The genus **Paraplonobia** Wainstein and **Neopetrobia** Wainstein (Acari, Trombidiformes, Tetranychidae) from Saudi Arabia: new species, new records and key to the world species of **Paraplonobia**

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Abstract

The two tetranychid genera **Paraplonobia** Wainstein and **Neopetrobia** Wainstein (Trombidiformes: Tetranychidae) are reported for the first time from Saudi Arabia. Three new species **Paraplonobia** (**Anaplonobia**) *arabica* Mirza & Alatawi, sp. n., *P. (A.) haloxylonia* Alatawi & Mirza, sp. n. and *P. (A.) tabukensis* Kamran & Alatawi, sp. n. are described and illustrated based on adult females, collected from *Prosopis juliflora* (SW.) Dc. (Fabaceae) and *Haloxylon salicornicum* Bunge (Amaranthaceae) from two different regions of Saudi Arabia. **Neopetrobia mcgregori** (Pritchard and Baker) is redescribed and illustrated based on female collected from *Cynodon dactylon* L. (Poaceae). The diagnostic morphological features including leg chaetotaxy of all known species of the subgenus **Anaplonobia** is tabulated. A key to the world species of the genus **Paraplonobia** is also provided.

Keywords

Hystrichonychini, *arabica*, *haloxylonia*, *tabukensis*, *Prosopis*
Introduction

The genus *Paraplonobia* Wainstein belongs to the tribe Hystrichonychini Pritchard and Baker of the subfamily Bryobinae (Acar: Prostigmata: Tetranychidae). Wainstein (1960) considered *Anaplonobia* and *Paraplonobia* as subgenera of *Aplonobia* Womersley. Later, Tuttle and Baker (1968) proposed *Anaplonobia* and *Paraplonobia* as two valid genera. After that, Gutierrez (1985) categorized the genus *Paraplonobia* into three subgenera: *Anaplonobia* Wainstein, *Brachynychus* Mitrofanov & Strunkova and *Paraplonobia* Wainstein on the basis of coxal setal count and the aspect of peritremes and considered the genus *Anaplonobia* as subgenus of *Paraplonobia* (Gutierrez 1985).

The genus *Paraplonobia* includes 32 species to date, which are widely distributed throughout the world. The subgenera *Anaplonobia*, *Paraplonobia*, and *Brachynychus* include 22, nine and one species, respectively (Baker and Tuttle 1972, Meyer 1987, Bolland et al. 1998, Migeon and Flechtmann 2004).

The subgenera *Anaplonobia* and *Paraplonobia* have a coxal setal formula of 2–2–1–1 while the subgenus *Brachynychus* has a coxal setal formula of 4–3–2–2. The subgenus *Anaplonobia* differs from *Paraplonobia* by having anastomosed peritremes while the later has simple peritremes (Gutierrez 1985, Bolland et al. 1998).

The genus *Neopetrobia* also belongs to the tribe Hystrichonychini and morphologically closely resembles the genus *Paraplonobia* except for the fourth pair of dorsocentral setae $f_1$ which are widely spaced as compared to setae $c_1$, while $f_1$ setae are normally spaced as $c_1$ in *Paraplonobia* (Meyer 1987, Bolland et al. 1998). The genus *Neopetrobia* has been categorized into three subgenera; *Neopetrobia*, *Reckia* Wainstein and *Langella* Wainstein (Gutierrez 1985, Bolland et al. 1998). The subgenus *Neopetrobia* is different from other two subgenera by having integument without tuberculate or reticulate pattern and rounded or spindle shaped dorsal setae and includes ten species to date (Bolland et al. 1998).

A few tetranychid species have been reported from Saudi Arabia (SA): *Bryobia praetiosa* Koch, *Eotetranychus fallugiae* Tuttle & Baker, *Eutetranychus orientalis* (Klein), *E. palmatus* Attiah, *Oligonychus afrasiacicus* (McGregor), *O. pratensis* (Banks), *Tetranychus cinnabarinus* (Boisduval), *T. turkestzni* (Ugarov & Nikolskii), and *T. urticae* (Koch) (Martin 1972, Alatawi 2011). The genus *Paraplonobia* is poorly known from Arabian peninsula. Previously, two species *P. (A.) harteni* Meyer and *P. (P.) dactylnoni* Smiley & Baker were reported from Yemen (Meyer 1996; Smiley and Baker 1995).

Two genera, *Paraplonobia* and *Neopetrobia*, are reported upon for the first time from Saudi Arabia with three new species: *Paraplonobia* (*Anaplonobia*) *arabica* sp. n., *P. (A.) haloxylonia* sp. n. and *P. (A.) tabukensis* sp. n. which are described and illustrated based on adult females. The male of *P. (A.) haloxylonia* sp. n. is also described and illustrated. *Neopetrobia mcgregori* (Pritchard & Baker) is redescribed and illustrated based on female.

Diagnostic features of all known species of the subgenus *Anaplonobia* are provided including body morphological features, leg I length in comparison to body length, and leg chaetotaxy (Tables 1 and 2) as well as a key to the world species of the genus *Paraplonobia*. 
Table 1. Some morphological diagnostic features of the world species of the subgenus *Anaplonobia*, genus *Paraplonobia*.

