ARTICULATA 2011 26 (1): 51–65 FAUNISTIK

In search of the most mysterious orthopteran of Europe: the Reed cricket *Natula averni* (Orthoptera: Gryllidae)

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Abstract

In the last few years a lot of new information has become available on *Natula averni*. As the common name we propose Reed cricket, because the species was found almost exclusively in reed beds. Recent findings show that this species is more abundant than previously thought. The species can easily be found with knowledge of distribution, habitat and song, all described in this publication. Nevertheless a lot of questions remain about the taxonomy. We hope that information gathered after this publication will help us to reveal the proper identity of reed crickets in Europe.

Zusammenfassung

In den letzten Jahren sind viele neue Informationen über *Natula averni* verfügbar geworden. Als deutschen Namen schlagen wir Schilfgrille vor, da die Art fast ausschließlich in Schilfröhrichten gefunden wurde. Neuere Angaben zeigen, dass *N. averni* deutlich häufiger ist als vorher angenommen. Anhand der in dieser Publikation beschriebenen Angaben zu Verbreitung, Lebensraum und Gesang ist die Art leicht nachweisbar. Dennoch gibt es weiterhin viele Fragen bezüglich der Taxonomie. Wir hoffen, dass diese Arbeit dazu anregt, den taxonomischen Status der Schilfgrillen in Europa abschließend zu klären.

Introduction

The cricket *Natula averni* (subfamily Trigoniinae) (fig. 1a-d) was described by A. Costa in 1855. The species was later placed in *Natula* (GOROCHOV & LLORENTE 2001). Apart from an undated record from the Canary Islands the species was not recorded in Europe for more than 130 years. In 1987 there is a single record from Sardinia (as *Natula longipennis*) (SCHMIDT & HERRMANN 2000). After that in 2005 *Natula averni* was discovered in Corsica (BOITTIER et al. 2006, 2007; Braud & Sardet 2006) and in 2006 we recorded for the first time the song in Sicily and Corsica. After discovering the habitat, we were able to record this small cricket on several localities in southern Europe, including first records for Turkey, the Iberian Peninsula and the Balearic Islands. The habitat was almost exclusively dense reed vegetation along rivers and lakes, close to the sea. Based on the typical habitat we propose Reed cricket as the English name.

Figure 1a: *Natula averni*, male from Corsica (first photo ever of living specimen). Photo E. Sardet.

Figure 1b: *Natula averni*, macropterous male, from Turkey. Photo R. Kleukers.

Figure 1c: *Natula averni*, female, from Turkey. Photo R. Kleukers.

Figure 1d: *Natula averni*, singing male. Photo (from movie) L. Forbicioni.

Figure 1e: Searching for *Natula averni* by means of a white blanket**.** Photo B. Odé.

Figure 1f: Habitat of *Natula averni* Foce del Belice, Sicily. Photo R. Kleukers.

There is considerable confusion on the correct scientific name of this cricket. For example the record from Sardinia was called *Natula longipennis* (SCHMIDT & HERMANN 2000). It is possible that *N. averni* and *N. longipennis* (type locality in Isle St. Maurice, Mauritius) are synonyms (GOROCHOV & LLORENTE 2001). On the other hand it may even be that more than one species is involved, even within Europe.

We have many sound recordings from southern Europe but the species is very difficult to find (fig. 1e). Therefore we have for many locations only very few voucher specimens and this makes it difficult to solve the taxonomic problems. In this paper we summarize the known records from southern Europe, adopting as a working hypothesis that all records are from one species, which we call *Natula averni* for now. However, we need more material to investigate if one or more species are present in southern Europe and which is the correct name. Therefore we ask orthopterists to contribute to solving this mystery.

Distribution

Natula averni was described from the shores of Lago Arverno near Naples in Campania (Italy). It has not been rediscovered for a long time. Recently it was recorded from Corsica (fig. 1a) (BOITTIER et al. 2006, 2007) and the Canary Islands (GOROCHOV & LLORENTE 2001). SCHMIDT & HERMANN (2000) mention a record of *Natula longipennis* (identification by Gorochov) in Sardinia. According to GOROCHOV & LLORENTE (2001) it is possible that *N. averni* is synonymous with *N. longipennis* and then the distribution would include Africa and Southeast Asia. In the past few years we have gathered new records for several localities in southern Europe, Turkey and Thailand (table 1, fig. 2), which are treated here per country.

Italy

The third record of *N. averni* in Italy, after the description and the record from Sardinia, stems from Foce del Belice, Sicily in 2006 (fig. 1f). Several males of an unknown cricket were heard from a margin of a dense reed vegetation along the river Belice, 100-150 m from the sea shore. After comparing the song recordings with the available recordings from Corsica, we were able to deduct that this must be *N. averni*. In 2010 we discovered the species in Apulia, Basilicata, Calabria and from the Island of Elba (Tuscany). The habitat is always reed vegetation along rivers close to the sea. From all localities we have sound recordings, but only from Elba we also have voucher specimens. In this locality L. Forbicioni saw the animals sitting and walking on the leaves of reed at a height of about 70-100 cm. It was also quite easy to catch several specimens with a net.

The species seems to be quite widespread along the southern Italian coast and can probably be found in many other deltas.

France

N. averni in France is thus far known only from Corsica. The first observations stem from 2005 (BOITTIER et al. 2006), but up until 2008 observations have been made by E. Sardet, Y. Braud, E. Boitier, O. Bardet & D. Petit. Many observations stem from the eastern coast of the island, that is relatively flat and has quite a lot

of river deltas. But also on the western coast the species has been found. Main habitat is vegetation dominated by reeds, *Arundo donax* or sedges, sometimes also with some trees. The species predominantly lives close to the sea, more or less at sea level. In rare occasions the species was found at a somewhat higher altitude (up to 35 m). Not included in table 1 is an observation by Y. Braud from Ajaccio at an altitide of even 52 m.

