

**THREE NEW SPECIES OF *ASCA* v. HEYDEN
(ACARI : BLATTISOCIDAE) FROM NEW ZEALAND,
AND RECORDS OF *ASCA* FROM SOME
SOUTHERN PACIFIC ISLANDS**

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Summary

Descriptions are given of *Asca arboriensis* n. sp., *A. plumosa* n. sp., and *A. porosa* n. sp. from New Zealand. *A. quinquesetosa* Wharton is recorded from Niue Island, *A. garmani* Hurlbutt from Niue, Manuae, Viti Levu, and Rarotonga, and *A. muma* Hurlbutt from Viti Levu. A key is given to the 12 species of *Asca* known from New Zealand and islands in the south Pacific.

INTRODUCTION

This paper describes three new species of *Asca* v. Heyden from New Zealand, and extends the description of the six species previously known from this country (Wood, 1965) by illustrating their tecta.

Three species, previously known only from the northern hemisphere, are recorded from islands in the south Pacific. Collections of leaf litter and moss were made from Niue Island by Dr A. C. Eyles in September and October 1964 and from the Cook Islands (Rarotonga, Mangaia, Manuae, Mauke, Aitutaki, Atiu, and Palmerston Atoll), Fiji (Viti Levu), and Tahiti in May and June 1965 by Dr G. W. Ramsay. Unfortunately, the litter material was some weeks old when it arrived in New Zealand and very few soil arthropods were obtained.

In the following descriptions nomenclature of setae and inter-setal distances follows the system used by Hurlbutt (1963) and Wood (1965).

NEW SPECIES OF *Asca* FROM NEW ZEALAND

Asca arboriensis n. sp.

FEMALE

Anterior dorsal shield 270 μ long, 260 μ wide with 17 pairs of short (15–20 μ), slightly curved, rod-like setae. Posterior dorsal shield 260 μ long, 265 μ wide, with 15 pairs of setae (Fig. 1A). Lengths of postero-dorsal setae and inter-setal distances of specimens from Mount Egmont and Canaan are given in Table 1. Setae J5 very short (8 μ) and thorn-like;

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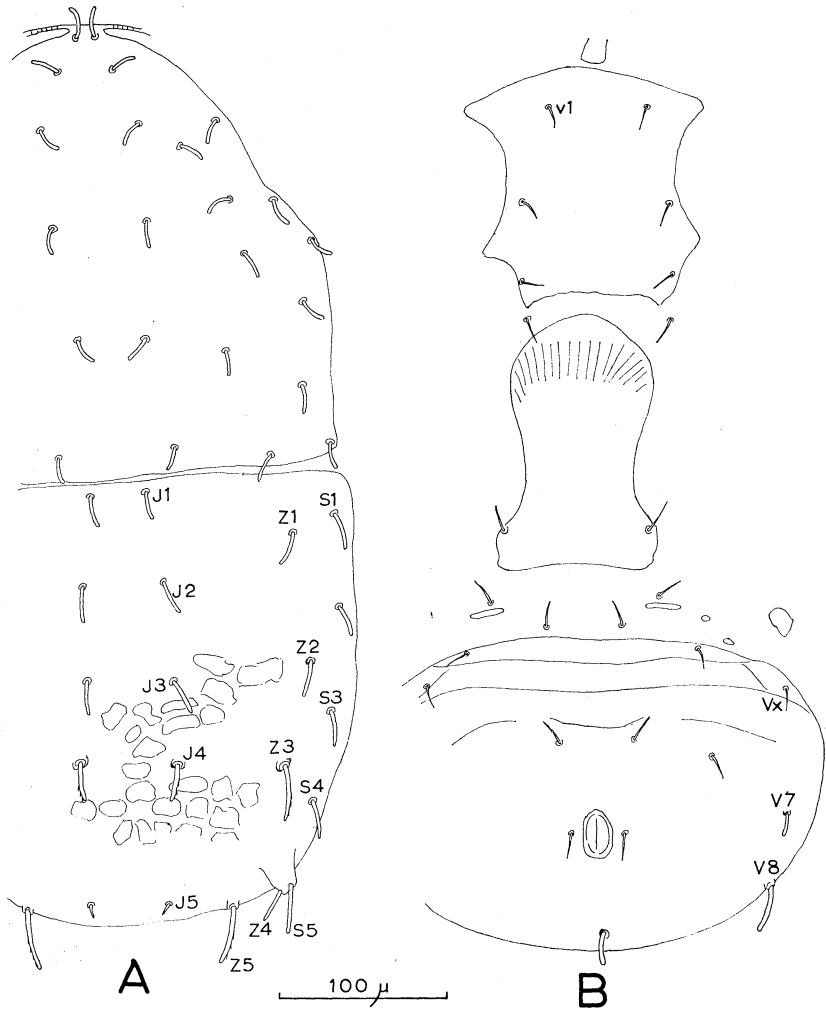


