum numbers.

Measurements of body parts were made by laying the part directly onto a 10 mm × 10 mm grid divided into 0.1 mm × 0.1 mm squares. The measurements made are defined as follows. Leg length is the combined length of all segments, each measured separately, from coxa to tip of tarsus. Patella + tibia index is the combined length of both segments from the longest leg, divided by the length of the carapace. Carapace length is measured along the midline; carapace width across the widest point; and carapace index is carapace length divided by width. Total spider length is from the posterior tip of the abdomen to the anterior face of the clypeus as viewed from above.

Full descriptions are given of *S. capensis*, *S. lepida*, and *S. truncata*. As *S. grossa* is fully described elsewhere (Levy & Amitai 1982), the description given in this paper has been reduced to the essential information needed to identify *S. grossa* specimens—further measurements and diagrams of internal genitalia and of chelicerae may be found in Levy & Amitai (1982).

The *Steatoda* of New Zealand were compared with the *Steatoda* of Australia, represented by collections held at the Western Australian Museum, Perth, and the Australian Museum, Sydney.



## DESCRIPTIONS

### *Steatoda* Sundevall, 1833

*Steatoda* Sundevall, 1833. Conspectus Arachnidum, p. 16. Type species *Steatoda castaneus* (Clerck) 1757, designated by Thorell 1869, On European Spiders, p. 93.

DIAGNOSIS: Medium to large spiders, 2–13 mm total body length (Levy & Amitai 1982). Carapace longer than wide and with a distinct fovea. Male with stridulatory ridges on the posterior sides of the carapace. Lateral eyes touching or separated by less than their diameter. Chelicerae sometimes enlarged in male, with 1 or 2 teeth on anterior margin, none posterior in females (Levi & Levi 1962). Legs I or IV longest, third shortest. Opisthosoma suboval, male with sclerotised ridges around pedicel. Colulus large.

Some species of the *Steatoda* genus (including *S. capensis*) may be confused with *Latrodectus*, but in *Steatoda* the lateral eyes are touching or separated by less than their diameter (Levi 1957), and there are no teeth on the chelicerae (Levy & Amitai 1982).

### *Steatoda capensis* Hann, 1990

*Teutana lepida* Cambridge, 1903. Annals S. Afr. Mus. 5 (3): pp. 154–155, pl. XI, fig. 2. Type from Cape Town in Hope Museum, Oxford.

*Steatoda capensis* Hann, 1990. N.Z. Journ. Zool., 17: 283, paratype adult male + female from Cape Town examined (S. Afr. Mus., collector R. Tucker, 15 September 1914, B156).

*Description*

COLOURATION: **Female**. Carapace black to brown. Legs black to brown. Dorsum of opisthosoma black or chocolate brown, markings if present may include any or all of the following: a white or yellow band around the anterior margin; 2, 4, or 6 white spots arranged in pairs down the midline; and a white or reddish vertical dash above the spinnerets. Venter either totally black or brown, or with a white spot behind the epigastric furrow and pale lines leading from edge of epigastric furrow to base of spinnerets.

**Male**. Carapace and sternum brown with granulations. Legs light green or orange, with dark articulations. Opisthosoma black; dorsum with white band around anterior, a broad W shape at its most extreme, 4 white median spots, and a white vertical dash in the midline above the spinnerets (Fig. 1); some specimens also have pale lines laterally; more mature specimens less patterned; stridulatory ridges on anterior of opisthosoma are the most prominent of the 4 species described here; venter either black or brown with no markings or with a white spot behind the epigastric furrow, which in some specimens extends back to the spinnerets as a white cone.

FEMALE: **Measurements** (11 females). Total length 7.0–8.8 mm; carapace length 2.4–4.0, width 2.2–2.6, index 0.92–1.6; length of legs: I 12.5–14.5, II 8.6–11.1, III 7.6–8.8, IV 11.6–13.7; patella + tibia index 1.05–1.7

**Epigynum**. Kidney-shaped depression with distinct border (Fig. 2); anterior half divided by a septum

**Key to species of *Steatoda* in New Zealand**

*Males*

1. Anterior medial eyes on snout; palpal sclerites compact (Fig. 10); cheliceral fang elongate (Fig. 9) ..... ***S. lepida***
   Anterior medial eyes not on snout and fang not elongate ..... 2
2. Medium-sized spiders not usually more than 5.0 mm in length; embolus of palp elongate following a 360 degree spiral (Fig. 15). ..... ***S. truncata***
   Size usually exceeds 5.0 mm in length; embolus not elongate ..... 3
3. Mid-dorsum of opisthosoma with four white patches in square (Fig. 1); median apophysis bifurcate (Fig. 6) ..... ***S. capensis***
   Dorsum of opisthosoma with median row of roughly triangular white patches; median apophysis an inwardly directed hook (Fig. 18) ..... ***S. grossa***

*Females*

1. Medium-sized spiders usually no more than 5.0 mm in length; epigynum pale wrinkled and membranous.....(endemic species) ..... 2
   Larger spiders, usually above 5.0 mm in length; epigynum divided by median septum..... (introduced species)..... 3
2. Epigynum with distinct dark subcutaneous sclerotised V and spermathecae visible ..... ***S. truncata***
   Epigynum with central wrinkled knob flanked by whorl on each side (Fig. 8A) ..... ***S. lepida***
3. Epigynum heavily sclerotised; spermathecae not visible (Fig. 2)..... ***S. capensis***
   Epigynum with distinct posterior lip; not heavily sclerotised; spermathecae clearly visible ..... ***S. grossa***



which arises on the anterior margin and disappears into the central depression; heavily sclerotised; internal organs (Fig. 3) not visible; epigynum often covered by an epigynal plug (Fig. 4).

MALE: **Measurements** (10 males). Total length 5.7–7.2 mm; carapace length 2.8–3.6, width 1.8–2.3, index 1.49–1.78; length of legs: I 11.9–14.1, II 8.0–10.4, III 6.9–8.8, IV 11.3–13.4; patella + tibia I index 1.16–1.32; length of bulb + tibia of palp 1.1–1.3.

**Chelicerae.** Not bulging anteriorly; stout conical tooth present on mesal side with a small denticle just above it on the inner margin; fang short, with a broad base and a row of fine indentations (Fig. 5).

**Palp.** Distinctive brown bifurcate median apophysis prominent on mesal side; arched filiform portion of the embolus extends above median apophysis; pale membranous conductor initially broadens then narrows to a point above embolus (Fig. 6A–C).

