

On the Staphylinidae of El Hierro, with additional new records from the Canary Islands (Coleoptera: Staphylinidae)

● VOLKER ASSING

Abstract. During a field trip to El Hierro in December 1999 and January 2000, more than 44 species of Staphylinidae were recorded, at least 21 of them either Canarian endemics or island endemics of El Hierro. New data on the distribution and bionomics are presented for several lesser known species, some of which were described only recently from the island. The following ten species are for the first time recorded from El Hierro: *Omalium excavatum* STEPHENS, 1834, *Lithocharis ochracea* (GRAVENHORST, 1802), *Lithocharis vilis* (KRAATZ, 1859), *Chloecharis debilicornis* (WOLLASTON, 1857), *Phacophallus trigonocephalus* (KRAATZ, 1859), *Gabronthus maritimus* (MOTSCHULSKY, 1858), *Mycetoporus solidicornis* WOLLASTON, 1864, *Mycetoporus adumbratus* WOLLASTON, 1865, *Atheta pseudolaticollis* ERBER & HINTERSEHER, 1992 (a junior primary homonym of *A. pseudolaticollis* BERNHAUER, 1936), and *Atheta cacti* (WOLLASTON, 1862). *Atheta misella* (WOLLASTON, 1864), previously treated as a synonym of *A. liliputana* (BRISOUT, 1860), is reinstated as a distinct species, which is endemic in the Canaries and for the first time also reported from Gran Canaria and Tenerife; an examination of hindwing development revealed that it is wing-dimorphic. *A. liliputana* is removed from the list of Canarian Staphylinidae. Based on an examination of additional material, the following species are reported from the Canary Islands for the first time: *Philonthus parvus* SHARP, 1874, and *Trichiusa immigrata* LOHSE, 1984 (both Tenerife). *Philonthus discoideus* (GRAVENHORST, 1802) and *Scopaeus gracilis* (SPERK, 1835) are first island records from La Palma.

Key words. Coleoptera, Staphylinidae, Canary Islands, El Hierro, taxonomy, new records; Kanarische Inseln, Taxonomie, Neunachweise.

Zusammenfassung. Während einer Exkursion auf El Hierro im Dezember 1999 und Januar 2000 wurden mehr als 44 Staphylinidenarten nachgewiesen, darunter mindestens 21 Endemiten der Kanaren und Inselendemiten von El Hierro. Für einige wenig bekannte Arten, die teilweise erst kürzlich von der Insel beschrieben wurden, werden neue Daten zur Verbreitung und Bionomie vorgelegt. Zehn Arten werden erstmals für El Hierro gemeldet: *Omalium excavatum* STEPHENS, 1834, *Lithocharis ochracea* (GRAVENHORST, 1802), *Lithocharis vilis* (KRAATZ, 1859), *Chloecharis debilicornis* (WOLLASTON, 1857), *Phacophallus trigonocephalus* (KRAATZ, 1859), *Gabronthus maritimus* (MOTSCHULSKY, 1858), *Mycetoporus solidicornis* WOLLASTON, 1864, *Mycetoporus adumbratus* WOLLASTON, 1865, *Atheta pseudolaticollis* ERBER & HINTERSEHER, 1992 (ein jüngeres primäres Homonym von *A. pseudolaticollis* BERNHAUER, 1936) sowie *Atheta cacti* (WOLLASTON, 1862). *Atheta misella* (WOLLASTON, 1864), von früheren Autoren als Synonym von *A. liliputana* (BRISOUT, 1860) betrachtet, ist eine distinkte, auf den Kanaren endemische und flügelmorphische Art und wird erstmals für Gran Canaria und Teneriffa nachgewiesen. Eine Untersuchung weiteren kanarischen Materials ergab zwei Erstnachweise für das gesamte Archipel: *Philonthus parvus* SHARP, 1874, und *Trichiusa immigrata* LOHSE, 1984 (beide von Teneriffa). *Philonthus discoideus* (GRAVENHORST, 1802) und *Scopaeus gracilis* (SPERK, 1835) sind neu für La Palma.

