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THREE NEW SPECIES OF ORIBATID MITES OF THE SUPERFAMILY ORIPODOIDEA (ACARI, ORIBATIDA) FROM VIETNAM

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Three new species of oribatid mites (Oribatida) of the superfamily Oripodoidea – *Phauloppia differens* sp. n. (Oribatulidae), *Oripoda operta* sp. n. (Oripodidae) and *Pirnodus concavus* sp. n. (Oripodidae) – are described, based on adults collected from the bark and tree branches of *Dipterocarpus alatus* and *Haldina cordifolia* in southern Vietnam.

Keywords: arboreal mites, *Phauloppia*, *Oripoda*, *Pirnodus*, taxonomy, morphology, Cat Tien National Park, Oriental region

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The arboreal fauna of oribatid mites (Acari, Oribatida) in Vietnam is insufficiently studied (Corpuz-Raros, Ermilov, 2020; Salavatulin et al., 2022). The main goal of our paper is to describe three new species of the superfamily Oripodoidea belonging to the genera *Phauloppia* Berlese 1908 (family Oribatulidae), *Oripoda* Banks 1904 and *Pirnodus* Grandjean 1956 (family Oripodidae), based on materials collected from trees in the Cat Tien National Park, southern Vietnam.

Phauloppia and *Oripoda* comprise 25 and 38 species (Subías, 2022; Ermilov, Salavatulin, 2023), respectively, which have a cosmopolitan distribution except the Antarctic region (Subías, 2022). *Pirnodus* comprises six species (Ermilov, Salavatulin, 2023) which are distributed in the Afrotropical, Australasian, Neotropical, and southern Palaearctic regions (Subías, 2022; Ermilov, Salavatulin, 2023). Presently, two species of *Phauloppia* – *P. adjecta* Aoki et Ohkubo 1974, *P. dilatata* Ermilov et Salavatulin 2023; four species of *Oripoda* – *O. canagaratnami* (Balogh 1970), *O. excavata* Mahunka 1988, *O. luminosa* (Hammer 1979), *O. pinicola* Aoki et Ohkubo 1974; and one species of *Pirnodus* – *P. partiarus* Ermilov et Salavatulin 2023 are registered in Vietnam (Corpuz-Raros, Ermilov, 2020; Salavatulin et al., 2022; Ermilov, Salavatulin, 2023).

MATERIAL AND METHODS

Specimens. Samples of bark and branches were collected via climbing trees (using spikes and other special equipment). Mites were subsequently extracted by high-pressure flushing and further heptane flotation in laboratory conditions. Detailed descriptions of arboreal acarofauna collection and extraction techniques are presented in Salavatulin (2019).

Observation and documentation. For measurement and illustration, specimens were mounted in lactic acid on temporary cavity slides. All measurements are in micrometers (μm). Body length was measured in lateral view, from the tip of the rostrum to the posterior edge of the notogaster; other structures were oriented to avoid parallax errors. Notogastral width refers to the maximum width in dorsal aspect. Setal lengths were measured perpendicular to their long axes, accounting for curvature. Formulas for leg solenidia are given in square brackets according to the sequence genu-tibia-tarsus. Drawings were made with a camera lucida using a Leica DM 2500 light microscope.

Terminology and conventions. Morphological terminology used herein mostly stems from the following papers on Oribatulidae and Oripodidae: Grandjean (1950, 1956); Ermilov, Salavatulin (2023).

Leg setal nomenclature follows Norton (1977); for overview see Norton and Behan-Pelletier (2009).

Abbreviations and notations. *Prodorsum*: *lam* = lamella; *slam* = sublamella; *tlam* = translamella; *tu* = tutorium; *kf* = keel-shaped ridge; *ro*, *le*, *in*, *ex*, *bs* = rostral, lamellar, interlamellar, exobothridial, bothridial setae, respectively; *Ad* = dorsosejugal porose area; *D* = dorsophragma. *Notogaster: c*, *da*, *la*, *dm*, *lm*, *dp*, *lp*, *h*, *p* = setae; *Aa*, *A1*, *A2*, *A3* = porose areas; *Sa*, *S1*, *S2*, *S3* = sacculi; *ia*, *im*, *ip*, *ih*, *ips* = lyrifissures; *gla* = opisthonotal gland opening. *Gnathosoma: a*, *m*, *h* = subcapitular setae; *or* = adoral seta; *acm* = palp seta; ω = palp solenidion; *cha*, *chb* = cheliceral setae; *Tg* = Trägårdh's organ. *Epimeral and lateral podosomal regions*: *1a*, *1b*, *1c*, *2a*, *3a*, *3b*, *3c*, *4a*, *4b*, *4c* = epimeral setae; *z* = aperture of supracoxal gland; *Am* = humeral porose area; *PdI*, *PdII* = pedotecta I, II, respectively; *dis* = discidium; *cir* = circumpedal carina. *Anogenital region: g*, *ag*, *an*, *ad* = genital, aggenital, anal, adanal setae, respectively; *iad* = adanal lyrifissure; *Amar* = marginal porose area. *Legs*: *Tr*, *Fe*, *Ge*, *Ti*, *Ta* = trochanter, femur, genu, tibia, tarsus, respectively; *pa* = porose area; ε = famulus; *d*, *l*, *v*, *ev*, *bv*, *ft*, *tc*, *it*, *p*, *u*, *a*, *s*, *pv*, *pl* = setae; ω, σ, φ = solenidia.

Phauloppia differens Ermilov, Salavatulin et Kontschán sp. n.
(Figs 1, 2)

Type material. Holotype (♀) and two paratypes (2 ♀♀): Vietnam, Dong Nai Province, Dong Nai Biosphere Reserve, Cat Tien National Park, 11°25'–11°26'N, 107°25'–107°26'E, about 130 m a.s.l., bark (holotype and one paratype) and branch (one paratype) of *Haldina cardifolia* at the height of 25 m above ground, November 20, 2022 – December 10, 2022 (collected by V. M. Salavatulin and A. A. Kudrin). Two paratypes (2 ♀♀): same location but both from the bark of *Dipterocarpus alatus*.

The holotype is deposited in the collection of the Senckenberg Museum of Natural History, Görlitz, Germany; four paratypes are deposited in the collection of the Tyumen State University Museum of Zoology, Tyumen, Russia. All specimens are preserved in 70 % solution of ethanol with a drop of glycerol.