| Species | Distribution | Dorsal setae | Dorsal Striations | Stylophore anteriorly | Peritremes |
|---------|--------------|--------------|-------------------|----------------------|------------|
| $^3$ P. (A.) *acharis* (Pritchard & Baker, 1955) | USA | slightly lanceolate | widely spaced transverse | rounded | weak with two irregular branches |
| $^7$ P. (A.) *algarrobicola* (Gonzalez, 1977) | Chile | subspatulate, on tubercles | widely spaced transverse | spherical | anastomose |
| $^3$ P. (A.) *ambrosiae* (Tuttle, Baker & Abbatiello, 1976) | Mexico, USA | slender/setiform | tuberculate longitudinal | - | ball like anastomose |
| $^7$ P. (A.) *arabica* Mirza & Alatawi, sp. n. | Jazan, Riyadh, Tabuk | subspatulate, e-f on small tubercules | weak, irregular, longitudinal | slightly incised | elongate anastomose |
| $^9$ P. (A.) *boutelouae* Turtle & Baker, 1968 | USA | subspatulate | closely spaced transverse | - | anastomose |
| $^3$ P. (A.) *brickellia* Baker & Tuttle, 1972 | USA | subspatulate | strong tubercules/lobes | strongly rounded, anastomose |
| $^7$ P. (A.) *candicans* (Meyer, 1974) | South Africa | subspatulate, on tubercles | medially wide spaced longitudinal, remaining dashed | slightly incised | complex anastomose |
| $^9$ P. (A.) *concolor* Chaudhri, Akbar & Rasool, 1974 | Pakistan | lanceolate | weak transverse | anastomose |
| $^9$ P. (A.) *contigua* (Chaudhri, Akbar & Rasool, 1974) | Pakistan | lanceolate | dotted longitudinal | weak branched anastomose |
| $^9$ P. (A.) *daryaensis* Chaudhri, Akbar & Rasool, 1974 | Pakistan | lanceolate | irregular, weak, longitudinal, medially transverse | slightly incised | anastomose |
| $^9$ P. (A.) *gigulenta* (Meyer, 1974) | South Africa | lanceolate | Small tubercles making pattern | round | sausage anastomose |
| $^2^9$ P. (A.) *halosylonia* Alatawi & Mirza, sp. n. | Riyadh, KSA | lanceolate | weak, longitudinal | weak anastomose with few long thread like branches |
| Species                  | Distribution           | Shape                        | Dorsal setae         | Distance of dorso-central hysterosomal setae especially (c1, d1, e1) to the setae next in line | Hysterosoma medially | Propodosomal shield | Stylophore anteriorly       | Peritremes                  |
|--------------------------|------------------------|------------------------------|----------------------|----------------------------------------------------------------------------------|----------------------|----------------------|-----------------------------|-----------------------------|
| *P. (A.) hartenii* (Meyer, 1996) | Yemen                  | lanceolate                    |                      | closely spaced transverse                                                       | dashed, transverse |                      | slightly incised           | weakly anastomose with few branches |
| 1 *P. (A.) inornata* (Meyer, 1987) | South Africa           | slender /setiform             | distinctly shorter   | widely spaced transverse                                                          | coarse longitudinal, plate dashed | incised                  | weak branched anastomose    |                            |
| 7 *P. (A.) prosopis* (Tuttle & Baker, 1964) | Miami USA, Marigat, Kenya | subspatulate                  | distinctly shorter   | widely spaced transverse                                                          | longitudinal        |                      | -                           | anastomose                   |
| 2 *P. (A.) tabukensis* Kamran & Alatawi, sp. n. | Tabuk, KSA             | narrowly lanceolate           | distinctly shorter   | closely spaced transverse                                                          | weak, longitudinal  | rounded               | small, compact, anastomose |                            |
| 9 *P. (A.) siberoni* (Meyer, 1974) | South Africa           | lanceolate, on tubercles      | distinctly shorter   | closely spaced transverse                                                          | dashed fine longitudinal | slightly incised       | elongate anastomose         |                            |
| 8 *P. (A.) allionia* Baker & Tuttle, 1972 | USA                    | slender/ setiform             | as long as/ slightly longer | closely spaced transverse                                                          | strong tuberculate longitudinal | rounded               | small, elongate anastomose bulb |                            |
| 3 *P. (A.) calame* (Pritchard & Baker, 1955) | USA                    | slender/ setiform, on small tubercles | as long as/ slightly longer | widely spaced transverse                                                          | pebbled              | rounded               | three chambered branches |                            |
| 5 *P. (A.) coldinae* (Tuttle & Baker, 1964) | USA                    | slender/setiform              | much longer          | -                                                                                | -                     | -                    | rounded                     | anastomose                   |
| 7 *P. (A.) juliflorae* (Tuttle & Baker, 1968) | USA                    | subspatulate on small tubercles | longer               | widely spaced tuberculate striate                                                 | tuberculate striate  | rounded               | Weak branched anastomose     |                            |
| 3 *P. (A.) artenisia* Baker & Tuttle, 1972 | Mexico, USA            | slender, blunt distally       | as long as/slightly longer | widely spaced tuberculate fold, transverse                                         | broken, irregular, longitudinal | rounded               | elongate anastomose bulb    |                            |
| 4 *P. (A.) berberis* Baker & Tuttle, 1972 | USA                    | slender/setiform              | as long as/ slightly longer | widely spaced broad folds with tubercules                                         | small tubercules     | rounded               | small anastomose bulb       |                            |
| 6 *P. (A.) euphorbiae* (Tuttle & Baker, 1964) | Mexico, USA            | subspatulate                  | slightly shorter/as long as | irregular transverse                                                              | basket weave         | rounded               | anastomose                  |                            |
| 9 *P. (A.) tshipensis* (Meyer, 1974) | South Africa           | spatulate, on tubercles       | longer               | closely spaced transverse                                                          | broken longitudinal  | deeply incised        | oval anastomose              |                            |

Host Plant Family: 1. Acanthaceae, 2. Amaranthaceae, 3. Asteraceae, 4. Berberidaceae, 5. Boraginaceae, 6. Euphorbiaceae, 7. Fabaceae, 8. Nyctaginaceae, 9. Poaceae
| Species                  | Length of leg I as compared to body length | Coxa I | Coxa II | Coxa III | Coxa IV | Trochanter I | Trochanter II | Trochanter III | Trochanter IV | Femora I | Femora II | Femora III | Femora IV | Genua I | Genua II | Genua III | Genua IV | Tibia I | Tibia II | Tibia III | Tibia IV | Tarsus I | Tarsus II | Tarsus III | Tarsus IV |
|--------------------------|-------------------------------------------|--------|---------|----------|---------|--------------|--------------|--------------|--------------|----------|-----------|------------|-----------|---------|-----------|-----------|---------|---------|----------|-----------|---------|-----------|-----------|---------|
| *P. (A.) aeharis*        | longer                                    | -      | -       | -        | -       | -            | -            | -            | -            | 13(1)    | -         | -          | -         | 14(3)+2dup | -         | -         | -         | -       | -       |
| *P. (A.) algarrobicola*  | longer                                    | 2      | 2       | 0       | 0       | 1           | 1            | 1            | 1            | 5(5)     | 3(3)      | 5(5)       | 4(3)      | 3(2)    | 10(2)     | 7         | 9(9)    | 8       | 19       | 14       | 11(11)   |
| *P. (A.) arabica*        | longer                                    | 2      | 2       | 1       | 1       | 1           | 1            | 1            | 1            | 5(5)     | 3(3)      | 5(5)       | 4(3)      | 3(3)    | 9(1)      | 9         | 9(9)    | 9(9)    | 14(2)+2dup | 8(1)+1dup | 8(1)    | 9(9)     |
| *P. (J.) bickellia*      | longer                                    | -      | -       | -       | -       | -            | -            | -            | -            | -        | -         | -          | -         | -       | -         | -         | -       | -       | -        | -         | -       |
| *P. (A.) daryentis*      | longer                                    | 2      | 2       | 1       | 1       | 1           | 1            | 1            | 1            | 9(6)     | 4(4)      | 5(5)       | 4(4)      | 14(9)   | 14         | 9         | 9(9)    | 15(2)+2dup | 10(1)+1dup | 12(1)   | 12(1)    |
| *P. (A.) haloxylonia*    | longer                                    | 2      | 2       | 1       | 1       | 1           | 1            | 1            | 1            | 9(6)     | 4(4)      | 5(5)       | 4(4)      | 13(1)   | 9(9)      | 9         | 9(9)    | 18(2)+2dup | 12(2)+1dup | 14(1)   | 14(1)    |
| *P. (A.) barreni*        | longer                                    | 2      | 2       | 1       | 1       | 1           | 1            | 1            | 1            | 9(6)     | 4(4)      | 5(5)       | 4(4)      | 13(1)   | 9(9)      | 9         | 9(9)    | 15(1)+2dup | 9(1)+1dup  | -       | 10(1)    |
| *P. (A.) protosopis*     | longer                                    | -      | -       | -       | -       | -            | -            | -            | -            | 5(4)     | 3(3)      | 4(4)       | 3(2)      | 9(7)    | 7(8)      | 7         | 13(2)   | 10(1)   | 9(9)      | 8         |         |
| *P. (A.) tabukentis*     | longer                                    | 2      | 2       | 1       | 1       | 1           | 1            | 1            | 1            | 8(6)     | 3(3)      | 4(5)       | 5(3)      | 13(1)   | 9(8)      | 8         | 10+2dup | 7+1dup  | 10+2dup  | 9+1dup   | 9+1dup   |
| *P. (A.) allonia*        | longer                                    | -      | -       | -       | -       | -            | -            | -            | -            | -        | -         | -          | -         | -       | -         | -         | -       | -       | -        | -         | -       |
| *P. (A.) artemisia*      | longer                                    | -      | -       | -       | -       | 1           | -            | -            | -            | -        | 6(6)      | -          | 4(4)      | -       | -         | -         | -       | -       | -        | -         | -       |
| *P. (A.) berberis*       | longer                                    | -      | -       | -       | -       | -            | -            | -            | -            | -        | -         | -          | 4(3)      | -       | -         | 9(1)      | 5(5)    | 5-6     | 8(1)+2dup | -         | 8(8)    |
| *P. (A.) calame*         | longer                                    | -      | -       | -       | -       | -            | -            | -            | -            | -        | 13(1)     | -          | -         | -       | -         | -         | -       | -       | -        | -         | -       |
| *P. (A.) concolor*       | shorter                                    | 2      | 2       | 1       | 1       | 1           | 1            | 1            | 1            | 9(6)     | 4(4)      | 5(5)       | 4(4)      | 14(9)   | 14         | 9         | 9(9)    | 22       | 15       | 15       | 15       |
| *P. (A.) contiguus*      | shorter                                    | 2      | 2       | 1       | 1       | 1           | 1            | 1            | 1            | 9(6)     | 4(4)      | 5(5)       | 4(4)      | 14(9)   | 14         | 9         | 9(9)    | 20       | 15       | 15       | 15       |
| *P. (A.) tshippis*       | shorter                                    | -      | -       | -       | -       | -            | -            | -            | -            | 9(6)     | 4(4)      | 5(5)       | 4(4)      | 13(1)   | 8(6)      | 7         | 16(1)+2dup | 13+1dup  | 12(1)   | 12(1)    |
| *P. (A.) ambrosiae*      | -                                         | -      | -       | -       | -       | -            | -            | -            | -            | 13(1)    | -         | -          | -         | 16(3)+2dup | -         | -         | -         | -       | -       |
| *P. (A.) bototolouk*     | -                                         | -      | -       | -       | -       | -            | -            | -            | -            | 11(8)    | 6(5)      | 8-9(9)     | 7(7)      | 13(1)   | 9(9)      | 9         | 18(1)+2dup | 15+1dup  | 14(1)   | 14(1)    |
| *P. (A.) candicans*      | -                                         | -      | -       | -       | -       | -            | -            | -            | -            | 9(6)     | 4(4)      | 5(5)       | 3(3)      | 12-13(1) | 9(9)      | 9(9)      | 16(2)+2dup | 12-13(2)+1dup | 12(1) | 12(1) |
| *P. (A.) immorina*       | -                                         | 2      | 2       | 1       | 1       | 1           | 1            | 1            | 1            | 9(6)     | 4(4)      | 5(5)       | 6(6)      | 13(1)   | 9(9)      | 9(9)      | 18(2)+2dup | 14+1dup  | 14(1)   | 14(1)    |
| *P. (A.) baronita*       | -                                         | -      | -       | -       | -       | -            | -            | -            | -            | 9(6)     | 4(4)      | 5(5)       | 4(4)      | 13(1)   | 9(6)      | 9(9)      | 18(1)+2dup | 14+1dup  | 12-13(1) | 14(1)    |
| *P. (A.) choleti*        | -                                         | -      | -       | -       | -       | -            | -            | -            | -            | -        | -         | -          | -         | -       | -         | -         | -       | -       | -        | -         | -       |
| *P. (A.) ephorkiae*      | -                                         | -      | -       | -       | -       | -            | -            | -            | -            | -        | -         | -          | -         | -       | -         | -         | -       | -       | -        | -         | -       |
| *P. (A.) juliflora*      | -                                         | -      | -       | -       | -       | -            | -            | -            | -            | -        | -         | -          | -         | -       | -         | -         | -       | -       | -        | -         | -       |
**Materials and methods**

