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Ginkgoscia relicta gen.n. et sp.n. from China (Coleoptera: Hydraenidae)

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Abstract

Ginkgoscia relicta gen.n. et sp.n. (Coleoptera: Hydraenidae) is described from China (Zhejiang). The new genus is placed in the subfamily Ochthebiinae, because it shares some presumptive synapomorphies with the Chilean genus *Ochtheosus* PERKINS.

Key words: Coleoptera, Hydraenidae, Ochthebiinae, new genus, new species, China, Zhejiang.

Introduction

Only one year ago, a most remarkable, new hydraenid genus, *Edaphobates* JÄCH & DÍAZ, was described in the third volume of the Water Beetles of China (JÄCH & DÍAZ 2003). Soon after its publication we were able to examine a collection of water beetles taken by M. Wang in the Chinese province of Zhejiang. To our utmost surprise, this material contained another most unusual, undescribed hydraenid genus, which, in contrast to *Edaphobates*, is obviously aquatic and appears to represent a very basal taxon within the ochthebiine lineage.

Although all available specimens are females we think that this peculiar new genus deserves formal description, bringing the total number of recognized hydraenid genera to 40.

We wish to thank M. Wang (Shenyang) for collecting and sending the type material. We are greatly indebted to W. Zelenka (Wien) for the habitus illustration.

Ginkgoscia gen.n.

TYPE SPECIES (by monotypy): *Ginkgoscia relicta* sp.n.

DESCRIPTION: Habitus (Fig. 1). Dorsal surface moderately densely setose, covered with strongly recumbent setae.

Clypeus forming distinct angle with labrum; strongly produced and widely explanate laterally, strongly transverse; lateral margins upturned and bulgy. Frontoclypeal (epistomal) suture deeply impressed, but effaced at bulgy lateral margin. Frons very wide, distinctly produced and upturned laterally in front of eyes; disc with median, H- or W-shaped gibbosity. Ocelli large and glabrous, more or less halfway between middle and eye. Compound eyes very large. Neck region (retracted part of head) separated from anterior (exposed) part of head by distinct edge. Mentum wider than long, trapezoidal, widest posteriorly; with a pair of large deep impressions in posterior half. Submentum well developed, transverse, with prominent median longitudinal ridge. Genae with two medially interrupted transgenal ridges, an antennal furrow and various subocular ridges; genal suture indicated by narrow glabrous line. Gula short, subtriangular; laterally with one pair of elongate oblique, deeply impressed pits. Labrum in almost vertical position; transverse; anterior margin widely arcuately emarginate; anterolateral angles rounded; anterior smooth portion and posterior matt portion distinctly separated. Antenna (Fig. 2) eleven-segmented, about as long as anterior tibia; inserted in pit below frontoclypeal margin; scapus elongate; pedicellus short, wide, almost pear-shaped, pedunculate, slightly longer than wide,

tapering apically; segment 3 slender, elongate, segments 4 and 5 very small, subquadrate; segment 6 weakly cupuliform; segments 7-11 not pedunculate, forming loose pubescent club; segments 8-10 distinctly asymmetrical. Maxilla (Fig. 3): distal segment of galea moderately long, slender, with apical rows of curved setae (fimbriate condition) and with conspicuous ventro-lateral projection bearing some long setae; lacinia moderately wide, straight, with apical rows of curved setae and groups of acute and blunt setae; maxillary palpi very short, hardly half as long as distance between eyes; first palpomere very short, second palpomere elongate and slightly curved, third palpomere short, apically widened, fourth palpomere elongate, spindle-shaped, distinctly longer than third palpomere.

