Reicheiodes Ganglbauer, 1891 from Nepal: Description of a new species, and supplemental iconography of the Himalayan species (Insecta: Coleoptera: Carabidae: Dyschiriini)

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ABSTRACT Contrib. Nat. Hist. 32: 1–13

A recent revision of the genus *Reicheiodes* Ganglbauer, 1891, subgenus *Himalayodes* Dostal, 1993, from the Himalaya (Balkenohl & Schmidt 2015) is supplemented by the description and illustration of *R. subcirculatus* sp. nov. from the western slope of the Singalila mountain range in East Nepal. Differential diagnostic information to the most closely related species is provided. Habitus illustrations of the type specimens of three previously described Himalayan *Reicheiodes* species (*R. convexipennis* Balkenohl, 1994, *R. loebli* Balkenohl, 1994, *R. ellipsoideus* Balkenohl, 1995) are provided in order to complete the photo series of all ten known species. New records are reported for *R. ellipsoideus* Balkenohl, 1995, *R. franzi* Dostal, 1993, and *R. similitudis* Balkenohl & Schmidt, 2015. Aedeagus and coxostylus of *R. ellipsoideus* Balkenohl, 1995, are illustrated and described for the first time. The key to Himalayan *Himalayodes* species is updated.

Keywords: *Himalayodes*, taxonomy, distribution, new species, key to species

ZUSAMMENFASSUNG

Die kürzlich erfolgte Revision der himalayischen Arten der Gattung *Reicheiodes* Ganglbauer, 1891, Untergattung *Himalayodes* Dostal, 1993 (Balkenohl & Schmidt 2015) wird durch die Beschreibung und Abbildung der neuen Art *R. subcirculatus* sp. nov. ergänzt. Die neue Art wird differentialdiagnostisch von den nächstverwandten Arten abgegrenzt. Um die Fotoserie aller zehn bekannten *Reicheiodes*-Arten des Himalaya zu komplettieren, werden Habitusabbildungen der Typus-Exemplare von drei früher beschriebenen Arten hinzugefügt (*R. convexipennis* Balkenohl, 1994, *R. loebli* Balkenohl, 1994, *R. ellipsoideus* Balkenohl, 1995). Für *R. ellipsoideus* Balkenohl, 1995, *R. franzi* Dostal, 1993 und *R. similitudis* Balkenohl & Schmidt,

2015 werden neue Funde mitgeteilt. Die bisher nicht bekannten Genitalia von *R. ellipsoideus* werden beschrieben und abgebildet. Der Schlüssel zu den *Himalayodes* Arten des Himalaya wird aktualisiert.

Introduction

Recently the *Reicheiodes* species from the Himalaya have been revised (Balkenohl & Schmidt 2015). In that revision a single specimen was identified among late incoming material and could not be assigned directly to any of the known species. It was mentioned at the end of the text in brief but not described, also due to time constraints.

This specimen has been revisited now, also because it was collected in the same mountain area as *Reicheiodes convexipennis* Balkenohl, 1994, at the western slope of the Singalila mountain chain on the south slope of the Kangchenjunga massif, very close to the type locality of the latter. The more careful investigation confirmed the previous assumption that the specimen represents another new species, and adding-up the number of known species of the subgenus *Himalayodes* Dostal, 1993 to ten.

In addition, another twenty-three specimens of *Reicheiodes* became available very recently confirming and enriching faunistic knowledge of three of the known species. Among this material there were five specimens of *R. ellipsoideus*, including one male. This species was previously known from a single female only. Consequently the missing descriptions and figures of the male aedeagus and the female coxostylus are provided in the present contribution.

To further supplement the revision, habitus pictures of the new as well as three additional species are provided in this contribution so that the photo series of all ten *Himalayodes* species are now available.

Material and methods

This study is based on twenty-two specimens of the genus *Reicheiodes* from the Himalaya including the holotypes of *R. ellipsoideus* Balkenohl, 1995 and *R. loebli* Balkenohl, 1994, and a paratype specimen of *R. convexipennis* Balkenohl, 1994, in addition to comprehensive material which is cited in Balkenohl & Schmidt (2015). Terms, methods of preparation and figuring, description of characters, and literature, were used as described in detail in

the previous revision of the Himalayan species of the genus by Balkenohl & Schmidt (2015).