The mite specimens were collected by shaking the plant parts, especially leaves, onto a white sheet of paper. Mites found moving on paper were collected with the help of a camel hairbrush and preserved in small vials containing 70% ethanol. Preserved mite specimens were observed under a stereomicroscope (SZX10, Olympus, Tokyo, Japan) and mounted on glass slides in Hoyer’s medium. The mounted specimens were examined under phase contrast microscope (DM2500, Leica, Wetzlar, Germany). Different body parts were pictured using an auto montage software system (Syncroscopy, Cambridge, UK), then drawn with Adobe Illustrator (Adobe System Inc., San Jose, CA, USA). All measurements are in micrometers. The terminology used in this paper follows that of Lindquist (1985). All type specimens were deposited at Acarology Laboratory, Department of Plant Protection, College of Food and Agricultural Sciences, King Saud University except one each of female and male paratypes of *Paraplonobia* (*Anaplonobia*) *haloxylonlia* sp. n., female paratype each of *P. (A.) arabica* sp. n., and *P. (A.) tabukensis* sp. n., with Accession numbers, OSAL 0115769, OSAL 00115768, OSAL 0110333 and OSAL 0110332 respectively, that were deposited at Ohio State University Acarology Laboratory (OSAL), USA.

**Results and discussion**

**Family Tetranychidae Donnadieu**

**Subfamily Bryobinae Berlese**

**Genus Paraplonobia Wainstein, 1960**

*Aplonobia (Paraplonobia)* Wainstein, 1960: 140.

*Paraplonobia*: Tuttle and Baker 1968: 48, Meyer 1974: 119, Chaudhri et al. 1974: 28, Gutierrez 1985: 75, Bolland et al. 1998: 7.

**Type species.** *Aplonobia (Paraplonobia) echinopsili* Wainstein, 1960 by original designation.

**Diagnosis.** Based on Baker and Tuttle 1968, Gutierrez 1955, Meyer 1974, Meyer 1987, Bolland et al. 1998.

Body oval; prodorsum without lobes and with three pairs of setae; dorsal opisthosomal setae ten pairs. Dorsal setae not set on prominent tubercles; setae f₁ normal in position, coxal setal formula variable, most species with 2–2–1–1 except one species of the subgenus *Brachynychus* having 4–3–2–2 setae on coxae I–IV respectively; anal setae three pairs; peritremes simple/anastomosing; tarsus I with two sets of duplex setae, present close to distal end of tarsus; claws and empodium pad-like each with tenant hairs (Fig. 5A).
Subgenus *Anaplonobia* Wainstein

**Diagnosis.** Based on Gutierrez 1985, Bolland et al. 1998.

Peritremes anastomosed, coxal setal formula 2–2–1–1.

The subgenus *Anaplonobia* includes 22 species (Migeon and Flechtmann 2004). The species of the subgenus *Anaplonobia* can be grouped into two categories: 1) Eight species with dorsal body setae slightly shorter/as long as or longer than distances to the bases of consecutive setae (Tables 1 and 2), second group with dorsal body setae distinctly shorter than distances between their bases, contains 17 species including three new species (*P. (A.) arabica* sp. n., *P. (A.) haloxylonia* sp. n., and *P. (A.) tabukensis* sp. n.) reported in this study (Table 1, 2).

Shape of setae (spatulate, subspatulate, lanceolate or setiform), comparative length of setae with respect to the distance of setae next behind, shape of peritremes (compact anastomose, branched or weakly anastomosed), propodosomal shield (pebbled, lobbed, with longitudinal/transverse striations), hysterosoma (medially with closely/widely spaced striations), comparative length of leg I with respect to body length (shorter/longer) and leg chaetotaxy are the major diagnostic characters vary among/within the species of subgenus *Anaplonobia* (Table 1, 2).

