

Distribution of *Cymatia rogenhoferi* (Fieber, 1864) (Hemiptera, Heteroptera, Corixidae) in the West-Palaeartic Region, with the first record for the Italian mainland

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Received: 01. February 2012 / Accepted: 05. November 2012 / Available online: 12. February 2013 / Printed: December 2013

Abstract. Distributional data on *Cymatia rogenhoferi* (Fieber, 1864) in the West-Palaeartic region are analyzed and show a mostly westward expansion of its distributional range. The collecting of the species in a temporary wet area in Tuscany represents the first record for the Italian mainland. A new map with the updated distribution is also given and discussed.

Key words: *Cymatia rogenhoferi*, Nepomorpha, Corixidae, Italy, distribution.

Introduction

Cymatia rogenhoferi (Fieber, 1864) belongs to Cymatiinae, a small subfamily of Corixidae, including few species worldwide and only three in Europe: *C. coleoprata* (Fabricius, 1777), an Euro-Sibiric species, living also in Northern Italy, *C. bonsdorffii* (C. R. Sahlberg, 1819), a more nordic species that does not seem to be present south of the Alps, and *C. rogenhoferi*, a species with the centre of its distribution in Central Asia, also reaching Europe and Northern Africa (Jansson 1986, 1995).

As in many other species belonging to the superfamily Corixoidea, wing dimorphism is present, with brachypterous and macropterous forms. According to Tamanini (1979), the former is more common, while full-winged specimens are rare. This is evident in *C. coleoprata* (Tamanini 1979). The brachypterous morph of *C. rogenhoferi* was described by Tamanini (1964) on specimens from Pantelleria Island (Sicily, Italy).

Cymatia rogenhoferi is a predator of planktonic crustaceans and insect larvae; it inhabits brackish as well as acidic waters (Wollmann et al. 2000). It colonizes lentic waters or backwaters of rivers (Baugnée 2005). Hufnagel & Vásárhelyi (1999) and Elder (2002) described juvenile instars. Suchá & Papáček (2008) reported it overwintering as an adult in the Czech Republic.

In the West-Palaeartic region this species was known only from rare and scattered records (Jansson 1986), but since then many contributions, including new records of this species in the region, were published. It is therefore useful and necessary to resume work on this species to get a full

picture of its current distribution.

The species has become more common in the last two decades in this region (Straka et al. 2009, Fent et al. 2011) and was recently recorded for the first time in Morocco (Gheit 1994), The Netherlands (Kelleher & van der Velde 2001 - first specimen collected in 1991), Belgium (Baugnée 2005) and England (Brooke 2009 - first specimen collected in 2005).

Cymatia rogenhoferi is considered rare in several West-Palaeartic countries such as Morocco (Gheit 1995), Czech Republic (Suchá 2010), Poland (Kurzątkowska 2008) and Romania (Berchi et al. 2011), and it has been included in red lists as for example in Germany (e.g. Bartels et al. 2004, Deckert & Winkelmann 2005).

Materials and methods

All the available literature was checked, including unpublished data from technical reports and thesis dissertations. Only data from reliable sources have been considered to create an updated distributional map of the species. The records used for this purpose are deducible from the references listed in the results.

The specimen representing the new Italian record was collected using a water net and is deposited in my private collection, preserved in alcohol (75%); other specimens cited in this contribution are in Terzani's collection.

Abbreviations used in the text:

MZUF - Natural History Museum of the University of Florence, Zoological Section "La Specola".

CFC - Fabio Cianferoni private collection, Florence, Italy.

TFC - Fabio Terzani collection (preserved in MZUF).