Introduction

According to recent checklists (HERNÁNDEZ *et al.* 1994, MACHADO & OROMÍ in press), species diversity and the number of endemic species of Staphylinidae are much lower in El Hierro than in any of the other Canary Islands with Laurisilva vegetation (Gran Canaria, Tenerife, La Gomera, La Palma). The relatively young age of the island (1.5–2 mio. years), as compared to Gran Canaria, Tenerife, and La Gomera, may be one explanation, but La Palma is approximately of the same age or, at most, only slightly older and is inhabited by a much greater number of species and endemics.

In all, MACHADO & OROMÍ (in press) indicate a total of 82 staphylinid species for the island. This figure, however, must be considered tentative, particularly because several taxa described from the Canaries have never been revised since their description, many records have not been re-examined and are consequently of doubtful status, and also because the staphylinid fauna of El Hierro has been less intensively studied than that of the other islands referred to above. The only study especially dealing with the beetle fauna of El Hierro is a commented species list by FRANZ (1996), which is based on long-term observations and which indicates 76

staphylinid taxa. This figure, however, includes two undescribed species of doubtful status, several possible or probable misidentifications, and one species (*Gabrieus canariensis* (FAUVEL 1902) is listed twice under different names.

In order to allow for better comparison with the results presented below and with similar studies carried out on other islands (ASSING 1999, ASSING & WUNDERLE 1999), and to avoid bias due to literature data based on misidentification, three groups of staphylinids are excluded from further consideration: (1) the Pselaphinae, which were transferred to the Staphylini-

dae only recently and which were not considered in most previous studies on the Staphylinidae of the Canaries, (2) the species of *Mocyta* MULSANT & REY, 1874, a subgenus of *Atheta* THOMSON, 1858, which is currently in a state of taxonomic confusion, and (3) another 13 possibly or probably misidentified or synonymous species. Of the 82 species listed by MACHADO & OROMÍ (in press) this leaves 63 taxa of non-pselaphine Staphylinidae whose presence in El Hierro may be regarded as fairly certain. Three of them are island endemics, four are Canarian endemics occurring in only two Canarian islands (hereafter referred to as restricted Canarian endemics), and 18 more widely distributed Canarian endemics. *Ocypus addendus* (LINDBERG, 1953) and *Omaliium sculpticolle* WOLLASTON, 1864, are here omitted due to possible misidentification and suspected synonymy with *O. excavatum* STEPHENS, 1834, respectively. Of the four restricted Canarian endemics, El Hierro shares one with La Palma (*Megarthus spathuliformis* ASSING & WUNDERLE, 1999), one with La Gomera (*Stenus aeneotinctus* WOLLASTON, 1864), one with Tenerife (*Oligota wollastoni* WILLIAMS, 1973), and one with Gran Canaria (*Quedius angustifrons* WOLLASTON, 1864), though there is some doubt regarding the latter record, which is based on FRANZ (1996). Unfortunately, it was not possible to examine the specimens on which the data provided by FRANZ (1996) are based, because his collection is currently inaccessible.

In December and January 1999/2000, the staphylinid fauna of El Hierro, especially that of various woodland biotopes (Laurisilva, Fayal-Brezal, etc.), was studied over a period of two weeks. All the island endemics and the vast majority of Canarian endemics were collected and several species previously unknown from El Hierro were recorded. Additional Canarian material collected and sent to me by RAFAEL GARCÍA BECERRA, Santa Cruz de La Palma, contained several new records from El Hierro, Tenerife, and La Palma, among them two first records from the Canarian archipelago.

Results and discussion

In all, 2981 adult specimens of Staphylinidae were collected in El Hierro in December 1999 and January 2000. Not counting the species of the subgenus *Mocyta*

MULSANT & REY, 1874 (genus *Atheta* THOMSON, 1858) and one species of Pselaphinae (*Afropselaphus guanche* BESUCHET, 1968), the material comprised 43 species, among them 3 island endemics, 2 restricted Canarian endemics, and 15 more widespread Canarian endemics (Tab. 1). A considerable proportion of the adult beetles of the following 15 species was teneral, which suggests larval development in autumn and winter: *Megarthus spathuliformis*, *M. wollastoni*, *Stenus aeneotinctus*, *Medon subcoriaceus*, *Sunius canariensis*, *Phacophallus trigonocephalus*, *Heterothops canariensis*, *Quedius depauperatus*, *Lordithon thoracicus luridus*, *Atheta coriaria*, *A. aeneicollis*, *A. dilutipennis*, *A. pseudolaticollis*. Some of the species recorded are treated in more detail below.