Diagnosis. Body length: 240–255. Surface of body with slight microgranulate sculpturing; subcapitular mentum foveolae. Rostrum pointed. Lamella present. Rostral and lamellar setae long, setiform, barbed; interlamellar seta long, dilated mediodistally, heavily barbed; bothridial seta long, clavate, barbed; exobothridial seta medium-sized. Thirteen pairs of notogastral setae; of them, *c*, h_2, p_1–p_3 short, setiform, roughened, others long, thick, narrowed distally, heavily barbed. Four pairs of very small, rounded porose areas. Epimeral setal formula: 3–1–3–3. All epimeral and anogenital setae comparatively short. Two pairs of adanal setae. Marginal porose area represented by one or two, or three pairs of posterolateral rounded porose areas. Number of setae on leg tarsi I–III: 19–15–15; genu IV with one seta (*d*).

Description. *Measurements*. Body length: 240 (holotype), 240–255 (paratypes); notogaster width: 165 (holotype), 165–180 (paratypes).

Integument. Body light brown. Surface of body with slight microgranulate sculpturing (visible in dissected specimens under high magnification, ×1000); subcapitular mentum with small sparse foveolae.

Prodorsum. Rostrum pointed. Lamella well developed, about 1/4 length of prodorsum. Rostral (45–49) and lamellar (56–58) setae setiform, barbed; interlamellar seta (45–49) dilated mediodistally, heavily barbed; bothridial seta (45–49) clavate, barbed; exobothridial seta (22–26) setiform, thin, slightly barbed. Dorsosejugal porose area present but poorly visible.

Notogaster. Anterior margin distinctly convex medially. Thirteen pairs of setae: *c*, h_2, p_1–p_3 (11–15) setiform, thin, roughened; *da*, *la*, *dm*, *lm*, h_1 (56–64), *dp* (94–105), *lp*, h_3 (82–86) thick, narrowed distally, heavily barbed. Four pairs of very small, rounded porose areas (*Aa*, *A1*: 2–4; *A2*, *A3*: 2). Opisthonotal gland opening and all lyrifissures well visible.

Gnathosoma. Subcapitulum size: 63–67×45–49; seta *a* (13–15) setiform, unilaterally barbed in mediodistal part; *m* (15) and *h* (15) setiform, roughened; all setae similar in thickness; both adoral setae (7) setiform, barbed. Palp length: 41–45; postpalpal seta (4) spiniform, slightly roughened. Chelicera length: 71–75; setae (*cha*: 22; *chb*: 15) setiform, barbed.

Epimeral and lateral podosomal regions. Epimeral setal formula: 3–1–3–3; all setae (*1a*, *2a*, *3a*, *4a*, *4b*: 11–15; others: 19) setiform, thin, roughened. Discidium triangular. Circumpedal carina distinct.

Anogenital region. Genital, aggenital, anal, and adanal setae (11–15) setae setiform, thin, roughened. Adanal lyrifissure diagonal or transverse, close and anterolateral to anal aperture. Marginal porose area represented by one or two, or three pairs of posterolateral rounded porose areas (4–6).

Legs. Median claw thicker than lateral claws, all slightly barbed on dorsal side; lateral claw with tubercle distoventrally. Dorsal porose area on tarsus I, proximoventral porose area on tarsi I–IV, ventral porose area on tibiae I–IV and on genua I–IV, and dorsoparaxial porose area on femora I–IV and on trochanters III, IV distinct; proximoventral porose area on tarsi and ventral porose area on tibiae often represented by two areas. Formulas of leg setation and solenidia: I (1–4–2–4–19) [1–2–2], II (1–4–2–4–15) [1–1–2], III (2–3–1–3–15) [1–1–0], IV (1–2–1–3–11) [0–1–0]; homology of setae and solenidia indicated in Table 1; solenidia ω_1 on tarsus I, ω_1, ω_2 on tarsus II and σ on genua III slightly bacilliform, φ_1 on tibia I and φ on tibiae II–IV subflagellate, other solenidia rod-like.