Results

After the analysis of all available records in literatures, it revealed that the distribution of this species is in Central Asia from Kazakhstan and East-Siberia to Mongolia and northern China. It is recorded also from India, while in southwest Asia it is present from Iran to Saudi Arabia. Its western distribution is from Turkey, through Europe: Russia, Ukraine, Moldova, Romania, Bulgaria, Poland, Slovakia, Hungary (frequent in Danube Basin), Serbia, the Czech Republic, Austria, Germany, The Netherlands, Belgium, eastern and northern France, and Great Britain (England) (Jansson 1986, 1995, Kecskés 1999, Elder 2000, Földessy 2000, Wollmann et al. 2000, Horsák 2001, Kondorosy 2001, Hufnagel & Gaál 2005, Vásárhelyi & Bakonyi 2005, Kurzątkowska 2006, 2008, Barndt 2010, Vadadi-Fülöp et al. 2007, Arnold 2008, Bernáth et al. 2008, Boda 2008, Brooke 2009, Straka et al. 2009, Bloechl et al. 2010, Suchá 2010, Wilson 2010, Berchi et al. 2011, Fent et al. 2011, Frase & Wolf 2011). In the Mediterranean region there are only one record from literature (cf. Jansson 1986) and a new one from south France (Elder, Sainte-Marie-du-Mont (Manche), France, pers. comm. 2011: France, Bouches-du-Rhône, Le Sambuc, flooded ricefield near road RD36, N43°32'43,6" E04°41'62,2" (WGS84), 5.VIII.2004, J.-F. Elder leg., 2 ♂♂, 3 ♀♀), many from Spain, some for northern Morocco and one from Algeria (Montes et al. 1982, Jansson 1986, Gheit 1994, Ribes et al. 1997, Boix et al. 2001, Millán et al. 2001, García-Avilés 2002, Abellán et al. 2006). Puton (1880) quoted the species for "Italy", without locality, and Tamanini (1964) cited this record. The only precise records were until now the one quoted by Tamanini (1964) for Pantelleria Island and successive records from the same locality (Carapezza 1981, 1995, Bacchi & Rizzotti Vlach 2007). In "Fauna Europaea" (Aukema 2011) 'Sicily' (including Pantelleria Island) is set as "no data", while the species is marked as "present" in the 'Italian mainland'. The following record is the first one for continental Italy, and also the first for Tuscany: ITALY, TUSCANY: Le Miccine, 36 m a.s.l., Campi Bisenzio (Florence Province), UTM (WGS84) 066904-485443, 15.III.2010, F. Cianferoni & F. Terzani leg., 1 macropterous ♀ (CFC).

Remarks. The collecting site is a temporary wet area (Fig. 1), remnant of the former extended wet plain area called "Piana" that existed west of Flor-

ence and was well known for its high biodiversity. After large drainage works, not much of it is left and the protection of the few remaining marshy sites is necessary (Bartolozzi et al. 2008). The examined biotope is dominated by *Trifolium* sp. (Fabaceae), but also typical water-dependent species like *Alisma plantago-aquatica* L. (Alismataceae) are present.

The single female of *Cymatia rogenhoferi* (Figs. 2A, 2B) was collected among several hundreds of *Sigara lateralis* (Leach, 1817) and dozens of *S. basalis* (Costa, 1843) (Corixidae, Corixinae).

This species can be separated from the others of the same genus by its peculiar pronotal and elytral pattern and by the different body size, which are good characters for males and females (Jansson 1986).

An updated map (Fig. 4), modified from Jansson (1986), is given, using all available data.

Discussion

The situation illustrated by Jansson (1986) (Fig. 3) revealed a different representation of the actual distribution of this species. The taxon presented two disjuncted areas: one extending from Asia to Central-Eastern Europe and another one in the West Mediterranean, with few isolated records (Carapezza 1995). With this new record for the Italian mainland and checking of the last 25 years reports, the distributional area of the species appears now more continuous (Fig. 4).

The species was not known from the western part of its current range (e.g. Great Britain, The Netherlands, Belgium, NW France, Spain outside the Pyrenees, and maybe Morocco as well) at the time Jansson wrote his review (Fig. 3). The possible causes of this sudden, mostly westward (but also northward in Europe) expansion of its range, probably related with climatic change (cf. Rabitsch 2008), are however difficult to explain.

According to Vigna Taglianti et al. (1999), this taxon can be assigned to a Centralasiatic-European-Mediterranean chorotype.

From bibliographic data (Tamanini 1979) the species appears to be univoltine with the reproduction period around May-June in Italy, so the macropterous specimen that I collected, most likely was an overwintering female searching for a suitable biotope for oviposition. No adults or larvae were found during further visits (1.V.2010; 3.VI.2010; 23.VI.2010) and later the biotope dried



Figure 1. The collecting site of the new Italian record. Temporary wet area in the Florence Province (Central Italy) (photo F. Cianferoni).



Figure 2. Habitus of the collected specimen. Dorsal (A) and ventral (B) view. Scale bar 1 mm (photo S. Bambi).