Megarthus spathuliformis ASSING & WUNDERLE, 1999. The restricted Canarian endemic, which was only recently observed to be distinct from *M. serrula* WOLLASTON, 1865, was exclusively found in Laurisilva and mature Fayal-Brezal at altitudes between 800 and 1300m, whereas its congener *M. wollastoni* CUCCODORO & LÖBL was collected in a wide range of habitats, even in compost at an altitude of only 50m. FRANZ (1996), in contrast, states that *M. spathuliformis* (under the name *M. serrula*) is more common than *M. wollastoni*, which he collected on only three occasions.

Omaliium excavatum STEPHENS, 1834. The species is here for the first time recorded from El Hierro, where it was found in several localities at higher altitudes (1000–1450m), primarily in Fayal-Brezal. It seems likely that the previous records of *O. sculpticolle* WOLLASTON, 1864 (a suspected junior synonym of *O. excavatum* STEPHENS, 1834), including the nomenclaturally irrelevant *O. sculpticolle* var. *hierrense* (see FRANZ 1996), refer to this species.

Stenus aeneotinctus WOLLASTON, 1864. This restricted Canarian endemic was observed in several localities in Fayal-Brezal and mature Laurisilva at altitudes between 800 and 1300m, but is apparently much less common in El Hierro than in La Gomera (see ASSING 1999).

Lithocharis ochracea (GRAVENHORST, 1802). The widespread inhabitant of compost and similar habitats was collected in Las Puntas and in Las Playas. It is here for the first time recorded from El Hierro and

is now known from all Canarian islands, except for Gran Canaria (MACHADO & OROMÍ in press).

Lithocharis vilis (KRAATZ, 1859). In the Canarian archipelago, *L. vilis* was previously known only from Tenerife (MACHADO & OROMÍ in press); like its preceding congener, it is here for the first time recorded from El Hierro. One was collected in rotting plant debris in Las Puntas together with numerous specimens of *L. ochracea*.

Chloecharis debilicornis (WOLLASTON, 1857). One specimen was found in Las Puntas together with the two *Lithocharis* species. The species was previously unknown from the island (MACHADO & OROMÍ in press).

Sunius canariensis (BERNHAEUER, 1928). HERNÁNDEZ *et al.* (1994) list only *S. canariensis* for El Hierro, whereas FRANZ (1996) states that both *S. canariensis* and *S. brevipennis* (WOLLASTON, 1864) are rather common in the forest biotopes of the island. The 28 specimens collected by myself all belong to one wing-dimorphic or -polymorphic species. Since the diagnoses and keys by COIFFAIT (1961, 1984) and FRANZ (1979) also rely on wing-length as a distinguishing character and are not based on an examination of types, the presence of both species in El Hierro must be considered doubtful. The material listed in table 1 is here tentatively attributed to *S. canariensis*.

Sunius microphthalmus (FRANZ, 1979). According to FRANZ (1979, 1996), this microphthalmous species, one of the three non-pselaphine island endemics of El Hierro, occurs in deep and moist litter layers (below laurel trunks and rocks) of the Laurisilva of El Golfo, but was also once found in Las Playas. The single female collected on 31.XII.1999 was sifted from deep litter in Fayal-Brezal at an altitude of 850 m.

Phacophallus trigonocephalus (KRAATZ, 1859). Like the *Lithocharis* spp., *P. trigonocephalus* was collected in rotting plant debris in Las Puntas and is here for the first time recorded from El Hierro.

Gabronthus maritimus (MOITSCHULSKY, 1858). In the Canarian archipelago, this species was previously known only from Gran Canaria and La Palma (MACHADO & OROMÍ in press). More than 150 specimens

Table 1. *Staphylinidae* recorded in El Hierro in December and January 1999/2000.

Explanations and abbreviations. Endemism: h = endemic to El Hierro; c = endemic to Canarian archipelago; rc = restricted Canarian endemic, occurring in only two islands of the archipelago; ?: distribution uncertain.

Biotope. I: *Pinus canariensis* wood; II: Fayal-Brezal with predominantly or exclusively *Erica arborea*; III: Fayal-Brezal with predominantly *Myrica faya*; IV: mature Laurisilva (exclusively broad-leaved trees present); V: fallows, arable land; VI: xerophyte vegetation.