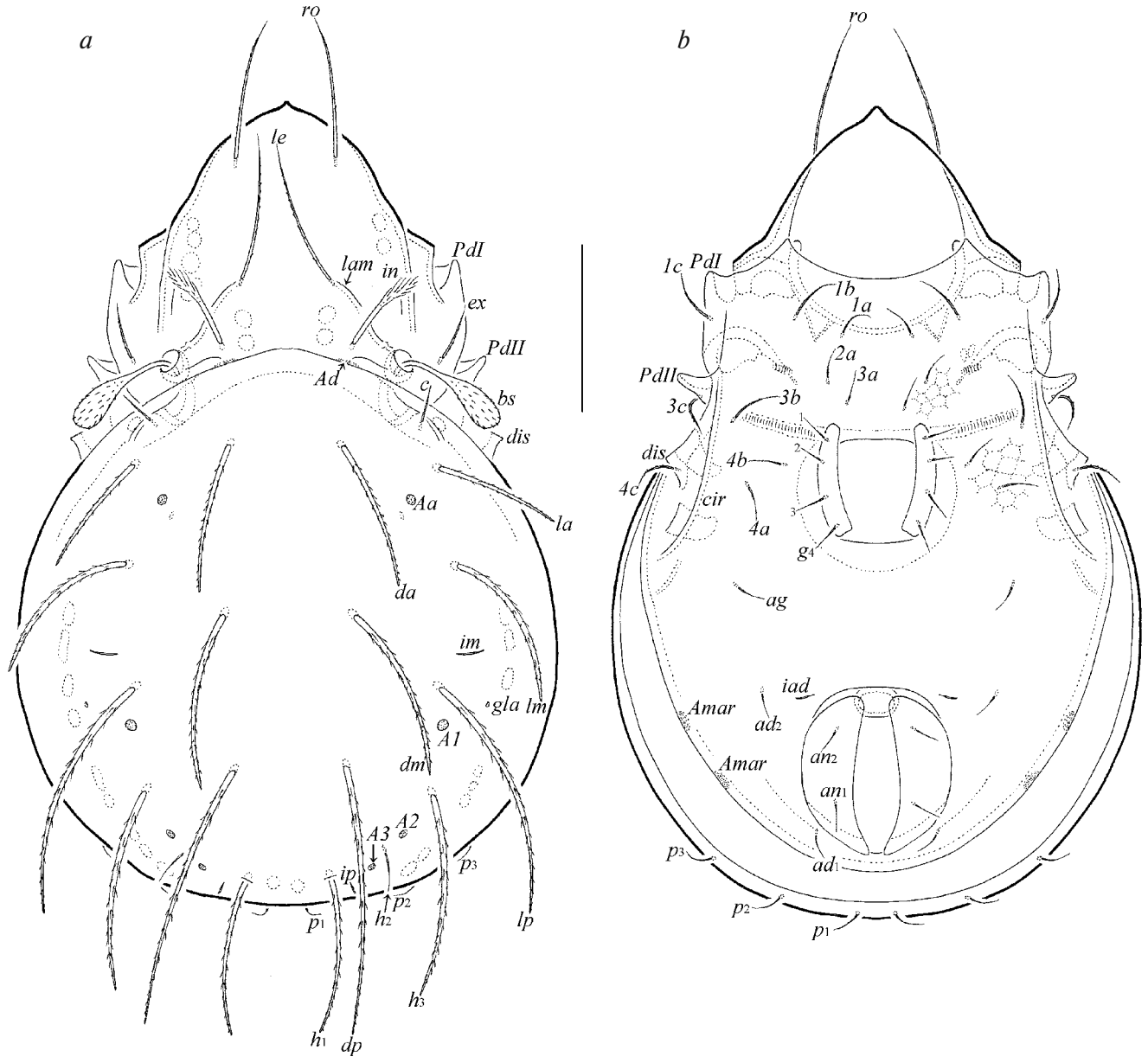

Рис. 1. *Phauloppia differens* sp. n., adult: *a* – dorsal view (legs not shown), *b* – ventral view (gnathosoma and legs not shown). Scale bar 50 μm.

C o m p a r i s o n . *Phauloppia differens* sp. n. is similar to *P. dilatata* Ermilov et Salavatulin 2023 from Vietnam (see Ermilov, Salavatulin, 2023) in having dilated mediodistally interlamellar setae. However, the new species differs from *P. dilatata* in: pointed (versus rounded) rostrum; presence (versus absence) of marginal porose areas; distinctly longer rostral, lamellar, interlamellar, and exobothridial setae; morphology of bothridial seta (clavate versus globular); almost rounded (versus elongate oval) notogaster; number, length and morphology of some notogastral setae (13 pairs, with one pair of *c*; *da*, *la*, *dm*, *dp*, *lm*, *lp*, h_1, h_3 long, thick, narrowed distally, heavily barbed versus 14 pairs, with two pairs of *c*; *da*, *la*, *dm*, *dp*, *lm*, *lp*, h_1, h_3 short, setiform, slightly roughened); ornamentation of subcapitular mentum (foveolate versus striate); presence (versus absence) of epimeral seta *3c*; presence of two pairs (versus three pairs) of adanal setae; and reduced chaetome of leg tarsi I–III (19–15–15 versus 14–13–11).

E t y m o l o g y . The specific epithet *differens* is Latin for “difference” and alludes to the different lengths of notogastral setae in the new species.

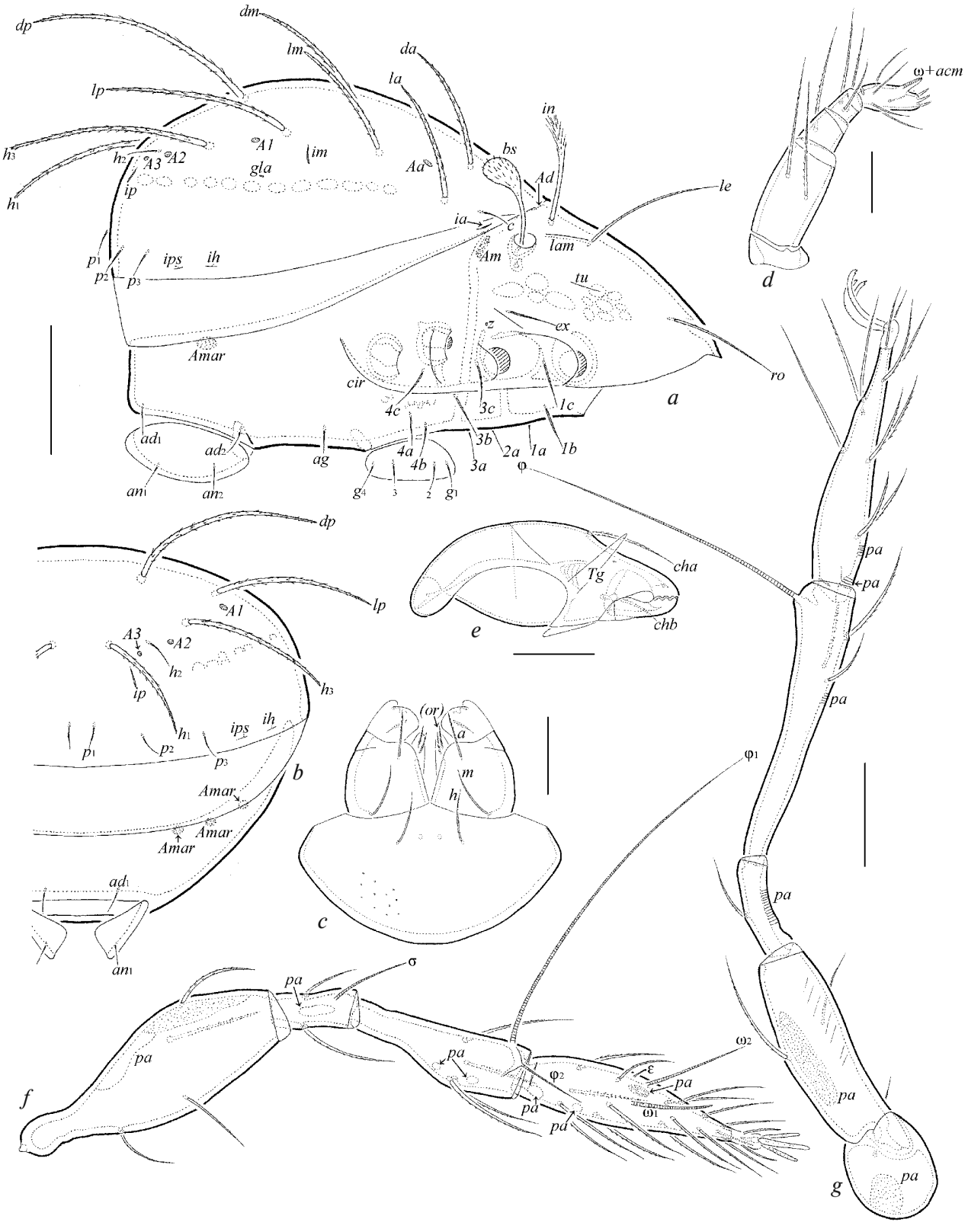

Рис. 2. *Phauloppia differens* sp. n., adult: *a* – right lateral view (gnathosoma and legs not shown); *b* – posterior view (part of left half not shown); *c* – subcapitulum, ventral view; *d* – palp, right, antiaxial view; *e* – chelicera, left, paraxial view; *f* – leg I (trochanter not shown, femur turned), left, paraxial view; *g* – leg IV, right, paraxial view. Scale bar (μm): *a*, *b* – 50; *c*, *e*–*g* – 20; *d* – 10.