Only in a few cases, and only after working really hard, it was possible to catch some voucher specimens.

Spain

As published by GOROCHOV & LLORENTE (2001) the species has been collected in the Canaries on the island Tenerife. In 2008 C. Roesti found the species abundantly in the island Mallorca and was also able to collect a specimen and make some sound recordings.

In august 2010 R. Kleukers found a few small populations of *N. averni* along a large brackish lake in the Ebro delta. This is the first record for the Iberian Peninsula. Further research is needed to see how widespread the species is in the Ebro delta and along the rest of the Spanish coast and islands.

Turkey

In May 2009 C. Roesti found *Natula averni* as a common cricket in reed vegetation in the delta area around Antalya. However, neither sound recordings nor collections have been made so far.

In June 2009 the first two authors together with L. Willemse did some field work before the international Orthoptera congress in Antalya. We discovered a population of *Natula averni* in high marsh vegetation behind the beach and along the river mouth of river Alakir near Hasyurt, southwest of Antalya. We were able to catch two males and one female (fig. 1b, c). Unfortunately the female escaped after being photographed.

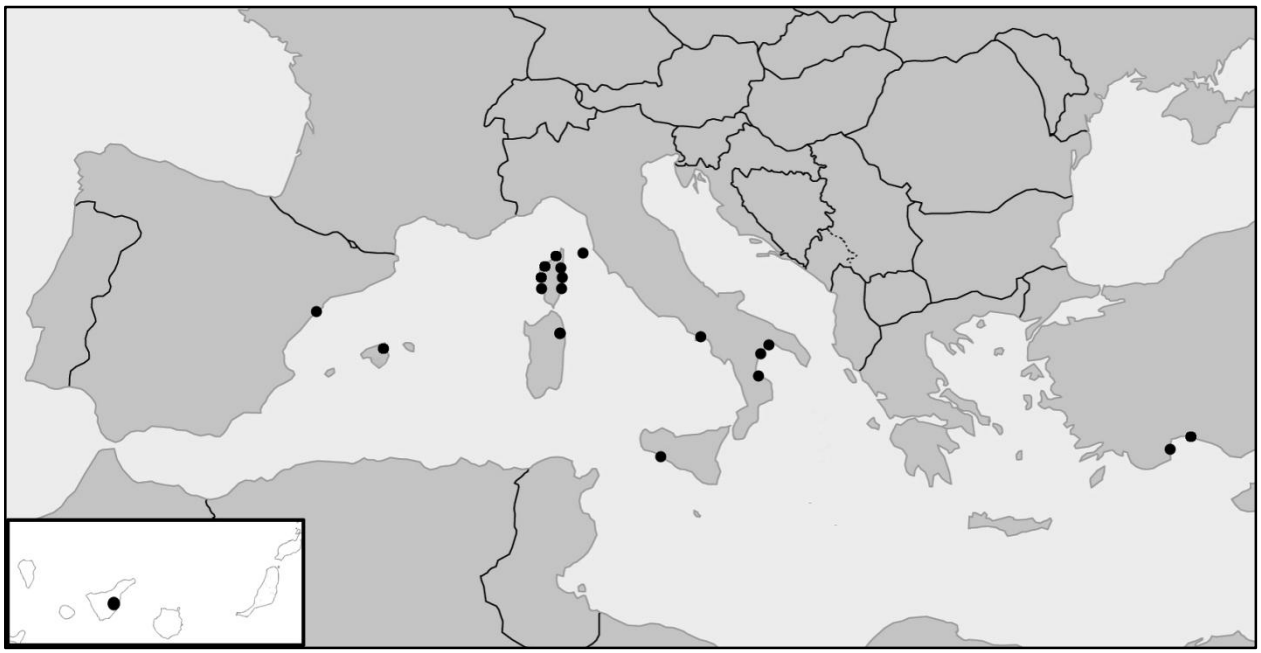

Figure 2: Distribution map of *Natula averni*, based on the present observations.

Table 1: Observations of *Natula averni* in southern Europe and Turkey. * = B. Odé, L. Willemse, R. Kleukers, B. Massa, P. Fontana, R. Battiston, R. Mariño-Pérez.

