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A new *Atheta* species from the West Caucasus and a redescription of *A. brevapicalis* (Coleoptera: Staphylinidae: Aleocharinae)

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A b s t r a c t : *Atheta* ("*Alaobia*") *specicola* nov.sp. (Russia: Krasnodarskiy Kray), a cavernicolous species closely allied to *A. trinotata* (KRAATZ, 1856), and *A. brevapicalis* ASSING & VOGEL, 2017 are (re-)described and illustrated. Newly collected material revealed that the type series of *A. brevapicalis* is composed of two species. Additional records of *A. brevapicalis*, including the first records from Iran, are reported; the distribution of the species is mapped.

K e y w o r d s : Coleoptera, Staphylinidae, Aleocharinae, *Atheta*, taxonomy, new species, Russia, Armenia, Iran, new records, distribution map.

Introduction

Although *Atheta* THOMSON, 1858 represents one of the largest genera of organisms, only relatively few species have been recorded from the Caucasus region. An extreme case is Armenia, from where, according to SCHÜLKE & SMETANA (2015), only seven species had been reported up until the end of 2014. ASSING & VOGEL (2017) recorded nine additional species from this country, seven of them new to science, primarily based on the results of a field trip to Armenia in summer 2016.

Another field trip conducted to Armenia by Michael Schülke (Berlin) and the author in summer 2017 yielded more than 1500 specimens of *Atheta*, among them several specimens of *Atheta brevapicalis* ASSING & VOGEL, 2017. A study of this material revealed that the sole female paratype of this species is not conspecific with the two male type specimens. An undescribed species allied to *Atheta trinotata* (KRAATZ, 1856) from a cave in the West Caucasus was found in material collected by Andreas Pütz (Eisenhüttenstadt).

Material and methods

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

MNB Museum für Naturkunde, Berlin (incl. coll. Schülke; J. Frisch, M. Schülke)

cAss..... author's private collection

cPüt private collection Andreas Pütz, Eisenhüttenstadt

cVog..... private collection Jürgen Vogel, Görlitz

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss), a Discovery V12 microscope (Zeiss), and a Jenalab compound microscope (Carl Zeiss Jena). The images were created using a digital camera (Nikon Coolpix 995), as well as a photographing device constructed by Arved Lompe (Nienburg) and CombineZ software. The map was created using MapCreator 2.0 (primap) software.

Body length was measured from the anterior margin of the labrum to the abdominal apex, the length of the forebody from the anterior margin of the labrum to the posterior margin of the elytra, head length along the middle from the anterior margin of the clypeus to the posterior carina of the head, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra, and the length of the median lobe of the aedeagus from the apex of the ventral process to the base of the 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.

Results

Atheta (Atheta) brevapicalis ASSING & VOGEL, 2017 (Figs 1-9, 13, Map 1)

Material examined: Armenia: 1♂, S Martuni, Sulema Pass, 39°57'58"N, 45°14'13"E, 2340 m, slope with small stream and scattered bushes, litter and roots near stream sifted, 8.VII.2017, leg. Assing (cAss); 2♀♀, 40 km NW Sisian, Vorotan Pass, 39°41'48"N, 45°41'28"E, 2090 m, grassy slope with scattered bushes, litter, debris, and moss sifted, 8.VII.2017, leg. Assing (cAss); 2♂♂, 2♀♀, pass N Goris, 39°35'34"N, 46°19'29"E, 1990 m, N-slope with small stream valleys with and without water, litter, debris, and moss sifted, 9.VII.2017, leg. Schülke (MNB, cVog); 1♀, 25 km SW Kapan, 39°04'01"N, 46°16'10"E, 2150 m, near stream, litter of *Salix* and debris sifted, 10.VII.2016, leg. Schülke (MNB). Iran: 1♂, 1♀, Kerman province, Küh-e Hezār plain above Ābshār-e Rāyen water fall, SW Rāyen, 29°33'N, 57°18'E, 2920 m, stream bank, 5.VI.2014, leg. Wrase (MNB, cAss); 1♀, Tehran province, Elburz range., Kandovan Pass, N Tajrish, 36°10'N, 51°18'E, 2850 m, stream bank, 10.VI.2014 leg. Wrase & Laser" (MNB)