Table 1. Leg setation and solenidia of adult *Phauloppia differens* sp. n.

Leg	*Tr*	*Fe*	*Ge*	*Ti*	*Ta*
I	*v*'	*d*, *l*', *bv*", *v*'	(*l*), σ	(*l*), (*v*), φ	(*ft*), (*tc*), (*it*), (*p*), (*u*), (*a*), *s*, (*pv*), *v*', (*pl*), ε, ω_1, ω_2
II	*v*'	*d*, *l*', *bv*", *v*"	(*l*), σ	(*l*), (*v*), φ	(*ft*), (*tc*), (*it*), (*p*), (*u*), (*a*), *s*, (*pv*), ω_1, ω_2
III	*l*', *v*'	*d*, *l*', *ev*'	*l*', σ	*l*', (*v*), φ	(*ft*), (*tc*), (*it*), (*p*), (*u*), (*a*), *s*, (*pv*)
IV	*v*'	*d*, *ev*'	*d*	*l*', (*v*), φ	*ft*", (*tc*), (*p*), (*u*), (*a*), (*pv*)

Notes. Roman letters refer to normal setae, Greek letters – to solenidia (except ε = famulus). Single prime (') marks setae on the anterior and double prime (") – setae on the posterior side of a given leg segment. Parentheses refer to a pair of setae.

Oripoda operta Ermilov, Salavatulin et Kontschán sp. n.
(Figs 3, 4)

Type material. Holotype (♀) and six paratypes (3 ♂♂, 3 ♀♀): Vietnam, Dong Nai Province, Dong Nai Biosphere Reserve, Cat Tien National Park, 11°26'N, 107°26'E, about 130 m a.s.l., branches of *Dipterocarpus alatus* at the height of 25 m above ground, November 20, 2022 – December 10, 2022 (collected by V. M. Salavatulin and A. A. Kudrin).

The holotype is deposited in the collection of the Senckenberg Museum of Natural History, Görlitz, Germany; six paratypes are deposited in the collection of the Tyumen State University Museum of Zoology, Tyumen, Russia. All specimens are preserved in 70 % solution of ethanol with a drop of glycerol.

Diagnosis. Body length: 210–300. Rostrum sparsely tuberculate in males (versus not tuberculate in females); epimeral region striate; anogenital region foveolate. Rostrum rounded. Prolamella and translamella absent; sublamella and keel-shaped ridge present. Rostral and lamellar setae long, setiform, barbed; interlamellar seta medium-sized, robust, acute, barbed; bothridial seta comparatively short, globular, slightly barbed, completely covered by anterior margin of notogaster. All notogastral setae short, setiform, slightly roughened. Epimeral setal formula: 3–1–2–1. All epimeral and anogenital setae comparatively short. Marginal porose area represented by one pair of posterolateral sacculi.

Description. *Measurements*. Body length: 270 (holotype), 210–240 (male paratypes), 270–300 (female paratypes); notogaster width: 150 (holotype), 135–143 (male paratypes), 150–165 (female paratypes).

Integument. Body light brown. Rostrum sparsely tuberculate in males (fig. 4*a*) versus tubercles absent in females (fig. 3*a*); epimeral region longitudinally striate; anogenital region and anal plates sparsely foveolate but narrow region between genital and anal apertures without foveolae; adanal region and region of keel-shaped ridge with indistinct striae; paraxial part of leg femora III, IV with some transverse striae.

Prodorsum. Rostrum broadly rounded. Lamella about 1/2 length of prodorsum; prolamella and translamella absent; sublamella and keel-shaped ridge present. Rostral and lamellar setae (30–34) setiform, barbed; interlamellar seta (22–26) robust, acute, barbed; bothridial seta (17–19) with short stalk and globular, slightly barbed head; bothridial seta completely covered by anterior margin of notogaster in dorsal view; exobothridial seta and dorsosejugal porose area not observed.

Notogaster. Anterior margin almost straight. All notogastral setae (13–15) setiform, thin, slightly roughened. Four pairs of sacculi with drop-like channels. Opisthonotal gland opening and all lyrifissures well visible.

Gnathosoma. Subcapitulum size: 64–67×45–49; seta *a* (15) setiform, unilaterally barbed in mediodistal part; *m* (11) and *h* (20) setiform, roughened; *m* thinner than *a* and *h*; both adoral setae (7–9) setiform, barbed. Palp length: 45–49; postpalpal seta (4) spiniform, smooth. Chelicera length: 77–79; seta *cha* (22) setiform, barbed; *chb* absent.

Epimeral and lateral podosomal regions. Epimeral setal formula: 3–1–2–1; all setae (*1a*, *1c*, *2a*, *3a*: 11–15; *1b*: 22; *4a*, *4b*: 19) setiform, thin, slightly roughened. Discidium broadly tubercle-like. Circumpedal carina distinct.

Anogenital region. Genital (9–11) and aggenital (11–15) setae setiform, thin, roughened; anal and adanal setae (17–19) setiform, slightly barbed. Adanal lyrifissure close and parallel to anal plate. Marginal porose area represented by one pair of posterolateral sacculi.

Legs. Median and lateral claws thick, slightly different in thickness, slightly barbed on dorsal side. All tarsi with well developed pulvillus. Proximoventral porose area on tarsi I–IV and dorsoparaxial porose area on femora I–IV and on trochanters III, IV distinct; distoventral porose area present only on tibia I (versus not observed on tibiae II–IV). Formulas of leg setation and solenidia: I (1–5–2–4–15) [1–2–2], II (1–5–2–4–13) [1–1–2], III (2–3–1–3–11) [1–1–0], IV (1–2–2–3–10) [0–1–0]; homology of setae and solenidia indicated in Table 2; solenidia ω_1, ω_2 on tarsi I, II and slightly bacilliform, slightly swollen distally, σ on genua III slightly bacilliform, φ_1 on tibia I and φ on tibiae II–IV subflagellate, terminating in flattened disc, other solenidia rod-like.