*Comments*

As *S. capensis* has spread around New Zealand, various institutions (e.g., Plant Protection Centre, Lynfield (MAF)), have received adult specimens from members of the public worried that the spider is the endemic venomous katipo, *Latrodectus katipo* Powell, a member of the Black Widow genus. The females of the two species are the same size and shape, and some *S. capensis* females have a reddish dash on the tip of the abdomen. Hence, *S. capensis* has been given the common name of the False Katipo, first used by Faulls et al. (1991).

*Steatoda capensis* is South African in origin, and was first described by O. P. Cambridge (1903) from Cape Town under the name *Teutana lepida*. As the name *S. lepida* is preoccupied, the species was renamed *S. capensis* (Hann 1990a). *S. capensis* is common throughout southern Africa, where it is the commonest species recorded in and around houses (Dippenaar-Schoeman & Muller 1990). Cambridge (1903) wrote that *S. capensis* was known locally (Cape Peninsula, South Africa) as the "knoppies-spider", and that its bite was dreaded by the villagers. Local cases of serious illness and death were attributed to its bite, but the culprit was proved to be *Latrodectus indistinctus*, a member of the Black Widow genus, and not *S. capensis* (Smithers 1944). *L. indistinctus* has been identified as the "knoppies-spider" referred to by Cambridge (Smithers 1944). Although not highly venomous, there are still a number of records of bites from *S. capensis* leading to swelling and pain lasting up to 14 days, including the case reported by Davies (1992).

The earliest museum specimen of *S. capensis* in

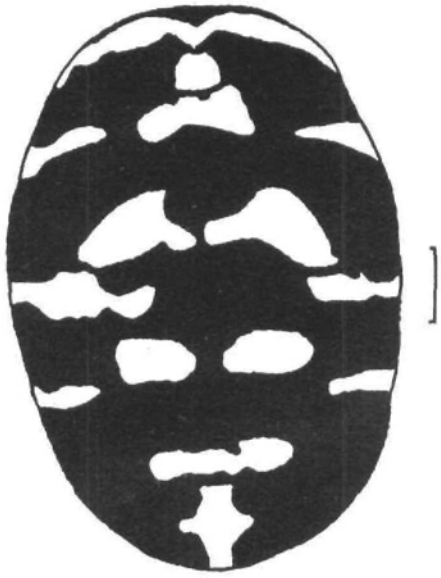


**Fig. 1** Male, opisthosoma dorsal view. Bar 0.5 mm.

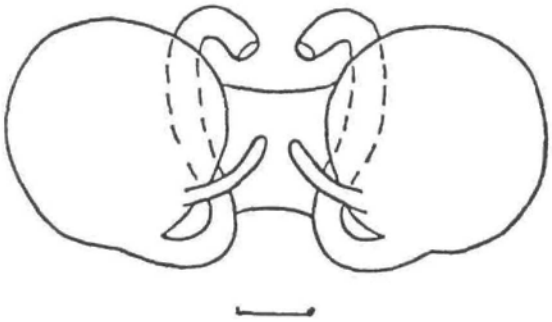


**Fig. 3** Female internal genitalia. Bar 0.04 mm.

**Fig. 1–6** *Steatoda capensis*.

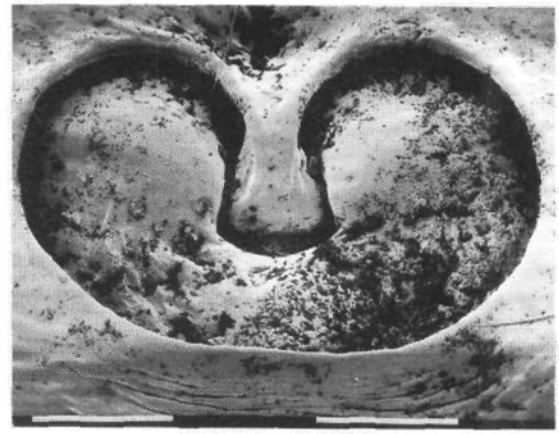


**Fig. 2** Female epigynum SEM. Bar 0.10 mm.

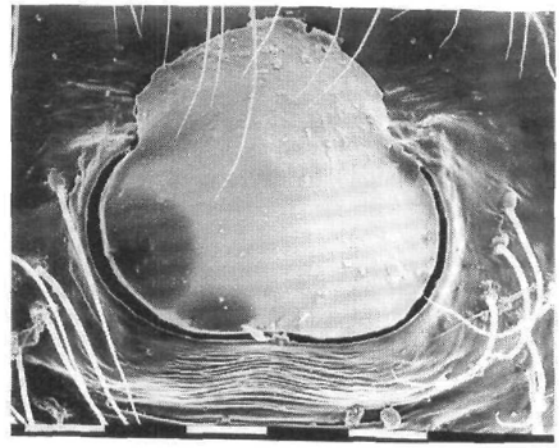


**Fig. 4** Female epigynal plug SEM. Bar 0.10 mm.

New Zealand is dated 1942, from Dargaville (R. Rowe). Earliest records for other locations are Lower Hutt 1949 (G. R. Stevens), Whangerei 1951 (no collector given), Hokianga 1953 (B. J. Marples), and Spirits Bay 1960 (B. A. Holloway). The earliest South Island record is Motueka 1984 (T. J. Barrett). *S. capensis* has also been present on some offshore islands for at least the past 30 years (e.g., Great Barrier Island 1963; R. G. Ordish).

*Steatoda capensis* is found throughout North Island, from Cape Reinga to Cape Palliser. It is the most frequently recorded *Steatoda* species in North Island, accounting for over 50% of museum specimens from the 1960–90 period. Many of these specimens are from coastal areas, where *S. capensis* is frequently found under logs and in marram grass. However, *S. capensis* is also common around areas of human habitation. There are far fewer records from South Island. Between 1984 and 1992, the species has been recorded from the Nelson, Marlborough, Canterbury, and Otago regions of South Island. *S. capensis* is clearly spread by human activity, and the much larger human population in North Island would account for its rapid spread throughout this area.