	Locality	Co-ordinates	Date	Observer	Stage	Source	Recording (table 2)
I	Lago di Averno, W Napoli, Campania	N40.841867° E14.074774°	< 1855	A. Costa	♀+♂	Costa, 1855; coll.	-
I	Siniscola, Nuoro, Sardinia	N40.592773° E9.710964°	16-22.IX.1987	G.H. Schmidt & M. Herrmann	2♂♂+1♀	Schmidt & Herrmann, 2000; coll.	-
I	Foce del Belice (0m), Sicilia	N37°34'57.5" E12°51'53.7"	16.V.2006	B. Odé, L. Willemse & R. Kleukers	♂♂	♫ recorded, not coll.	3
I	Beach of Policoro (1m), Basilicata	N40°10'23.7" E16°42'17.0"	15.VI.2010	B. Odé et al. *	♂♂	♫ recorded, not coll.	5
I	Lato river mouth (0m), Puglia	N40°29´44.8" E16°58´29.7"	15.VI.2010	B. Odé et al. *	♂♂	♫ recorded, not coll.	6
I	Crati river mouth (1m), Calabria	N39°43'17.8" E16°31'16.3"	17.VI.2010	B. Odé et al. *	♂♂	♫ recorded, not coll.	7
I	San Giovanni, Isola d'Elba, Livorno, Tuscany	32TPN0839	14.X.2010	L. Forbicioni	1♂	♫ heard, coll.	-
I	San Giovanni, Isola d'Elba, Livorno, Tuscany	32TPN0839	20.X.2010	L. Forbicioni	2♂♂+1♀	♫ recorded, coll.	4
I	San Giovanni, Isola d'Elba, Livorno, Tuscany	32TPN0839	24.X.2010	L. Forbicioni	6♂♂+4♀♀	♫ heard, coll.	-
I	San Giovanni, Isola d'Elba, Livorno, Tuscany	32TPN0839	04.XI.2010	L. Forbicioni	4♂♂+2♀♀	♫ heard, coll.	-
I	Le prade, Isola d'Elba, Livorno, Tuscany	32TPN1039	08.XI.2010	L. Forbicioni	1♂	♫ heard, coll.	-
F	Golo river mouth (1m), Venzolasca, Corsica	UTM 543,838 4707,936	28.VII.2005	E. Boitier, O. Bardet & D. Petit		♫ heard, not coll.	-
F	Isola Longa (13m), Ghisonaccia, Corsica	UTM 537,826 4656,121	30.VII.2005	E. Boitier, O. Bardet & D. Petit		♫ heard, not coll.	-
F	Portiglioro (5m), Propriano, Corsica	UTM 489,25 4610,45	03.VIII.2005	E. Boitier, O. Bardet & D. Petit		♫ heard, not coll.	-

Table 1 (continuation): Observations of *Natula averni* in southern Europe and Turkey.

Locality		Co-ordinates	Date	Observer	Stage	Source	Recording (table 2)
F	Estuary of river Fango (7m), Galeria, Corsica	N42,41908° E8,65941°	02.VII.2006	E. Sardet & Y. Braud	juv.+adult	♫ recorded, coll.	-
F	Golo river mouth (1m), Vescovato, Corsica	N42,52272° E9,53331°	13.VII.2006	E. Sardet & Y. Braud		♫ heard, not coll.	-
F	San Pellegrino (0m), Penta-Di-Casinca, Corsica	UTM 544,528 4699,875	19.VII.2006	E. Boitier, O. Bardet & D. Petit		♫ heard, not coll.	-
F	Liamone river mouth, near bridge (0m), Coggia, Corsica	UTM 476,886 4658,508	26.VII.2006	E. Boitier, O. Bardet & D. Petit		♫ heard, not coll.	-
F	Beach of San Giuseppe (0m), Coggia, Corsica	UTM 476,012 4659,519	26.VII.2006	E. Boitier, O. Bardet & D. Petit		♫ heard, not coll.	-
F	Beach of San Giuseppe (0m), Coggia, Corsica	UTM 476,012 4659,519	26.VII.2006	E. Boitier, O. Bardet & D. Petit	1♂	♫ recorded, coll.	2
F	Beach of San Giuseppe (0m), Coggia, Corsica	UTM 476,012 4659,519	30.VII.2006	E. Boitier, O. Bardet & D. Petit		♫ heard, not coll.	-
F	North of Étang de Palu (3m), Ventiseri, Corsica	N41,9596° E9,4096°	11.IX.2006	E. Sardet & Y. Braud		♫ heard, not coll.	-
F	Pine forest (1m), Lucciana, Corsica	N42,55446° E9,52804°	02.II.2007	Y. Braud		♫ heard, not coll.	-
F	Fornaccio (N) (2m), Venzolasca, Corsica	N42,52046° E9,53305°	28.IV.2007	Y. Braud		♫ heard, not coll.	-
F	Tower of San Pellegrino (1m), Penta-di-Casinca, Corsica	N42,44969° E9,54081°	28.IV.2007	Y. Braud	adult	collected?	-
F	Figareto (N) (1m), Talasani, Corsica	N42,41763° E9,53868°	29.IV.2007	Y. Braud		♫ heard, not coll.	-
F	Beach of Cupabia (1m), Serra-di-Ferro, Corsica	N41,738333° E8,78389°	30.IV.2007	Y. Braud		♫ heard, not coll.	-
F	Étang de Canniccia (Austinaccia) (3m), Sollacaro, Corsica	N41,72648° E8,84946°	22.VI.2007	Y. Braud		♫ heard, not coll.	-
F	Anghione (5m), Penta-di-Casinca, Corsica	UTM 543868 4703366	27.VII.2007	E. Boitier & D. Petit		♫ heard, not coll.	-

Table 1 (continuation): Observations of *Natula averni* in southern Europe and Turkey.