Comparison. *Oripoda operta* sp. n. is similar to *O. obliqua* Aoki et Yamamoto 2007 from Japan (see

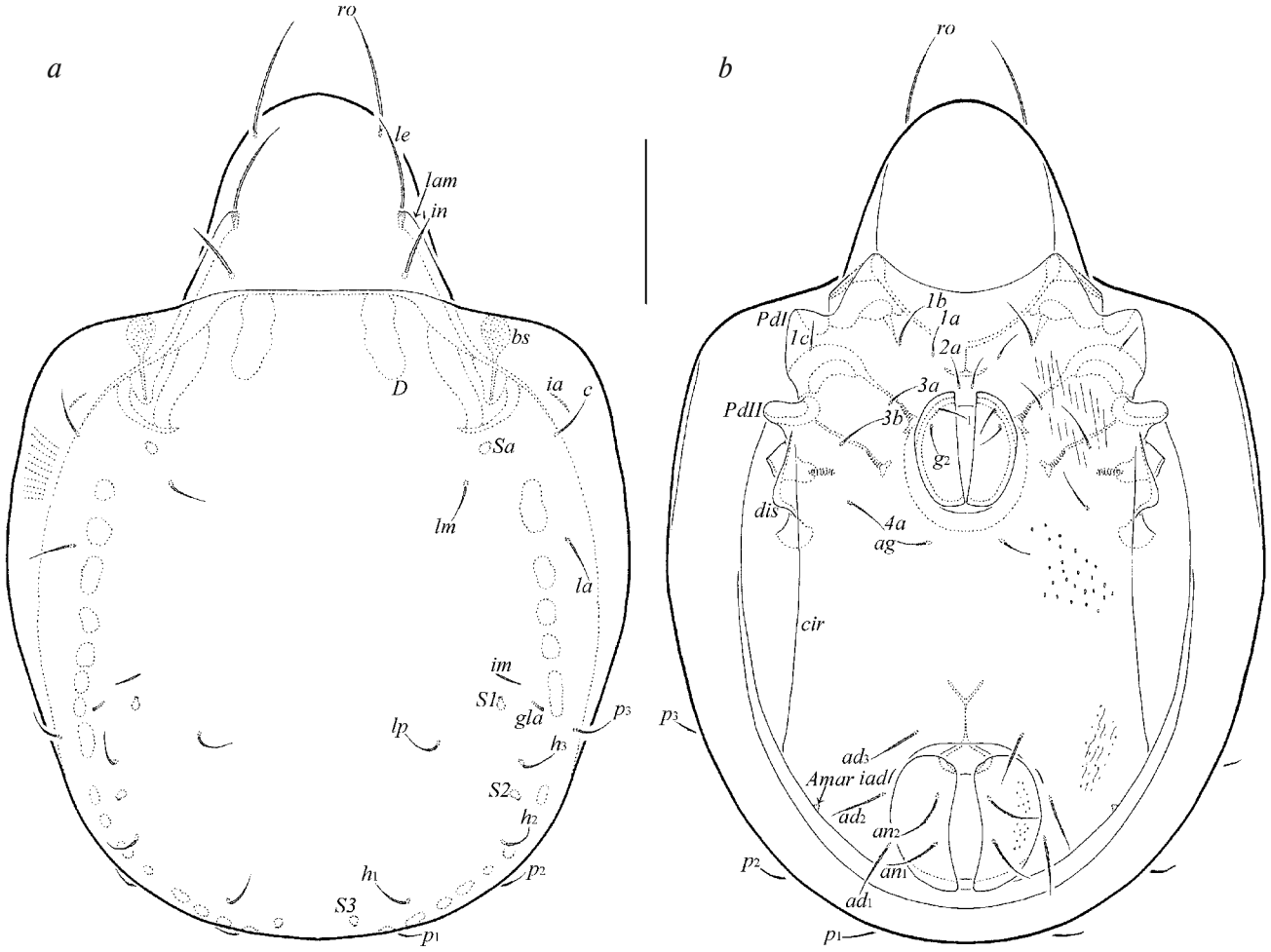

Fig. 3. *Oripoda operta* sp. n., adult: *a* – dorsal view (legs not shown), *b* – ventral view (gnathosoma and legs not shown). Scale bar 50 μm.

Aoki, Yamamoto, 2007) in: the presence of tuberculate rostrum in males; comparatively long rostral, lamellar and interlamellar setae, with *ro* and *le* setiform, *in* robust; bothridial seta completely covered by anterior margin of notogaster; short notogastral setae; and medium-sized, setiform adanal setae. The new species differs from *O. obliqua* in: smaller body size (length of males 210–240, length of females 270–300 versus length of males 305–320, length of females 310–415); absence (versus presence) of rugosities on the rostrum and on the pteromorph in females; almost rounded (versus elongate oval) notogaster; and the morphology of anterolateral margin of the pteromorph (broadly rounded versus largely cut obliquely).

E t y m o l o g y . The specific epithet *operta* is Latin for "hidden" and alludes to the bothridial seta being completely covered by the anterior margin of the notogaster in the new species.

Table 2. Leg setation and solenidia of adult *Oripoda operta* sp. n.

Leg	*Tr*	*Fe*	*Ge*	*Ti*	*Ta*
I	*v'*	*d*, (*l*), *bv"*, *v"*	(*l*), σ	(*l*), (*v*), φ	(*ft*), (*tc*), (*it*), (*p*), (*u*), (*a*), *s*, *pv'*, ε, ω_1, ω_2
II	*v'*	*d*, (*l*), *bv"*, *v"*	(*l*), σ	(*l*), (*v*), φ	(*ft*), (*tc*), (*it*), (*p*), (*u*), (*a*), *s*, ω_1, ω_2
III	*l'*, *v'*	*d*, *l'*, *ev'*	*l'*, σ	*l'*, (*v*), φ	(*ft*), (*tc*), (*p*), (*u*), *a'*, *s*, *pv"*
IV	*v'*	*d*, *ev'*	*d*, *l'*	*l'*, (*v*), φ	*ft"*, (*tc*), (*p*), (*u*), *a'*, *s*, *pv"*

Notes. See Table 1 for explanations.