FIG. 1—*Asca arboriensis* n. sp. (holotype ♀): A. Dorsal, B. Ventral.

all other setae blunt and rod-like. Setae J4, Z3, and Z5 situated on small tubercles and possessing a few minute, lateral spinules. Postero-lateral horns bear two pairs of smooth rod-shaped setae. Distance J4-J4 varying from slightly less to slightly more than J4-Z3. Tectum has three tines of equal length (Fig. 3I).

First pair of ventral setae, v1, lie on sternal shield (Fig. 1B). Posterior margin of sternal shield concave. Three pairs of small platelets on integument between genital and ventri-anal shields. Metapodal shields oval. Setae

V7 (13μ), V8 (29μ) and post-anal seta (21μ) on ventri-anal shield rod-shaped like the dorsal setae.

MALE

Anterior dorsal shield 220μ long, 230μ wide. Posterior dorsal shield 230μ long, 230μ wide. Lengths of dorsal setae and inter-setal distances of specimens from Mount Egmont given in Table 1.

DISTINGUISHING FEATURES

The shape of the setae and their lengths relative to inter-setal distances are characteristic.

COLLECTION DATA

Holotype: adult female from *Coprosma pseudocuneata* W. R. B. Oliver (beating sample), 1,400 m North Egmont Chalet, 26.xii.64 (E. Collyer). Allotype: same details as holotype. Other collections: from *Nothofagus* sp. (beating sample), Lake Waikaremoana; from *Libocedrus bidwilli* Hook. f. (beating sample), 1,000 m north side Mount Egmont; from *Podocarpus ballii* Kirk (beating sample), 1,000 m north side Mount Egmont; from *Podocarpus* sp. (beating sample), 900 m C̄anaan, Abel Tasman National Park. All collections by E. Collyer.

MATERIAL

Holotype, allotype, and paratypes in collection of Entomology Division, D.S.I.R., Nelson. Paratypes sent to British Museum (Natural History) and United States National Museum.

Asca plumosa n. sp.

FEMALE

Anterior dorsal shield 180μ long, 210μ wide with 17 pairs of moderately long ($22-28 \mu$), acicular, bilaterally plumose setae. Posterior dorsal shield 180μ long, 210μ wide with 15 pairs of setae situated on distinct tubercles. Posterior shield with unusual ornamentation of small protuberances or tubercles (Fig. 2A). All postero-dorsal setae bilaterally plumose (almost pectinate), except setae J4 and Z3 which are plumose on the distal two-thirds of one side only, and S4 which are naked. These three pairs of setae recurved distally. Posterior pair of marginal setae long (60μ) and re-curved distally; these and nearest pair of marginal setae not plumose. Postero-lateral horns distinctly elongated, with two pairs of short, simple setae, the pair S5 being sickle-shaped. Lengths of postero-dorsal setae of specimens from Wanganui given in Table 1. Setae J5 very short, plumose. Distance J4-J4 more than twice J4-Z3. Location of setae J4 unusual in being distinctly anterior to setae Z3. Setae Z2 not anterior to S3. Tectum is unusual in being slightly truncated and having anterior edge serrated with 9-12 small teeth (Fig. 3J).

