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## A revision of *Nazeris* IX. Three new species from Nepal and additional records (Coleoptera: Staphylinidae: Paederinae)

Volker ASSING

**A b s t r a c t :** Three species of *Nazeris* FAUVEL, 1875 of the *N. flavocaudatus* group from East Nepal are described and illustrated: *Nazeris biapicalis* nov.sp., *N. hebes* nov.sp., and *N. trapezilobus* nov.sp. Additional records of three previously described species are reported from East Nepal and Lebanon. The pronounced intraspecific variation of external and sexual characters of *N. ammonita* (SAULCY, 1865) is discussed and illustrated. The genus now includes a total of 250 described species and seven subspecies. It is represented in the *Himalaya* (exclusive of China) by 52 described species.

**K e y w o r d s :** Coleoptera, Staphylinidae, Paederinae, *Nazeris*, Palaearctic region, Nepal, taxonomy, new species, new records, intraspecific variation.

### Introduction

According to ASSING (2016), the Palaearctic genus *Nazeris* FAUVEL, 1873 previously included 241 described species and seven subspecies, all of them micropterous and with more or less restricted distributions, with 125 and 49 described species confined to China and the Himalaya (exclusive of Chinese regions), respectively. In the meantime, six additional species have been described from China, three from Zhejiang and three from Xizang (HU, PAN & LI 2016; HU, TU & LI 2016). Thus, prior to the present study, *Nazeris* was represented by a total of 247 described species, 131 of which are restricted to China.

Material from East Nepal examined since the latest contribution (ASSING 2016) included three new species, as well as additional records of two previously described species. Moreover, recently collected material of *Nazeris ammonita* (SAULCY, 1865) from Lebanon necessitated a study of the intraspecific variation of this species.

### Material and methods

The material treated in this study is deposited in the following collections:

NME.....Naturkundemuseum Erfurt (M. Hartmann, assisted by W. Apfel)

cAss.....author's private collection

cFel .....private collection Benedikt Feldmann, Münster

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss Ger-

many) and a Jenalab compound microscope (Carl Zeiss Jena). The images were created using a digital camera (Nikon Coolpix 995) and a photographing device constructed by Arved Lompe (Nienburg) and CombineZ software.

Body length was measured from the anterior margin of the mandibles (in resting position) to the abdominal apex, the length of the forebody from the anterior margin of the mandibles to the posterior margin of the elytra, head length from the anterior margin of the frons to the posterior constriction of the head, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra (at the suture), and the length of the aedeagus from the apex of the ventral process to the base of the aedeagal capsule. The "parameral" side (i.e., the side where the sperm duct enters) is referred to as the ventral, the opposite side as the dorsal aspect.

Other measurements are abbreviated as follows: HL = head length from anterior margin of frons to posterior constriction of head; HW = maximal head width (including eyes); PL: length of pronotum along midline; PW = maximal width of pronotum; AL = length of aedeagus from apex of ventral process to base; rAL = length of aedeagus from apex of ventral process to distal margin of sperm duct opening.

### Descriptions and additional records

#### *Nazeris schawalleri* ASSING, 2014

**Material examined:** Nepal: 2♂♂, Solu Khumbu, SE Lukla, 27°41'N, 86°45'E, 3000-3100 m, 21.V.2013, leg. Schmidt (NME, cAss).

**Comment:** The above specimens were collected not far from the type locality, which is situated above Pangum, Solu Khumbu district (ASSING 2014b).