Locality		Co-ordinates	Date	Observer	Stage	Source	Recording (table 2)
F	Beach of Crovani, l'Argentella (5m), Calenzana, Corsica	UTM 473785 4702367	31.VII.2007	E. Boitier & D. Petit		♫ heard, not coll.	-
F	Delta of river Fango, Piana di l'Olmu (5m), Galéria, Corsica	UTM 472104 4696492	01.VIII.2007	E. Boitier & D. Petit		♫ heard, not coll.	-
F	L'Aliso, along D82 (0m), Saint-Florent, Corsica	UTM 524953 473842	06.VIII.2007	E. Boitier & D. Petit		♫ heard, not coll.	-
F	Valdone (35m), Aghione, Haute-Corse, Corsica	UTM 536,376 4658,368	17.VII.2008	E. Boitier & D. Petit		♫ heard, not coll.	-
F	San Pellegrinu (2m), Penta di Casinca, Corsica	N42,4500° E9,5378°	12.VIII.2008	C. Roesti	♂♂	♫ heard, not coll.	-
F	Golo river mouth (1m), Borgo, Corsica	N42.52278° E9.53389°	21.VIII.2008	C. Roesti	♂♂	♫ heard, not coll.	-
E	Tenerife, Canary Islands	-	< 2001	A. Gorochov & V. Llorrente	1♂	Gorochov & Llorrente, 2001; coll.	-
E	S'Albufera National Park (1m), Can Picafort, Mallorca	N39°46'40.81'' E3°07'48,62''	20.VI.2008	C. Roesti	1♂	♫ recorded, coll.	8,9
E	l'Encanyissada, Ebro delta, Catalunya	N40°39'19.6" E00°41'04.8"	28.VII.2010	R. Kleukers	10♂♂	♫ recorded, not coll.	1
E	l'Encanyissada, Ebro delta, Catalunya	N40°39'34.5" E00°40'52.7"	28.VII.2010	R. Kleukers	5♂♂	♫ heard, not coll.	-
E	l'Encanyissada, Ebro delta, Catalunya	31TCF0403	2.X.2010	D.L. Pomares	4-5♂♂	♫ heard, not coll.	-
TH	Khumphaya, Ampoe Hangdong, Chiang Mai	N18°42' E98°56'	12.XII.1998	S. Ingrisch	1♂	♫ recorded, coll.	12
TR	East of Lara Beach, Antalya	N36°51'31.57" E30°52'23.81"	03.III.2009	C. Roesti	2♂♂+1♀	♫ heard, not coll.	-
TR	Hasyurt, Kumluca (0m), Antalya	N36°18'59.7" E30°15'24.1"	20.VI.2009	B. Odé, L. Willemse & R. Kleukers	2♂♂	♫ recorded, coll.	10, 11

Habitat

Summarizing the observations above, the habitat of *N. averni* is localized along the Mediterranean coast, close to the sea, in marshlands with a more or less stable high ground water table, although somewhat influenced by tidal fluctuations and often near the mouth of a river. Vegetation is usually 1.5-3 m high, species-poor and with a domination of reed (*Phragmites australis*) or other tall grasses, sedges or rushes. At some localities the influence of the sea is reflected in a somewhat brackish vegetation.

In many localities the subsoil consists of sandy deposits. The topsoil however usually is covered with a layer of organic material.

Thanks to the relatively large amount of observations in Elba we now know that within the habitat the species predominantly resides on the leaves of reeds and tall grasses between 70-100 cm height. Further details on live cycle and biology, however, remain unclear.

Morphology (fig. 3)

*Biometrics (length in mm), based on specimens from Elba***.** Male: total: 4.1-4.3; pronotum: 0.4-0.5; tegmina: 3.2-3.3; hind femur: 3.0-3.1. Female: 4.5-5.0; pronotum: 0.5-0.6; tegmina: 2.7-2.9; hind femur: 3.1-3.2; ovipositor: 1.5-1.7.

Natula averni vaguely resembles the related *Trigonidium cicindeloides*, which is the only other European representative of the subfamily Trigonidiinae. *Natula averni* is very small (4 mm), amber coloured, with green to pale brown eyes (when alive) and very long antennae, about three times the body length. On the pronotum a median light line is present and two lateral light bands, which are 1/3 wider than long, tapering anteriorly. The pronotum has a distinct transverse sulcus and bristles of different length along fore and hind margins and on the side. The tegmina of the male reach the tip of the abdomen, widely overlapping along the entire width. Both tegmina are more or less identical**;** the pars stridens is very short (ca. 0.1 mm). The female shows less pellucid tegmina, just shorter than the abdomen, narrower than in the male, overlapping only marginally. The cerci are very long, longer than the abdomen and provided with fine bristles. The ovipositor is short, less than half of the cerci length, upcurved with a serrated apex. The legs are provided with bristles, fore and intermediate tibiae have a very small outer spine. The hind tibiae show three pairs of spines in the lower half, further three very small ones on the outer side, the intermediate is longer than others, and three on the inner side, the upper is longer than others and as long as half of the first tarsal segment. These spines are yellow with a blackish apex. The hind tarsi are half as long as the tibiae, the first segment bearing two short spines dorsally and two long spines ventrally, the outer exceeds the second tarsal segment. The first tarsal segment of fore and intermediate legs are as long as the second and the third together, that of the hind legs is longer than the second and the third together. The second tarsal segment is longer than the third and shows a small transversal incision. The claws are smooth. The male genitalia are similar to that of *N. longipennis* in GOROCHOV (1987).

According to COSTA (1855) the nymphs of *N. averni* and *Trigonidium cicindeloides* are quite similar, but they can be distinguished because the tarsal claws in *T. cicindeloides* are clearly toothed, while those of *N. averni* are smooth. In *N. averni* the eyes are coloured green to pale brown, whereas the eyes of *T. cicindeloides* are quite dark.