Comment: The original description is based on two males (holotype, paratype) and one female paratype, all of them from the same locality in South Armenia. A revision of the type material and a comparison with the newly available material (see above) revealed that the type series is composed of two species. The male type specimens are conspecific with the above material, whereas the female belongs to an undescribed species. Also, based on the structure of the spermatheca, *A. brevapicalis* is closely allied to *A. triangulum* (KRAATZ, 1856) and not to *A. pechlaneri* SCHEERPELTZ, 1933, as hypothesized by ASSING & VOGEL (2017). In order to rectify the previous confusion, a redescription is provided below. For illustrations of the forebody, the antenna, and the male primary and secondary sexual characters see figures 1-6 in ASSING & VOGEL (2017).

Redescription: Body length 3.6-4.5 mm; length of forebody 1.6-2.0 mm. Coloration: body black, except for a more or less pronounced, diagonal and narrowly wedge-shaped dark-yellowish band on the elytra, extending from the humeral angles to the posterior sutural angles; legs with dark-brown to blackish-brown femora, dark-yellowish to yellowish-brown tibiae, and yellowish tarsi; antennae and maxillary palpi blackish, except for the yellowish palpomere IV.

Head weakly transverse; punctuation fine and rather sparse; interstices with pronounced microreticulation composed of fine isodiametric meshes. Eyes large, longer than

postocular region in dorsal view. Antenna 1.2-1.3 mm long and slender; antennomeres IV-X gradually increasing in width, but of similar shape, all weakly transverse; antennomere XI elongate, nearly as long as the combined length of antennomeres VIII-X.

Pronotum 1.20-1.25 times as broad as long and about 1.2 times as broad as head; pubescence of type I (i.e., directed anteriorly along midline and more or less transversely laterad in lateral portions); punctuation similar to that of head, or denser; interstices with pronounced microreticulation composed of isodiametric meshes.

Elytra slightly longer than pronotum; punctuation approximately as dense as, and slightly more distinct than that of pronotum; interstices with shallow microreticulation. Hind wings fully developed.

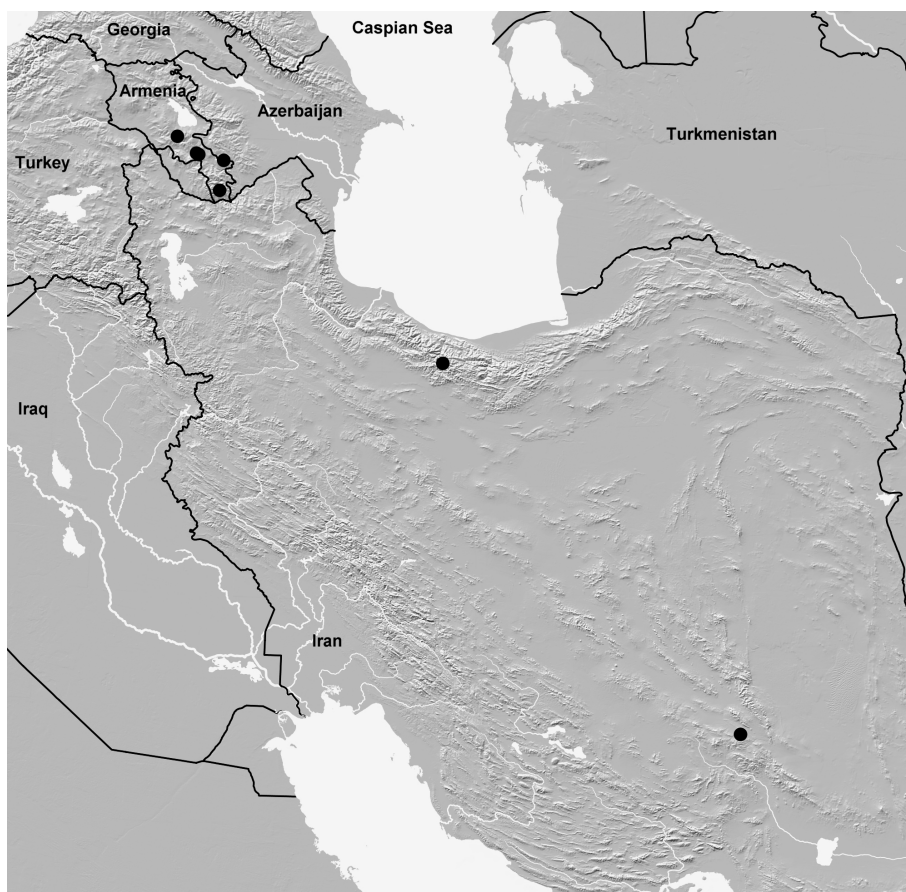
Abdomen narrower than elytra; punctuation fine and rather sparse; microsculpture composed of long transverse meshes on tergites III-VI, of a mix of long and short transverse meshes on tergite VII, and predominantly of short transverse or isodiametric meshes on tergite VIII; posterior margin of tergite VII with palisade fringe; tergite VIII with pronounced sexual dimorphism.