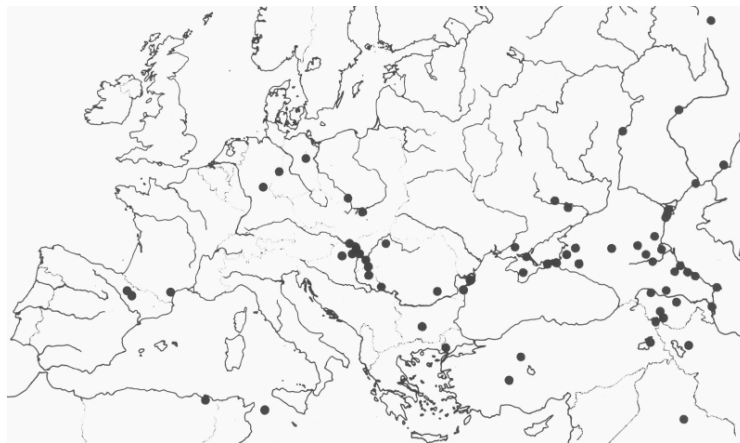


Figure 3. Distribution of *Cymatia rogenhoferi* (Fieber, 1864) in West Palaearctic according to Jansson (1986) (modified).

out completely (17.VII.2010; 20.VIII.2010).

Moreover recent investigations on Pantelleria

Island did not report the presence of this species in the unique known station ("Specchio di Venere"

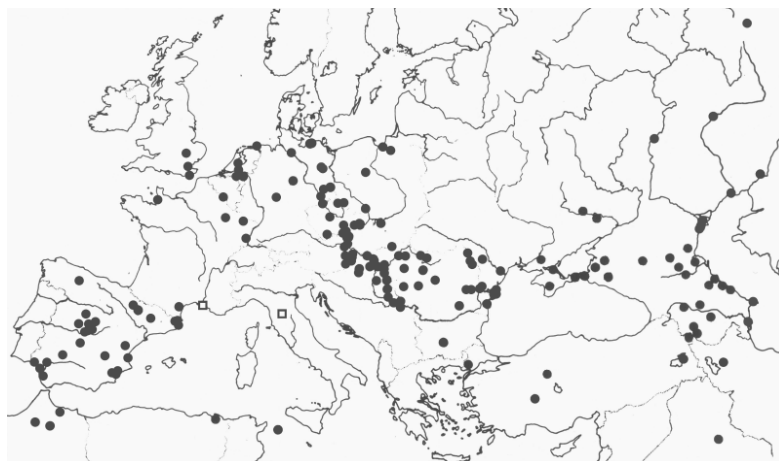


Figure 4. Present distribution of *Cymatia rogenhoferi* (Fieber, 1864) in West Palearctic (modified and updated from Jansson 1986). Solid circles represent the records from published and unpublished contributions, blank squares represent the new records.

lake), but only a large population of *Sigara selecta* (Fieber, 1848) (10.IV.2010, F. Terzani legit, TFC).

Further investigations in the Mediterranean region (particularly on the Italian mainland and in central regions of France) will probably be useful for a better understanding of dispersal in this species.

Acknowledgements. I wish to thank Fabio Terzani and Saverio Rocchi (MZUF) for help during the samplings and for providing material to study; Luca Bartolozzi (MZUF) who allowed me to study the Natural History Museum of Florence collection; Marcin Kamiński (Museum and Institute of Zoology, Polish Academy of Sciences, Warsaw, Poland) who provided and translated for me the Polish article of Kurzątkowska (2006); Jean-François Elder (National Natural Reserve, Domaine de Beauguillot, Sainte-Marie-du-Mont, France) who kindly communicated to me about an interesting unpublished record for south France; Petr Kment (National Museum, Praha, Czech Republic), Marius Berchi (West University of Timișoara, Romania), Udo Bröring (Brandenburg University of Technology, Cottbus, Germany) and Gilles Jacquemin (Henri Poincaré University, Nancy, France) who provided for me essential informations and literature; Mala Ram (London, UK) for the revision of the English text; Saulo Bambi (MZUF) for the stereomicroscope photos.