#### *Nazeris confluens* ASSING, 2014

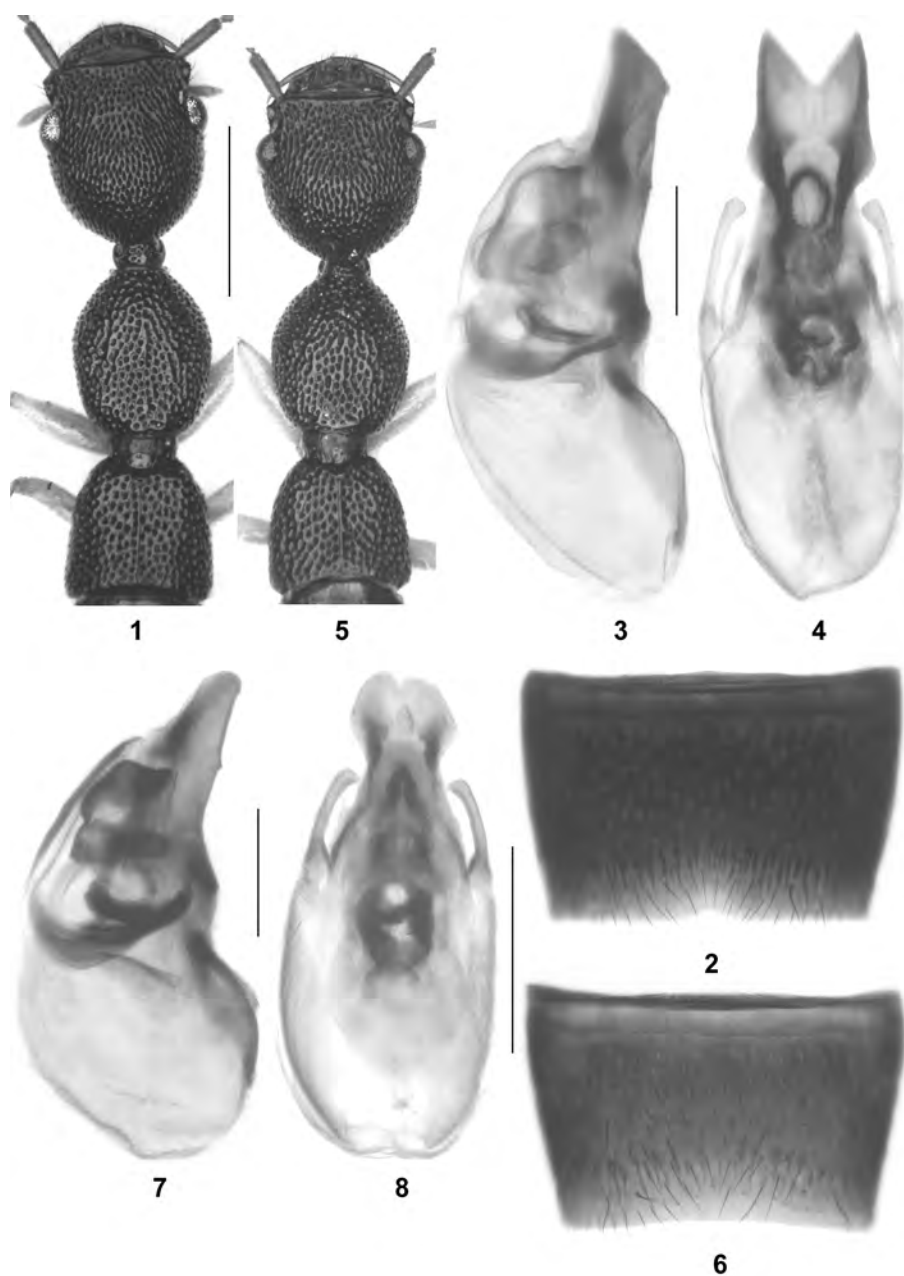
**Material examined:** Nepal: 4 exs., Arun valley, Deurali, 27°30'N, 87°16'E, ca. 2100 m, 10.IV.2014, leg. Schmidt (NME, cAss).

**Comment:** This species has been collected in several geographically close localities on the east side of the Arun valley, Kosi province, East Nepal (ASSING 2014b, 2016).