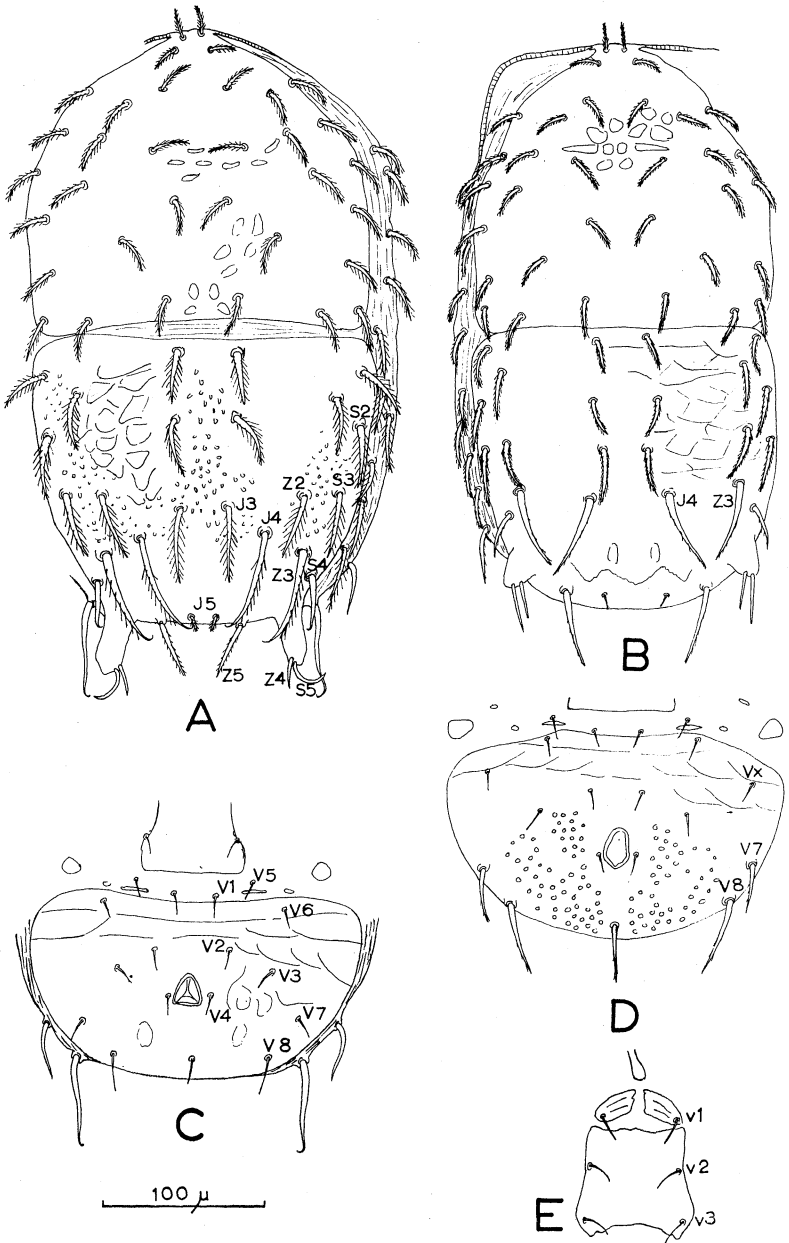


FIG. 2—*Asca plumosa* n. sp. (holotype ♀): A. Dorsal, C, Ventri-anal region; *Asca porosa* n. sp. (holotype ♀): B. Dorsal, D, Ventri-anal region, E. Sternal region.

First pair of ventral setae long ($21\ \mu$), situated on individual platelets as in *A. porosa* (see Fig. 2E) so that only two pairs of setae ($16\ \mu$) on sternal shield. Anterior margin of sternal shield straight, posterior margin slightly concave. Two pairs of small platelets on integument between genital and ventri-anal shields; metapodal shields almost circular (Fig. 2C). Setae V7 ($13\ \mu$), V8 ($23\ \mu$), and post-anal seta ($16\ \mu$) simple and slender, not enlarged or situated on tubercles, and similar to other ventri-anal setae ($13\ \mu$). Setae Vx absent so that only 13 setae on ventri-anal shield instead of the usual 15.

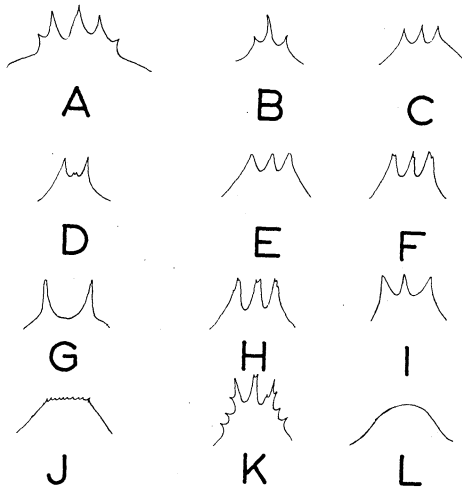


FIG. 3.—Tecta of the know species of *Asca* from New Zealand and the south Pacific Islands.
 A. *A. novazelandica* Wood (holotype);
 B. *A. brevisetosa* Wood (holotype);
 C. *A. duosetososa* Fox (♀ Auckland);
 D. *A. tuberculata* Wood (holotype);
 E. *A. foliata* Womersley (♀ Auckland);
 F. *A. aphidioides* (L.) (♀ Auckland);
 G. *A. quinquesetosa* Wharton (♀ Niue);
 H. *A. garmani* Hurlbutt (♀ Niue);
 I. *A. arboriensis* n. sp. (holotype);
 J. *A. plumosa* n. sp. (holotype);
 K. *A. porosa* n. sp. (holotype);
 L. *A. muma* Hurlbutt (♀ Fiji).