Most species of the subgenus *Anaplonobia* have been reported from USA, Mexico, South Africa and Pakistan and collected mostly from three host plants families Asteraceae, Fabaceae and Poaceae (Bolland et al. 1998) (Table 1).

The specimens of new species *P. (A.) arabica* sp. n., collected from *Prosopis juliflora* from three different regions (Riyadh, Tabuk, and Jazan) of Saudi Arabia, are morphologically similar except for some variations in setal counts on Tibia II and Tarsus I–II–III. (Table 2). The variations in the setal count of leg I–II–IV (Tibia and Tarsus) in *P. (A.) prosopis* had been found also in the description made by Tuttle and Baker (1964) from USA and Toroitich and Ueckermann (2009) from Kenya (Table 2). However, in some other species of the subgenus *Anaplonobia*, setal variations on genua, tibiae and tarsi have been found among the different specimens collected from the same host and location within the same species. i.e. genua I (8–9) in *P. (A.) candicans*, tibia I (12–13) and tarsus II (12–13) of *P. (A.) glebulanta*, and tarsus III (12–13) of *P. (A.) theroni* (Table 2).

*Paraplonobia (Anaplonobia) arabica* sp. n.

http://zoobank.org/200D2E10-9324-4C31-8B04-F08C8F33EBD1

Figs 1–8

**Diagnosis.** Dorsal body setae subspatulate, serrate, expanded distally and distinctly shorter to the distances of setae next in line, first pair of dorsocentral setae c1 reaching 2/3 to the distance of setae d1, setae c1 almost 1.5 times widely spaced than setae f1, setae e2, f1, f2 and h1 set on small tubercles, dorsal hysterosomal striations widely spaced, propodosoma medially with longitudinal broken striations, stylophore with a
Figures 1, 2. *Paraplonobia* (Anaplonobia) arabica sp. n., adult female. 1 dorsum, 2 venter.
small mediocephalic emargination, peritremes branched tube like compact anastomosing, leg I shorter than body length.

**Description of holotype female** (n = 9). Measurement of holotype followed by 8 paratypes (in parenthesis) (Figs 1–8).

**Dorsum** (Fig. 1). Body oval; length of idiosoma 439 (430–443), maximum width 282 (280–287), length of body (gnathosoma + idiosoma) 476 (472–480). Propodosoma medially with longitudinal broken striations, without anterior projections. Dorsal body setae subspatulate, serrate, expanded distally and distinctly shorter to the distances of setae next in line, first pair of dorsocentral setae c1 reaching 2/3 to the distance of setae d1, setae c1 almost 1.5 times widely spaced than setae f1, setae e1, f1, f2 and h1 set on small tubercles. Dorsal striations transverse on hysterosoma, without lobes and widely spaced. Length of dorsal setae: v2 45 (42–46), sc1 40 (38–41), sc2 41 (40–43), c1 45 (44–48), c2 42 (40–44), c3 40 (39–44), d1 34 (32–38), d2 44 (43–46), e1 45 (44–48), e2 44 (43–45), f1 45 (44–45), f2 44 (42–45), h1 46 (45–48). Distance between dorsal setae: v2–v2 53 (51–55), v2–sc1 97
Venter (Fig. 2). Idiosoma ventrally with transverse striations from setae 1a to 3a; most of the area between 3a to 4a is transverse with few V-shaped striations laterally; transverse posterior to setae 4a; striations transverse regular anterior to aggenital setae (ag). The intercoxal setae 1a slightly longer than the distance 1a–1a. The intercoxal setae 3a just equal to distance 3a–3a. The intercoxal setae 4a 4/5 to the distance 4a–4a. Length of intercoxal and coxal setae: 1a 39 (35–40), 3a 52 (51–55), 4a 50 (48–52), 1b 54 (52–56), 1c 18 (16–20), 2b 37 (35–38), 2c 21 (20–21), 3b 23 (21–23), 4b 38 (36–39); aggenital setae ag 48 (44–48), ag–ag 27 (25–28); genital setae two pairs, g1 32 (30–34), g1–g1 40 (39–44), g2 56 (52–57), g1–g2 12 (10–14); anal setae three pairs, ps1 21 (18–22), ps2 37 (35–39), ps3 58 (54–60), ps1–ps1 33 (30–34), ps2–ps2 26 (24–27), ps3–ps3 19 (18–22); para-anal setae two pairs, h2 33 (31–34), h2–h2 17 (16–18), h3 38 (35–40), h3–h3 46 (45–48).

Gnathosoma (Figs 3–4). Stylophore elongate, slender and slightly notched anteriorly. Peritremes branched tube like compact anastomosing (Fig. 3). Scapular setae m 36 (34–37), m–m 32 (31–35). Palp femur and genu each with one seta, palp tibia with three setae, tibial claw strongly curved; palp tarsus with three setae, three eupathidia, one solenidion (Fig. 4).

Legs (Figs 5–8). Length of legs I–IV (without coxae) 336, 251, 276, 298 respectively. Leg I shorter than body length. Number of setae and solenidia (in parenthesis) on legs I–IV: coxae 2–2–1–1, trochanters 1–1–1–1, femora 5–5–3–3, genua 4–4–3–3, tibiae 9(1)–(8–9)–9–9; tarsi I with 12–14 tactile setae, two sets of duplex setae at distal end, two eupathidia and one/two solenidion; tarsi II with 8–9 tactile setae, one set of duplex setae, two eupathidia and one solenidion; tarsi III with 8–9 tactile setae and one solenidion; tarsi IV with 9 tactile setae and one solenidion. True claws pad like each with one pair of tenant hair; empodium pad–like with two rows of small tenant hairs.

Male. Not in collection.

Etymology. The specific epithet is derived from the region “Arabia” from where type specimens were collected.

Type material. Holotype and one paratype female, P. juliflora (Fabaceae), Deesa Valley, Dessa, Tabuk, SA, 27°36.048’N, 036°25.592’E, October, 18, 2015, coll. J.H. Mirza.; seven paratype females, P. juliflora (Fabaceae), Sharma, Near Red Sea, Tabuk, SA, 28°03.479’N, 035°17.186’E, October, 19, 2015, coll. M. Kamran.

Remarks. The P. (A.) arabica sp. n. relates to P. (A.) prosopis (Tuttle & Baker, 1964), P. (A.) algarrobicola (Gonzalez, 1977) and P. (A.) boutelouae Tuttle & Baker, 1968 because of sharing following similar characters: dorsal body setae spatulate and distinctly shorter to the distances of setae next behind and widely spaced dorsal hysterosomal striations. Also, the new species closely resembles P. (A.) prosopis by setae c1 at least reaching half distance to the bases of setae d1. However, the new species differs
from all related species by having stylophore anteriorly with slight incision (notch). The new species is also distinguished from \( P. \) \((A.)\) \textit{prosopis} by setae \( c_1 \) reaching to the distance of setae \( d_1 \) \( 2/3 \) vs. \( 1/2 \), setae \( c_1 \)–\( c_1 \) almost 1.5 times widely spaced than setae \( f_1 \)–\( f_1 \) vs. almost sub/equally spaced in \( P. \) \((A.)\) \textit{prosopis}. The new species can be separated from other related species \( P. \) \((A.)\) \textit{algarrobicola} and \( P. \) \((A.)\) \textit{boutelouae} by the setae \( c_1 \) reaching \( 2/3 \) to the distance of \( d_1 \) vs. less than half as long as distances to the bases setae next behind in later species

\textit{Paraplonobia (Anaplonobia) haloxylonia sp. n.}

http://zoobank.org/09E8353-E635-4C38-B277-8D6DDC56C31A

Figs 9–28

**Diagnosis.** Dorsal setae lanceolate, densely serrate, not set on tubercles and distinctly shorter to the distances of setae next behind, dorsocentral setae \( (c_1, d_1 \) and \( e_1) \) almost 1/3 to the distance of setae next behind, propodosoma medially with weak, longitudinal irregular striations, hysterosoma with transverse and closely spaced striations medially, stylophore slightly notched anteriorly, peritremes anastomosed distally, with few long thread like branches, and hysterosomal striations closely spaced, leg I shorter than body.

