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A survey of Chironomids from seasonal ponds of Numidia, northeastern Algeria

Abstract - In recent years, much progress has been made in Chironomid (Diptera) research in the Mediterranean area. A total of 35 species has recently been collected in 20 ponds located in Numidia, northeastern Algeria with 25 species new to the Algerian fauna. Most species found are widespread in the Palaearctic. *Polypedilum nubifer* and *Tanytarsus formosanus* are Panpaleotropical, the former has expanded its range in Europe and recently in the Nearctic; *Paratanytarsus mediterraneus* is a Mediterranean species.

Riassunto - Le ricerche sui Chironomidi (Diptera) dell'area mediterranea hanno fatto molti progressi in questi ultimi anni. In 20 pozze temporanee situate nel nord est dell'Algeria in Numidia, sono state raccolte recentemente 35 specie, delle quali 25 risultano nuove per la fauna algerina. La maggior parte delle specie è diffusa nella regione Paleartica. *Polypedilum nubifer* e *Tanytarsus formosanus* provengono dalla regione Panpaleotropica, la prima specie ha esteso il suo areale di distribuzione in Europa e recentemente anche nella regione Neartica, *Paratanytarsus mediterraneus* è specie caratteristica dell'area Mediterranea.

Key words: Algeria, Chironomidae, Mediterranean area, new records

INTRODUCTION

Chironomid research in the Mediterranean region has been very active in the last years, the number of species known to occur in the Mediterranean countries (South-France, Spain, Portugal, Italy, Greece, Turkey, Syria, Lebanon, Israel, Tunisia, Algeria and Morocco) has gone up steeply. Information was very scant before the publication of a list of the species known from the Palaearctic (Reiss, 1977); in this paper a list of species endemic to the Mediterranean region was provided. Thereafter, the Northern Mediterranean side (Spain, France, Italy, and Greece) was very intensively studied but, recently, many contributions from the Southern Mediterranean side emerged. A review of the fauna from the Mediterranean region (Laville & Reiss, 1992) recorded the presence of 97 species but, in this compilation, species from East Turkey (Caspers & Reiss, 1989) and Italian Alps (Rossaro, 1988) were also included.

In the Mediterranean region, according to Lattin (1867), we can distinguish two

zoogeo-graphical subregions: the Western Atlanto-Mediterranean subregion including S-France, Spain, Portugal, North Africa, Italy and the eastern or Ponto-Mediterranean subregion also named Province of Levant including Yugoslavia, Greece, Turkey, Syria, Lebanon, Israel, NE-Lybia, N-Egypt. For chironomids of the Mediterranean fauna a differentiation into Circum- and West-Mediterranean subgroups is not yet possible. The Afrotropical species reach the Mediterranean region chiefly by the Nile valley. Nevertheless, some apparently relict Afrotropic species in the South of Morocco may suggest a West-African progression towards the Mediterranean. Likewise, Numidia is known to be an Afrotropical relict pocket (Samraoui *et al.* 1993; 1998) with a distinct dispersal route linking the Afrotropical region to the Palaearctic. The Syrian-East African rift valley may also be considered as a dispersal path for West Palaearctic, and especially Oriental chironomids, into the Afrotropic region.

Twenty nine species with an Afrotropical distribution (Laville & Reiss, 1992) reaching various parts of the Mediterranean area have so far been reported: 18 species characteristic of the Eastern part, and 11 species of the Western part of the Mediterranean area. Seven species with a Panpalaeotropical distribution were also reported in the Mediterranean region (Laville & Reiss, 1992).

Recent captures in several oueds (water courses with very irregular hydrologic regime) in Kabylie du Djurdjura, northern Algeria (Moubayed *et al.*, 2007) generated a list of 87 chironomid species from this area: 8 belonged to Tanypodinae, 3 to Diamesinae, 57 to Orthocladiinae and 19 to Chironominae. 10 species were undescribed. A total of 53 species were new records for Algeria, 25 of which being also new records for North Africa. The present research is a further contribution to the knowledge of Algerian Chironomids, focusing on characteristic North African habitats: temporary ponds, and, by extension, to the Mediterranean fauna.

SAMPLING AREA AND METHODS

The 26 sampled ponds are part of an on-going monitoring program which started in 1996. The specimens examined in this study were collected during the hydrological cycle of 2007/2008, in winter above all, these ponds drying up in summer.

The climate of Numidia, north-eastern Algeria, is typically Mediterranean with a dry and hot summer and rainfall concentrated in the winter months. The sites sampled are seasonal ponds all located in Numidia (Table 1, Fig. 1, Fig. 2. They have a wide range of salinity (0.1-10 $mScm^{-1}$), water depth, hydroperiod. They also differ in the presence/absence of fish and in the nature and extent of vegetation they host. Details of these temporary ponds were given elsewhere (Samraoui, 2002).

The list of species was based on identifications of adult males, pupal exuviae, and larvae; adult males were captured with a butterfly or a dip net, pupal exuviae with a Brundin (1966) net and larvae with a kick sample. Quantitative samples were not collected because of the difficulty to catch in a measurable area, so only qualitative samples are available.

Table 1 - List of the sampled sites.