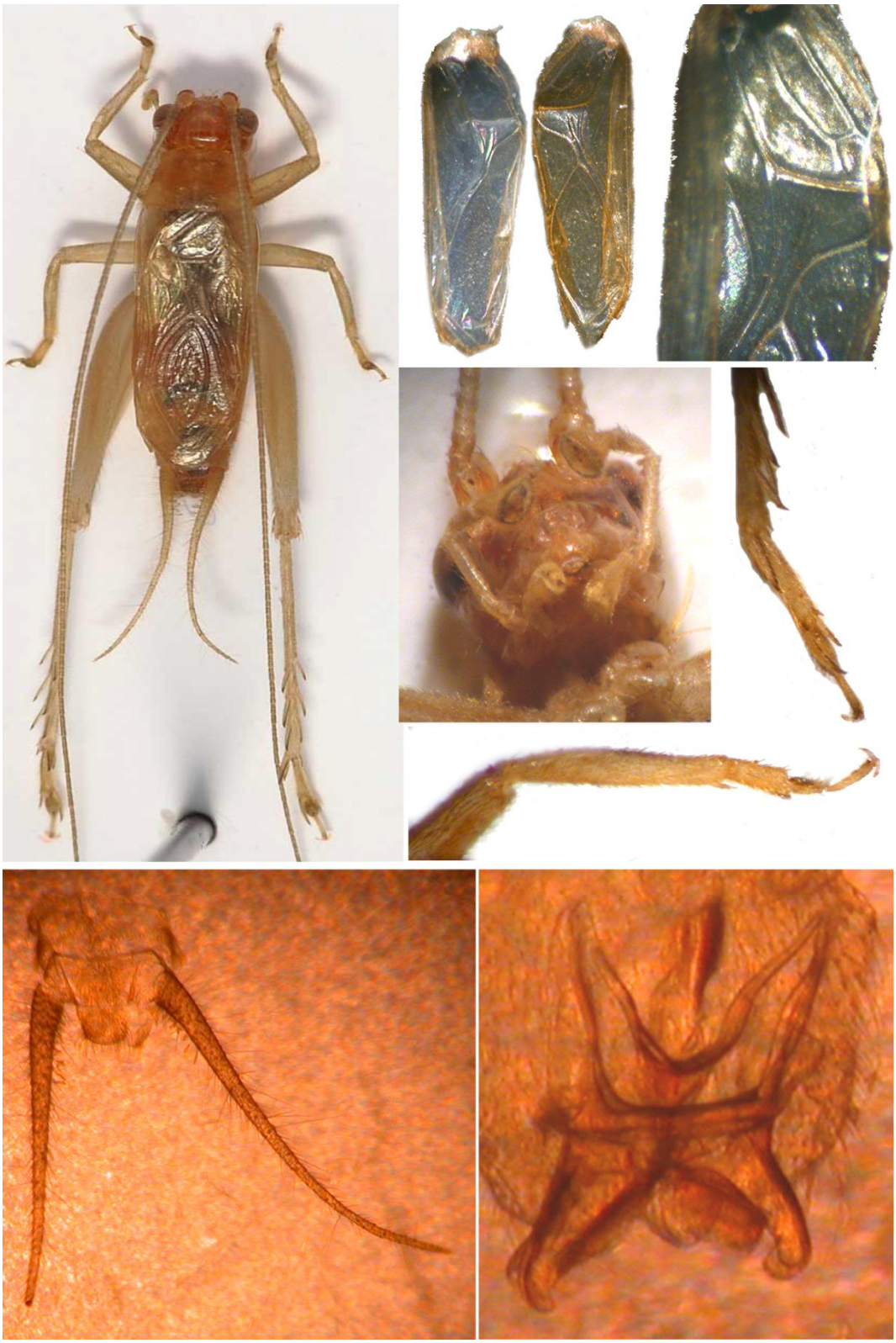

Figure 3: Morphology of male *Natula averni* from Elba. Photos B. Massa.

Song (table 2, fig. 4, 5)

In table 2 all studied song recordings from Europe and Turkey are listed. Additionally to the European recordings we took into account recordings of Sigfrid Ingrisch from Thailand (1996), supposedly belonging to *N. longipennis*.

Table 2: Details of sound recordings

Rec. nr.	Filename (.wav)	Species	Date	Time	Country	Recording medium	Recordist
1	file0071	*N. averni*	28.VII.2010	16:00	Spain	Microtrack II (CF)	R. Kleukers
2	natula	*N. averni*	26.VII.2006	-	France	unknown	Y. Braud
3	Take33	*N. averni*	16.V.2006	15:12	Italy	Tascam HD-P2 (CF)	B. Odé
4	Natula	*N. averni*	20.X.2010	16:00	Italy	videocamera	L. Forbicioni
5	Take38	*N. averni*	15.VI.2010	12:49	Italy	Tascam DA-P1 (DAT)	B. Odé
6	Take40	*N. averni*	15.VI.2011	17:20	Italy	Tascam DA-P1 (DAT)	B. Odé
7	Take08	*N. averni*	17.VI.2010	16:28	Italy	Tascam DA-P1 (DAT)	B. Odé
8	Ana_ave_night_1	*N. averni*	20.VI.2010	-	Spain	unknown	C. Roesti
9	Ana_ave_Tag_3	*N. averni*	20.VI.2010	-	Spain	unknown	C. Roesti
10	Take88	*N. averni*	24.VI.2009	6:11	Turkey	Tascam HD-P2 (CF)	B. Odé
11	Take82	*N. averni*	21.VI.2009	10:57	Turkey	Tascam HD-P2 (CF)	B. Odé
12	0868anax	*N. longipennis*?	12.XII.1998	-	Thailand	Sony cassette recorder	S. Ingrisch

Rec. nr.	Echeme tempo (/s)	Mean echeme duration (ms; min-max)	Syllable tempo (/s)	Mean number of syllables per echeme (min-max)	Peak frequency (kHz)	Temperature (°C)	Light
1	3,4	110 (80-140)	108	11,9 (8,6-15,1)	7,0	30	+
2	2,1	200 (170-230)	84	16,8 (14,3-19,3)	6,6	30	?
3	2,2	240 (230-250)	87	20,9 (20-21,8)	6,4	25	+
4	1,4	305 (280-330)	55	16,8 (15,4-18,2)	4,7	20	+
5	2,9	180 (160-200)	97	17,5 (15,5-19,4)	7,0	30	+
6	2,4	185 (170-200)	93	17,2 (15,8-18,6)	7,0	30	+
7	2,4	215 (200-230)	90	19,4 (18-20,7)	7,1	30	+
8	0,8	550 (400-700)	40	22 (16-28)	4,1	17	-
9	2,2	252,5 (240-265)	80	20,2 (19,2-21,2)	6,3	24	+
10	3,5	110 (80-140)	83	9,1 (6,6-11,6)	6,6	25	-
11	5,8	90 (80-100)	107	9,6 (8,6-10,7)	7,1	35	+
12	4,2	75 (60-90)	70	5,3 (4,2-6,3)	5,0	19	+