In New Zealand, the adults and juveniles of both sexes can be found throughout the year. Females continue to produce egg sacs year round, but produce most in December–March. The mean number of eggs per sac over all sacs for *S. capensis* studied in Motueka, Nelson, was 183.6 (SD 53.9; $n = 37$) with

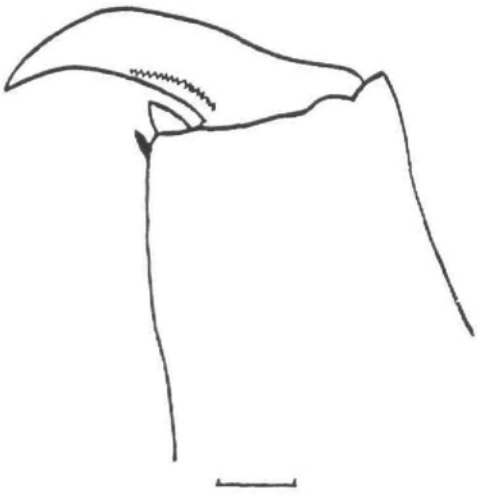


**Fig. 5** Female left chela, inner view. Bar 0.28 mm.

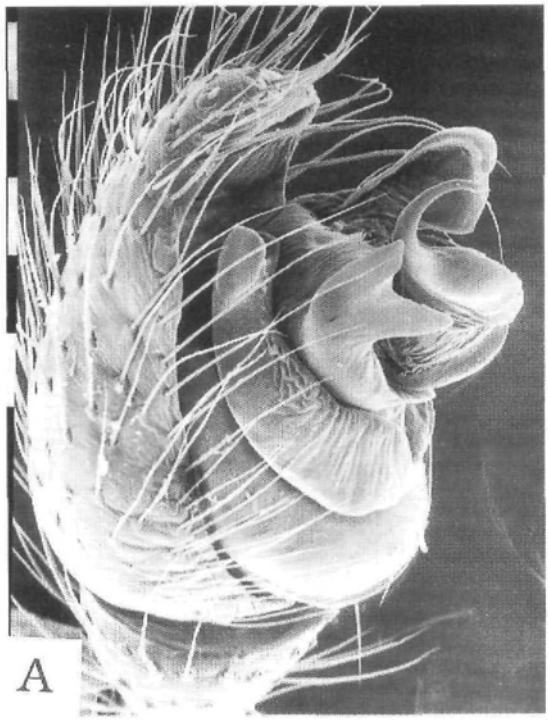
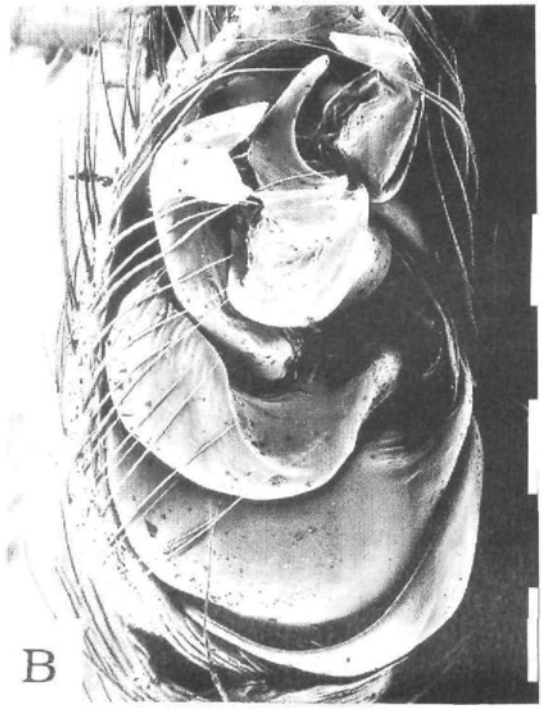
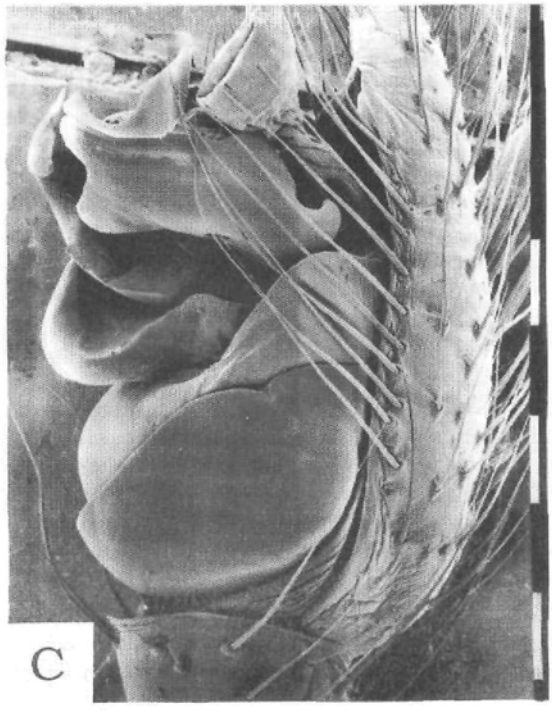



**Fig. 6 A**, Male left palpus, mesal view. Bar 0.10 mm. **B**, Male left palpus, ventral view. Bar 0.10 mm. **C**, Male left palpus, retrolateral view. Bar 0.10 mm.