References

- Abellán, P., Sánchez-Fernández, D., Millán, A., Botella, F., Sánchez-Zapata, J.A., Giménez, A. (2006): Irrigation pools as macroinvertebrate habitat in a semi-arid agricultural landscape (SE Spain). *Journal of Arid Environments* 67: 255-269.
- Arnold, K. (2008): Aktuelle Heteropteren-Funde nach 1980 aus dem Freistaat Sachsen (Insecta: Hemiptera). 4. Beitrag. *Faunistische Abhandlungen (Dresden)* 26: 149-159.
- Aukema, B. (2011): *Fauna Europaea: Hemiptera, Heteroptera*. *Fauna Europaea version 2.4* <<http://www.faunaeur.org>, accessed at 2011.10.31>.
- Bacchi, I., Rizzotti Vlach, M. (2007): *Insecta Heteroptera Nepomorpha and Gerromorpha*. pp. 147-149 + CD-ROM. In: Ruffo, S., Stoch, F. (eds.), *Checklist and Distribution of the Italian Fauna*. *Memorie del Museo civico di Storia naturale di Verona*, 2ª serie, Sezione Scienze della Vita.
- Barndt, D. (2010): Beitrag zur Arthropodenfauna ausgewählter Binnensalzstellen in Brandenburg. *Naturschutz und Landschaftspflege in Brandenburg* 19: 34-44.
- Bartels, R., Gruschwitz, W., Kleinsteuber, W. (2004): Rote Liste der Wanzen (Heteroptera) des Landes Sachsen-Anhalt. *Berichte des Landesamtes für Umweltschutz Sachsen-Anhalt* 39: 237-248.
- Bartolozzi, L., Cianferoni, F., Fabiano, F., Mazza, G., Rocchi, S., Terzani, F., Zinetti, F. (2008): Osservazioni sulla entomofauna della Piana fiorentina. Un Piano per la Piana: idee e progetti per un Parco. *Atti del convegno*. 9-10 maggio 2008 - Polo Scientifico e Tecnologico di Sesto fiorentino, Università di Firenze. 14 pp.
- Baugnée, J.-Y. (2005): Hétéroptères nouveaux ou intéressants pour la faune belge (Hemiptera Heteroptera). *Bulletin de la Société royale belge d'Entomologie* 140: 103-122.
- Berchi, G.M., Petrovici, M., Ilie, D.M. (2011): Aquatic and semiaquatic true bugs (Heteroptera: Nepomorpha) of Cefa Nature Park (North-Western Romania). *Analele Universității din Oradea, fascicula Biologie* 18: 29-33.
- Bernáth, B., Kriska, G., Suhai, B., Horváth, G. (2008): Wagtails (Aves: Motacillidae) as insect indicators on plastic sheets attracting polarotactic aquatic insects. *Acta Zoologica Academiae Scientiarum Hungaricae* 54: 145-155.
- Bloechl, A., Koenemann, S., Philippi, B., Melber, A. (2010): Abundance, diversity and succession of aquatic Coleoptera and Heteroptera in a cluster of artificial ponds in the North German Lowlands. *Limnologica* 40: 215-225.
- Boda, P. (2008): Aquatic and semiaquatic Heteroptera (Nepomorpha, Gerromorpha) of Tisza Region. In: Gallé, L. (ed.), *Vegetation and Fauna of River Tisza Basin II*. *Tisza Monograph Series* 8: 25-44.
- Boix, D., Sala, J., Moreno-Amich, R. (2001): The faunal composition of Espolla Pond (NE Iberian peninsula): the neglected