Pronotum distinctly wider than long, disc very strongly convex in cross section. Lateral parts widely explanate, only very slightly declivitous, strongly arcuately retracted in basal 0.3. Anterior corners widely rounded; lateral rim crenulate. Posterior margin of pronotum slightly produced at middle. Disc with pair of moderately large, admedian rounded gibbosities near middle; anterior and posterior transverse grooves present. Prosternum rather short, with median longitudinal ridge, intercoxal process narrow. Hypomeral antennal pocket large, wide and deep, covering anterior half of hydrofuge hypomeron, micropunctate and microreticulate; hydrofuge hypomeron separated from lateral hypomeron by crested undulating (weakly S-shaped) ridge. Mesoventrite (= preepisternum 2) with strongly reinforced anterior collar, a pair of admedian and a pair of lateral ridges; lateral ridges forked in front of mesocoxae; admedian ridges and median branch of lateral ridges joining posteriorly to form a prominent intercoxal ridge. Suture between mesoventrite and anepisternum 2 indicated weakly by very faint ridge. Mesocoxal cavities strongly transverse, disjunct; mesepimeron subtriangular, rather broadly reaching mesocoxal cavity. Mesocoxae subglobular, distinctly separated, slightly projecting. Scutellar shield small, triangular, more or less completely concealed under projecting posterior margin of pronotum. Elytra well sclerotized, strongly convex in cross section and strongly declivitous apically; covering abdomen completely; lateral rim serrate. Dorsal surface with rows of serial punctures; in discal area rows strongly irregular; serial punctures small or moderately large, usually deeply impressed, somewhat effaced on apical declivity; intervals slightly or strongly convex, some of the discal intervals forming short, straight or oblique gibbosities, intervals on lateral declivity more or less regularly ridge-like. Elytral gutter very narrow, distinctly declivitous. Inflexed lateral portion of elytra well-developed and wide, without pubescent portion. Inner surface of elytra, and metanotum not examined. Metaventrite with large transverse glabrous torus, and with wide, deeply impressed median longitudinal groove (? discrimen) in basal half of metaventrite; pubescence confined to median groove and lateral parts; torus anteriorly produced to form distinct intercoxal ridge, which meets intercoxal ridge of metaventrite; katepisternal area deeply impressed; exposed part of anepisternum 3 narrow. Metacoxae strongly transverse, widely separated by deep intercoxal cavity. Hind wings present; length and venation not examined. Legs thin, moderately long; tarsi rather short, five-segmented.

Abdomen with 10 tergites. Tergites VII and VIII strongly enlarged, with distinct spicules; tergite VIII with longitudinal median line. Tergite IX with lateral margins strongly deflexed, with distinct anterolateral apophyses; posterior corners strongly produced, acuminate. Tergite X (Fig. 7) subtrapezoidal, sparsely covered with short spine-like setae and with admedian subapical tufts of setae; posterior margin rounded, notched medially; dorsal surface distinctly sclerotized except moderately wide hyaline apical margin. Inflexed subelytral parts of sternites II – VIII with cuticular spicules. Ventral surface of abdomen with six well-developed ventrites. Intercoxal sternite very small, elongately subtriangular, posteriorly impressed. Ventrite 1 with posterior border of metacoxal cavity beaded; bead interrupted at middle (behind intercoxal sternite) and effaced laterally; ventrites 1 - 4 with distinct sublateral longitudinal bead, demarcating inflexed areas. Dense hydrofuge pubescence more or less confined to ventrite 1, lateral parts of ventrites 2 - 4, and anterior corners of ventrite 5. Anterior margin of ventrites 2 - 5 each with row of small

granules. Intersegmental space between ventrites 1 - 5 deeply impressed. Ventrites 5 and 6 very large, more or less glabrous and smooth; ventrite 6 matt and sparsely pubescent in posterior half. Valvifers absent. Gonocoxites (Figs. 5, 6) completely fused, exposed, with apical irregular fringe of setae; laterally comprehensively inflexed; anterolateral apophyses well developed and produced anteriad; anterior margin very strongly emarginate (semi-circular). Spermathecal complex (Fig. 4) forming a long, curved and slender tube, tapering apically.