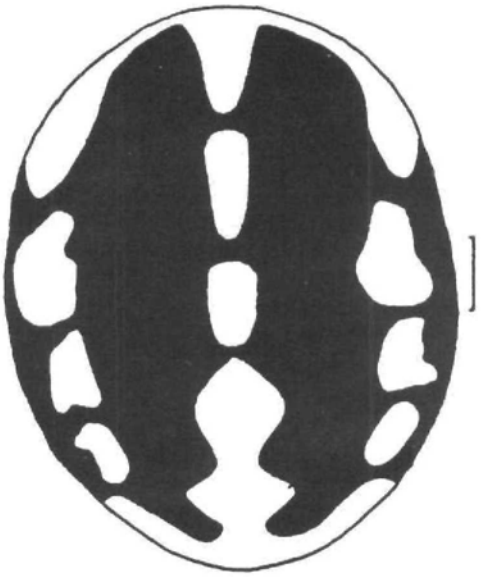


**Fig. 7** Female opisthosoma dorsal view. Bar 0.50 mm.

**Fig. 7–10** *Steatoda lepida.*

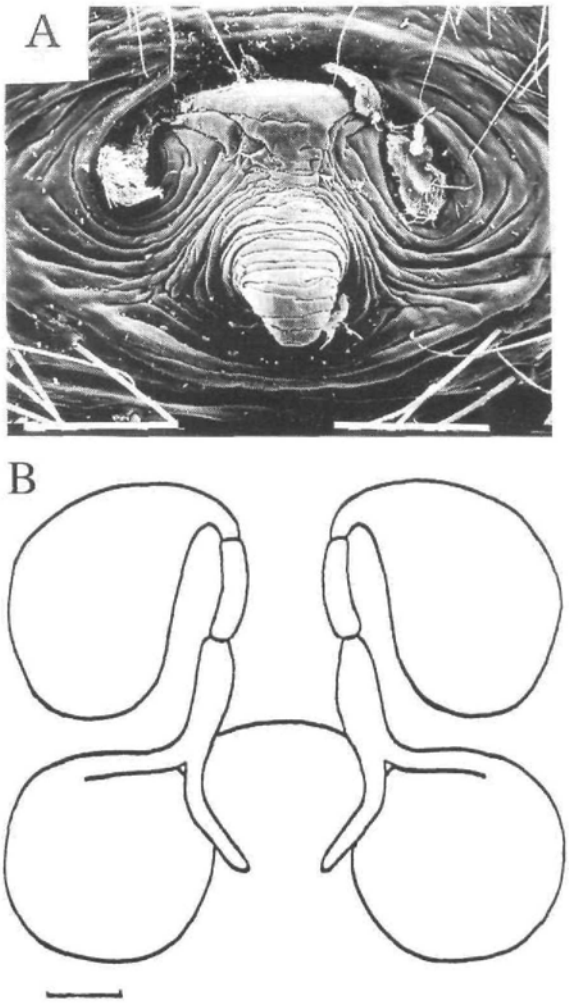



**Fig. 8 A**, Female epigynum SEM. Bar 0.10 mm. **B**, Female internal genitalia. Bar 0.04 mm.

a range of 92–309 (Hann 1990b). The egg sacs are 8–10 mm in diameter, white and slightly fluffy in appearance, and are usually attended by the female until hatching.

*Steatoda capensis* studied in Motueka, Nelson, fed mainly on a common sandhopper, *Talorchestia quoyana* (Amphipoda), and a variety of coleoptera including *Cecyropa lucunda*, *Mimopeus elongatus*, *Ceratognathus irroratus*, *Thelyphassa diaphana*, and *Conoderus exsul* (Hann 1990b). As *S. capensis* is found in many different types of habitat, it probably accepts a diverse range of prey.

*Steatoda capensis* has been implicated in the displacement of the endemic true katipo, *L. katipo*, from coastal regions of the Wellington province (Hann 1990b).

*Steatoda capensis* is also found in Australia with records from Melbourne, Perth, and Canberra (M. Harvey, Western Australian Museum, pers. comm.), and many New South Wales records including Sydney. The earliest record from the Australian Museum collection is June 1947 at Sydney Marts Docks.

### *Steatoda lepida* (Cambridge) 1879

*Lithyphantes lepidus* Cambridge, 1879. Proc. Zool. Soc., Lond. 1879, p. 690, pl. 53, fig. 9. Male type in Hope Museum, Oxford.

*Theridium triloris* Urquhart, 1885. Trans. N.Z. Instit., 18, p. 194, pl. 8, fig. 1.

*Lithyphantes regium* Marples, 1956. Rec. Auck. Instit., 4: 329–342, fig. 5.

*Steatoda regia* (Marples) 1956 in Brignoli (1983) A Catalogue of the Araneae, p. 412. NEW SYNONYMY.

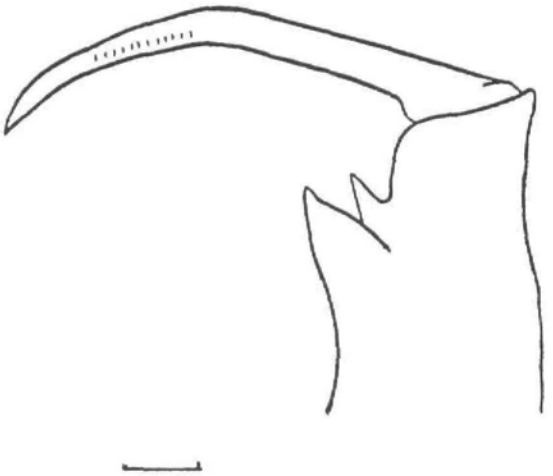


**Fig. 9** Male left chela, inner view. Bar 0.30 mm.

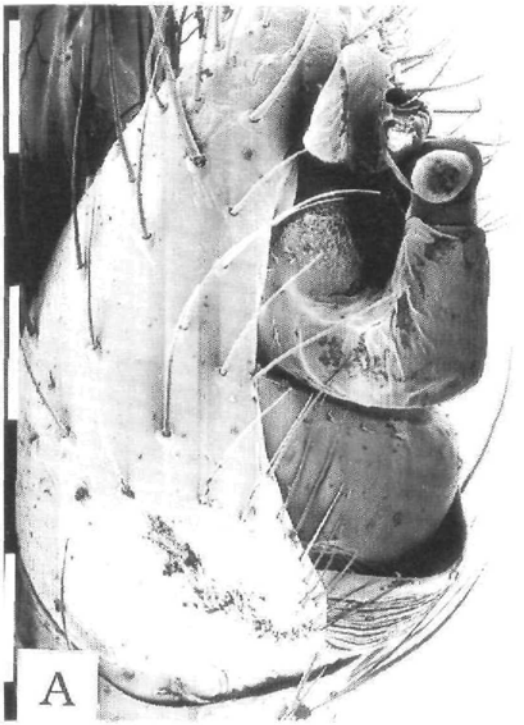
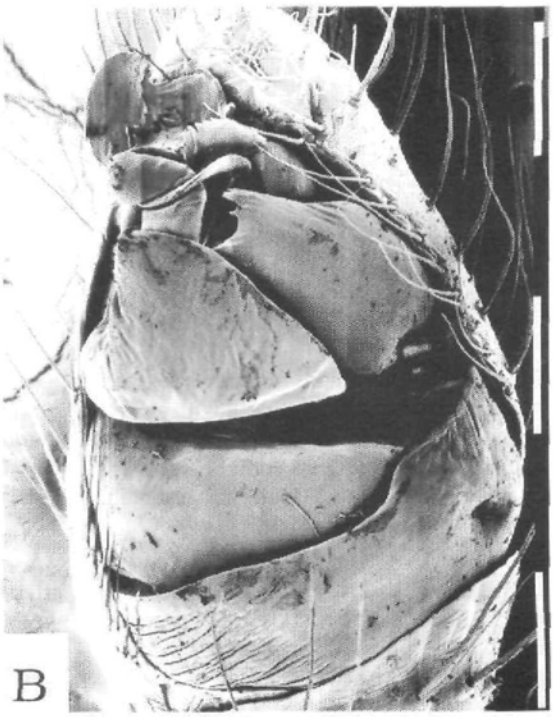
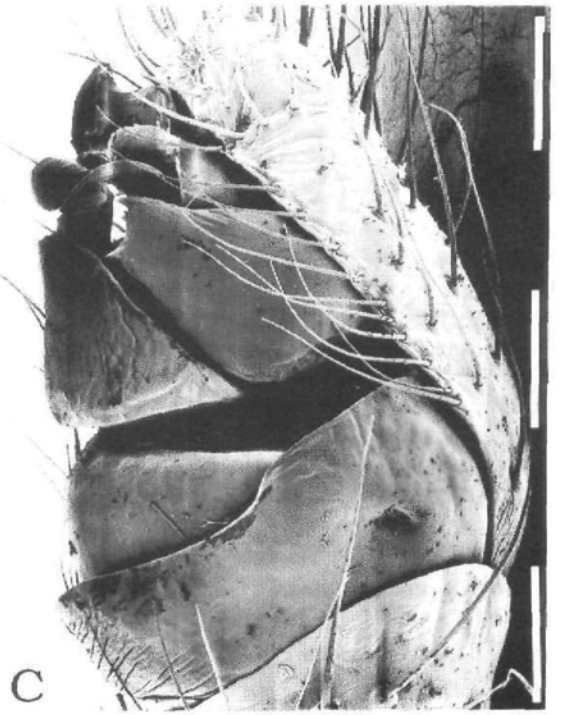