♂: posterior margin of tergite VIII truncate to weakly concave and dentate, with 5-8 smaller teeth and a pronounced lateral tooth on either side; sternite VIII with strongly convex posterior margin; median lobe of aedeagus approximately 0.4 mm long and shaped as in Figs 1-6.

♀: posterior margin of tergite VIII weakly and more or less broadly concave in the middle; posterior margin of sternite VIII weakly and broadly convex, in the middle weakly concave, and with moderately long brown marginal setae (Fig. 13); spermatheca as in Figs 7-9, without finger-shaped structures at the base of the distal portion of the capsule.

Comparative notes: In external (size, habitus, coloration) and the secondary sexual characters, *A. brevapicalis* is highly similar to *A. triangulum*. It is reliably distinguished from this species only by less transverse antennomeres V-X and by the primary sexual characters. In *A. brevapicalis*, the ventral process of the aedeagus is apically broader and more obtuse (lateral view). Moreover, the spermatheca lacks the finger-shaped structures at the base of the distal portion, the distal portion is more slender and distally not distinctly dilated, and the proximal portion is much longer. For illustrations of the aedeagus and spermatheca of Armenian material of *A. triangulum* see Figs 10-12. From the undescribed species with which it was previously confounded, *A. brevapicalis* is distinguished by the diagonal yellowish band on the elytra, finer punctuation of the head, finer punctuation of the elytra, a medially concave posterior margin of the female sternite VIII, and by the completely different shape of the spermatheca. For illustrations of the female secondary sexual characters of the undescribed species (female paratype of *A. brevapicalis*) see figures 11-13 in ASSING & VOGEL (2017).

Distribution and natural history: *Atheta brevapicalis* is currently known from six localities in Armenia and two in Iran, from where this species is reported for the first time. The specimens were sifted from litter, debris, and roots near streams, often beneath willow or small bushes, at altitudes of 2090-2570 m (Armenia) and 2850-2920 m (Iran).