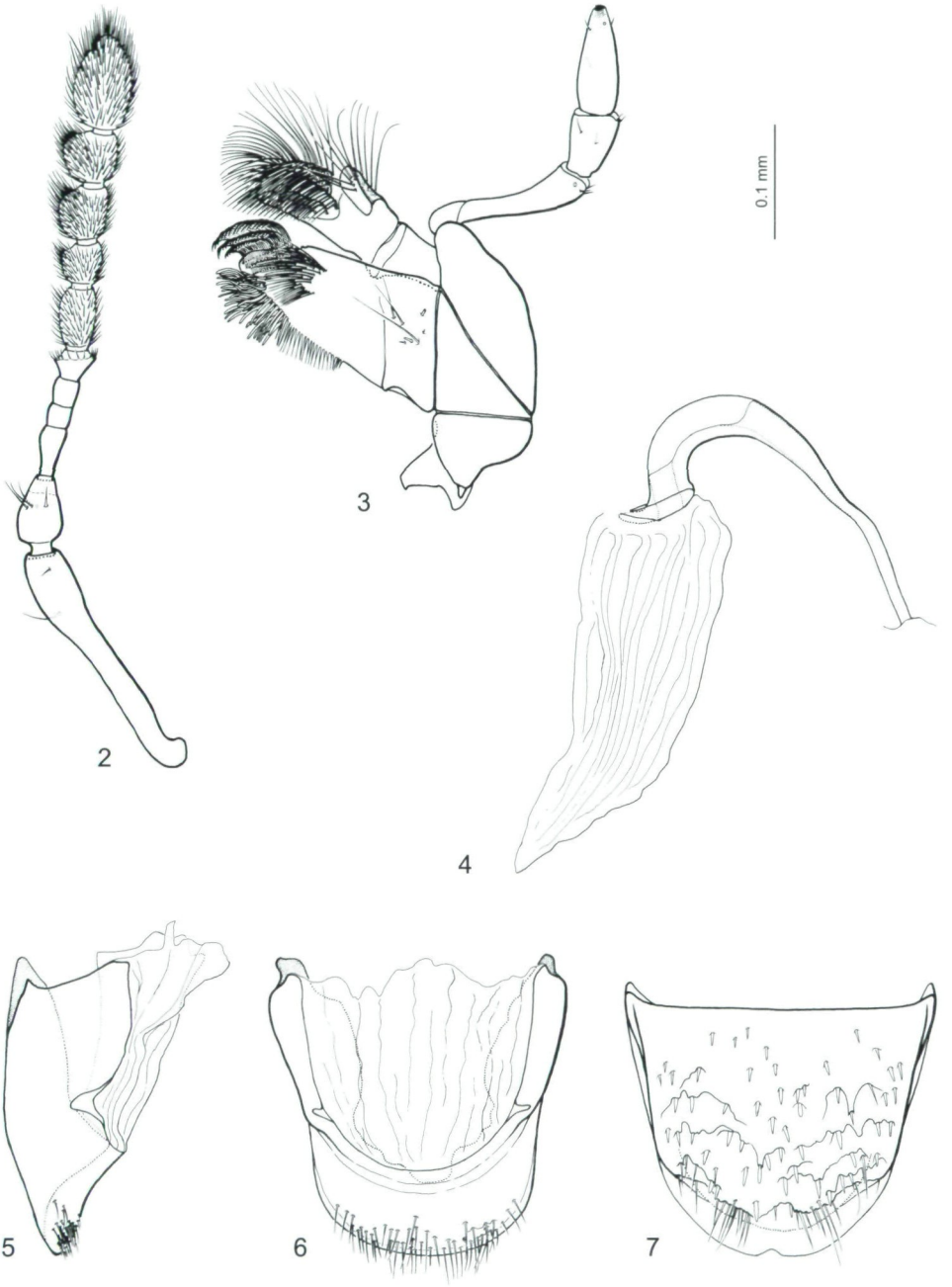
DIFFERENTIAL DIAGNOSIS: The new genus is very distinctive. Besides the typical habitus (Fig. 1), *Ginkgoscia* is characterized by the combination of the following features (based on female): 1) clypeus strongly produced and widely explanate laterally, strongly transverse; lateral margins upturned and bulgy; 2) frons very wide, distinctly produced and upturned laterally in front of eyes, with median, H- or W-shaped gibbosity; 3) ocelli large and glabrous; 4) mentum wider than long, trapezoidal, widest posteriorly, with a pair of large impressions in posterior half; 5) submentum well developed, transverse, with prominent median longitudinal ridge; 6) labrum smooth and glabrous anteriorly, densely sculptured and matt posteriorly, anterior and posterior portion distinctly separated; 7) labrum and clypeus forming distinct angle; 8) antennae eleven-segmented, pedicellus short, wide, almost pear-shaped, pedunculate, slightly longer than wide, tapering apically; 9) galea fimbriate, with conspicuous setose ventro-lateral projection; 10) maxillary palpi short, penultimate segment shorter than ultimate; 11) pronotum explanate laterally, arcuately retracted posteriorly, lateral rim crenulate; 12) pronotal disc with pair of admedian gibbosities near middle; 13) hypomeral antennal pocket large, wide and deep; 14) hypomeral antennal pocket setae and "antennal cleaner" absent; 15) elytra covering abdomen completely; 16) rows of serial elytral punctures strongly irregular in discal area, intervals partly forming gibbosities; 17) metaventrite with large transverse glabrous torus and with wide, deeply impressed median longitudinal groove, torus anteriorly produced to form distinct intercoxal ridge, which meets intercoxal ridge of metaventrite; 18) katepisternal area deeply impressed; 19) intercoxal sternite very small, elongately subtriangular, posteriorly impressed; 20) dense hydrofuge pubescence of abdomen more or less confined to ventrite 1, lateral parts of ventrites 2 - 4, and anterior corners of ventrite 5; 21) anterior margin of ventrites 2 - 5 each with row of small granules; 22) intersegmental space between ventrites 1 - 5 deeply impressed; 23) tergite VIII with broad median longitudinal groove; 24) ventrite 6 with transverse ridge separating smooth anterior half from pubescent posterior half; 25) valvifers absent; 26) gonocoxites completely fused, exposed; 27) spermathecal complex forming a long, curved and slender tube.