MALE

Not observed.

DISTINGUISHING FEATURES

This species possesses a number of characteristic features: differentiation of the postero-dorsal setae as regards shape and plumose adornment from other setae on the posterior dorsal shield; tubercular ornamentation of

posterior dorsal shield; elongate postero-lateral horns; position of setae J4. Ventr-anal setae Vx were absent in all specimens examined; these setae are either present or absent in *A. nesoica* Athios-Henriot, and are present in all other known species of *Asca*.

COLLECTION DATA

Holotype: adult female from moss on roadside verge, near Maxwell, Wanganui, 16.ix.64 (G. S. Grandison). Other collections: moss among shingle, Birdlings Flat, Lake Ellesmere (T. G. Wood).

MATERIAL

Holotype and paratypes in collection of Entomology Division, D.S.I.R., Nelson. Paratypes sent to British Museum (Natural History) and United States National Museum.

Asca porosa n. sp.

FEMALE

Anterior dorsal shield 180 μ long, 180 μ wide with 17 pairs of acicular, finely pilose setae, 18–26 μ long. Posterior dorsal shield 180 μ long, 180 μ wide with 15 pairs of setae situated on small tubercles (Fig. 2B). Postero-dorsal setae finely pilose, except J4, Z3, S4, and Z5 which are faintly barbed on one side; setae J4, Z3, Z5 distinctly stouter and longer than other postero-dorsal setae. Length of dorsal setae of specimens from Coronet Peak, Ben Lomond, Kurow and Lindis Pass given in Table 1. Setae J5 very short (10 μ). Setae on postero-lateral horns simple and lanceolate. Distance J4–J4 only slightly longer than J4–Z3. Tectum three-tined, each tine with two or three small cusps or teeth; two teeth situated laterally to each of the lateral tines.

TABLE 1—Measurements of Postero-dorsal Setae and Inter-setal Distances of Three New Species of *Asca* from New Zealand.

(All measurements in μ)

Species	J3	J4	J5	Z3	Z4	Z5	S5	J4–J4	J4–Z3	Z2–S2	
										Z2–S3	
FEMALES											
<i>A. arboriensis</i> *	21	23	8	35	21	36	28	59	62	1.2	
<i>A. plumosa</i> †	47	70	10	67	20	36	31	78	26	1.9	
<i>A. porosa</i> †	31	53	10	51	23	50	31	50	45	1.6	
MALES											
<i>A. arboriensis</i> *	18	21	8	33	20	35	26	50	49	1.3	

*Mean of 5 specimens.

†Mean of 10 specimens.

First pair of ventral setae located on individual platelets (Fig. 2E); two pairs of setae on ventral shield. Anterior margin of sternal shield straight, posterior margin concave. Three pairs of small platelets on integument between genital and ventri-anal shields. Setae V7 ($34\ \mu$), V8 ($49\ \mu$), and post-anal seta ($36\ \mu$) enlarged and faintly barbed (Fig. 2b). Ventri-anal shield with unusual small, circular pores in posterior half.

MALE

Not observed.

DISTINGUISHING FEATURES

In the shape of the dorsal setae and the modification of setae J4, Z3, and Z5 this species is similar to *A. spinosa* Ryke. It can be distinguished from this species by J5 being pilose and by the shape of the tectum, and from this and all other species by the pores on the ventri-anal shield.

COLLECTION DATA

Holotype: adult female from moss 1,800 m, Coronet Peak, Queenstown, 27.ii.65 (T. G. Wood). The species is known only from the South Island and other collections are: moss on rocks near Alexandra; moss, 1,500 m, Ben Lomond, Queenstown; moss among shingle, Waimakariri River, near Arthur's Pass; moss among rocks and tussocks, 300 m near Ophir, Alexandra; moss on rocks, Kurow, N. Otago; moss among tussocks, 1,000 m, Lindis Pass; moss among shingle, Birdlings Flat, Lake Ellesmere; moss on roadside cuttings, Cashmere Hills, Christchurch. All collections by the author.

MATERIAL

Holotype and paratypes in collection of Entomology Division, D.S.I.R., Nelson. Paratypes sent to British Museum (Natural History) and United States National Museum.