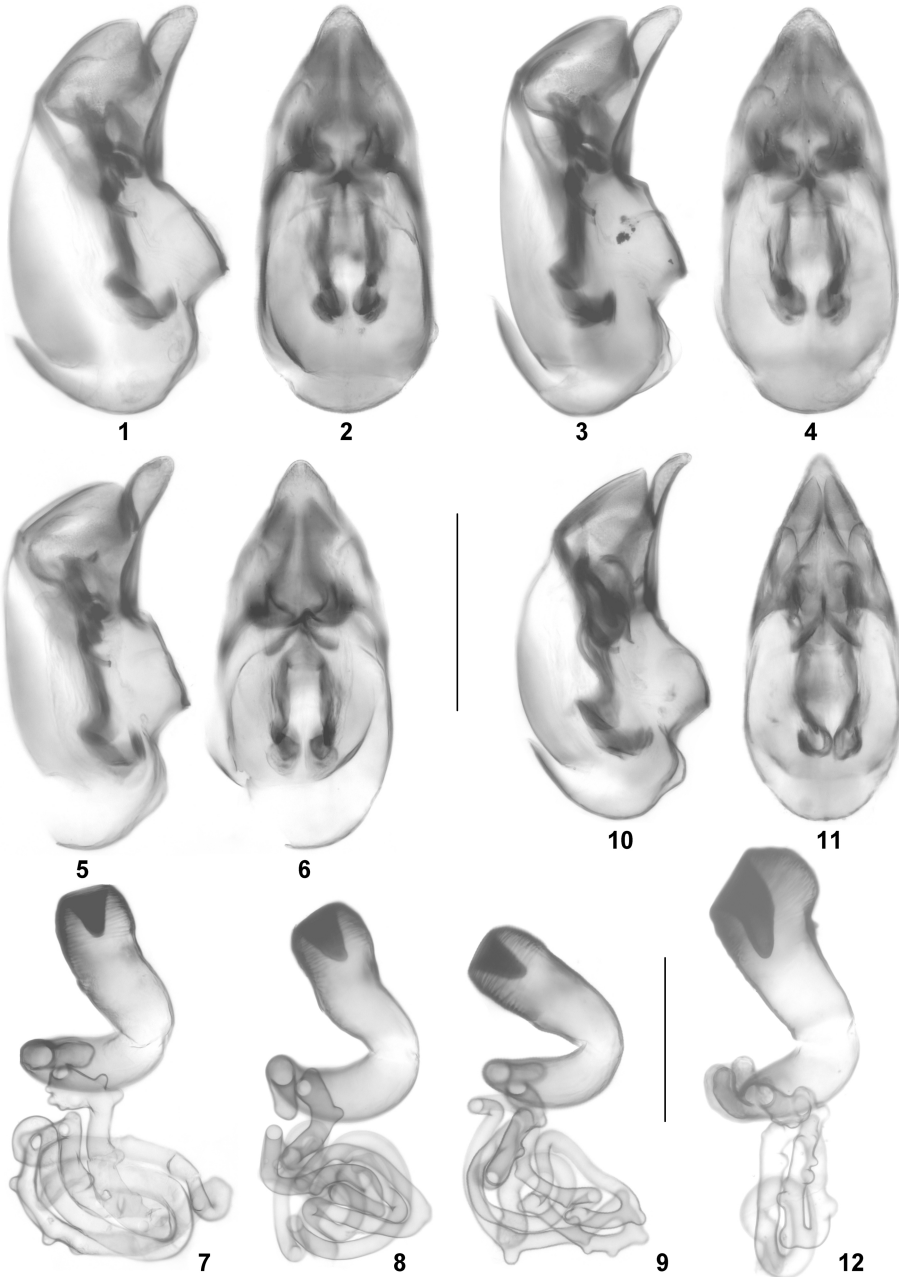
Map 1: Distribution of *Atheta brevapicalis*.