Localities and dates. 1: El Fayal, 27°43'30N, 17°59'30W, 1200m, 27.xii.; 2: Malpaso, 27°43'30N, 18°02W, N-slope, 1450m, *Erica* litter and moss, 26.xii.; 3: Camino Jinama, 27°45'30N, 17°59W, 1200m, 28.xii.; 4: El Fayal, 27°43'30N, 17°59'30W, 1300m, 30.xii.; 5: S Mirador del Golfo, 27°44N, 18°00W, 1300m, 26.xii.; 6: W Mirador del Golfo, 27°44N, 18°00W, 1300m, 2.i.; 7: Camino Jinama, 27°45'30N, 17°59W, 1050m, 28.xii.; 8: NW Tinor, 27°46'30N, 17°56W, 950–1050m, 3.i.; 9: SW La Frontera, 27°44N, 18°03W, 900m, 4.i.; 10: Camino San Salvador, 27°44N, 18°01W, 800–900m, 2.i.; 11: SW La Frontera, 27°44N, 18°02W, 850m, 31.xii.; 12: SW La Frontera, 27°44'30N, 18°02'30W, 600m, 31.xii.; 13: Camino San Salvador, 27°44N, 18°01W, 1250m, 2.i.; 14: Fuente Mancafite, 27°44N, 18°05W, 1000m, 25.xii.; 15: E Fuente Mancafite, 27°44N, 18°04W, 800m, 25.xii.; 16: Montana Pedraje, 27°48N, 17°57W, 900m, 26.xii.; 17: Camino Jinama, 27°45N, 17°59W, 900m, 28.xii.; 18: same data, but 850m; 19: Camino San Salvador, 27°44N, 18°01W, 800–950m, 2.i.; 20: Camino Jinama, 27°45N, 17°59W, 750m, 28.xii.; 21: same data, but 600m; 22: Las Playas, S Parador Nacional, 27°42'30N, 17°57'30W, 10–50m, 29.xii.; 23: Punta de la Dehesa, 27°45'30N, 18°08'30W, 50m, 31.xii.; 24: S Valverde, 27°48N, 17°55W, 700m, ex rotting *Opuntia*, 29.xii.; 25: Camino San Salvador, 27°44'30N, 18°01W, 650m, 2.i.; 26: Las Puntas, 27°48N, 17°59W, 50m, ex plant debris, 24.xii.–4.i.

biotope			I			II			III						IV						V		VI					
locality (no.)			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
species	ende- mism	total																										
<i>Afropselaphus guanche</i> BESUCHET, 1968	h	6									2	1	1		2													
<i>Megarthritis spathuliformis</i> ASSING & WUND., 1999	rc	58						1	2		3				47	5												
<i>Megarthritis wollastoni</i> CUCCODORO & LÖBL, 1997	c	61	1		1				4	7	1	1	4	3				2		1	1	7	11		7	4	6	
<i>Omalium ocellatum</i> WOLLASTON, 1854		1																					1					
<i>Omalium excavatum</i> STEPHENS, 1834		33	1	2		1	23	3	1					1	1													
<i>Anotylus nitidulus</i> (GRAVENHORST, 1802)		1																										1
<i>Stenus aeneotinctus</i> WOLLASTON, 1864	rc	43			3			4	6				5		22	1			2									
<i>Astenus megacephalus coiffaiti</i> ISRAELSON, 1971	h	4											2		1				1									
<i>Astenus dimidiatus</i> (WOLLASTON, 1864)	c	1																					1					
<i>Medon subcoriaceus</i> (WOLLASTON, 1864)	c	217			6	9	1	3	17	24	13	2	11	13	45	18	10	3	5	14		20						3
<i>Lithocharis ochracea</i> (GRAVENHORST, 1802)		33																					1					32
<i>Lithocharis vilis</i> (KRAATZ, 1859)		1																										1
<i>Sunius canariensis</i> (BERNHAEUER, 1928)	c	28					1			14			1		1			1			5	2	3					
<i>Sunius microphthalmus</i> (FRANZ, 1979)	h	1										1																
<i>Chloecharis debilicornis</i> (WOLLASTON, 1857)		1																										1
<i>Lobrathium multipunctum canariense</i> (WOLL., 1865)	c	1													1													
<i>Phacophallus parumpunctatus</i> (GYLL., 1827)		20																								6	14	
<i>Phacophallus trigonocephalus</i> (KRAATZ, 1859)		6																										6
<i>Othius philonthoides</i> WOLLASTON, 1864	c	92			8	2	29	23			2	4	4	3	5	2			1	8		1						
<i>Philonthus concinnus</i> (GRAVENHORST, 1802)		1																										1
<i>Philonthus longicornis</i> STEPHENS, 1832		3																										3
<i>Gabrieus canariensis</i> (FAUVEL, 1898)	c	43													2						1		3	1	3	1	32	
<i>Gabronthus maritimus</i> (MOTSCHULSKY, 1858)		152																										152
<i>Ocypus olens</i> (MÜLLER, 1764)		3					1			2																		
<i>Heterothops canariensis</i> ISRAELSON, 1979	c	7																				4					3	
<i>Quedius depauperatus</i> WOLLASTON, 1864	c	1																										1
<i>Quedius megalops</i> WOLLASTON, 1864	c	8								1	1	2			2							1					1	
<i>Habrocerus canariensis</i> ASSING & WUND., 1995	c	2																										2
<i>Trichophya pilicornis</i> (GYLLENHAL, 1810)		3																				2				1		
<i>Mycetoporus solidicornis</i> WOLLASTON, 1864	?	1							1																			
<i>Mycetoporus adumbratus</i> WOLLASTON, 1865	?	3	3																									
<i>Bryophacis filicornis</i> (WOLLASTON, 1864)	c	5								3			1										1					