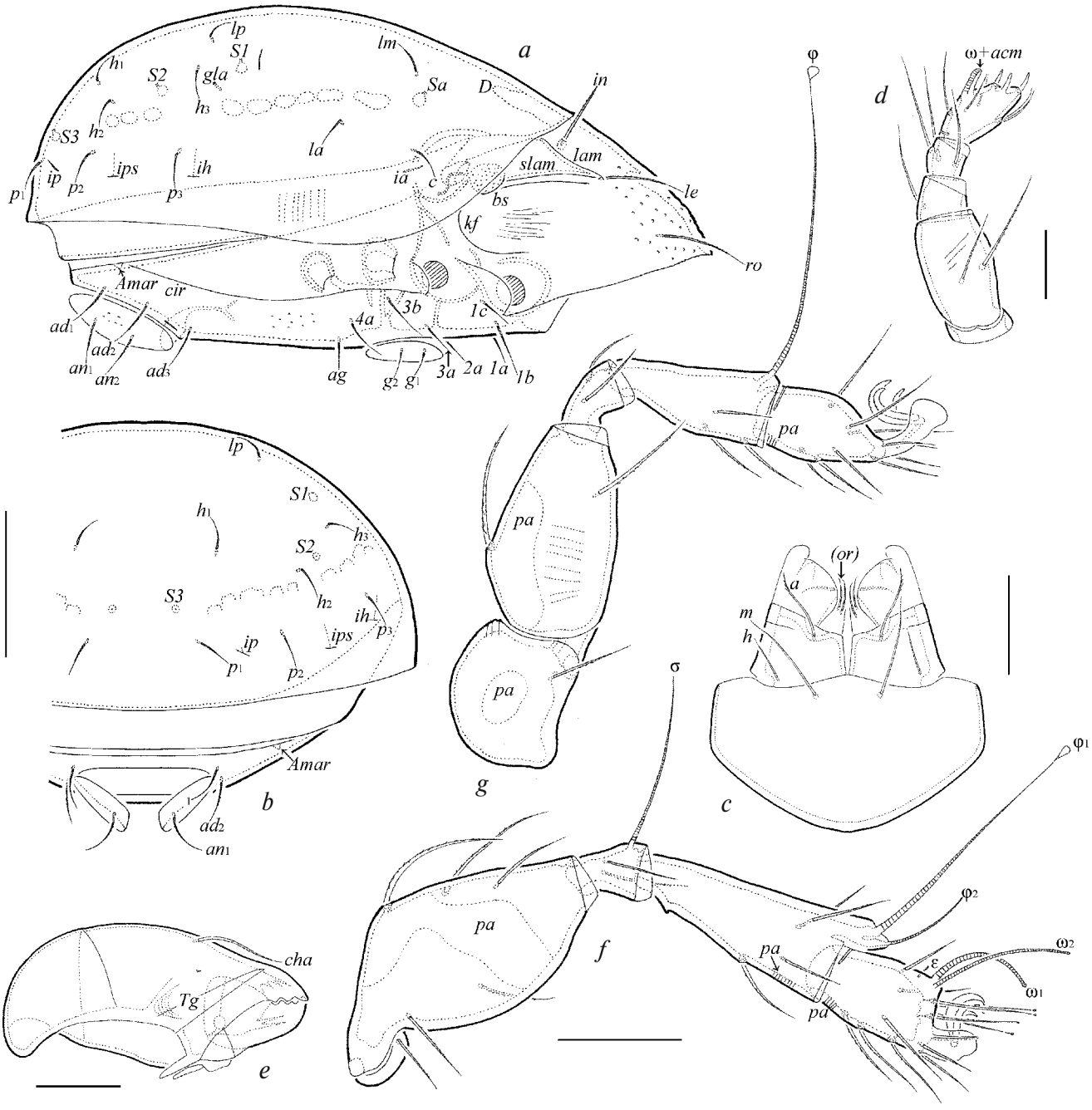

Fig. 4. *Oripoda operta* sp. n., adult: *a* – right lateral view (gnathosoma and legs not shown); *b* – posterior view (part of left half not shown); *c* – subcapitulum, ventral view; *d* – palp, right, antiaxial view; *e* – chelicera, left, paraxial view; *f* – leg I, right, antiaxial view; *g* – leg IV, left, antiaxial view. Scale bar (μm): *a*, *b* – 50; *c*, *e*–*g* – 20; *d* – 10.

Pirnodus concavus Ermilov, Salavatulin et Kontschán sp. n. (Figs 5, 6)

Type material. Holotype (♀) and three paratypes (1 ♂, 2 ♀♀): Vietnam, Dong Nai Province, Dong Nai Biosphere Reserve, Cat Tien National Park, 11°26'N, 107°26'E, about 130 m a.s.l., bark of *Dipterocarpus alatus* at the height of 25 m above ground, November 20, 2022 – December 10, 2022 (collected by V. M. Salavatulin and A. A. Kudrin).

The holotype is deposited in the collection of the Senckenberg Museum of Natural History, Görlitz, Germany; three paratypes are deposited in the collection of the Tyumen State University Museum of Zoology,