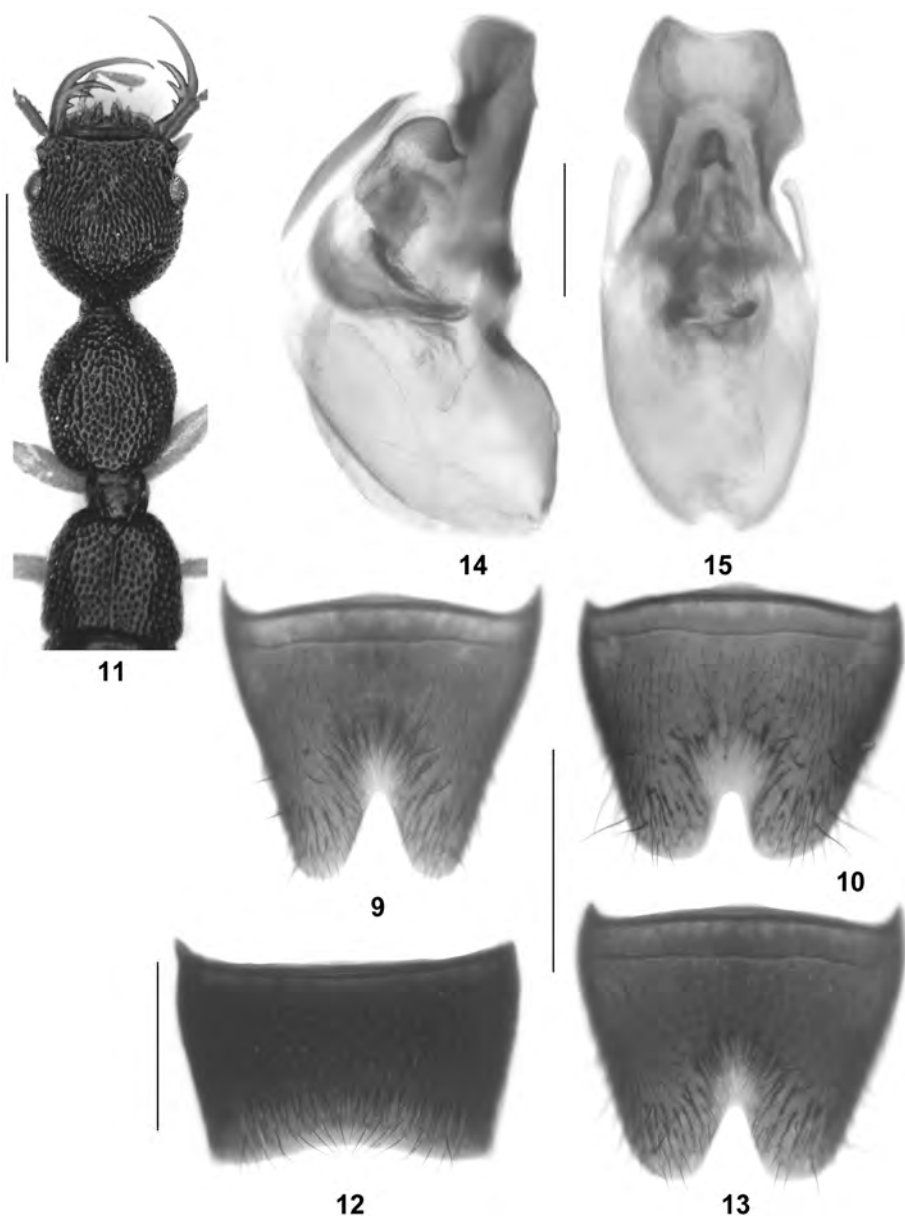
#### *Nazeris biapicalis* nov.sp. (Figs 1-4, 9)

**Type material:** Holotype ♂: "E-NEPAL, Arun Valley, Deurali, ca. 2100 mNN, 27°30'N, 87°16'E, 10.V.2014, leg. J. Schmidt / Holotypus ♂ *Nazeris biapicalis* nov.sp. det. V. Assing 2016" (NME). Paratypes: 4♀♀: same data as holotype (NME, cAss).

**Etymology:** The specific epithet (Latin, adjective) alludes to the apically bifid ventral process of the aedeagus in ventral view.



**Figs 1-8:** *Nazeris biapicalis* nov.sp. (1-4) and *N. hebes* nov.sp. (5-8): (1, 5) forebody; (2, 6) male sternite VII; (3-4, 7-8) aedeagus in lateral and in ventral view. Scale bars: 1, 5: 1.0 mm; 2, 6: 0.5 mm; 3-4, 7-8: 0.2 mm.