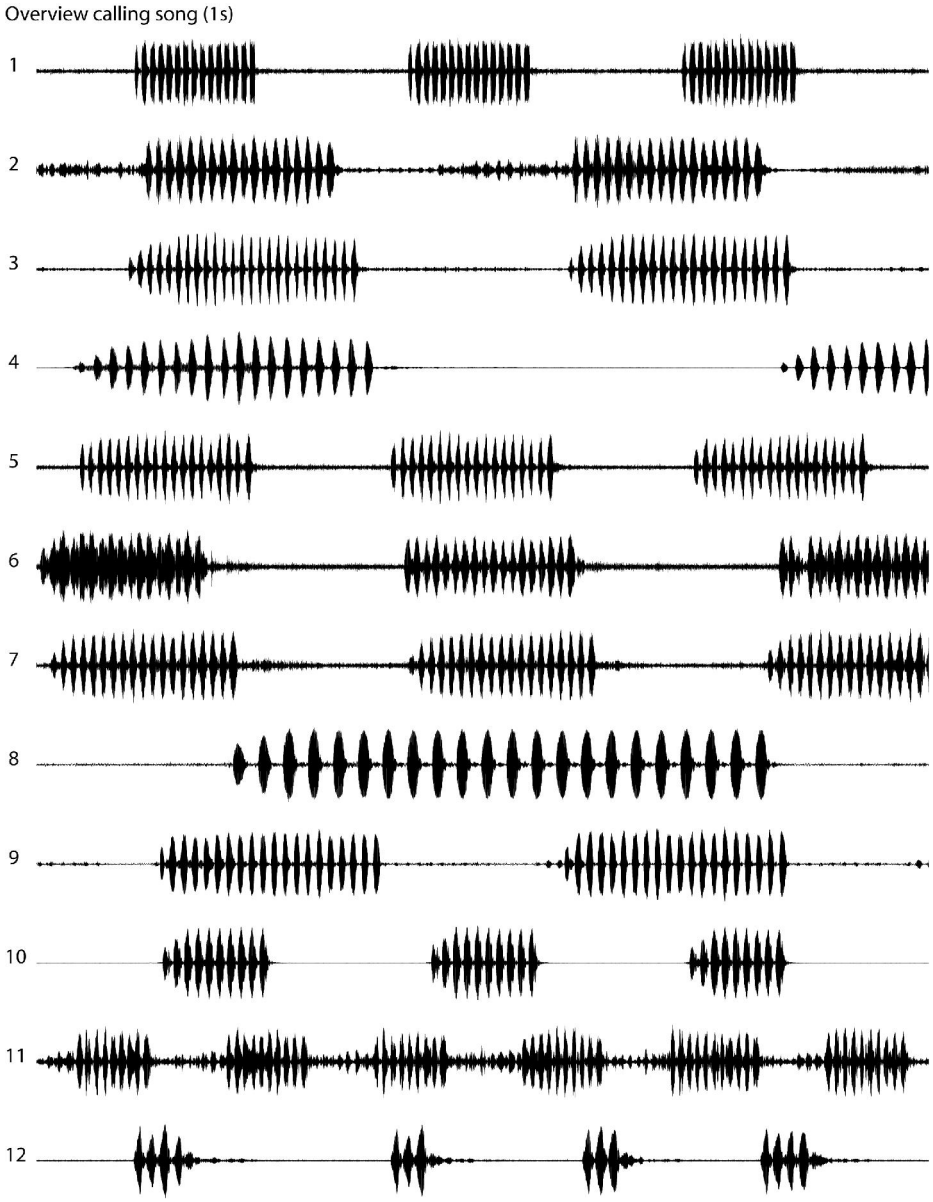

Figure 4: Oscillograms of 1 s of the recordings as referred to in table 1 and 2.