**Description of holotype female** \( (n = 39) \). Measurements of holotype followed by 38 paratypes (in parenthesis) (Figs 9–19).

**Dorsum** (Fig. 9). Body oval; length of idiosoma 583 (578–585), maximum width 372 (369–378), length of body (gnathosoma + idiosoma) 658 (655–663). Propodosoma medially with weak, longitudinal irregular striations, hysterosoma with transverse and closely spaced striations medially, stylophore slightly notched anteriorly, peritremes anastomosed distally, with few long thread like branches, and hysterosomal striations closely spaced, leg I shorter than body.

**Venter** (Figs 10–12). Idiosoma ventrally with transverse simple striations from setae 1a to 3a; longitudinal irregular between setae 3a and 4a; transverse posterior to setae 4a; striations longitudinal irregular anterior to aggenital setae (ag). Length of intercoxal and coxal setae: \( 1a \) 25 (24–26), \( 3a \) 19 (19–21), \( 4a \) 22 (21–23), \( 1b \) 33 (31–33), \( 1c \) 22 (21–24), \( 2b \) 24 (23–25), \( 2c \) 22 (21–23), \( 3b \) 23 (22–24), \( 4b \) 27 (26–28); aggenital setae, \( ag \) 28 (27–28), \( ag-ag \) 32 (29–32); genital setae two pairs, \( g_1 \) 31 (30–33), \( g_2 \) 20 (19–21), \( g_1-g_1 \) 32 (31–33), \( g_2-g_2 \) 35 (34–36), \( g_1-g_2 \) 10 (10–12); anal setae three pairs, \( ps_1 \) 11 (10–12), \( ps_2 \)
Figures 9, 10. *Paraplonobia* (Anaplonobia) *haloxylonia* sp. n. adult female. 9 dorsum 10 venter.
The genus *Paraplonobia* Wainstein and *Neopetrobia* Wainstein...

Figures 11–15. *Paraplonobia (Anaplonobia) haloxylonia* sp. n. adult female. 11, 12 spermatheca 13, 14 stylophore and peritremes 15 palp.
Figures 16–19. Paraplonobia (Anaplonobia) haloxylonia sp. n. 16 leg I 16A duplex setae, empodium and claws of tarsus I 17 leg II 18 leg III 19 leg IV.

16 (15–17), ps$_3$ 17(16–18), ps$_2$–ps$_1$ 16 (15–18), ps$_2$–ps$_2$ 22 (20–23), ps$_3$–ps$_3$ 26 (25–26); para–anal setae two pairs, h$_2$ 16 (15–17), h$_2$–h$_2$ 14 (13–16), h$_3$ 17 (15–17), h$_3$–h$_3$ 31 (30–32) (Fig. 10). Spermathecae elongate, star shaped structure at distal end (Fig. 11–12).

Gnathosoma (Figs 13–15). Stylophore slightly notched anteriorly. Peritremes anastomosed distally, with few long thread like branches (Figs 13–14). Scapular setae m 22 (21–23), m–m 17 (16–18). Palp femur and genu each with one seta, palp tibia with three setae, tibial claw strongly curved; palp tarsus with three setae, three eupathidia, one solenidion (Fig. 15).

Legs (Figs 16–19). Length of legs I–IV (without coxae) 507, 328, 340, 400 respectively. Leg I shorter than body length. Number of setae and solenidia (in parenthesis)
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Figures 20, 21. *Paraplonobia* (Anaplonobia) haloxylonia sp. n. adult male. 20 dorsum; 21 venter.
on legs I–IV: coxae 2–2–1–1, trochanters 1–1–1–1, femora 9–6–4–4, genua 5–5–4–4, tibiae 13(1)–9–9–9; tarsi I with 15 tactile setae, two sets of duplex setae at distal end, 11 tactile setae and two solenidia well proximal to duplex setae, two eupathidia; tarsi II with 10 tactile setae, one set of duplex setae, two eupathidia and one solenidion; tarsi III with 12 tactile setae and one solenidion; tarsi IV with 12 tactile setae and one solenidion. True claws pad-like each with one pair of tenant hair; empodium pad-like with two rows of small tenant hairs.

Male (n = 11) (Figs 20–28). Dorsum (Fig. 20). Body almost oval, slightly tapering caudally; idiosoma 320–325 long, 190 wide; striations on dorsum entirely dotted; propodosomal striations same as in female, hysterosomal also same as in female except longitudinal/oblique or irregular in the area medially between dorsal setae e1 and h1, shape of setae also same as in female.

Venter (Figs 21–23). Idiosoma ventrally with transverse striations except in the area between ventral setae 3a and 4a and genito-anal area; the area between 3a and 4a with simple dots (without striations); genito-anal setae five pair, genital setae two pairs (g1, g2), anal setae three pairs (ps1, ps2, ps3); para-anal setae two pairs (h2, h3); aedeagus up turned, broadly sigmoid, sharply tapering distally (Figs 22–23).

Gnathosoma. Stylophore and peritremes as in female; palp femur with small horn-like seta, palp genu with one dorsal seta, palp tibia with three setae and strongly curved tibial claw; palp tarsus thumb like with one solenidion, three eupathidia and three setae (Fig. 24).

**Figures 22–24.** *Paraplonobia (Anaplonobia) haloxylonia* sp. n. adult male. 22–23 aedeagus 24 palp.
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Figures 25–28. Paraplonobia (Anaplonobia) haloxylonia sp. n. adult male. 25 leg I 25A duplex setae, empodium and claws of tarsus I 26 leg II 27 leg III 28 leg IV.

Legs (Figs 25–28). Length of leg I–IV (without coxae) 366, 223, 250, 289 respectively. Setae with solenidion in parenthesis on legs I–IV as; coxae 2–2–1–1, trochanters 1–1–1–1, femora 9–6–4–4, genua 5–5–4–4, tibiae 9(2)+8duplex–10(1)–9–9, tarsus I with six pairs of duplex setae (two pairs distally, two pairs at mid and two pairs at proximal part of the tarsus), 15 tactile setae, two eupathidia, one solenidion, tarsus II with one duplex seta, nine tactile setae, two eupathidia, one solenidion, tarsus III with
12 tactile setae, one solenidion, tarsus IV with 13 tactile setae, one solenidion. True claws pad like each with one pair of tenant hair; empodium pad-like with two rows of small tenant hairs.

**Etymology.** The specific epithet is derived after the host plant, *Haloxylon salicornicu* from which some type specimens were collected.

**Type material.** Holotype female, one male and two female paratypes, *H. salicornicu* (Amaranthaceae), Salbookh Road, Dariyah, Riyadh, SA, 24°30.649’N, 46°46.615’E, September, 18, 2012, coll. M. Kamran; four males and 22 female paratypes, *Hilaria* sp. (Poaceae), Tashlia, Heyer Road, Riyadh, SA, 24°29.000’N, 46°47.890’E, January, 17, 2015, coll. J.H. Mirza; five males and four females paratypes, *Hilaria* spp. (Poaceae), Sanabal Farm, Kharaj, Riyadh, SA, 24°16.999’N, 47°11.854’E, January, 23, 2015, coll. M. Kamran.