**Figs 9-15:** *Nazeris biapicalis* nov.sp. (9), *N. hebes* nov.sp. (10), and *N. trapezilobus* nov.sp. (11-15): (9-10, 13) male sternite VIII; (11) forebody; (12) male sternite VII; (14-15) aedeagus in lateral and in ventral view. Scale bars: 11: 1.0 mm; 9-10, 12-13: 0.5 mm; 14-15: 0.2 mm.

**Description:** Body length 5.5-7.0 mm; length of forebody 3.1-3.6 mm. Coloration: body black; legs pale-yellowish; antennae yellowish, with the basal antennomeres slightly darker.

Head (Fig. 1) oblong, 1.05-1.08 times as long as broad; frons depressed; postero-median portion of dorsal surface somewhat elevated; punctation dense, coarse, non-umbilicate, and mostly not confluent; interstices forming narrow ridges. Eyes less than one-third as long as distance from posterior margin of eye to posterior constriction of head. Antenna 1.9-2.1 mm long.

Pronotum (Fig. 1) approximately 1.2 times as long as broad and 0.80-0.85 times as broad as head; punctation very coarse, coarser than that of head, very dense everywhere.

Elytra (Fig. 1) approximately 0.6 times as long as pronotum; punctation similar to that of pronotum.

Abdomen broader than elytra; punctation very dense and coarse on tergites III-VI, gradually becoming less coarse and less dense from tergite VI or VII; interstices without microsculpture; posterior margin of tergite VII without palisade fringe.

♂: sternite VII (Fig. 2) distinctly transverse, 1.55 times as broad as long, with unmodified and rather sparse pubescence, posterior margin with shallow median excision; sternite VIII (Fig. 9) weakly transverse, posterior excision narrowly V-shaped and rather deep, 0.3 times as deep as length of sternite, anterior to this excision with small pale impression; aedeagus (Figs 3-4) 0.9 mm long and of distinctive shape; ventral process with sharply V-shaped excision apically; dorso-lateral apophyses slender, weakly sclerotized, apically weakly dilated, and short, apically extending only to base of ventral process.

**Comparative notes:** Based on the shape of the male sternite VII, the transverse and impressed male sternite VIII, and particularly the morphology of the aedeagus, this species belongs to the *N. flavocaudatus* group, which previously included 16 species and whose distribution ranges from East Nepal across West Bengal eastwards to Sikkim (ASSING 2014b). Among the species of this group, the aedeagus of *N. biapicalis* is most similar to that of *N. flavocaudatus* ASSING, 2014 (West Bengal: Darjeeling district), from which the new species differs by the blackish coloration of the body (including the abdominal apex), less coarse punctation of the forebody, and by the shape of the aedeagus both in ventral and in lateral view. For illustrations of *N. flavocaudatus* see ASSING (2014b).

**Distribution and natural history:** The type locality is situated in East Nepal. The specimens were collected at an altitude of 2100 m, together with *N. confluens*.

#### ***Nazeris hebes* nov.sp.** (Figs 5-8, 10)

**Type material:** Holotype ♂: "NEPAL, E, Therathum distr., N Basantapur, 2650-2700 m, 28.-29.V.2016, leg. J. Schmidt, 27°10'21"N, 87°45'14"E A / Holotypus ♂ *Nazeris hebes* nov.sp. det. V. Assing 2016" (NME). Paratypes: 2♂♂, 1♀: same data as holotype (NME, cAss).

**Etymology:** The specific epithet (Latin, adjective: blunt) alludes to the apically blunt ventral process of the aedeagus in lateral view, one of the characters distinguishing this species from the similar *N. imberbis* ASSING, 2014.

**Description:** Body length 5.7-6.5 mm; length of forebody 3.1-3.3 mm. Coloration: body dark-brown to black; legs pale-yellowish; antennae yellowish, with the basal antennomeres slightly darker.

Head (Fig. 5) weakly oblong or as long as broad; frons depressed; postero-median portion of dorsal surface somewhat elevated; punctation dense, coarse, and non-umbilicate, extensively confluent in median and antero-median portion of dorsal surface; interstices forming narrow ridges. Eyes less than one-third as long as distance from posterior margin of eye to posterior constriction of head. Antenna approximately 1.8 mm long.