DISTRIBUTION: This genus is known only from China (Zhejiang).

ECOLOGY: The type specimens were all collected from a small stream. Although there is no detailed information on the microhabitat, the new genus can be assumed to be aquatic.

DISCUSSION: With the discovery of *Ginkgoscia*, the limits between Hydraeninae and Ochthebiinae are further obscured. In the key to subfamilies published by PERKINS (1997), three characters are used to differentiate between Ochthebiinae and Hydraeninae: 1) Hypomeral antennal pocket in ventral face (Ochthebiinae) or anterior face (Hydraeninae) of hypomeron. Although this character applies to a number of genera, the antennal pocket is rather ventral in the hydraenine genus *Discozantaena* PERKINS & BALFOUR BROWNE and must be regarded as anterior or at least antero-ventral in several ochthebiines (e.g. some species of *Tympanogaster* JANSSENS). 2) Penultimate maxillary palpomere more robust and longer than ultimate (Ochthebiinae) or neither longer nor more markedly robust (Hydraeninae). In *Ginkgoscia* the penultimate maxillary palpomere is neither longer nor is it more markedly robust than the ultimate. In fact, the maxillary palp of *Ginkgoscia* does not at all represent the typical ochthebiine condition (minute, peg-like apical palpomere). 3) Specialized ESDS (exocrine secretion delivery system) gland concentration in head (Ochthebiinae) or prothorax (Hydraeninae). We have not examined this character state in *Ginkgoscia*.

Fig. 1: *Ginkgoscia relicta*, habitus.



Figs. 2 - 7: *Ginkgoscia relicta*; 2) antenna, 3) left maxilla, ventral view, setation of cardo, stipes and palpifer omitted, 4) spermathecal complex, lateral view from left side, 5) gonocoxite, lateral view from right side, 6) same, ventral view, 7) tergite X, dorsal view.

Although the new genus deviates considerably from all other Ochthebiinae in the maxillary palpi we decided to place it in Ochthebiinae instead in Hydraeninae, because it shares a number of presumptive apomorphies with *Ochtheosus* PERKINS (see JÄCH 1998): e.g. shape of mentum; crenulation of lateral pronotal margin; ridges and median impression of metaventrite; tergite VIII with broad median longitudinal groove; ventrite 6 with transverse ridge separating smooth anterior half from pubescent posterior half.

Size reduction of the ultimate maxillary palpomere and enlargement of the penultimate palpomere may be an autapomorphy for Ochthebiinae (excl. *Ginkgoscia*). Interestingly, the maxillary palps and the antenna of *Ginkgoscia* resemble those of the hydraenine genera *Davidraena* JÄCH and *Gondraena* JÄCH, thus supporting the theory of possible closer relationships between *Davidraena* (and its allies) and Ochthebiinae, which was already discussed by BEUTEL et al. (2003: 273).

Unfortunately, the tentorium, which presents some key characters for the reconstruction of the hydraenid phylogeny, such as the laminatentorium and the dorsal tentorial arms (see BEUTEL et al. 2003), could not be examined.