**Remarks.** The *P. (A.) haloxylonia* sp. n. closely resembles *P. (A.) contiguus* (Chaudhri, Akbar and Rasool 1974) because both species sharing the following set of similar characters; peritremes distally with few branches, dorsal body setae short, subequal in length, lanceolate, prodorsal shield entirely with longitudinal striations and hysterosomal striations closely spaced. The new species, differs from *P. (A.) contiguus* by comparative length of leg I (shorter than body vs. longer than body), dorsocentral setae (c1, d1 and e1) almost 1/3 to the distance of setae next behind vs. more than half, number of setae on genu I (5 vs. 4) in *P. (A.) contiguus*.

**Paraplonobia (Anaplonobia) tabukensis sp. n.**

http://zoobank.org/57BF2D3A-80B0-4C7E-90CD-FACB4543B5FF

Figs 29–36

**Diagnosis.** Dorsal setae slightly lanceolate, densely serrate, not present on tubercles and distinctly shorter to the distances of setae next behind, prodorsum entirely with longitudinal striaions, hysterosomal striations closely spaced, peritremes complex anastomosed distally, styllophore slightly rounded anteriorly, leg I shorter than body length, number of setae on femur I–IV 8–6–3–3, number of setae on genu I–IV 4–5–3–3.

**Description of holotype female** (*n = 3*). Measurements of holotype followed by 2 paratypes (in parenthesis) (Figs 29–36).

**Dorsum** (Fig. 29). Body rounded; length of idiosoma 483 (480–490), maximum width 445 (440–450), length of body (gnathosoma + idiosoma) 595 (590–610). Prodorsosoma medially with weak and laterally with strong longitudinal regular striations; hysterosomal striations medially transverse and closely spaced, laterally longitudinal irregular. Dorsal setae slightly lanceolate, densely serrate, not present on tubercles and distinctly shorter to the distances of setae next behind, dorsocentral setae (c1, d1 and e1) almost 1/3 to the distance of setae next behind. Length of dorsal setae: v1 34 (32–36), sc1 29 (28–31), sc2 30 (28–32), c1 28 (26–30), c2 26 (24–28), c3 29 (28–32), d1 23 (21–25), d2 22 (21–24), e1 21 (20–23), e2 22 (21–24), f1 23 (21–24), f2 26 (24–27), h1 27 (25–29). Distance between dorsal setae: v1–v2 89 (85–90), v1–sc1 68
The genus Paraplonobia Wainstein and Neopetrobia Wainstein...
Figures 31, 32. Paraplonobia (Anaplonobia) tabukensis sp. n. adult female. 31 Stylophore and peritremes palp.

Figures 33–36. Paraplonobia (Anaplonobia) tabukensis sp. n. 33 leg I 33A duplex setae, empodium and claws of tarsus I 34 leg II 35 leg III 36 leg IV.
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(65–690), sc₁–sc₂ 68 (67–70), sc₁–sc₁ 204 (202–206), sc₂–sc₂ 301 298–302), c₁–c₁ 138 (135–140), c₁–c₂ 91 (89–92), c₂–c₁ 79 (75–80), c₂–c₂ 327 (325–328), c₃–c₄ 424 (422–426), d₁–d₁ 119 (118–120), d₂–d₂ 91 (89–92), d₂–d₁ 295 (292–298), c₁–d₁ 88 (86–89), c₃–d₁ 110 (109–112), e₁–e₁ 27 (25–28), e₁–e₂ 85 (84–86), e₂–d₂ 85 (84–86), e₂–e₂ 229 (228–231), f₁–f₁ 78 (76–80), f₂–f₂ 113 (110–114), f₁–f₂ 35 (33–36), f₁–d₁ 82 (81–84), h₁–h₁ 53 (52–56).

Venter (Fig. 30). Idiosoma ventrally with transverse simple striations from setae 1a to 3a; longitudinal regular between setae 3a and 4a; transverse posterior to setae 4a; striations longitudinal regular anterior to aggenital setae (ag). Length of intercoxal and coxal setae: 1a 40 (38–42), 3a 32 (31–34), 4a 32 (30–35), 1b 46 (44–47), 1c 32 (31–34), 2b 30 (29–34), 2c 29 (28–31), 3b 32 (31–34), 4b 32 (31–35); aggenital setae (ag) 42 (41–45), ag–ag 23 (21–25); genital setae two pairs, g₁ 43 (40–44), g₂ 39 (35–40), g₁–g₁ 52 (50–55), g₂–g₂ 60 (58–64), g₁–g₂ 12 (10–13); anal setae three pairs, ps₁ 20 (18–21), ps₂ 26 (24–27), ps₃ 28 (27–29), ps₁–ps₁ 23 (20–24), ps₂–ps₂ 32 (31–35), ps₃–ps₃ 23 (21–26); para-anal setae two pairs, h₁ 27 (26–28), h₂ 11 (10–13), h₂ 32 (31–34), h₃–h₃ 28 (27–29).

Gnathosoma (Figs 31–32). Stylophore rounded anteriorly. Peritremes small compact anastomosed distally (Fig. 31). Scapular setae m 28 (27–29), m–m 37 (26–39). Palp femur and genu each with one seta, palp tibia with three setae, tibial claw strongly curved; palp tarsus with three setae, three eupathidia, one solenidion, one solenidion.

Legs (Figs 33–36). Length of legs I–IV (without coxae) 450, 282, 345, 408 respectively. Leg I shorter than body length. Number of setae and solenidia (in parenthesis) on legs I–IV: coxae 2–2–1–1, trochanter 1–1–1–1, femora 8–6–3–3, genua 4–5–3–3, tibiae 13(1)–9–8–8; tarsis I with 10 tactile setae, two sets of duplex setae at distal end, all tactile setae well proximal to duplex setae, two eupathidia; tarsis II with 7 tactile setae, one set of duplex setae, two eupathidia; tarsis III with 11 tactile setae, one set of duplex setae,; tarsi IV with 11 tactile setae one set of duplex setae,.. True claws pad like each with one pair of tenant hair; empodium pad-like with two rows of small tenant hairs.

Male. Not in collection.

Etymology. The specific epithet is derived from the region of Saudi Arabia, Tabuk, from where it was collected.

Type material. Holotype female, two paratype females, H. salicornicum (Amaranthaceae), 30 km Tabuk road, Sharma, Tabuk region, SA, 28°03.479’N, 035°17.186’E, October, 19, 2015, coll. M. Kamran and J.H. Mirza.

Remarks. The P. (A.) tabukensis sp. n. closely resembles P. (A.) theroni (Meyer 1974) because both species share the following set of similar characters; dorsal body setae, lanceolate and distinctly shorter to the distances of setae next behind, prodorsum entirely with longitudinal striations, hysterosomal striations closely spaced, peritremes complex anastomosed distally (Meyer 1974, 1987). The new species differs from P. (A.) theroni by shape of stylophore anteriorly (rounded vs. slightly indented), number of setae on femur I–IV (8–6–3–3 vs. 9–6–4–4), number of setae on genu I–IV (4–5–3–3 vs. 5–5–6–6), number of setae on tibia III (8 vs. 6) and on tarsi I–II excluding duplex setae and solenidia (10–7 vs. 18–14) in P. (A.) theroni.
Key to the world species of the genus *Paraplonobia* (Prostigmata: Tetranychidae) (after Meyer 1987).