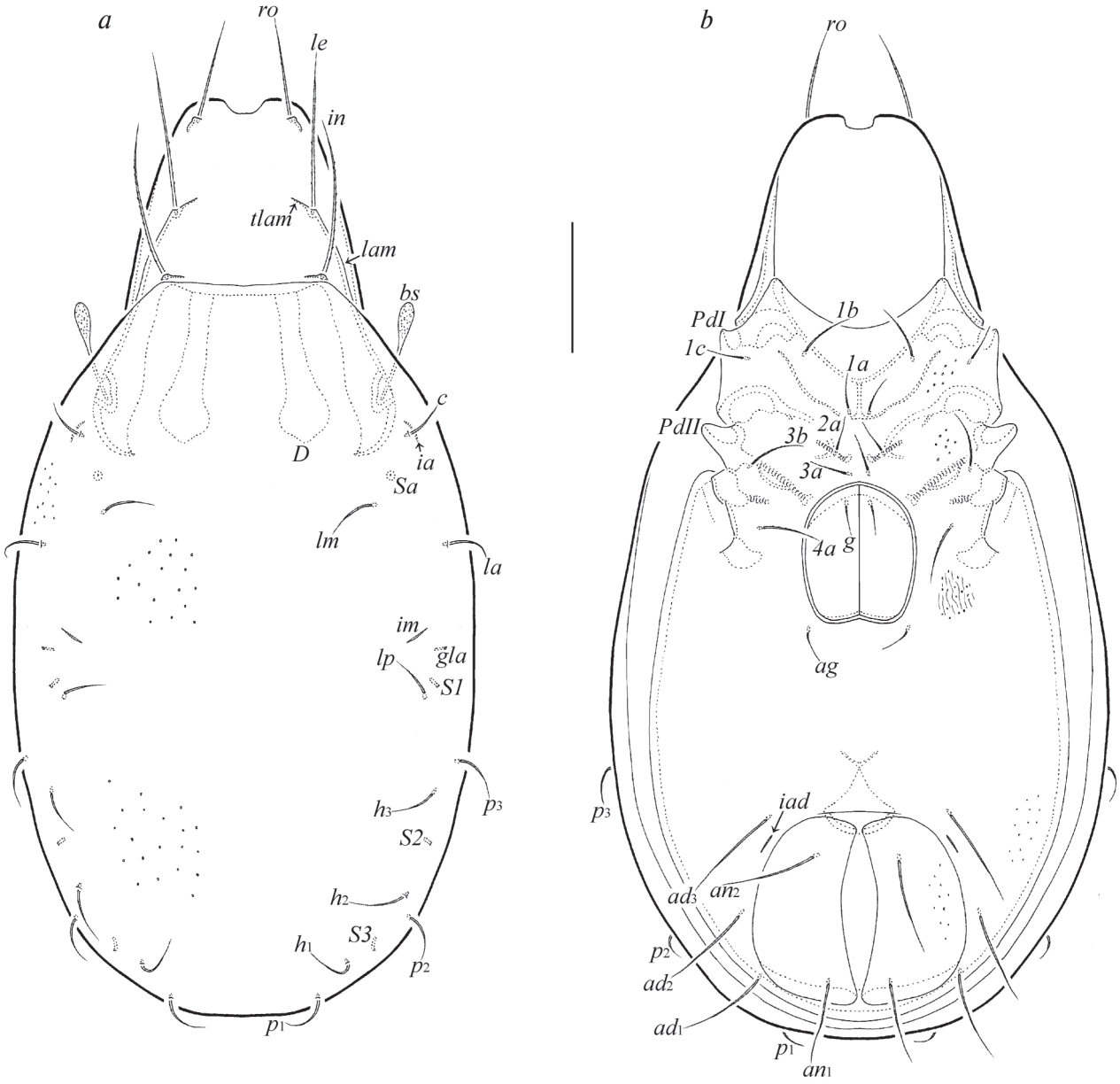

Fig. 5. *Pirnodus concavus* sp. n., adult: *a* – dorsal view (legs not shown), *b* – ventral view (gnathosoma and legs not shown). Scale bar 50 μm.

Tyumen, Russia. All specimens are preserved in 70 % solution of ethanol with a drop of glycerol.

Diagnosis. Body length: 330–375. Body surface foveolate. Rostrum concave. Prolamella and sublamella absent; translamella represented by two short oblique lines near lamellae; keel-shaped ridge present. Rostral, lamellar and interlamellar setae long, setiform, barbed; bothridial seta clavate or fusiform, slightly barbed; head of bothridial seta not covered by anterior margin of notogaster. All notogastral setae medium-sized, setiform, smooth. Epimeral setal formula: 3–1–2–1. All epimeral, genital and aggenital setae comparatively short; anal and adanal setae long but not longer than length of anal plate.

Description. *Measurements*. Body length: 375 (holotype), 345 (male paratype), 330, 375 (female paratypes); notogaster width: 195 (holotype), 165 (male paratype), 150, 195 (female paratypes).

Integument. Body light brown. Surface of body sparsely and minutely foveolate; lateral part of body partially slightly striate.

Prodorsum. Rostrum with median indentation. Lamella about 1/2 length of prodorsum; prolamella