Pronotum (Fig. 5) 1.15-1.20 times as long as broad and approximately 0.85 times as broad as head; punctation very coarse, slightly coarser than that of head, very dense everywhere, partly slightly confluent.

Elytra (Fig. 5) 0.55-0.60 times as long as pronotum; punctation similar to that of pronotum, but not confluent.

Abdomen broader than elytra; punctation dense and coarse, slightly less coarse and less dense on posterior than on anterior tergites; interstices without microsculpture; posterior margin of tergite VII without palisade fringe.

♂: sternite VII (Fig. 6) strongly transverse, approximately 1.7 times as broad as long, with unmodified and moderately sparse pubescence, posterior margin very shallowly concave, without median excision; sternite VIII (Fig. 10) transverse, posterior excision anteriorly rounded (not acute) and moderately deep, barely 0.25 times as deep as length of sternite, anterior to this excision with impression without pubescence; aedeagus (Figs 7-8) approximately 0.75 mm long and of distinctive shape; ventral process with minute median excision apically in ventral view; dorso-lateral apophyses slender, moderately sclerotized, apically weakly dilated, and short, apically extending slightly beyond base of ventral process.

**Comparative notes:** Like *N. biapicalis*, *N. hebes* belongs to the *N. flavocaudatus* group. Regarding the shape of the aedeagus, it is most similar to *N. imberbis* from Solu Khumbu and Bhojpur districts, East Nepal. *Nazeris hebes* differs from this species by the denser and extensively confluent punctation of the head, by the shape of the posterior excision of the male sternite VIII (*N. imberbis*: posterior excision deeper and anteriorly acute), and by the shape of the aedeagus (*N. imberbis*: ventral process basally broader in ventral view and apically acute in lateral view). For illustrations of *N. imberbis* see ASSING (2014b). For characters distinguishing *N. hebes* from the syntopic *N. trapezilobus* see the comparative notes in the following section.

**Distribution and natural history:** The type locality is situated to the north of Basantapur in Therathum district, East Nepal. The specimens were collected at an altitude of 2650-2700 m, together with the similar and closely related *N. trapezilobus*.

#### ***Nazeris trapezilobus* nov.sp.** (Figs 11-15)

**Type material:** Holotype ♂: "NEPAL, E, Therathum distr., N Basantapur, 2650-2700 m, 28.-29.V.2016, leg. J. Schmidt, 27°10'21"N, 87°45'14"E A / Holotypus ♂ *Nazeris trapezilobus* nov.sp. det. V. Assing 2016" (NME). Paratypes: 4♂♂, 1♀: same data as holotype (NME, cAss); 2♂♂: "E-NEPAL Sankhuwasabha/Therathum Distr., S of Gupha, 29-3000 m, 26.V.16, lg. Schmidt, 27°16'23"N 87°29'47"E" (NME, cAss).

**Etymology:** The specific epithet is a noun in apposition and alludes to the trapezoid shape of the ventral process of the aedeagus in ventral view.

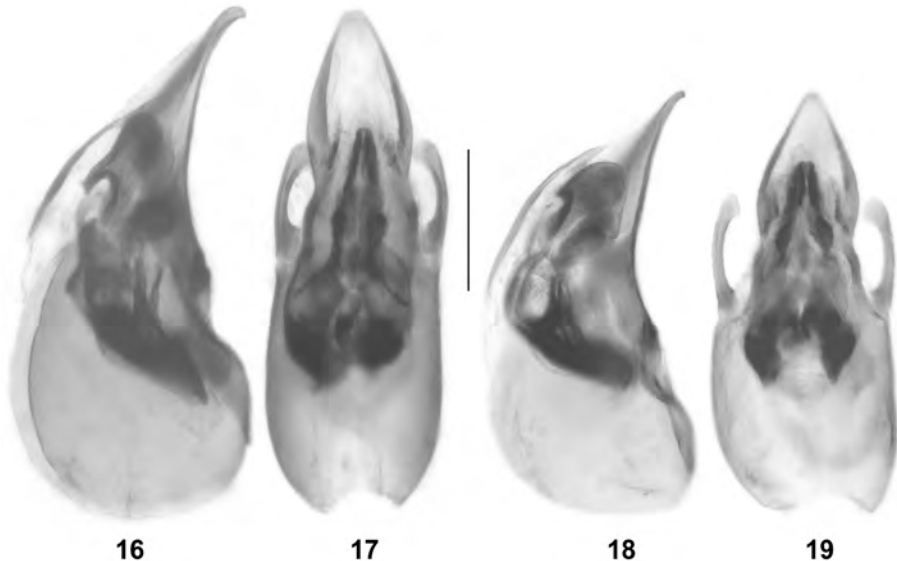
**Description:** Coloration, size, and other external characters (Fig. 11) as in the syntopic *N. hebes*, except as follows:

Punctuation of abdomen slightly denser on average.

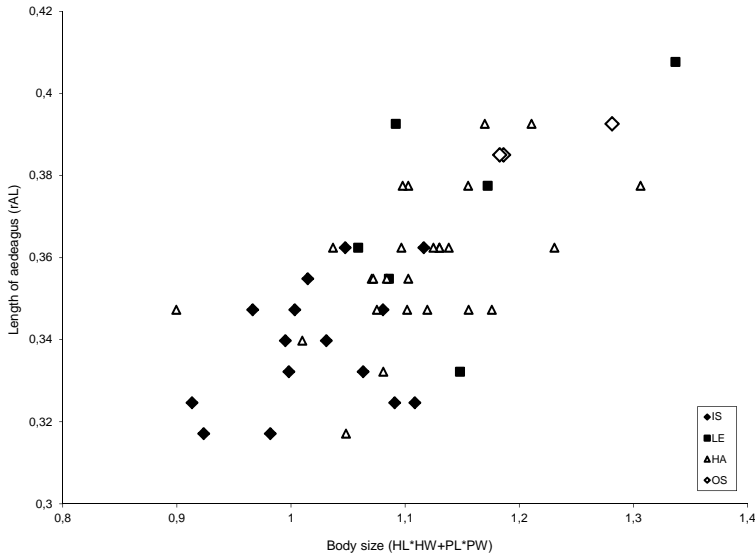
♂: sternite VII (Fig. 12) strongly transverse, approximately 1.9 times as broad as long (length measured along middle), with unmodified and rather dense pubescence, posterior margin broadly and distinctly concave, without median excision; sternite VIII (Fig. 13) transverse, posterior excision V-shaped and approximately 0.28 times as deep as length of sternite, anterior to this excision with small impression without pubescence; aedeagus (Figs 14-15) approximately 0.8 mm long and of distinctive shape; ventral process large, of trapezoid shape, and apically broadly concave in ventral view; dorso-lateral apophyses slender, moderately sclerotized, apically weakly dilated, and short, apically extending slightly beyond base of ventral process.

**Comparative notes:** *Nazeris trapezilobus*, too, belongs to the *N. flavocaudatus* group. Among the species of this group, it is characterized particularly by the strongly transverse and posteriorly distinctly concave male sternite VII and by the distinctive shape of the ventral process of the aedeagus. It is reliably distinguished from the syntopic *N. hebes* only by the different shape and denser pubescence of the male sternite VII, by the differently shaped posterior excision of the male sternite VIII, and by the shape of the aedeagus.

**Distribution and natural history:** The type locality is identical to that of *N. hebes*. Two paratypes were collected in a close locality at the border of Therathum and Sankhuwasabha districts. The altitudes range from approximately 2700 to approximately 3000 m.



**Figs 16-19:** *Nazeris ammonita* (SAULCY) from Rayfoun, Lebanon (16-17) and from Israel (18-19): aedeagus in lateral and in ventral view. Scale bar: 0.2 mm.



**Fig. 20:** Length of aedeagus in relation to body size in *Nazeris ammonita* (SAULCY) from Israel (IS), Lebanon (LE), Hatay (HA), and Osmaniye (OS). For body size, an approximation of the sum of the surfaces of the head and pronotum ( $HL \cdot HW + PL \cdot PW \text{ mm}^2$ ) is used. Aedeagal length is given as rAL mm (see material and methods section) to avoid bias due to different modes of preparation.