***Atheta* ("Alaobia") *specicola* nov.sp.** (Figs 14-21)

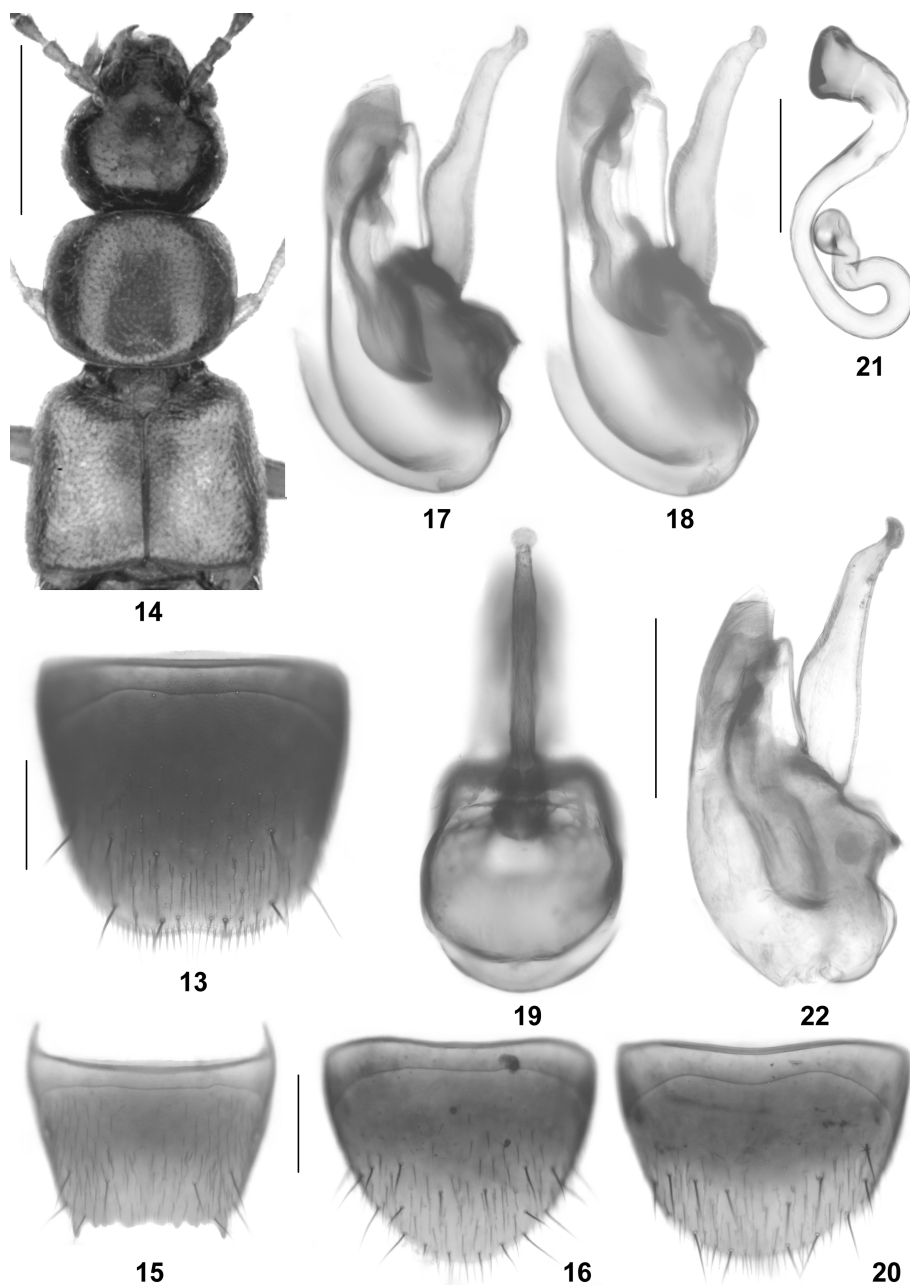
Type material: Holotype ♂: "RUSSIA, NW Caucasus, (Krasnodarkij Kraj), Chernomorskiy Mts. rng., cave, NE Podgornoye, on bat excrements, 638 m, 44°07'51.4"N, 41°05'54.2"E, 26.V.2014 leg. A. Pütz / Holotypus ♂ *Atheta specicola* sp. n. det. V. Assing 2016" (cPüt). Paratypes: 30 exs.: same data as holotype (cPüt, cAss).

E t y m o l o g y : The specific epithet is a noun in apposition meaning cave inhabitant (from the Latin noun specus).

D e s c r i p t i o n : Body length 2.7-3.8 mm; length of forebody 1.4-1.8 mm. Coloration: head blackish-brown to black; pronotum dark-brown to blackish-brown; elytra dark-yellowish to yellowish-brown with the scutellar region distinctly and occasionally the postero-lateral portions indistinctly infuscate; abdomen blackish with the apex (posterior portion of segment VII and segments VIII-X) reddish-yellow to pale-brown; legs dark-yellowish; antennae blackish, with the basal 2-3 antennomeres reddish-yellow.



Figs 1-12: *Atheta brevipicalis* from Armenia (1-4, 7-8) and Iran (5-6, 9) and *A. triangulum* from Armenia (10-12): (1-6, 10-11) median lobe of aedeagus in lateral and in ventral view; (7-9, 12) spermatheca. Scale bars: 0.2 mm.



Figs 13-22: *Atheta brevipicalis* from Armenia (13), *A. specicola* (14-21), and *A. trinotata* from Germany (22): (13, 20) female sternite VIII; (14) forebody; (15) male tergite VIII; (16) male sternite VIII; (17-19, 22) median lobe of aedeagus in lateral and in ventral view; (21) spermatheca. Scale bars: 14: 0.5 mm; 13, 15-22: 0.2 mm.

Head (Fig. 14) transverse, approximately 1.1 times as broad as long, and distinctly wedge-shaped, dilated behind eyes, broadest posteriorly; punctation fine and rather dense; interstices with pronounced microreticulation. Eyes weakly convex, not distinctly projecting from lateral contours of head, slightly shorter than postocular region in dorsal view. Antenna 0.9-1.0 mm long; antennomere IV weakly transverse; antennomeres V-X of increasing width and increasingly transverse, X approximately twice as broad as long.