**Fig. 10 A**, Male, left palpus, mesal view. Bar 0.10 mm. **B**, Male, left palpus, ventral view. Bar 0.10 mm. **C**, Male, left palpus, retrolateral view. Bar 0.10 mm.



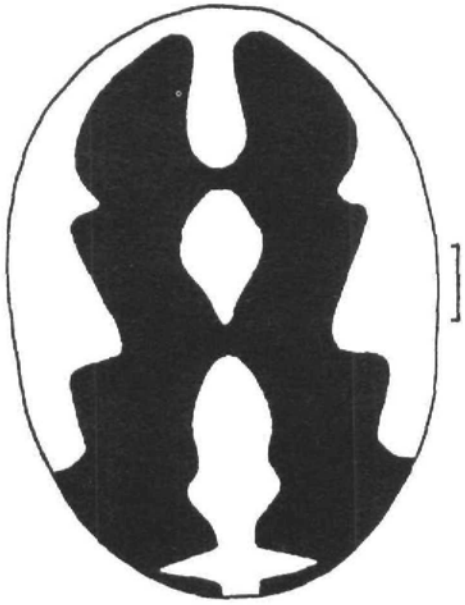


**Fig. 11** Female opisthosoma dorsal view. Bar 0.40 mm.

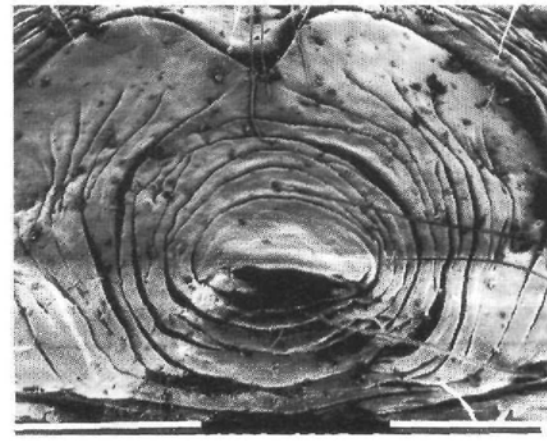


**Fig. 12** Female epigynum SEM. Bar 0.10 mm.

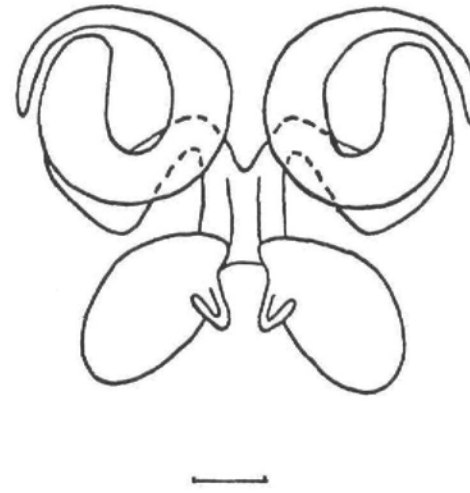


**Fig. 13** Female internal genitalia. Bar 0.04 mm.

**Fig. 11–15** *Steatoda truncata*.

*Steatoda lepida* new comb. Hann, 1990. N.Z. Journ. Zool., 17: 283.

*Description*

COLOURATION: **Female**. Carapace and sternum brown, without granulations. Legs yellowish-brown, joints of femora darkened as are distal ends of tibia and tarsi. Opisthosoma reddish brown to black: dorsum with 3 white bands, 2 lateral, 1 medial, encircling the dorsum, formed from white patches which may be continuous; all bands meet anteriorly and posteriorly; venter with single white spot behind epigastric furrow, and a white band extending from above the spinnerets (where it meets the other 3 bands) forward to parallel with the lung plates (Fig. 7).

**Male**. Colouration and markings as for female. Carapace modified anteriorly into a snout, supporting anterior medial eyes.

FEMALE: **Measurements** (7 females). Total length 4.5–5.0 mm; carapace length 2.0–2.4, width 1.4–1.8, index 1.3–1.4; length of legs: I 6.5–7.6, II 5.8–6.8, III 4.7–6.1, IV 6.8–8.1; patella + tibia IV index 0.92–1.3.

**Epigynum**. Pale membranous appearance; central conical knob pointing posterior with grooves running around the knob in a concentric pattern and extending either side of the knob forming a whorl on each side (Fig. 8A); internal genitalia (Fig. 8B) just visible through cuticle.

MALE: **Measurements**. Total length 4.8 mm; carapace length 2.4, width 1.6, index 1.5; length of legs: I 7.6, II 6.8, III 5.9, IV 8.2; patella + tibia IV index 1.08; bulb + tibia of palp 1.8.