#### *Nazeris ammonita* (SAULCY, 1865) (Figs 16-20)

**Material examined:** Lebanon: 1 ♀, Rayfoun, 33°58'N, 35°42'E, 990 m, mixed oak forest, pitfall trap, IV.2015, leg. Reuter (cFel); 2 ♀ ♀, same data, but V.2015 (cFel); 2 ♀ ♀, same data, but IV.2016 (cFel); 1 ♂, same data, but XI.2013 (cAss).

**Comment:** *Nazeris ammonita* is distributed in the Middle East from the Turkish province Osmaniye in the north to Israel and Jordan in the south (ASSING 2001, 2009, 2014a). The above material from Lebanon is characterized by rather large body size, rather uniform dark-brown to blackish-brown coloration of the body, and a large aedeagus (Figs 16-17) distinguished from that of populations from Israel not only by size, but also by slight differences in the shape of the ventral process in lateral and in ventral view (Figs. 18-19). In order to interpret these character conditions 50 males from Israel, Lebanon, and the Turkish provinces Hatay and Osmaniye were dissected and measured. This study revealed an enormous variability not only of coloration and size, but also of head shape, shape of the pronotum (see ratios  $HL/HW$ ,  $PW/HW$ , and  $PL/PW$  below), as well as of the size of the aedeagus and the shape of the ventral process. Material from Israel is generally smaller and of paler coloration than specimens from Lebanon. However, these character conditions are variable even within populations and largely overlap, and I have been unable to detect character combinations discretely subdividing the material into two fractions. The size of the aedeagus distinctly correlates with body size and does not provide any evidence either, suggesting that more than one species should be present in the region (Fig. 20). In consequence, the observed differences are interpreted as intra- rather than interspecific variation.



Like all its extant congeners, *N. ammonita* is a flightless species and consequently has little dispersal power. Suitable habitats (forests, shrubland, and grassland have had a patchy distribution particularly in the south of the range of *N. ammonita* at least since the pleistocene. Isolated gene pools and reduced gene flow across much of the distribution of the species would explain the enormous extent of intraspecific variation.

Measurements (in mm) and ratios (range, arithmetic mean; n = 50 ♂): HL: 0.72-0.86, 0.79; HW: 0.66-0.80, 0.73; PL: 0.68-0.88, 0.78; PW: 0.59-0.74, 0.67; AL: 0.54-0.76, 0.62; rAL: 0.32-0.41, 0.36; HL/HW: 1.03-1.13, 1.08; PW/HW: 0.89-0.96, 0.92; PL/PW: 1.10-1.22, 1.17.

### Acknowledgements

I am indebted to Matthias Hartmann (NME) and Wolfgang Apfel (Eisenach) for arranging the loan of the material which this study is based on. Benedikt Feldmann proof-read the manuscript.

### Zusammenfassung

Drei Arten der Gattung *Nazeris* FAUVEL, 1875 der *N. flavocaudatus*-Gruppe aus Ost-Nepal werden beschrieben und abgebildet: *Nazeris biapicalis* nov.sp., *N. hebes* nov.sp. und *N. trapezilobus* nov.sp. Weitere Nachweise von zwei beschriebenen Arten werden aus Ost-Nepal gemeldet. Eine Untersuchung von äußeren Merkmalen sowie der Größe und Form des Aedoeagus von *N. ammonita* (SAULCY, 1865) ergab eine bemerkenswerte Variabilität, die mit der geringen Ausbreitungsfähigkeit und der Verteilung geeigneter Habitate im Verbreitungsgebiet erklärt wird. Die Gattung umfasst damit derzeit insgesamt 250 beschriebene Arten und sieben Unterarten. Im Himalaya (ohne China) ist sie mit 52 beschriebenen Arten vertreten.

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Author's address: Dr. Volker ASSING  
Gabelsbergerstr. 2, D-30163 Hannover, Germany  
E-mail: vassing.hann@t-online.de

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