- biodiversity of temporary waters. *Wetlands* 21: 577-592.
- Brooke, S.E. (2009): A review of water bug species recently arrived in Britain. *Het News*, 2nd Series 14: 2-3.
- Carapezza, A. (1981): Gli Eterotteri dell'isola di Pantelleria (Insecta, Heteroptera). *Il Naturalista siciliano* 5: 73-91.
- Carapezza, A. (1995): Heteroptera. pp. 199-278. In: Massa, B. (ed.), *Arthropoda di Lampedusa, Linosa e Pantelleria (Canale di Sicilia, Mar Mediterraneo)*. *Il Naturalista Siciliano*.
- Deckert, J., Winkelmann, H. (2005): Rote Liste und Gesamtartenliste der Wanzen (Heteroptera) von Berlin. pp. 1-33. In: *Der Landesbeauftragte für Naturschutz und Landschaftspflege / Senatsverwaltung für Stadtentwicklung* (eds.), *Rote Listen der gefährdeten Pflanzen und Tiere von Berlin*. CD-ROM.
- Elder, J.F. (2000): Seconde localit e fran aise d'*Hygrotus (Coelambus) nigrolineatus* (Coleoptera, Dytiscidae). *Latissimus* 12: 5-6.
- Elder, J.F. (2002): Capture r cente en France de *Cymatia rogenhoferi* (Fieber, 1864) et description des stades juv niles (Heteropt. Corixidae). *Bulletin de la Soci t  entomologique de France* 107: 43-49.
- Fent, M., Kment, P.,  amur-Elipek, B., Kirgiz, T. (2011): Annotated catalogue of Enicocephalomorpha, Dipsocoromorpha, Nepomorpha, Gerromorpha, and Leptopodomorpha (Hemiptera: Heteroptera) of Turkey, with new records. *Zootaxa* 2856: 1-84.
- F ldessy, M. (2000): Heteroptera fauna elterjed se a B kk hegys gben II. ( szak-Magyarorsz g). *Folia Historico Naturalia Musei Matraensis* 24: 149-166.
- Frase, T., Wolf, F. (2011): Bemerkenswerte Wasserwanzenfunde (Nepomorpha, Gerromorpha) aus Mecklenburg-Vorpommern. *Virgo, Mitteilungsblatt des Entomologischen Vereins Mecklenburg* 14: 5-9.
- Garc a-Avil s, J. (2002): Biodiversidad de los humedales del Parque Regional del Sureste. III. Heter pteros acu ticos. *Serie Documentos* 37. Centro de Investigaciones Ambientales de la Comunidad de Madrid.
- Gheit, A. (1994): New water-bugs recorded for the Moroccan Fauna (Heteroptera, Hydrocorisae). *Bulletin de la Soci t  Entomologique de France* 99: 515-516.
- Gheit, A. (1995): Catalogue des H mipt res Hydrocorisae et Amphibicorisae des Provinces Nord Marocaines (1^{re} Note). *L'Entomologiste* 51: 241-249.
- Hors k, M. (2001): Contribution to our knowledge of macroinvertebrate fauna of the Dyje River downstream of the Nov  Mlyny Reservoirs (Czech Republic). *Scripta Facultatis Scientiarum Naturalium Universitatis Masarykianae Brunensis, Biology* 30: 41-62.
- Hufnagel, L., Ga l, M. (2005): Seasonal dynamic pattern analysis in service of climate change research. A methodical case-study – monitoring and simulation based on an aquatic insect community. *Applied Ecology and Environmental Research* 3: 79-132.
- Hufnagel, L., V s rhelyi, T. (1999): On the larvae of *Cymatia rogenhoferi* (Fieber, 1864) and *Gerris asper* (Fieber, 1860). *Annales Historico-Naturales Musei Nationalis Hungarici* 91: 61-63.
- Jansson, A. (1986): The Corixidae (Heteroptera) of Europe and some adjacent regions. *Acta Entomologica Fennica* 47: 1-94.
- Jansson, A. (1995): Corixidae. pp. 26-56. In: Aukema, B., Rieger, C. (eds.), *Catalogue of the Heteroptera of the Palaearctic Region*. Volume 1. Enicocephalomorpha, Dipsocoromorpha, Nepomorpha, Gerromorpha and Leptopodomorpha. The Netherlands Entomological Society, Amsterdam.
- Kecsk s, A. (1999): Occurrence of amphibiocorid bugs, water bugs and ground bugs in the catchment area of the River Someş/Szamos. pp. 241-247. In: S rk ny-Kiss, A., Hamar, J. (eds.), *The Someş/Szamos River Valley. A study of the geography, hydrobiology and ecology of the river system and its environment*. Tiscia monograph series, Szolnok-Szeged-T rgu Mureş.
- Kelleher, B., van der Velde, G. (2001): *Cymatia rogenhoferi* (Heteroptera: Corixidae) in The Netherlands. *Entomologische Berichten* 61: 115-116.