cies is wing-dimorphic. While all 26 specimens examined from El Hierro and the two specimens from Tenerife had completely reduced hind wings, 2 out of 33 beetles from Gran Canaria were macropterous.

Atheta pseudolaticollis ERBER & HINTERSEHER, 1992. Like *Atheta pseudolaticollis* CAMERON, 1944, which was later renamed as *A. hongkongensis* by LIKOVSKY (1984), *A. pseudolaticollis* ERBER & HINTERSEHER, 1992, is a junior primary homonym of *A. pseudolaticollis* BERNHAUER, 1936. For the time being, it does not seem practical to rename this species, particularly because it may have a wider, possibly even cosmopolitan distribution and because it is not unlikely to have a senior synonym. In the Canarian archipelago, the species was previously known only from La Palma, Tenerife, and Gran Canaria (MACHADO & OROMÍ in press); it is here for the first time recorded from El Hierro. One teneral ♀ was sifted from litter below xerophyte vegetation and rotting plant debris in Las Playas on 29.XII.1999. Additional material collected by R. GARCÍA contained a second record from El Hierro: 1 ♂, La Montañeta, 6.XII.1999.

Atheta cacti (WOLLASTON, 1862). The species was previously known only from La Palma and Tenerife. It is here for the first time reported from El Hierro: 1 ♂, 1 ♀, La Montañeta, 6.XII.1999, leg. GARCÍA, det. J. VOGEL (coll. GARCÍA, coll. ASSING).

Oxypoda hierroensis ZERCHE, 1996. Since the original description, which is based on a single female from Valverde (ZERCHE 1996), no additional records have been published. One ♀ of this island endemic was sifted from mouldy *Pinus* litter in a *Pinus canariensis* forest south of El Fayal (1200m), and one ♂ was collected in mature Laurisilva near the Camino Jinama (750m).

Additional new records

Scopaeus gracilis (SPERK, 1835). *S. gracilis* is now also known from La Palma: 1 ♂, 1 ♀, Cascada Colores, 27.VII.1999, leg. & coll. GARCÍA.

Philonthus parvus SHARP, 1874. The species is here for the first time recorded from the Canarian archipelago: 1 ♂, 1 ex., Tenerife, La Laguna, 7.VI.1982, leg. GARCÍA (coll. GARCÍA, coll. ASSING).

Philonthus discoideus (GRAVENHORST, 1802). First record from La Palma: 2 ♂, La Palma, La Grama, 22.&29.XII.1999, leg. GARCÍA (coll. GARCÍA, coll. ASSING).

Trichiusa immigrata LOHSE, 1984. In Europe, this introduced species from the New World was first discovered in the 1970s (LOHSE 1984). It is now also present in the Canarian archipelago: 1 ex., Tenerife, Anaga, 12.VII.1998, leg. & coll. GARCÍA. First record from the Canary Islands!