1. Coxal formula not exceeding 3–3–1–1 ....................................................... 2

1’ Coxal formula 4–3–2–2, dorsal body setae serrate pointed at the tip not set on tubercles, peritremes simple, empodial pad and true claws equal in length ...... subg. *Brachynychus*, species *P. (B.) cousiniae* (Mitrofanov & Strunk.)

2. Peritremes anastomosed ................................................................. subg. *Anaplonobia*, 11

2’ Peritremes simple ............................................................................ subg. *Paraplonobia*, 3

3. Stylophore rounded anteriorly ............................................................ 4

3’ Stylophore notched anteriorly ................................................................. 5

4. Dorsal body setae slightly lanceolate, leg I shorter that body .............. *P. (P.) edenvillensis* Meyer

4’ Dorsal body setae slender, leg I about as long as body ................ *P. (P.) myops* (Pritchard & Baker)

5. Dorsal body setae generally slender or slightly lanceolate and pointed distally ................................................................. 6

5’ Dorsal body setae broadly lanceolate ................................................................. 9

6. First three pair of dorsocentral setae c₁, d₁ and e₁ about half as long as distance between bases of consecutive setae ........................................... 7

6’ First three pair of dorsocentral setae c₁, d₁ and e₁ minute about a third to a fourth as long as the distance between bases of consecutive setae ........ 8

7. Length of body 466 µm (530 µm including gnathosoma), leg I as long as body, posterior opisthosomal setae longer than longitudinal distance between their bases................................. *P. (P.) bilariae* Tuttle & Baker

7’ Length of body 380 µm, leg I 160 µm long, shorter than body, posterior opisthosomal setae shorter than longitudinal distance between their bases .... *P. (P.) herniariae* (Bagdasarian)

8. Body elongate, length of body 345 µm, length of leg I 191 µm (without coxa and trochanter) ............................................................... *P. (P.) boutelouae* Baker & Tuttle

8’ Body oval, length of body 570 µm, length of leg I 419 µm (without coxa and trochanter) ................................................................. *P. (P.) dactyoni* Smiley & Baker

9. Dorsocentral setae (c₁, d₁, e₁ and f₁) more than half as long as distances between consecutive setae, leg I shorter than body ......................... 10

9’ Dorsocentral setae (c₁, d₁, e₁ and f₁) almost half as long as distances between consecutive setae, leg I shorter than body ...... *P. (P.) tridens* Tuttle & Baker

10. Peritremes terminating in a ball-like rounded structure; prodorsum with a wellmarked punctate shield; tibia IV with 8 setae ............................................... *P. (P.) penicillatus* Chaudhri et al.

10’ Peritremes terminating in oval shaped structure; prodorsum without a well-marked punctate shield; tibia IV with 7 setae ............................................... *P. (P.) echinopsili* (Wainstein)
The genus Paraplonobia Wainstein and Neopetrobia Wainstein...

11 Dorsal body setae slightly shorter/as long/as longer than distances between their bases.................................................................28
– Dorsal setae distinctly shorter than distances between their bases..........12

12 Dorsal integument striated, without tubercles or lumps.........................13
– Dorsal integument provided with tubercles or lumps forming a distinct pattern along with striation...............................................................P. (A.) glebulenta (Meyer)

13 Dorsal body setae slender, setiform ..................................................................14
– Dorsal body setae broadly spatulate, subspatulate or lanceolate...........15

14 Stylophore indented anteriorly, dorsocentral setae c1, d1, and e1 about 2/3 of the distance between their basis, peritremes weakly anastomosed.................................................................................................P. (A.) inornata (Meyer)
– Stylophore rounded anteriorly, dorsocentral setae c1, d1, and e1 about half the distance between, peritremes strongly anastomosed, stylophore rounded anteriorly..................................................................................................................................................P. (A.) ambrosiae (Tuttle et al.)

15 All dorsal body setae spatulate, subspatulate, expanded distally..............16
– Most of dorsal body setae lanceolate, not expanded distally................19

16 First pair of dorsocentral setae c1 less than half as long as distances to the bases setae next behind .................................................................17
– First pair of dorsocentral setae c1 at least reaching 1/2 or 2/3 of distance to the bases of setae next behind ..................................................18

17 Prodorsum medially with irregular broken striations..........................................................P. (A.) boutelouae Tuttle & Baker
– Prodorsum medially with regular longitudinal striations..........................P. (A.) algarrobicola (Gonzalez)

18 First pair of dorsocentral setae c1 reaching one half to the distance of setae next behind, setae c1 and f1 almost sub/equally spaced.................................................................P. (A.) prosopis (Tuttle & Baker)
– First pair of dorsocentral setae c1 reaching 2/3 to the distance of setae next behind, setae c1 almost 1.5 times widely spaced than setae f1 ...............................................................P. (A.) arabica sp. n.

19 Hysterosomal setae d1 and e1 lanceolate and about half as long as f1, setae f1 spatulate .................................................................P. (A.) brickellia Baker & Tuttle
– Dorsocentral setae subequal in length, lanceolate serrate............................20

20 Prodorsum entirely with longitudinal striations..............................................21
– Median area of prodorsum entirely/partially with transverse striations........26

21 Peritremes ending with few irregular branches.........................................22
– Peritremes distally with complex anastomosed........................................24

22 Stylophore slightly indented anteriorly, dorsum with closely spaced striations ......................................................................................P. (A.) acharis (Pritchard & Baker)
– Stylophore rounded anteriorly, dorsum with widely spaced striations........P. (A.) acharis (Pritchard & Baker)
23 Leg I distinctly longer than the body, first pair of dorsocentral setae c1 more than half to the distance of setae next behind. \( P. (A.) \) contiguus (Chaudhri et al.)

– Leg I shorter than body, first pair dorsocentral setae c1 1/3 to the distance of setae next behind. \( P. (A.) \) haloxylonia sp. n.

24 Dorsum with widely spaced striations, femora I with 11 setae \( P. (A.) \) candidans (Meyer)

– Dorsum with closely spaced striations, femora I with 8 or 9 setae

25 Stylophore rounded anteriorly, setae on femora I–IV 8–6–3–3 \( P. (A.) \) candicans (Meyer)

– Stylophore indented anteriorly, setae on femora I–IV 9–6–4–4, setae of genua I–IV 5–5–6–6 \( P. (A.) \) theroni (Meyer)

26 Propodosomal shield medially with two distinct bands of transverse striations \( P. (A.) \) daryaensis Chaudhri et al.

– Propodosomal shield entirely with transverse striations

27 Leg I shorter than body, peritremes weakly anastomosed. \( P. (A.) \) barteni (Meyer)

– Leg I longer than body, peritremes with complex anastomose

28 Stylophore anteriorly rounded \( P. (A.) \) concolor Chaudhri et al.

– Stylophore anteriorly deeply notched \( P. (A.) \) tshipensis (Meyer)

29 Dorsal body setae slender/setifrom \( P. (A.) \) euphorbiae (Tuttle & Baker)

– Dorsal body setae spatulate/subspatulate

30 Dorsal body setae set on tubercles, longer than the distances of setae next behind, propodosoma with broken striations \( P. (A.) \) juliflorae (Tuttle & Baker)

– Dorsal body setae not set on tubercles, as long as or slightly shorter to the distances of setae next behind, propodosoma medially with basket weaved pattern \( P. (A.) \) euphorbiae (Tuttle & Baker)

31 Opisthosomal setae much longer than the distance to the setae next in line \( P. (A.) \) coldeniae (Tuttle & Baker)

– Opisthosomal setae as long as the distance to the setae next in line

32 Prodorsal shield pebbled, most of opisthosomal setae set on tubercles \( P. (A.) \) calame (Pritchard & Baker)

– Prodorsal shield tuberculate/striate, opisthosomal setae not set on tubercles

33 Opisthosomal striations closely spaced with fine lobes \( P. (A.) \) artemisia Baker & Tuttle

– Prodorsal shield tuberculate

34 Opisthosomal striations mostly broad folds and covered with tubercles, peritreme small bulb like anastomosing \( P. (A.) \) berberis Baker & Tuttle

– Opisthosomal striations comparatively closely spaced with fine lobes, peritremes elongate anastomose \( P. (A.) \) allionia Baker & Tuttle
The genus Paraplonobia Wainstein and Neopetrobia Wainstein...