- Kondorosy, E. (2001): Somogy megye poloskafaun ja (Heteroptera). *Natura somogyiensis* 1: 123-134.
- Kurz tkowska, A. (2006): Nowe stanowisko rzadkiego w Polsce gatunku *Cymatia rogenhoferi* (Fieber 1864) (Heteroptera; Corixidae). New site of rare species *Cymatia rogenhoferi* (Fieber 1864) (Heteroptera; Corixidae). *Przegl d zoologiczny* 1-2: 53-54.
- Kurz tkowska, A. (2008): Water bugs (Heteroptera) in small water bodies located in Olsztyn. *Oceanological and Hydrobiological Studies* 37: 101-114.
- Mill n, A., Moreno, J.L., Velasco, J. (2001): Estudio faunístico y ecol gico de los cole pteros y heter pteros acu ticos de las lagunas de Albacete (Alboray, Los Patos, Ojos de Villaverde, Ontalafia y P tola). *Sabuco* 1: 43-94.
- Montes, C., Ram rez D az, L., Soler, A.G. (1982): Variaci n estacional de las taxocenosis de Odonatos, Cole pteros y Heter pteros acu ticos en algunos ecosistemas del bajo Guadalquivir (Sw. Espa a) durante un ciclo anual. *Anales de la Universidad de Murcia. Ciencias* 38: 19-100.
- Puton, A. (1880): Synopsis des H mipt res-H t ropt res de France. 3^e partie. Reduvides, Saldides, Hydrocorisae. Deyrolle, Paris.
- Rabitsch, W. (2008): The times they are a-changin': driving forces of recent additions to the Heteroptera fauna of Austria. pp. 309-326. In: Grozeva, S., Simov, N. (eds.), *Advances in Heteroptera Research. Festschrift in Honour of 80th Anniversary of Michail Josifov*. Pensoft Publishers, Sofia-Moscow.
- Ribes, J., Blasco-Zumeta, J., Rives, E. (1997): Heteroptera de un sabinar de *Juniperus thurifera* L. en los Monegros, Zaragoza. *Monografias SEA* 2: 1-127.
- Straka, M., Kment, P., Sychra, J., Helešic, J. (2009): The proposed  valsk y rybn k Nature Monument, an important refuge for wetland insects in South Moravia (Czech Republic): A species inventory of Odonata, Heteroptera and Coleoptera (*partim*) with the first Czech record of *Corixa panzeri* (Corixidae). *Acta Musei Moraviae, Scientiae Biologicae* 94: 87-116.
- Such , P. (2010): Seasonal dynamics in corixids (Heteroptera: Corixidae): A study from managed fishponds in South Bohemia. *Acta Phytopathologica et Entomologica Hungarica* 45: 107-114.
- Such , P., Pap cek, M. (2008): Overwintering corixid assemblages: structure and sexual maturity. *Bulletin of Insectology* 61: 177-178.
- Tamanini, L. (1964): Eterotteri dell'Isola di Pantelleria (Heteroptera). *Atti della Soci t  italiana di Scienze naturali e del Museo Civico di Storia naturale di Milano* 103: 65-71.
- Tamanini, L. (1979): Eterotteri acquatici (Heteroptera: Gerromorpha, Nepomorpha). *Guida per il riconoscimento delle specie animali delle acque interne italiane*. CNR, AQ/1/43, 6: 1-106.
- Vadadi-F l p, C., M sz ros, G., Jablonszky, G., Hufnagel, L. (2007): Ecology of the R ckeve-Soroks r Danube – a review. *Applied Ecology and Environmental Research* 5: 133-163.
- V s rhelyi, T., Bakonyi, G. (2005): Typical aquatic and semiaquatic habitats and their Heteroptera fauna of the Lake Balaton. *Folia Entomologica Hungarica* 66: 39-49.
- Vigna Taglianti, A., Audisio, P.A., Biondi, M., Bologna, M.A., Carpaneto, G.M., De Biase, A., Fattorini, S., Piattella, E., Sindaco, R., Venchi, A., Zapparoli, M. (1999): A proposal for a chorotype classification of the Near East fauna, in the framework of the Western Palearctic region. *Biogeographia, Lavori della Soci t  italiana di Biogeografia* (n.s.) 20: 31-59.
- Wilson, P. (2010): Species reports. Corixidae. *Cymatia rogenhoferi* – 3rd British record. *Het News*, 2nd Series 16: 8.
- Wollmann, K., Deneke, R., Nixdorf, B., Packroff, G. (2000): Dynamics of planktonic food webs in three mining lakes across a pH gradient (pH 2-4). pp. 3-14. In: Whitton, B.A., Albertano, P., Satake, K. (eds.), *Chemistry and Ecology of Highly Acidic Environments*. Hydrobiologia. Kluwer Academic Publishers. The Netherlands.