Acknowledgements. I am indebted to RAFAEL (FELO) GARCÍA BECERRA (Santa Cruz de La Palma) for contributing his faunistically remarkable material to the present study. In addition, I would like to express my sincere thanks to Sr. D. CAYO ARMAS BENÍTEZ and the Conserejo de Medio Ambiente del EXCMO. Cabildo Insular de El Hierro (Valverde) for issuing a collecting permit, and to Dr. PEDRO OROMÍ (La Laguna) for his kind assistance in contacting the authorities.

References

- ASSING, V. 1999. On the Staphylinidae of La Gomera (Canary Islands), with descriptions of four new species (Coleoptera). *Beitr. Ent.* **49**: 343–356.
- ASSING, V. & WUNDERLE, P. 1995. A revision of the species of the subfamily Habrocerinae (Coleoptera: Staphylinidae) of the world. *Rev. Suisse Zool.* **102**: 307–359.
- ASSING, V. & WUNDERLE, P. 1999. On the Staphylinidae of La Palma, Canary Islands, with descriptions of new species and remarks on some Canarian *Stenus* LATREILLE (Coleoptera). *Ent. Z.* **109**: 433–443.
- BERNHAEUER, M. 1936. Neue Staphyliniden vom belgischen Kongo. *Rev. Zool. Bot. afr.* **29**: 21–28.
- BERNHAEUER, M. & SCHEERPELTZ, O. 1926. Staphylinidae VI. In JUNK, W. & SCHENKLING, S. (eds.), *Coleopterorum Catalogus*, pars **82**: 499–988, Berlin.
- CAMERON, M. 1944. New species of Staphylinidae (Col.) from China and Japan. *Entomologist's mon. Mag.* **80**: 158–159.
- COIFFAIT, H. 1961. Les *Hypomedon* d'Europe et de la région méditerranéenne (Coleoptera Staphylinidae). *Rev. fr. Ent.* **28**: 16–40.
- COIFFAIT, H. 1984. Coléoptères Staphylinidae de la région paléarctique occidentale. V. Sous-famille Paederinae Tribu Paederini 2. Sous-famille Euaesthetinae. *Nouv. Rev. Ent.* **12(4)**: 1–440.
- FAUVEL, A. 1902. Catalogue des Staphylinides de la Barbarie, de la Basse-Égypte et des Îles Acores, Madères, Salvages et Canaries. *Rev. Ent.* **21**: 45–189.
- FRANZ, H. 1979. Zur Kenntnis der *Hypomedon*-Arten von den Kanarischen Inseln (Staphylinidae, Col.). *Koleopt. Rdsch.* **54**: 65–71.
- FRANZ, H. 1996. Die Ergebnisse meiner langjährigen Aufsammlungen der Coleopteenfauna [sic]

auf der Insel Hierro (Kanarische Inseln). *SitzBer. Abt. I* **202** (1995): 71–138.

HERNÁNDEZ, J. J., OUTERVELO, R. & GAMARRA, P. 1994. A preliminary list of Canarian Staphylinidae (Coleoptera). *Vieraea* **23**: 183–202.

LIKOVSKY, Z. 1984. Über die Nomenklatur der Aleocharinen (Coleoptera, Staphylinidae). *Annot. zool. bot.* No. **160**: 1–8.

LOHSE, G. A. 1984. *Trichiusa immigrata* n. sp., eine neue Adventivart aus Mitteleuropa. *Ent. Bl.* **80**: 163–165.

MACHADO, A. & OROMÍ, P. in press. Elenco de los coleópteros de las islas Canarias. *Instituto de Estudios Canarios, Ser. Monogr., La Laguna* **60** (2000): 308 pp.

WOLLASTON, T. V. 1864. *Catalogue of the Coleopterous Insects of the Canaries in the collection of the British Museum*. 633 pp. London.

WOLLASTON, T. V. 1865. *Coleoptera Atlantidum, being an enumeration of the Coleopterous Insects of the Madeiras, Salvages, and the Canaries*. 526 pp. London.

ZERCHE, L. 1996. Die *Oxypoda*-Arten der Kanarischen Inseln: Taxonomie, Bionomie, Phylogenie und Biogeographie. *Beitr. Ent.* **46**: 277–372.

● VOLKER ASSING, Gabelsberger Str. 2, D-30163 Hannover, Germany; e-mail: vassing.hann@t-online.de