**Chelicerae**. Bulging anteriorly; large fleshy conical tooth on inner surface; smaller tooth situated

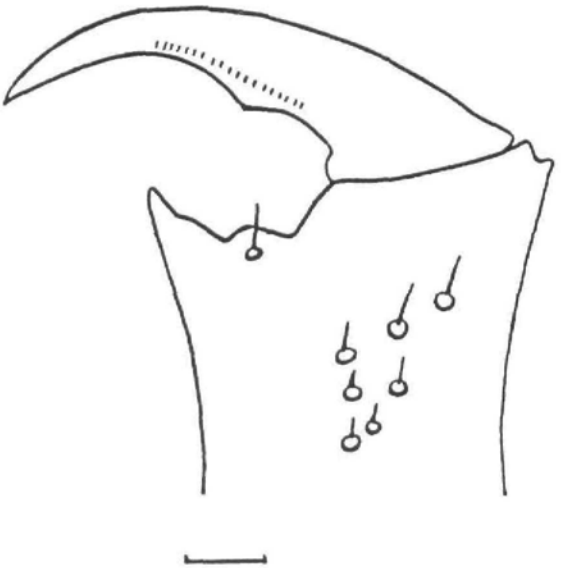


**Fig. 14** Male left chela, inner view. Bar 0.30 mm.

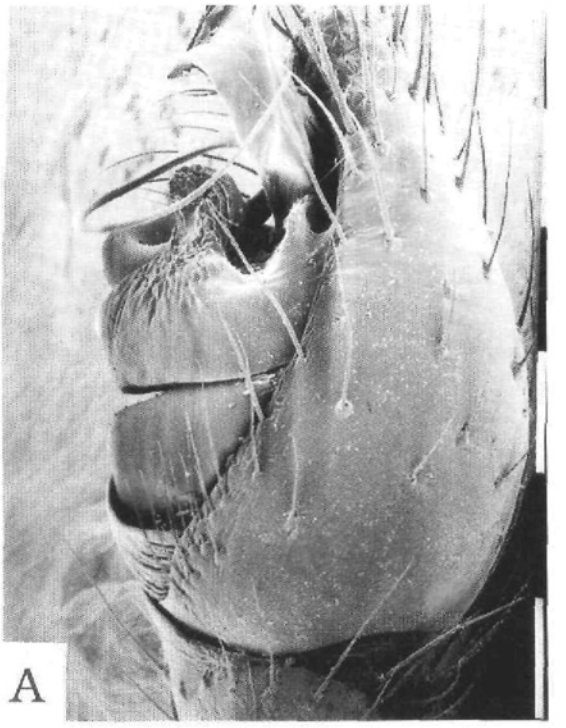
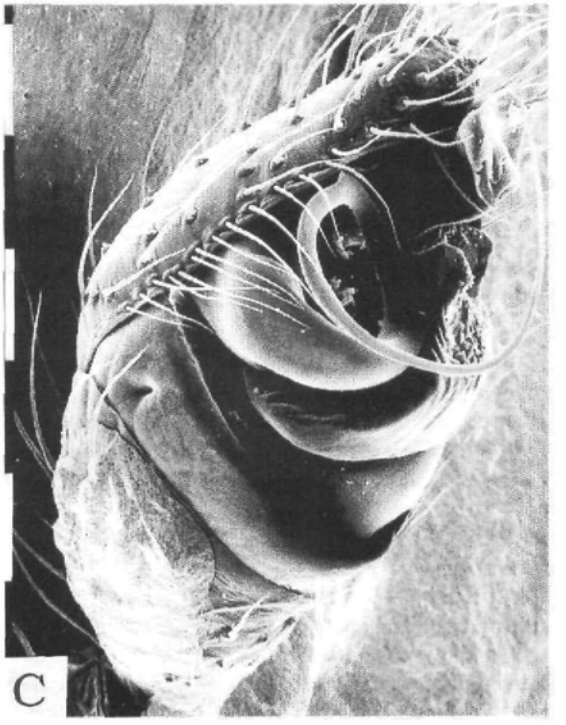



**Fig. 15 A**, Male right palpus, mesal view. Bar 0.10 mm. **B**, Male right palpus, ventral view. Bar 0.10 mm. **C**, Male right palpus, retrolateral view. Bar 0.10 mm.

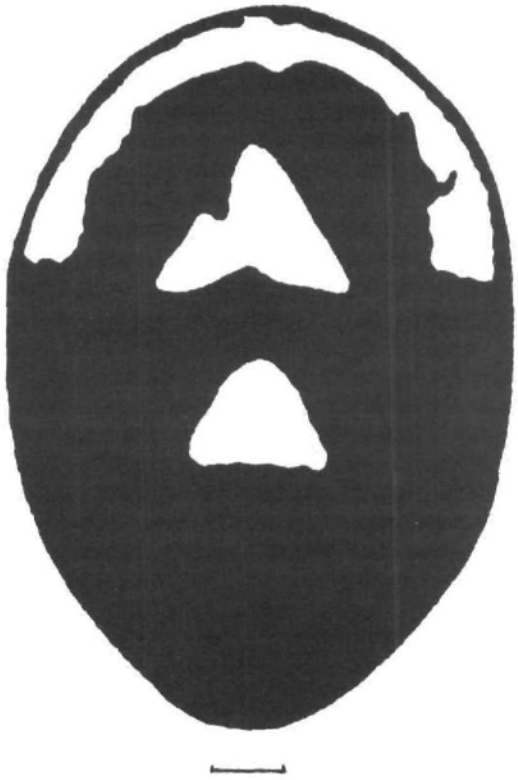


**Fig. 16** Female opisthosoma dorsal view. Bar 0.50 mm.

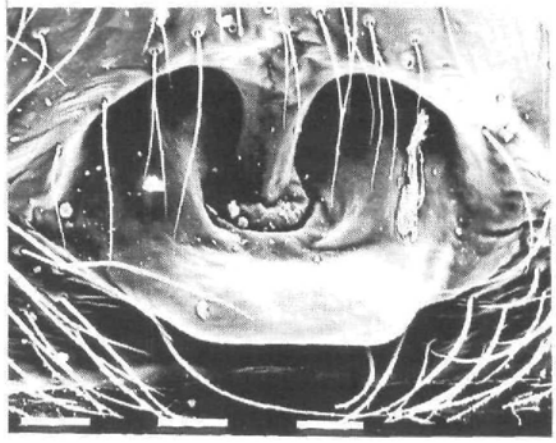


**Fig. 17** Female epigynum SEM. Bar 0.10 mm.

**Fig. 16–18** *Steatoda grossa.*

between the large tooth and the fang; fang very long and slender with distinct angular bend prior to a row of fine indentations (Fig. 9).