ETYMOLOGY: Ginkgo (a well-known tree native to China, regarded to be the most ancient living tree) and scia (σκιά, Greek: shadow); referring to the fact that the new genus was collected in the province of Zhejiang, where the last natural stands of *Ginkgo biloba* are found.

Ginkgoscia relicta sp.n.

TYPE LOCALITY: China, Zhejiang Province, Lishui Prefecture, 30 km NW Longquan City, Longquan - Zhulong road, 6 km N Huangyong Village, 800 m a.s.l.; small stream, 1 m wide, moderately fast flowing through bamboo forest and rice fields, slightly polluted; 9.IV.2001; leg. M. Wang; CWBS loc. 424 (see JÄCH & JI 2003).

TYPE MATERIAL: **Holotype** ♀ (Chinese Academy of Sciences, Institute of Applied Ecology, Shenyang, China): "CHINA: Zhejiang Lishui City Region 30 km NW Longquan \ Longquan – Zhulong 6 km N Huangyong 800 m, 9.IV.2001 leg. Wang, CWBS 424". **Paratypes**: 3 ♀♀ (Naturhistorisches Museum Wien, Austria), same locality data as holotype.

DESCRIPTION (female): ca. 2.45 - 2.60 mm long, ca. 1.2 - 1.3 mm wide. Dorsal surface moderately densely setose, covered with moderately long, more or less strongly recumbent setae, placed mainly on head, pronotum and elytral ridges; dorsal and ventral surface with dirt encrustations, which were largely removed from all specimens.

Colour dark brown; lateral margins of pronotum pale brown, translucent; body appendages evenly reddish brown.

Clypeus forming distinct angle with labrum; strongly produced and widely explanate laterally, strongly transverse, superficially punctate and distinctly microreticulate, with regular, more or less circular meshes; lateral margins upturned and bulgy. Frontoclypeal (epistomal) suture deeply impressed, but effaced at bulgy lateral margin. Frons very wide, distinctly produced and upturned laterally in front of eyes; disc with median, H- or W-shaped gibbosity; surface rugosely punctate, impressions microreticulate. Ocelli large and glabrous, more or less halfway between middle and eye. Compound eyes very large, with more than 100 facets visible in dorsal view. Mentum wider than long, trapezoidal, widest posteriorly; surface unevenly punctate; with a pair of large deep impressions in posterior half, separated from each other by a narrow longitudinal ridge. Submentum well developed, transverse, with prominent median longitudinal ridge. Genae with two, medially interrupted transgenal ridges, an antennal furrow and various subocular ridges; genal suture indicated by narrow glabrous line. Gula short, subtriangular; laterally with one pair of elongate, oblique, deeply impressed pits. Labrum in almost vertical position; anterior

margin widely arcuately emarginate and densely setose; anterolateral angles rounded; anterior and posterior half distinctly separated; surface smooth and almost glabrous in anterior half, densely sculptured in posterior half. Antenna (Fig. 2) about as long as anterior tibia; scapus elongate; pedicellus short, wide, pedunculate, slightly longer than wide, tapering apically; segment 3 slender, elongate, segments 4 and 5 very small, subquadrate; segment 6 weakly cupuliform; segments 7-11 not pedunculate, forming loose pubescent club; segments 8-10 distinctly asymmetrical. Maxillary palpi (Fig. 3) very short, hardly half as long as distance between eyes; first palpomere very short, second palpomere elongate and slightly curved, third palpomere short, apically widened, fourth palpomere elongate, spindle-shaped, distinctly longer than third palpomere.