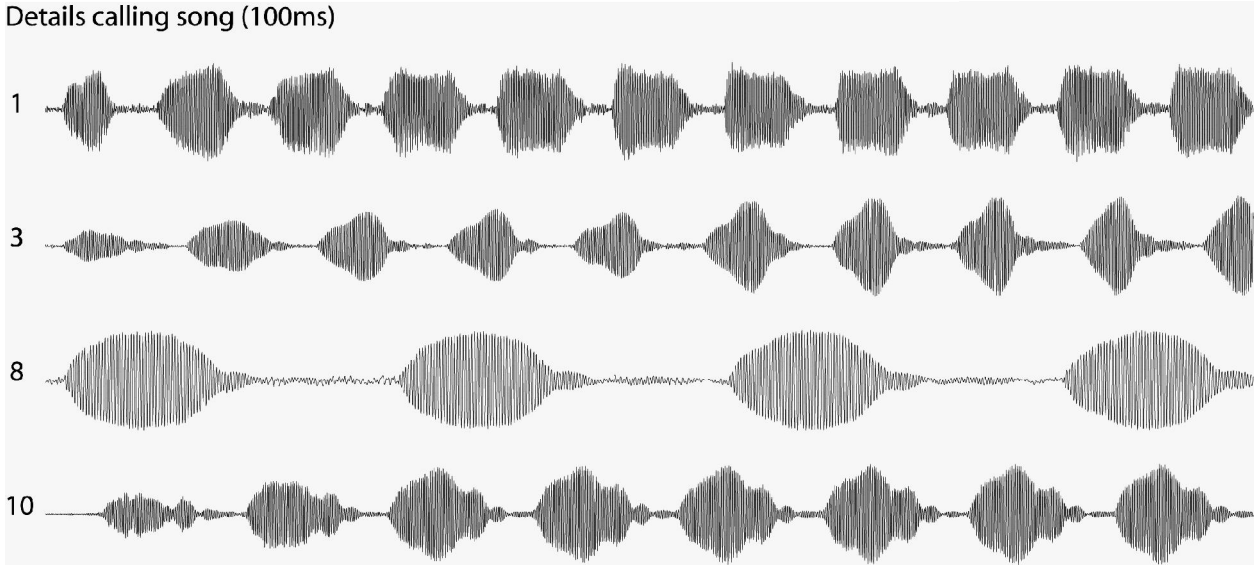

Figure 5: Oscillograms of 100 ms of part of the recordings as referred to in table 1and 2.

At present it seems that the species sings during most of spring, summer and autumn, at least from March till the beginning of November. The song can be heard in the afternoon, evening and night.

The conditions (especially temperature) between the available recordings differ considerably. Especially recordings from Elba and Thailand (and one from Mallorca), seem aberrant due to low temperatures. From the Turkish and Majorcan population both low and high temperature recordings are available. At first glance on the basis of bioacoustics three groups can be discerned: Western Mediterranean, Turkey and Thailand. The population of Spain seems a little aberrant within the Western Mediterranean group.

The song of the Western Mediterranean group consists of echemes of about 180-300 ms more or less regularly repeated at the rate of about 2-3/s, up to 4/s in the Spanish recordings and down to about 1/s at lower temperatures (Elba/ Mallorca). Echemes consist of about 17-21 mostly equally loud syllables, repeated at the rate of about 80-100/s, down to about 50/s under colder conditions. The recordings from Spain show echemes with about 12 syllables per echeme and a high syllable repetition rate of about 110/s.

Sometimes the first 1-3 syllables are weaker than the following ones. The frequency spectrum is very narrow with a peak frequency between 6.6 and 7.1 kHz. At lower temperatures this seems to drop to as low as 4.1-4.7 kHz, as shown in the recordings from Elba and Mallorca (fig. 6).

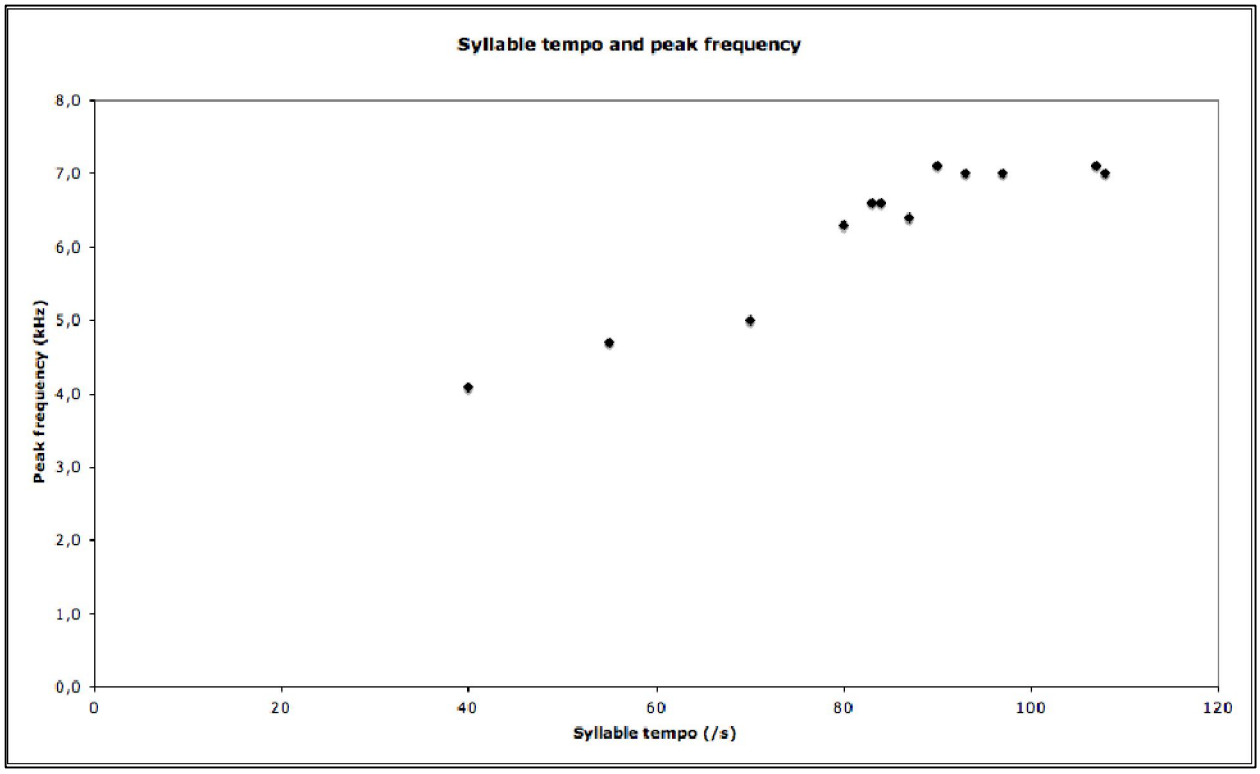

Figure 6: Relation between syllable tempo (/s) and peak frequency (kHz) of the song of *N. averni*.

Rarely series of shorter echemes precede the usual series of echemes. It seems that special social conditions (e.g. courtship) are involved in these situations. However, no observations are available those confirm this.