**Palp**. Knob-like median apophysis broadly attached to tegulum and encircled by spiral embolus; embolus arises from broad base which has dentate apical margin; distal end of embolus rests in broad conductor which also has dentate margin (Fig. 10A–C).

*Comments*

The male of *S. lepida* was first described by O. P. Cambridge (1879) from one specimen. This was followed by Urquhart's (1885) description of both sexes under the name *Theridium triloris*. The synonymy was recognised by Bryant (1935). The description given by Dalmas (1917) of S. *lepida* and the accompanying epigynal diagram are both in fact of *S. truncata*. Bryant (1933) also incorrectly classified Urquhart's *Theridium truncatum* as a synonym for *S. lepida*. Marples (1956) described a new species, *Lithyphantes regium*, from one female from Great Island in the Three Kings Islands, but the female was in fact a specimen of *S. lepida*. Thus, *S. regia* becomes invalid.

Museum specimens of *S. lepida* date back to 1920 from Queenstown (Otago Museum collection). *S. lepida* lives throughout both main islands and on offshore islands including the Chatham Islands and Three Kings Islands. Unlike the two introduced species, *S. lepida* is found in mountainous regions of New Zealand as well as lowland areas. *S. lepida* has been found under logs on the coast and under rocks in riverbeds.

Egg sacs of *S. lepida* are small, around 4–5 mm in diameter, and cream in colour. Four egg sacs examined contained between 25 and 30 eggs each.

***Steatoda truncata* (Urquhart) 1887** (new combination)

*Theridium truncatum* Urquhart, 1887. Trans. N.Z. Instit., 20, p. 115, pl. 11, fig. 5. Female holotype in Otago Museum (examined).

*Lithyphantes lepidus* Cambridge, 1879 in Dalmas (1917). Ann. Soc. ent. Fr., 86: 360, fig. 31.

*Description*

COLOURATION: **Both sexes**. Carapace black to brown. Legs yellowish brown. Opisthosoma: dorsum

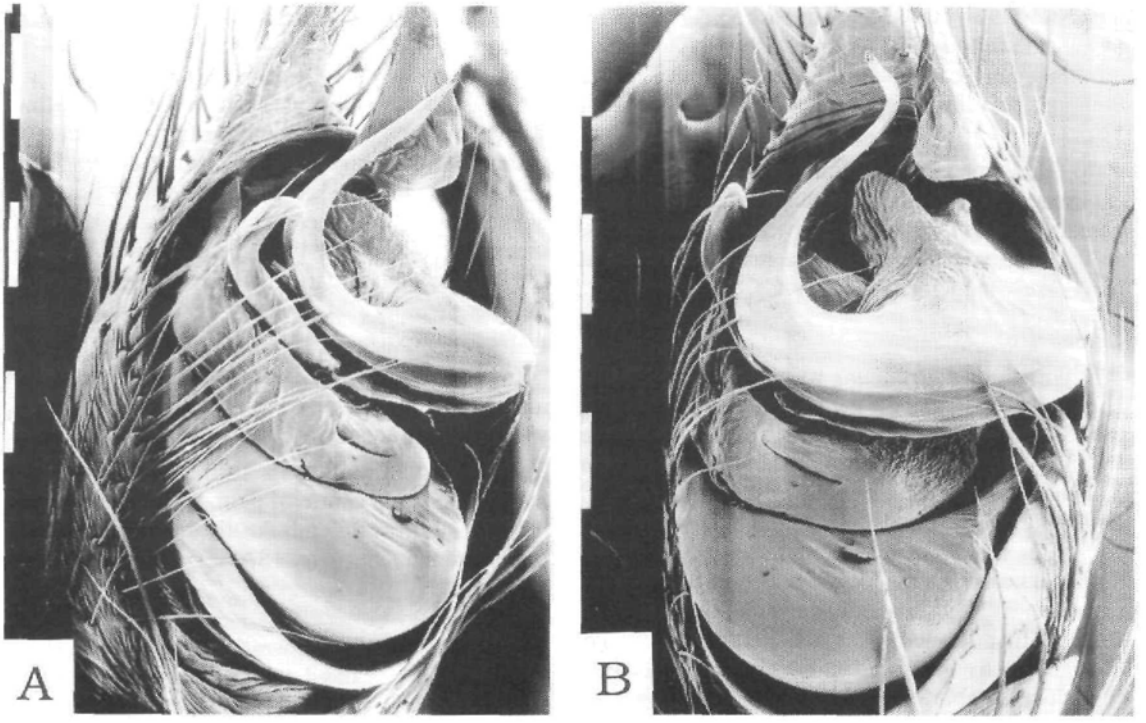
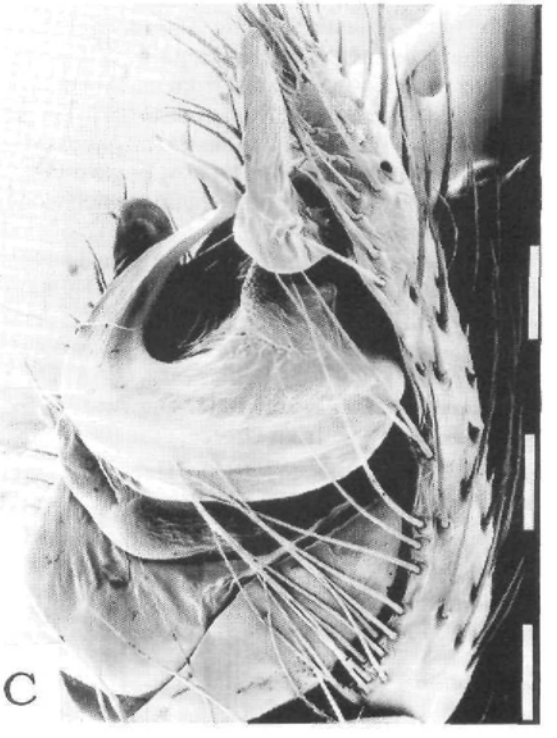



**Fig. 18 A**, Male left palpus, mesal view. Bar 0.10 mm. **B**, Male left palpus, ventral view. Bar 0.10 mm. **C**, Male left palpus, retrolateral view. Bar 0.10 mm.




brown to black; anterior broad white band which may extend laterally as far as two-thirds length of opisthosoma; lateral markings otherwise appear as white patches decreasing in size posteriorly; a series of white patches form a band down the mid-dorsum (Fig. 11); venter either unmarked or with a white patch on outer side of lung plates.