The material is deposited in the following collections:

CBB Coll. Michael Balkenohl, Bonstetten near Zürich, Switzerland;
CBP Coll. Petr Bulirsch, Prague, Czech Republic;
CSCHM Coll. Joachim Schmidt, Admannshagen and Rostock, Germany;
NHMB Naturhistorisches Museum Basel, Switzerland;
SMNS Staatliches Museum für Naturkunde, Stuttgart, Germany.

Updated key to species of *Himalayodes*

1 Elytron without dorsal setigerous punctures 2
– Elytron with one or two dorsal setigerous punctures 3
2 Three subhumeral setigerous punctures; pronotum strikingly depressed on disk, with lateral margin distinct only at the levels of the anterior and posterior setigerous punctures (Fig. 2). Distribution: Singalila mountain range of East Nepal and the Darjeeling District of India ..... ***R. convexipennis*** BALKENOHL, 1994
– Two subhumeral setigerous punctures; pronotum convex, with lateral margin complete and prolonged beyond the posterior setigerous puncture towards base. Distribution: Helambu massif and mountains surrounding the Kathmandu Valley, Central Nepal ... ***R. franzi*** DOSTAL, 1993
3 Pronotum wider than long, moderately convex on disk; elytron with reflexed lateral border fine at base 4
– Pronotum longer than wide, conspicuously convex on disk; elytron with reflexed lateral border markedly developed at base 5
4 Elytron shorter, strikingly convex, with two dorsal setigerous punctures; pronotum with broad and cup-like outline. Distribution: south slope of Solu Khumbu massif, eastern Central Nepal ..... ***R. concameratus*** BALKENOHL & SCHMIDT, 2015
– Elytron long-oval, with one dorsal setigerous puncture; pronotum with subcircular outline (Fig. 1). Distribution: western slope of Singalila mountain range, East Nepal ..... ***R. subcirculatus*** sp. nov.

5 Elytron with three umbilical setigerous punctures; genae developed inconspicuously; clypeus very feebly margined. Distribution: southern slopes of central Annapurna Mts. (Machapuchare and southwestern Lamjung Himal), western Central Nepal ..... ***R. jaegeri*** BALKENOHL & SCHMIDT, 1997

– Elytron with two umbilical setigerous punctures; genae well developed; clypeus feebly but distinctly margined 6

6 Elytron with one dorsal (anterior) setigerous puncture; lateral channel of pronotum deep and moderately broad (Fig. 3). Distribution: Lapchi Kang mountain range, central Nepal ..... ***R. loebli*** BALKENOHL, 1994

– Elyton with two dorsal setigerous punctures; lateral channel of pronotum shallow and narrow 7

7 Outline of pronotum appearing subcircular, globose, lateral channel very small at middle, not completely visible from above due to globosity of pronotum, surface with microscopic irregular reticulation; genae enclosing eyes posteriorly by a quarter; disc of head with irregular microscopic pattern (magnification 160 times); elytra conspicuously elliptical (Fig. 4), basal setigerous puncture situated in extended prolongation of first stria, minute striole at base. Distribution: mountains east of Arun Valley, East Nepal (Milke Danda, Jaljale Himal) ..... ***R. ellipsoideus*** BALKENOHL, 1995

– Outline of pronotum long-convex or regularly convex, lateral channel distinct, visible throughout from above, surface smooth; genae enclosing eyes posteriorly by a tenth; disc of head appearing smooth (magnification 160 times); elytra long-oval or egg-shaped, basal setigerous puncture situated in extended prolongation of second interval, no trace of striole at base 8

8 Pronotum long-globose, longer narrowed towards base, reflexed lateral margin ending at posterior setigerous puncture; elytra long-oval with maximum width slightly anterior to middle, striae distinct up to apex, intervals flattened; eyes less convex. Distribution: south eastern slope of Annapurna Mts. (south eastern Lamjung Himal), western Central Nepal ..... ***R. variobasalis*** BALKENOHL & SCHMIDT, 2015

– Pronotum more regularly-globose, narrowed with slightly rounded elongation towards base, reflexed lateral margin extended distinctly over posterior setigerous puncture; eyes regularly convex 9

9 Reflexed lateral margin of pronotum extended over posterior setigerous puncture by three times the diameter of puncture; elytra egg-shaped, more markedly narrowed towards base than in the following species, striae disappearing apically, intervals slightly convex. Distribution: south western slopes of Manaslu Himal, western Central Nepal ..... ***R. similitudis*** BALKENOHL & SCHMIDT, 2015

– Reflexed lateral margin of pronotum extended over posterior setigerous puncture by more than a third of distance from posterior puncture to base; elytra long-oval, striae all distinct up to apex, intervals flat (with exception of first interval). Distribution: Lamjura Danda mountain range of Solu Khumbu massif, eastern Central Nepal .....
..... ***R. duospinosus*** BALKENOHL & SCHMIDT, 2015

Description

Reicheiodes (Himalayodes) subcirculatus sp. nov.