Pronotum (Fig. 14) 1.20-1.25 times as broad as long and about 1.2 times as broad as head, small in relation to head; pubescence of type II (i.e., directed posteriad along midline and diagonally postero-laterad in lateral portions); punctation fine and rather dense; interstices with pronounced microreticulation.

Elytra (Fig. 14) approximately 0.9 times as long as pronotum; punctation dense and fine, but more distinct than that of head and pronotum; interstices with microreticulation. Hind wings fully developed.

Abdomen narrower than elytra; punctation fine, rather dense on tergites III-VI, sparse on tergites VII-VIII; microsculpture shallow and transverse; posterior margin of tergite VII with palisade fringe.

♂: tergite VIII (Fig. 15) transverse, posterior margin truncate, weakly serrate, and with a prominent tooth on either side; sternite VIII (Fig. 16) transverse, much longer than tergite VIII, posterior margin strongly and convexly produced in the middle; median lobe of aedeagus (Figs 17-19) 0.53-0.54 mm long; ventral process long and of distinctive shape.

♀: tergite VIII transverse, posterior margin smooth and more or less truncate in the middle; sternite VIII (Fig. 20) slightly longer than tergite VIII and with broadly convex posterior margin; spermatheca as in Fig. 21.

C o m p a r a t i v e n o t e s : As can be inferred from the similarly derived morphology of the aedeagus, the similar modifications of the male and female tergites and sternites VIII, as well as from the similar shape of the spermatheca, *A. specicola* is closely related to *A. trinotata* (KRAATZ, 1856) and allied species. These species are currently assigned to the - most likely polyphyletic - subgenus *Alaobia* THOMSON, 1858. There is no unambiguous synapomorphy shared by the species of the *A. trinotata* group with the type species of *Alaobia*, *A. scapularis* (SAHLBERG, 1831). Thus, the subgeneric assignment of *A. specicola* should be considered doubtful and is indicated in quotation marks above.

Among the species of the *A. trinotata* group, the sexual characters of *A. specicola* are most similar to those of the widespread *A. trinotata*, from which the new species differs both by external (head wedge-shaped and larger in relation to pronotum; eyes distinctly smaller and less prominent; antennae shorter and with more transverse antennomeres IV-X and with yellowish basal antennomeres; elytra shorter) and sexual characters. In *A. specicola*, the ventral process of the aedeagus is more slender and of slightly different shape. For comparison, the median lobe of the aedeagus of a male of *A. trinotata* from Germany is illustrated in Fig. 22. From *A. spelaea* (ERICHSON, 1939), a widespread cave-inhabiting species of the *A. trinotata* group, with which *A. specicola* shares not only a similar habitat, but also a similar habitus and a similar shape of the spermatheca, the new species is distinguished by shorter antennae with more transverse preapical antennomeres, a more strongly wedge-shaped head, a smaller pronotum (in relation to head), a

truncate posterior margin of the male tergite VIII (concave in *A. spelaea*), a posteriorly more strongly produced male sternite VIII, and above all the completely different shape of the ventral process of the aedeagus.

Distribution and natural history: The type locality is situated in the Chernomorskiy mountain range, Krasnodarskiy Kray, in the Northwest Caucasus. The specimens were collected from bat dung in a cave at an altitude of approximately 640 m.

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Zusammenfassung

Atheta ("Alaobia") *specicola* nov.sp. (Russland: Krasnodarskiy Kray), eine höhlenbewohnende und mit *A. trinotata* (KRAATZ, 1856) nah verwandte Art, und *A. brevapicalis* ASSING & VOGEL, 2017 werden beschrieben bzw. redeskribiert und abgebildet. Eine Untersuchung von neuem Material ergab, dass sich die Typenserie von *A. brevapicalis* aus zwei Arten zusammensetzt. Weitere Nachweise von *A. brevapicalis* werden gemeldet, darunter die ersten Nachweise aus dem Iran. Die derzeit bekannte Verbreitung dieser Art wird anhand einer Karte illustriert.

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