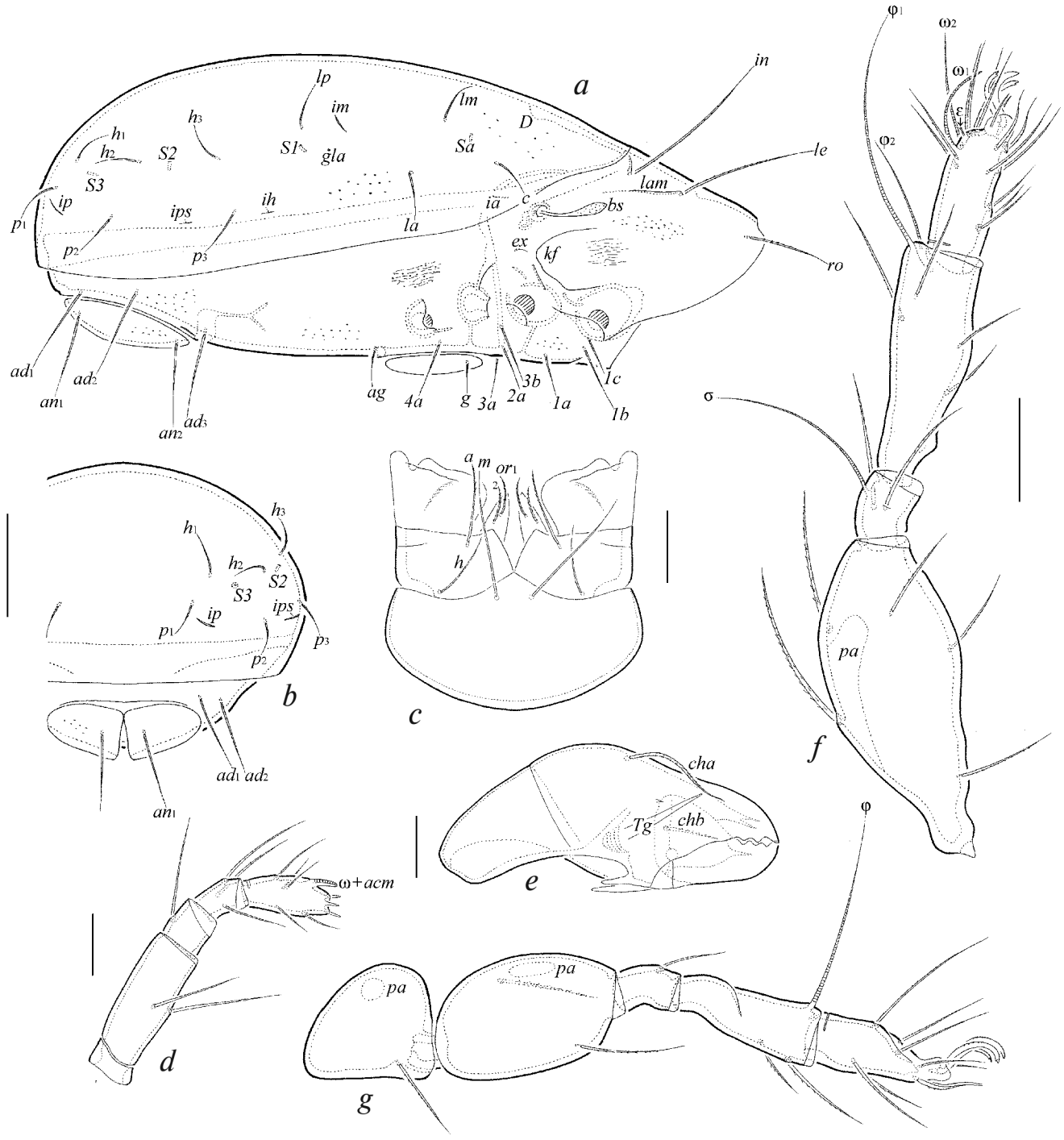

Fig. 6. *Pirnodus concavus* sp. n., adult: *a* – right lateral view (gnathosoma and legs not shown); *b* – posterior view (part of left half not shown); *c* – subcapitulum, ventral view; *d* – palp, right, antiaxial view; *e* – chelicera, left, paraxial view; *f* – leg I (trochanter not shown), right, antiaxial view; *g* – leg IV, left, antiaxial view. Scale bar (μm): *a*, *b* – 50; *c*, *e*–*g* – 20; *d* – 10.

and sublamella absent; translamella represented by two short oblique lines near lamellae; keel-shaped ridge present. Rostral (45–49), lamellar (71–75) and interlamellar (82–94) setae setiform, barbed; bothridial seta (35–37) clavate or fusiform, slightly barbed; head of bothridial seta not covered by anterior margin of notogaster in dorsal view; exobothridial seta (7) setiform, thin, smooth. Dorsosejugal porose area not observed.

Notogaster. Anterior margin straight. All notogastral setae (22–24) setiform, thin, smooth. Four pairs of

Table 3. Leg setation and solenidia of adult *Pirnodus concavus* sp. n.

Leg	*Tr*	*Fe*	*Ge*	*Ti*	*Ta*
I	*v*'	*d*, (*l*), *bv*", *v*"	(*l*), σ	(*l*), (*v*), φ	(*ft*), (*tc*), (*it*), (*p*), (*u*), (*a*), *s*, (*pv*), ε, ω_1, ω_2
II	*v*'	*d*, (*l*), *bv*", *v*"	(*l*), σ	(*l*), (*v*), φ	(*ft*), (*tc*), (*it*), (*p*), (*u*), (*a*), *s*, ω_1, ω_2
III	*l*', *v*'	*d*, *l*', *ev*'	σ	(*v*), φ	(*ft*), (*tc*), (*p*), (*u*), (*pv*)
IV	*v*'	*d*, *ev*'	*d*	(*v*), φ	*ft*", (*tc*), (*p*), (*u*), (*pv*)

Notes. See Table 1 for explanations.

sacculi with slightly elongated channels. Opisthonotal gland opening and all lyrifissures well visible.

Gnathosoma. Subcapitulum size: 73–77×60–64; seta *a* (22–26) setiform, unilaterally barbed in mediodistal part; *m* (22–26) and *h* (34–37) setiform, roughened; *m* thinner than *a* and *h*; both adoral setae (11–15) setiform, barbed. Palp length: 56–60; postpalpal seta (7) spiniform, roughened. Chelicera length: 112–116; setae (*cha*: 33–37; *chb*: 17–19) setiform, barbed.

Epimeral and lateral podosomal regions. Epimeral setal formula: 3–1–2–1; all setae (*1b*, *3b*: 35–37; *4a*: 28–30; others: 19–22) setiform, thin, smooth. Discidium and circumpedal carina not observed.

Anogenital region. Genital (15) and aggenital (19–22) setae setiform, thin, smooth; anal and adanal setae (45–47) subflagellate, smooth. Adanal lyrifissure close and parallel to anal plate. Marginal porose area not observed.

Legs. Median and lateral claws thick, slightly different in thickness, slightly barbed on dorsal side; lateral claw with tubercle distoventrally. Proximoventral porose area on tarsi I–IV and distoventral porose area on tibiae I–IV absent; dorsoparaxial porose area on femora I–IV and on trochanters III, IV distinct. Anterodorsal part of all tarsi with two longitudinal ridges. Formulas of leg setation and solenidia: I (1–5–2–4–16) [1–1–2], II (1–5–2–4–13) [1–1–2], III (2–3–0–2–10) [1–1–0], IV (1–2–1–2–9) [0–1–0]; homology of setae and solenidia indicated in Table 3; solenidia ω_1 on tarsus I, ω_1, ω_2 on tarsus II and σ on genua III slightly bacilliform, φ_1 on tibia I and φ on tibiae II–IV subflagellate, other solenidia rod-like.

Comparison. *Pirnodus concavus* sp. n. is similar to *P. detectidens* Grandjean 1956 from southeastern Europe (see Grandjean, 1956; Travé, 1959; Pérez-Íñigo, 1993) in having adanal setae not longer than the anal plate and in uniform notogastral setae. However, the new species differs from *P. detectidens* in the presence (versus absence) of short translamellar lines near lamellae and in the absence (versus presence) of sexual dimorphism (e.g., males of *P. detectidens* are characterized by the absence of the anterior margin of notogaster medially and by the bothridial seta completely covered by the anterior margin of the notogaster; females of *P. detectidens* are characterized by a rounded rostrum and by the genital aperture distinctly larger than anal aperture).

Etymology. The specific epithet *concavus* is Latin for "concavity" and alludes to the concave rostrum in the new species.

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ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This work does not contain any studies involving human and animal subjects.

CONFLICT OF INTEREST

The authors of this work declare that they have no conflicts of interest.

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ТРИ НОВЫХ ВИДА ПАНЦИРНЫХ КЛЕЩЕЙ НАДСЕМЕЙСТВА ORIPODOIDEA (ACARI, ORIBATIDA) ИЗ ВЬЕТНАМА

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Описаны три новых вида панцирных клещей (Oribatida) надсемейства Oripodoidea – *Phauloppia differens* sp. n. (Oribatulidae), *Oripoda operta* sp. n. (Oripodidae) и *Pirnodus concavus* sp. n. (Oripodidae). Описания базируются на имаго, собранных с коры и ветвей деревьев *Dipterocarpus alatus* и *Haldina cordifolia* в южном Вьетнаме.

Ключевые слова: арбореальные клещи, *Phauloppia*, *Oripoda*, *Pirnodus*, таксономия, морфология, национальный парк Кат Тьен, Ориентальная область