Fig. 1.

Type material: Holotype, ♂, with label data "NEPAL east Mangalbare dist. Terhatum 2.6.–9.6.2013 lgt. E. Kučera", "Coll. P. Bulirsch" (CBP).

Diagnosis. A species with long-oval elytra, more regularly globose pronotum with less rounded elongation towards base, and moderately convex eyes with small genae. Chaetotaxy of the elytron is as follows: 1 basal, 1 subhumeral, 2 umbilical, 1 praeapical, and 1 dorsal setigerous punctures. Distinguished from the most similar species *R. concameratus* by the more slender total appearance, the absence of the second dorsal setigerous puncture, the shape of the pronotum with subcircular outline, the shape of the elytra with its maximum width at middle, the less convex elytra (lateral view), the more impressed punctures of the elytral striae which are in addition more distinctly impressed up to the apex, and the different shape of the endophallus. Another similar species is *R. ellipsoideus* which is distinguished by the much finer lateral channel of the pronotum, the presence of two dorsal setigerous punctures on the elytron, and the different shape of the endophallus. The geographically close species *R. convexipennis* is rather easily distinguishable from the new species because it exhibits three subhumeral setigerous punctures, and the pronotum is strikingly depressed with the lateral margin distinct at the anterior and posterior setigerous punctures only.

Measurements: Length 2.6 mm, width 0.96 mm, ratio length/width of pronotum 0.95, ratio length/width of elytra 1.45.

Colour: Head, pronotum, and dorsal surface dark reddish brown. Clypeus, vault of supraantennal plates, and clypeal field medium brown. Mandibles medium brown with carinae and apices darkened, mandibular and maxillary palpi medium brown with tip of apex light beige, femora and tibiae

Figs 1–4: Habitus. 1: *Reicheiodes (Himalayodes) subcirculatus* sp. nov., holotype, ♂. 2: *R. convexipennis* Balkenohl, 1994, paratype, ♂. 3: *R. loebli* Balkenohl, 1994, holotype, ♂. 4: *R. ellipsoideus* Balkenohl, 1995, holotype, ♀.

medium brown, tarsomeres medium brown, seven apical antennomeres dark brown, antennomeres 1–3 medium brown, fourth antennomere darkened apically. Ventral surface middle to dark brown.

Head: A third smaller than pronotum. Clypeus and lateral tooth distinctly margined. Clypeus straight, lateral tooth projecting, obtuse at tip, divided from supraantennal plates by obtuse but distinct notches; clypeal field nearly square, convex, smooth, separated from frons by deep straight transverse furrow; frons moderately convex, smooth; supraantennal plates convex, with carina at top of vault. Frontal furrows deep, broad, diverging anteriorly and posteriorly of transverse furrow. Eyes regularly convex; facets distinct, convex; genae enclosing eyes posteriorly by less than 10%. Antennae moderately long, extending beyond posterior setigerous puncture of pronotum, scapus with a single apical seta situated dorsally, antennomeres 5–10 moniliform. Labrum 7-setose, with indistinct isodiametric reticulation, nearly smooth. Mandibles moderately slender, arcuate apically. Terminal segments of maxillary and labial palpi securiform, both robust.

Pronotum: Outline subglobose, wider than long, maximum width at middle, in lateral view moderately convex. Lateral border subcircular in appearance, equally convex in middle part, narrowed with slightly rounded elongation to base. Reflexed lateral margin distinct, reaching from rounded anterior angles up to posterior setigerous puncture, extended over puncture by half of distance to base, joining anterior transverse line. Lateral channel moderately broad and deep. Median line sharp, distinct, deeper at base, joining anterior transverse line; anterior transverse line complete, developed as moderate line; surface shiny, with rough wrinkles laterally, with few subtle pierced punctures, flange of moderate size.