In the recordings from Turkey the number of syllables is about 9-10, whereas the echeme repetition rate is very high, up to 6/s at higher temperatures. However, syllable repetition rate is about 110/s, just as high as in Spain.

In the recordings from Thailand the echeme repetition rate is also quite high, about 4/s, but the number of syllables in echemes is even lower: about 5. Syllable repetition rate is about 70/s. Taking into account the relatively low temperature at the available recordings, the echeme repetition rate should be at least at the level of the Turkish population at more normal higher temperatures.

Discussion

It is important to solve the identity of this elusive species. When *Natula averni* and *N. longipennis* prove to be synonyms the status changes from local in Europe to occurring in a wide area, in three continents. On the other hand it is possible that the species in Europe and Turkey consists of a complex of two or more species. Although we have scarce material, we can already draw some first conclusions based on the sound recordings which we have available from many localities. The recordings from Italy, Spain (including Mallorca) and Corsica seem to fit into one bioacoustically coherent group. Taking into account recording temperatures it seems that Turkish, Majorcan and especially Thai populations are different, showing a higher echeme repetition rate and lower number of syllables per echeme.

The methods used until now to collect specimens were not very efficient. The crickets can be heard easily, but they are very difficult to find. We have used several methods in trying to catch specimens.

We spend many hours in the burning sun, between swarms of mosquitoes, trying to locate the piercing song, but to no avail. It is hardly possible to hear whether the animals reside on the marsh floor or within the reed vegetation. Sweeping an insect net through the tough reed vegetation is useless if specimens can not be located. In Turkey we have trampled parts of the reed vegetation and laid out white sheets. Beating the surrounding vegetation over the sheets eventually yielded some specimens, but with much effort.

Using light is also a means to find the species. Apart from dedicated light traps, highly illuminated billboards or walls seem good places to search for small crickets, including *N. averni*, although so far no high numbers of individuals of the species have been collected this way.

In contrast with the experiences described above, the third author could easily locate and collect several specimens in reed vegetation in Elba in late autumn. The animals were sitting, walking or singing on the upper side of leaves of reed and after only a slight distortion quickly fled to the underside of those leaves. It might be possible that it is easier to catch animals in certain parts of the day or parts of the season.

Call

Natula averni can be easily recorded using the typical song. As we now have a good description of the habitat (reed beds along rivers and brackish lakes in deltas) it becomes possible to establish the exact distribution in southern Europe. We therefore place this call to all orthopterists visiting delta areas in southern Europe to investigate suitable habitats on the occurrence of this cricket. We are very interested in gathering exact localities where the species lives. A sound recording can serve as proof, but of course it would be very interesting to have more voucher material. Until now no efficient method for collecting this cricket is available. We would like to challenge orthopterists into finding the most useful method. A suggestion that we did not try yet: placing peanut butter traps (YANG et al. 1994) in the vegetation. When caught the crickets can best be preserved in ethanol. If sufficient specimens are available it would be good to have some specimens on 96% pure ethanol for DNA studies.

To serve well-prepared excursions a series of photos, sound recordings and a movie are available through www.ortheur.org.

Acknowledgements

We are very thankful to all people accompanying us with our field trips and helping with the attempts to catch specimens: Paolo Fontana, Luc Willemse, Daniel Petit, Eric Sardet, Olivier Bardet, Ricardo Marino-Perez & Roberto Battiston. Olivier Bardet provided the sound recording from France and Sigfrid Ingrisch provided sound recordings from Thailand. We would like to thank Andrej Gorochov, who shared some bibliographical notes and information on the characters of the genus.

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Literature

BOITIER, E., PETIT, D. & BARDET, O. (2006): Contribution à la connaissance des Orthoptéroïdes de Corse (Orthoptera, Phasmoptera, Mantodea). - L'Entomologiste, 62 (5-6): 129-145.

BOITIER, E., PETIT, D. & BARDET, O. (2007): Deuxième voyage naturaliste en Corse: contribution à la connaissance des Orthoptères (juillet-août 2006). - Rapport d'étape Office de l'Environnement de la Corse et Alcide-d'Orbigny, Clermont-Ferrand (mars 2007), 13 p. et annexes.

BAUD, Y. & SARDET, E. (2006): Catalogue des Orthoptéroïdes de Corse: seconde actualisation (Orthoptères, Mantoptères, Blattoptères, Dermaptères et Phasmoptères). - Matériaux Orthoptériques et Entomocénotiques, 11: 97-111.

COSTA, A. (1855): Seguito a Grillidei. - In: COSTA O.G. (ed.), Fauna del Regno di Napoli. - Napoli: 29-52.

GOROCHOV, A. (1987): On the cricket fauna of the genera Euscyrtinae, Trigonodiinae and Oecanthinae (Orthoptera, Gryllidae) in eastern Indochina. - In: L.N. MEDVEDEV (Ed.): The Entomofauna of Vietnam: 5-17. Academy of Sciences of the USSR, A.N. Severov Institute for Evolutionary Morphology and Animal Ecology. Nauka, Moscow.

GOROCHOV, A.V. & LLORENTE, V. (2001): Estudio taxonómico preliminar de los Grylloidea de España (Insecta, Orthoptera). - Graellsia, 57 (2): 95-139.

SCHMIDT, G.H. & HERRMANN, M. (2000): Occurrence and distribution of Orthopteroidea, Blattoptera, Mantodea, Phasmodea, and Dermaptera in Sardinia/Italy. - Boll. Soc. sarda Sc. nat., 32: 83-128.

YANG, J.-T., CHAO, J.-T. & LIU, W.-Y. (1994): Collecting crickets (Orthoptera: Gryllidae) using peanut butter bait traps. - Journal of Orthoptera Research 3: 87-89.