Genus *Neopetrobia* Wainstein, 1956

*Monoceronychus*: Pritchard and Baker 1955: 77.

*Neopetrobia*: Wainstein 1956: 151, Wainstein 1960a: 128, Tuttle and Baker 1968: 57, Meyer 1974: 93–94.

**Type species.** *Neopetrobia dubinini* Wainstein, 1956.

**Diagnosis.** Based on Baker and Tuttle 1968, Gutierrez 1955, Meyer 1974, Meyer 1987, and Bolland et al. 1998.

True claws pad like, each bearing a pair of tenant hairs; empodial pad longer than true claws, bearing a row of tenant hairs, distally not coalescent; dorsum with 3 pairs of prodorsal setae which are short and spindle shaped or spatulate; setal tubercles small or nonexistent; fourth pair of dorsocentral setae ($f_1$) widely spaced, not normal as $c_1$; peritremes anastomosing distally.

**Subgenus Neopetrobia Wainstein**

**Diagnosis.** Based on Gutierrez 1985, and Bolland et al. 1998.

Integument without tuberculate or reticulate pattern; dorsal setae rounded or spindle-shaped.

*Neopetrobia mcgregori* (Pritchard & Baker)

Figs 37–44

*Monoceronychus mcgregori* Pritchard & Baker, 1955.

*Neopetrobia mcgregori* (Pritchard & Baker) Meyer, 1987. Bolland et al. 1998.

**Redescription. Female** (*n* = 9). Body oval; length of idiosoma 369–372, maximum width 238–241, length of body (gnathosoma + idiosoma) 430–433.

**Dorsum** (Fig. 37). Propodosoma without anterior projections. Dorsum of opisthosoma and most of opisthosoma with nearly smooth integument, metapodosomal dorsum with widely spaced strong striations. Dorsal body setae minute, lanceolate, densely serrate, not present on tubercles. Length of dorsal setae: $v_2$ 13–14, $s_1$ 14–15, $s_2$ 13–14, $c_1$ 13–14, $c_2$ 12–13, $c_3$ 10–11, $d_1$ 11–12, $d_2$ 12–13, $e_1$ 10–11, $e_2$ 12–13, $f_1$ 11–12, $f_2$ 15–16, $h_1$ 16–17. Distance between dorsal setae: $v_2$–$v_2$ 54–56, $v_2$–$s_1$ 48–50, $s_1$–$s_2$ 47–50, $s_2$–$c_1$ 113–114, $s_2$–$s_2$ 165–167, $c_2$–$c_1$ 57–58, $c_1$–$c_2$ 50–52, $c_2$–$c_3$ 41–42, $c_2$–$c_2$ 161–162, $c_3$–$c_3$ 234–236, $d_1$–$d_1$ 57–58, $d_1$–$d_2$ 56–57, $d_2$–$d_2$ 160–161, $c_2$–$d_1$ 57–58, $c_1$–$d_2$ 79–80, $e_1$–$e_1$ 54–56, $e_1$–$e_2$ 45–47, $e_2$–$d_2$ 64–66, $e_2$–$e_2$ 135–136, $f_1$–$f_1$ 80–82, $f_2$–$f_2$ 86–88, $f_1$–$f_2$ 31–32, $f_1$–$d_1$ 79–80, $h_1$–$h_1$ 38–40.

**Venter** (Fig. 38). Idiosoma ventrally with transverse simple widely spaced striations from setae 1a to 3a; longitudinal regular between setae 3a and 4a; transverse pos-
Figures 37, 38. *Neopetrobia (Neopetrobia) mcgregori* (Pritchard & Baker) adult female. 37 dorsum, 38 venter.
The genus Paraplonobia Wainstein and Neopetrobia Wainstein...

terior to setae 4a; striations transverse regular anterior to aggenital setae (ag). Length of intercoxal and coxal setae: 1a 18–19, 3a 19–20, 4a 15–16, 1b 30–31, 1c 13–14, 2b 16–17, 2c 10–13, 3b 15–17, 4b 11–12; aggenital setae (ag) 26–27, ag–ag 38–39; genital setae two pairs, g_1 17–18, g_2 21–22, g_1–g_1 41–42, g_2–g_2 76–78, g_1–g_2 21–22; anal setae three pairs, ps_1 11–12, ps_2 10–11, ps_3 12–13, ps_1–ps_1 11–13, ps_2–ps_2 16–18, ps_3–ps_3 11–13; para-anal setae two pairs, h_2 11–13, h_2–h_2 7–9, h_3 7–8, h_3–h_3 17–19.

**Gnathosoma** (Figs 39–40). Stylophore slender, the sides angularly converging anteriorly and with a small mediocephalic emargination. Peritremes anastomosing with distal enlargement slender. Scapular setae m 17–18, m–m 19–21. Palp femur and genu each with one seta, palp tibia with three setae, tibial claw strongly curved; palp tarsus with two setae, two eupathidia, one solenidion.

**Legs** (Fig 41–44). Length of legs I–IV (without coxae) 240, 150, 148, 180 respectively. Number of setae and solenidia (in parenthesis) on legs I–IV: coxae 2–2–1–1, trochanters 1–1–1–0, femora 8–6–2–2, genua 4–4–4–4, tibia 8(1)–9–9–9; tarsi I with 11 tactile setae, two sets of duplex setae at distal end, three setae proximal to duplex setae, two eupathidia and one solenidion; tarsus II with nine tactile setae, one set of duplex setae, two setae proximal to duplex setae, one setae in line with duplex setae, two eupathidia and one solenidion; tarsus III with six tactile setae; tarsus IV with seven tactile setae. True claws pad like each with one pair of tenant hair; empodium pad-like with two rows of small tenant hairs.

**Materials examined.** 12 females, *Cynodon dactylon* (Poaceae), near exit10, King Abdullah Road, Riyadh, SA, 24°45.826’N, 46°45.470’E, September 07, 2015, coll. M. Kamran and E. M. Khan.

**Remarks.** *Neopetrobia mcgregori* was originally described very briefly under the genus *Monoceronychus* and has been only reported from Miami shores of Florida, USA (Pritchard and Baker 1955). Later, it was moved to the genus *Neopetrobia* on the basis of widely spaced fourth pair of dorsocentral setae (f_1) (Bolland et al. 1998). Worldwide, this is the second report of this species and no obvious differences have been observed in Saudi Arabian specimens from the original description.
Figures 41–44. *Neopetrobia* (*Neopetrobia*) *mcgregori* (Pritchard and Baker) adult female. 41 leg I 41A duplex setae, empodium and claws of tarsus I 42 leg II 43 leg III 44 leg IV.

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The genus *Paraplonobia* Wainstein and *Neopetrobia* Wainstein...