Elytron: Convex on disc, moderately to slightly convex in anterior part, more distinctly convex at base (lateral view). Outline long-oval, maximum width at middle, margined from pedunculus to apex; no humeral angle traceable; lateral channel moderately broad from level of humerus to apex, fine at base; reflexed margin distinct. Basal granula absent; basal setigerous puncture distinct, situated in projected extension of first stria. One subhumeral, two umbilical, one praeapical setigerous puncture(s). Parascutellar stria fine, situated at base. First stria reaching basal setigerous puncture, fifth reaching base, others ending basally at declivity, first one joining lateral channel at apex; inner five striae impressed, all formed by row of impressed punctures, becoming less impressed towards apex and laterally. All intervals moderately convex. Third interval with one (anterior) setigerous puncture, approaching second stria.

Hind wings: Completely atrophied.

Ventral surface: Proepisternum with very fine wrinkles, almost smooth. Abdominal sternites nearly smooth, terminal segment with indistinct and very fine rugae-like reticulation, two apical setigerous punctures widely distant.

Protibia: Lateral upper spine curved ventro-laterally. Movable spur smaller than spine, gently curved. Praeapical lateral denticle strong, sharp, second one much smaller.

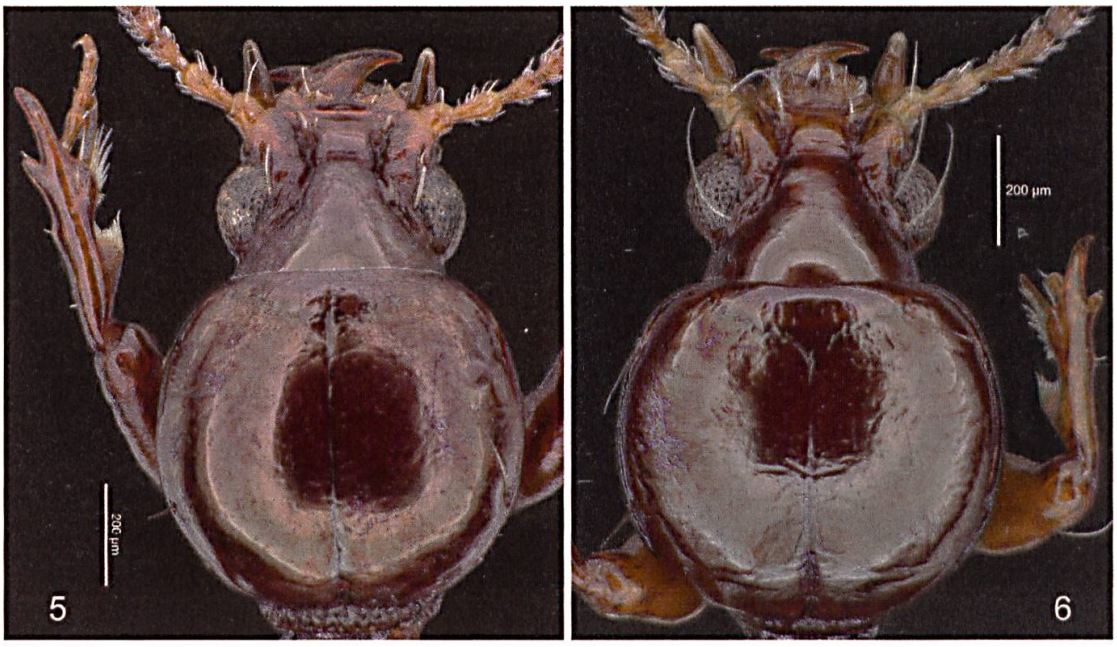
Male genitalia (Figs 7, 8): Median lobe moderately sclerotized, distinctly and angle like arcuate in middle part, slightly flattened in apical half, apex formed by asymmetric rounded spatula, dorsally and ventrally with very few fine pili in basal half. Oroficium medium sized, closing lips less sclerotized. Endophallus with numerous wrinkles, with three small spines in basal part (visible at 500 times by optimized condenser with narrow-band filter green 546 nm). Parameres asymmetrically, length of the ventral one less than a third of the dorsal one, ventral one slightly twisted, dorsal one moderately twisted, both with a short seta at apex.

Female genitalia: Unknown.

Etymology. The name refers to the subcircular appearance of the pronotum.

Distribution (Fig. 12). Up to today only known from the western slope of the Singalila mountain range in East Nepal. Based on the label data, the single specimen was found east of the village Mangalbare, which is situated in the Ilam District, but not in the Terhatum District, as erroneously stated on the locality label.

Habitat. Unknown.