RECORDS OF *Asca* FROM SOUTH PACIFIC ISLANDS

Asca garmani Hurlbutt

Moss on logs and leaf litter, Huvalu, NIUE, 22.ix.64 (A. C. Eyles); moss on rocks, Alofi, NIUE, 15.x.64 (A.C.E.); leaf litter, Lomaivuna, Rewa Valley, VITI LEVU, 16.vi.65 (G. W. Ramsay); moss and leaf litter Avana, RAROTONGA, 9.v.65 (G.W.R.); leaf litter, MANGAIA, 11.v.65 (G.W.R.); moss and leaf litter, Te Au O Tu, MANUAE, 13.v.65 (G.W.R.).

The previously known distribution of the species was Canada, U.S.A., Mexico, Bahama Islands, Cuba, Puerto Rico, Costa Rica, Panama, and Hawaii (Hurlbutt, 1963).

Asca quinquesetosa Wharton

Moss on logs, Huvalu, NIUE, 22.ix.64 (A. C. Eyles). The previously known distribution of this species was Clipperton Island and Hawaii (Hurlbutt, 1963).

Asca muma Hurlbutt

Leaf litter, Lomaivuna, Rewa Valley, VITI LEVU, 16.vi.65 (G. W. Ramsay). The previously known distribution of this species was Florida and Cuba (Hurlbutt, 1963).

KEY TO THE KNOWN SPECIES OF *Asca* (FEMALES) FROM NEW ZEALAND AND THE SOUTH PACIFIC

The shape of the tectum is often useful for confirming the identity of mites of the genus *Asca*, and this character is illustrated in Fig. 3 for the species considered in the following key:

1. Postero-lateral horns bearing a single seta (S5), second seta (Z5) rudimentary (less than 5 μ) or absent 2.
 - Postero-lateral horns bearing two pairs of setae. 4.
2. Dorsal shields ornamented with polygonal network of minute protuberances.
 - A. aphidioides* (L.)
 - Dorsal shields without polygonal ornamentation. 3.
3. Dorsal setae acicular, pilose, S5 pinnate; no protuberances ornamenting dorsal shield; tectum with three tines of equal length.
 - A. garmani* Hurlbutt
 - All dorsal setae broad, slightly clavate, faintly pilose; posterior dorsal shield irregularly ornamented with tubercle-like protuberances; tectum with three tines, middle tine short and forked.
 - A. tuberculata* Wood
4. Setae J5 minute, less than half the length of S5. 8.
 - Setae J5 more than half as long as S5. 5.
5. Dorsal setae narrow, leaf-like, with strongly serrated margins.
 - A. foliata* Womersley
 - Dorsal setae acicular, minutely barbed. 6.
6. J4-J4 greater than J4-Z3; Z2 located posteriorly to S3.
 - A. novazelandica* Wood
 - J4-J4 less than or equal to J4-Z3; Z2 located anteriorly to S3. 7.
7. Z2 distinctly anterior to S3 so that Z2-S3 is nearly as long as Z2-S2; tectum with three tines of equal length.
 - A. duosetosa* Fox
 - Z2 only slightly anterior to S3 so that Z2-S3 is less than half as long as Z2-S2; tectum with three tines, middle tine distinctly longest.
 - A. brevisetosa* Wood
8. Dorsal setae very short, longest less than 40 μ , rod-shaped; J4-J4 more than twice as long as J4.
 - A. arboriensis* n. sp.

- Dorsal setae not rod-shaped, longest more than 40 μ , J4-J4 less than 1.3 times as long as J4. 9.
9. Dorsal setae coarsely plumose, almost pectinate; postero-lateral horns elongate with external setae (S5) sickle-shaped; V7, V8 and post-anal seta not thickened.
A. plumosa n. sp.
- Dorsal setae pilose or minutely barbed; postero-lateral horns normal; S5 lanceolate; V7, V8 and post-anal seta thickened. 10.
10. J4-J4 less than J4-Z3; all dorsal setae minutely barbed; tectum with two tines.
A. quinquesetosa Wharton
- J4-J4 greater than J4-Z3; J4 and Z5 distinctly less pilose than other dorsal setae; tectum with three tines or smooth. 11.
11. Tectum with three tines and a number of teeth; ventri-anal shield with pores.
A. porosa n. sp.
- Tectum smooth; ventri-anal shield normal.
A. muma Hurlbutt

REFERENCES

- HURLBUTT, H. W. 1963: The genus *Asca* Heyden (Acarina : Mesostigmata) in North America, Hawaii, and Europe. *Acarologia* 5: 480-518.
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