Pronotum with disc very strongly convex in cross section. Lateral parts widely explanate, only very slightly declivitous, strongly arcuately retracted in basal 0.3. Anterior corners widely rounded; lateral rim crenulate. Posterior margin of pronotum slightly produced medially. Disc with a pair of moderately large, admedian rounded gibbosities near middle and with a pair of small inconspicuous rounded gibbosities in front of posterior margin about halfway beween middle and posterior corners; anterior and posterior transverse grooves present, posterior transverse groove medially interrupted by inconspicuous longitudinal ridge. Surface of disc and margins of ears densely, almost rugosely punctate; interstices more or less smooth and glabrous; centre of ears impunctate, smooth and glabrous. Prosternum rather short, rugosely punctate, with median longitudinal ridge, intercoxal process narrow. Hypomeral antennal pocket large, wide and deep, covering anterior half of hydrofuge hypomeron, micropunctate and microreticulate; surface of lateral hypomeron superficially punctate, microreticulate. Mesoventrite (= preepisternum 2) with strongly reinforced anterior collar, a pair of admedian and a pair of lateral ridges; lateral ridges forked in front of mesocoxae; admedian ridges and median branch of lateral ridges joining posteriorly to form a prominent intercoxal ridge. Suture between mesoventrite and anepisternum 2 indicated weakly by very faint ridge. Mesocoxal cavities strongly transverse, disjunct; mesepimeron subtriangular, rather broadly reaching mesocoxal cavity. Mesocoxae subglobular, distinctly separated, slightly projecting. Scutellar shield concealed under projecting posterior margin of pronotum. Elytra well sclerotized, strongly convex in cross section and strongly declivitous apically; covering abdomen completely; lateral rim serrate; disc transversely impressed at anterior 0.3. Dorsal surface with approximately 15 rows of serial punctures; in discal area rows strongly irregular; serial punctures small or moderately large, usually deeply impressed, somewhat effaced on apical declivity; interstices smooth and glabrous; intervals slightly or strongly convex, some of the discal intervals forming short, straight or slightly slanting gibbosities, which may be confluent behind transverse depression, intervals on lateral declivity more or less regularly ridge-like, with short interruptions, and with at least one prominent gibbosity at about anterior 0.3 - 0.6. Elytral gutter very narrow, distinctly declivitous. Inflexed lateral portion of elytra well-developed and wide, without pubescent portion. Inner surface of elytra, and metanotum not examined. Metaventrite with large transverse glabrous torus, and with wide, deeply impressed median longitudinal groove (? discrimen) in basal half of metaventrite; pubescence confined to median groove and lateral parts; torus anteriorly produced to form distinct intercoxal ridge, which meets intercoxal ridge of metaventrite; katepisternal area deeply impressed; exposed part of anepisternum 3 narrow. Metacoxae strongly transverse, widely separated by deep intercoxal cavity. Hind wings present; length and venation not examined. Legs thin, moderately long; tarsi rather short.

Abdomen with tergites VII and VIII strongly enlarged, with distinct spicules; tergite VIII with longitudinal median line. Tergite IX with lateral margins strongly inflexed, with distinct apophyses; posterior corners strongly produced, acuminate. Tergite X (Fig. 7) subtrapezoid, sparsely covered with short spine-like setae and with admedian subapical tufts of setae; posterior margin rounded, notched medially; dorsal surface distinctly sclerotized except moderately wide

hyaline apical margin. Inflexed subelytral parts of sternites II – VIII with cuticular spicules. Ventral surface of abdomen with six well-developed ventrites. Intercoxal sternite very small, elongately subtriangular, posteriorly impressed. Ventrite 1 with posterior border of metacoxal cavity beaded; bead interrupted at middle (behind intercoxal sternite) and effaced laterally; ventrites 1 - 4 with distinct sublateral longitudinal bead, demarcating inflexed areas. Dense hydrofuge pubescence more or less confined to ventrite 1 (except anterior part of middle), lateral parts of ventrites 2 - 4, and anterior corners of ventrite 5. Anterior margin of ventrites 2 - 5 each with row of small granules. Intersegmental space between ventrites 1 - 5 deeply impressed. Ventrites 5 and 6 very large, more or less glabrous and smooth; ventrite 6 matt and sparsely pubescent in posterior half. Gonocoxites (Figs. 5, 6) completely fused, exposed, with apical irregular fringe of setae; laterally comprehensively inflexed; anterolateral apophyses well developed and produced anteriad; anterior margin very strongly emarginate (semi-circular). Spermathecal complex (Fig. 4) forming a long, curved and slender tube, tapering apically.

Male unknown.

INTRASPECIFIC VARIABILITY: Rows of serial punctures on elytra strongly irregular and thus variable; position, size and shape of elytral ridges and gibbosities also quite variable.

DISTRIBUTION: Known only from the type locality.

ETYMOLOGY: relictus (Latin: pertaining to a relict); referring to the obviously basal position of *Ginkgoscia* within the Hydraeninae-Ochthebiinae lineage. The name is used as an adjective.

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