Figs 5–6: Head and prothorax. 5: *R. ellipsoideus* Balkenohl, 1995, holotype. 6: *R. loebli* Balkenohl, 1994, holotype.

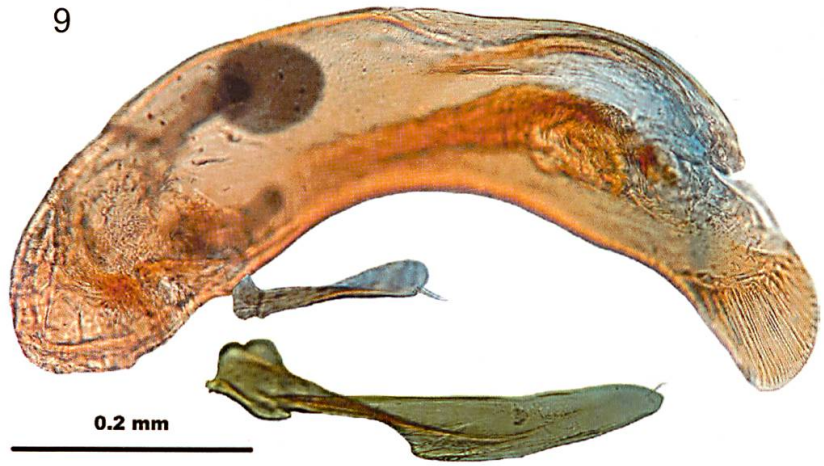
Figs 7–8: *Reicheiodes* (*Himalayodes*) *subcirculatus* sp. nov., holotype; 7: Aedeagus with median lobe and parameres, ventral view. 8: Apical part of median lobe, ventral view.

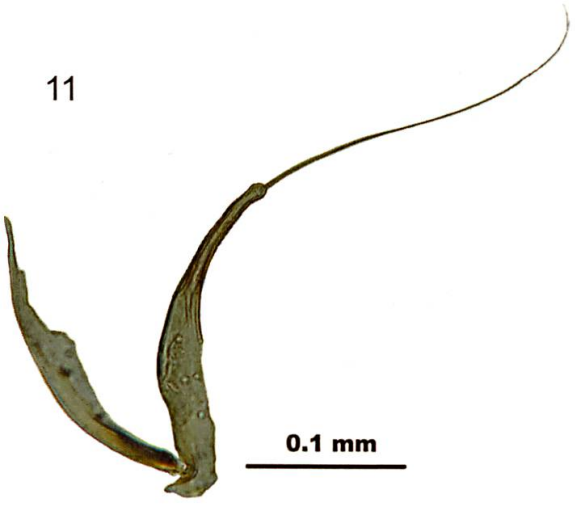
New records

Reicheiodes (Himalayodes) franzi Dostal, 1993

Additional material: Nepal , Shivapuri N Kathmandu, upper Bhudanilkantha, 2000–2500 m, 27+28.iv.2003, 10 specimens leg. J. Schmidt (CSCHM, CBB).

Remarks. The new record confirms previous finds. Up to today, this species is known from Mt. Phulchoki on the southern border of Kathmandu Valley and from Shivapuri Lekh on the northern border of Kathmandu Valley (Balkenohl & Schmidt 2015).





Figs 9–11: ***Reicheiodes (Himalayodes) ellipsoideus*** **BALKENOHL 1995. 9: Aedeagus with median lobe and parameres, ventral view. 10: Apical part of median lobe, ventral view. 11: Coxostylus.**

Based on the investigation of larger series (see also Balkenohl & Schmidt 2015) we found that the populations from both these localities vary morphologically. Specimens from the Shivapuri Lekh have, on average, less impressed striae on the elytra than those from Mt. Phulchoki. However, this feature seems to vary continuously with no distinct limit between the different populations. Additional investigations based on more comprehensive material are thus needed to understand the actual geographical variation of the species.

***Reicheiodes (Himalayodes) similitudis* Balkenohl & Schmidt, 2015**

Additional material: Nepal, Manaslu Mts, Dudh Pokhari Lekh, upper Dordi Khola Valley, 3500–3700 m, 8 specimens, 18.IV.2003, leg. J. Schmidt (CSCHM, CBB).

Remark. The records confirm previous finds.

***Reicheiodes (Himalayodes) ellipsoideus* Balkenohl, 1995**

Type material: Holotype, ♀, with label data "404 Sankhua Sabha Distr., above Pahakhola, 2600–2800 m, *Quercus semicarpifolia*, Rhododendron, 21 May to 3 June 88 MARTENS & SCHAWALLER", "NEPAL Expeditionen Jochen Martens" (SMNS).