FEMALE: **Measurements** (5 females). Total length 3.2–4.9 mm; carapace length 1.5–2.3, width 1.2–1.9, index 1.21–1.35; length of legs: I 6.0–8.4, II 5.1–7.5, III 4.4–5.6, IV 6.1- 9.0; patella + tibia IV index 1.17–1.27

**Epigynum**. Pale membranous appearance; central semi-circular projection surrounded by concentric grooves (Fig. 12); median V-shaped chitinised structure visible through integument; internal organs (Fig. 13) just visible.

MALE: **Measurements**. Total length 3.6 mm; carapace length 1.9, width 1.3, index 1.46; length of legs: I 6.7, II 5.6, III 4.8, IV 7.3; patella + tibia IV index 1.26; bulb + tibia of palp 1.8.

**Chelicerae**. Not bulging anteriorly; inner surface

with stout bristles; large pointed conical tooth on mesal side followed by a gap leading to the base of the fang; fang elongate with a transparent keel on the inner curve and a fine row of indentations (Fig. 14).

**Palp**. Median apophysis similar to *S. lepida* but not encircled by embolus; embolus arises from broad base and spirals through one or two 360 degree turns, so that normally the distal end rests in the broad hook-like conductor (Fig. 15A–C).

*Comments*

The female of *S. truncata* was first described by Urquhart (1887), and the male is fully described here for the first time. Dalmas (1917) described some features of both sexes and figured the epigynum of *S. truncata* under the name of *Lithyphantes lepidus*. Bryant (1933, 1935) also classified *S. truncata* as a synonym for *S. lepida*. Other than the female holotype held in Otago Museum, the oldest museum specimen in New Zealand is a female collected in 1923 (Millar Branch, Clarence River, G. Archey) and incorrectly identified as *Lithyphantes lepidus*.

Dalmas (1917) stated that this species had been found only in South Island. Museum collections indicate *S. truncata* is widespread in South Island, but it has also been recorded in the Wellington, Wairarapa, Hawke's Bay, and Tongariro areas of North Island. As with *S. lepida*, *S. truncata* lives in both mountainous and lowland regions. *S. truncata* has been frequently collected from under stones in riverbeds and, less often, from under logs in coastal areas. Dalmas (1917) wrote that these spiders were sometimes so numerous that their webs gave stoney banks an appearance of a silky coating which would sparkle in the sunlight.

One egg sac I examined was 4–5 mm in diameter and contained 70 eggs. Eggs are laid in February (Dalmas 1917).

### *Steatoda grossa* (Koch) 1838

*Theridium grossum* Koch, 1838. Die Arachniden, p. 112. Female type from Greece.

*Steatoda grossa* Koch, 1851. Uebersicht des Arachnidensystems (5): p. 17.

*Teutana grossa* Simon, 1881. Les Arachnides de France, 5 (1): p. 164.

*Theridium sericum* Urquhart, 1885. Trans. N.Z. Instit., 18: 198–199, pl. 8, fig. 5 (in Otago Museum).

*Description*

*Steatoda grossa* is the largest of the four species described here. Adult female *S. grossa* range from 5.9 to 10.3 mm in length and adult males from 3.8 to 6.8 mm (Levy & Amitai 1982). Juvenile and young adult specimens are easily distinguished from *S. capensis* by their paler body colour and distinctive abdominal markings (Fig. 16). More mature adult females can be confused with *S. capensis*, however, as the body colour becomes purplish black and the markings fade. The two species can easily be separated by examination of palpal sclerites of the male or the epigynal structure of the female.

**Epigynum**. Posterior border formed into a prominent lip; a septum arises from the mid-anterior margin and divides the epigynum into two (Fig. 17); spermathecae are clearly visible through the cuticle.

**Palps**. Median apophysis formed into hook, tip inclined towards centre of palp; spiral embolus has broad base; filiform embolus tip sits beneath membranous conductor (Fig. 18A–C).

*Comments*

*Steatoda grossa* is a cosmopolitan species (Levi 1957). In New Zealand, this species dates back to at least 1885 when Urquhart (1885) described an adult female under the name *Theridium sericum*. The next museum record in New Zealand is 1923 from Christchurch (Rex Wright). Earliest records for other locations are Raoul Islands, Kermadecs 1944 (J. H. Souvenser), Nelson 1948 (R. A. Cumber), Wellington 1946 (G. Ramsay), Hastings 1947 (R. R. Forster), and Auckland 1949 (E. Turbott). This species has a wide geographical distribution in New Zealand including some outlying islands.

As with *S. capensis*, this species has clearly been dispersed by human activity. There is no evidence in New Zealand spider collections that this species has been found anywhere other than in commensal locations. This is not surprising as both Gwinner-Hanke (1970) and Levy & Amitai (1982) have recorded *S. grossa* from inside buildings, and Levi (1957) recorded it as common in North American cities. The reproductive behaviour, web building, egg laying, and egg sac building of *S. grossa* are described by Gwinner-Hanke (1970). Prey capture is described by Gwinner-Hanke (1970) and Barmeyer (1975).

### Endemic *Steatoda* compared with exotic *Steatoda*

The New Zealand endemic species, *S. truncata* and *S. lepida*, show clear morphological relationships with species from Australia and South America. In

*S. lepida* from New Zealand, *S. ancorata* (Holmberg) 1876 from South America (Peru, Chile, Argentina), and *S. nasata* (Chrysanthus) 1975 from New Guinea and Australia, the anterior medial eyes of the males are on a protruding snout and the fangs are elongate. The resemblance between *S. lepida* and *S. nasata* was noted by Chrysanthus (1975). These three species also have similar palps.

A wrinkled membranous type of epigynum is seen in *S. truncata* and *S. lepida* from New Zealand, *S. ancorata* from S. America, *S. porteri* (Simon) 1909 from Chile, and in seven species from Australia—*S. nasata*, *S. niveosignata* (Simon) 1908, *S. adumbrata* (Simon) 1908 and W.A.M. ref. nos. (90/1258, 90/1299–307, 90/1298, and 90/1285). The abdominal pattern in the female of *S. lepida*, *S. ancorata*, and *S. nasata* are extremely similar. All the species mentioned above are of medium size (i.e., 4–5 mm in length).

Since the revision of Levi (1957), the species *(Teutana) adumbrata* and *(Lithophantes) niveosignata* are considered to belong to the genus *Steatoda* and are so called here, although this is the first time those name combinations have been published.



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