Additional Material: Nepal, Kosi - Gufa Pokhari 27°17'N/87°30'E to Chauki 27°12'N/87°28'E, 2900–2600 m, 21.VI.2001, 1 ♂, 4 ♀, leg. "NHMB Basel expedition to Nepal" (locality code #21b) (NHMB, CSCHM, CBB).

Supplemented redescription. Ventral surface: No differences observed among sexes.

Male genitalia (Figs 9, 10): Median lobe moderately sclerotized, regularly arcuate in middle part, slightly flattened and distorted in apical half, apex formed by broad asymmetrically rounded spatula, slantwise attached to medial lobe, dorsally and ventrally with some short minute pili in basal half. Oroficium nearly half as long as lobe, closing lips less sclerotized. Endophallus in apical half with bunch of minute bristles (visible in lateral view at 500 times by optimized condenser). Parameres asymmetrical, both somewhat twisted, length of the ventral one a third of the dorsal one; both parameres with two short setae at apex (160 times).

Female genitalia (Fig. 11): Coxostylus conspicuously small, slender, dorso-ventrally flattened, bent in apical half, carinate in apical two thirds, with one long nematiform seta at apex distinctly longer than coxostylus. Ramus securiform.

Variation: In the six specimens investigated, the globosity of the pronotum varies so that the lateral channel is more or less visible dorsally.

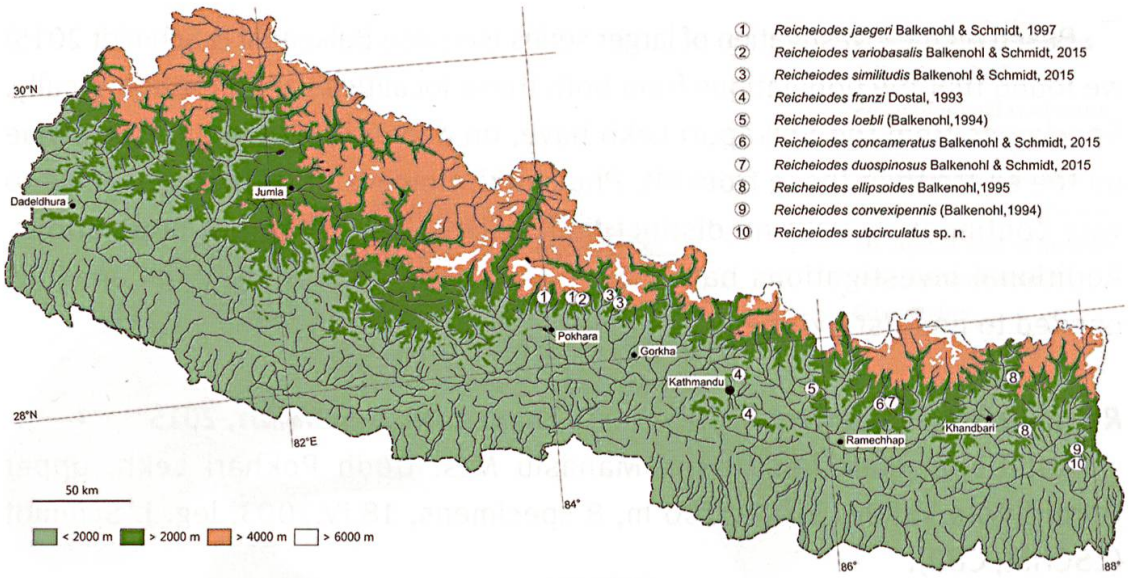


Fig. 12: Distribution of the species of the *Reicheiodes* subgenus *Himalayodes* in Nepal (recorded localities of all species plotted).

The anterior transverse line is more or less expressed as punctured line or broader punctures, and the lateral wrinkles vary from specimen to specimen. On the elytron the posterior one of the two dorsal setigerous punctures is more or less faintly developed (best visible at 120 times onwards), and the basal setigerous puncture is either situated in the projection of the first stria or slightly more approaching the extension of the second interval. In some specimens the coloration at the apex of the elytra is less pale than in the holotype.

Distribution (Fig. 12). Mountains directly to the east of the Arun Valley, East Nepal: Milke Danda, Jaljale Himal.

Habitat. Unknown.

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