Station num	Station	Geographic coordinates
1	Feid1-Feid4	36° 43.970' N, 8° 01.739' E
2	Frênes	36° 46.761' N, 8° 16.066' E
3	Messida	36° 48.769' N; 8° 26.611' E
4	Gauthier 1-4	36° 50.243' N, 8° 26.611' E
5	Fedjoudj	36° 51.652' N, 8° 15.065' E
6	Gérard	36° 50.594' N, 8° 09.587' E
7	Isoetes	36° 50.663' N, 8° 08.888' E
8	Berrihane Ecole	36° 50.469' N, 8° 08.089' E
9	Berrihane Sud	36° 50.067' N, 8° 06.680' E
10	Hrib	36° 50.110' N, 8° 06.680' E
11	Tamaris	36° 51.065' N, 8° 06.010' E
12	Carrière	36° 50.875' N, 8° 04.477' E
13	Mafragh	36° 50.440' N, 7° 56.875' E
14	Sangliers	36° 50.248' N, 7° 56.754' E
15	Boukhadra	36° 52.807' N, 7° 44.382' E
16	Ruppia	36° 55.003' N, 8° 20.620' E
17	Mare Lac Bleu	36° 54.701' N, 8° 20.000' E
18	ElFrines	36° 51.149' N, 8° 04.603' E
19	Salines	36° 50.034' N, 7° 47.460' E
20	Butomes	36° 50.007' N, 8° 06.010' E

Macroinvertebrate samples were preserved in 5% formaldehyde. Species identification required the preparation of permanent slides. The preparation follows Wirth & Marston (1968).

The key to Palaearctic genera (Wiederholm, 1983; 1986; 1989) and the key to Italian species (Ferrarese & Rossaro, 1981; Rossaro, 1982; Ferrarese, 1983; Nocentini, 1985), the key to Palaearctic pupae (Langton, 1991; Langton & Wisser, 2003) and more specialized literature were used to identify genera and species.

RESULTS

Most of the species captured are widespread in the Palaearctic. They include 9 Tanypodinae, 11 Orthocladiinae, 5 Tanytarsini, 10 Chironomini. The ponds sampled are lentic water, so the high proportion of Chironomini is well explained, but Orthocladiinae were also well represented; *Cricotopus* (*Isocladius*) *sylvestris* and *C.* (*I.*) *trifasciatus* were very abundant and present in several ponds, the genus *Psectrocladius* was also very common and present with 4 species (Table 2).

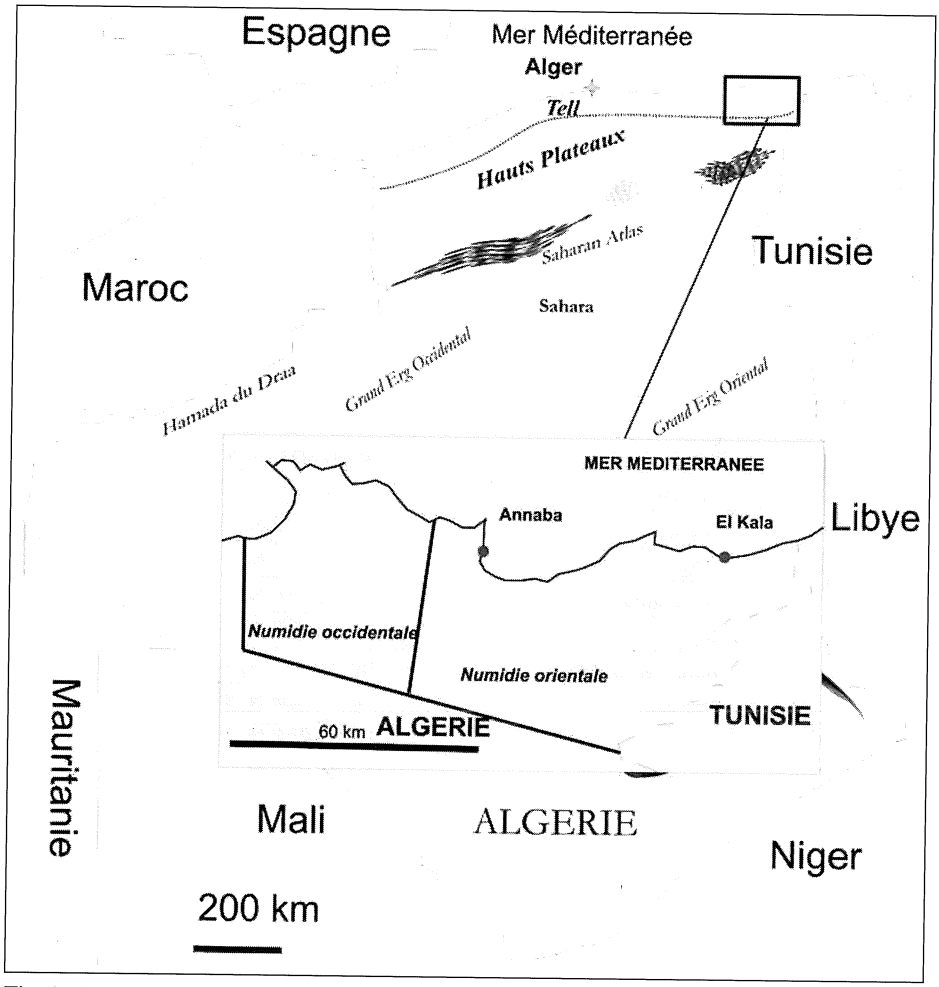

Fig. 1 - Map of Algeria with a close-up of Numidia.

At present 126 species of Chironomids are known to occur from Algeria; 11 species were collected before 1992 (Moubayed *et al.*, 1992; Laville & Reiss, 1992), 85 species were added thanks to captures between 1993 and 2001 (Moubayed *et al.*, 2007); 25 species new to the Algerian fauna were added in the present investigation; among them a species, possibly new to science, was captured as adult male, it is near to *P. mediterraneus* (Reiss & Säwedal, 1981). Five other taxa, determined to genus being based on larval material only, were also captured, of them three species (*Bryophaenocladius* sp., *Cladotanytarsus* sp., *Glyptotendipes* sp.) belong to genera new for Algeria, two other

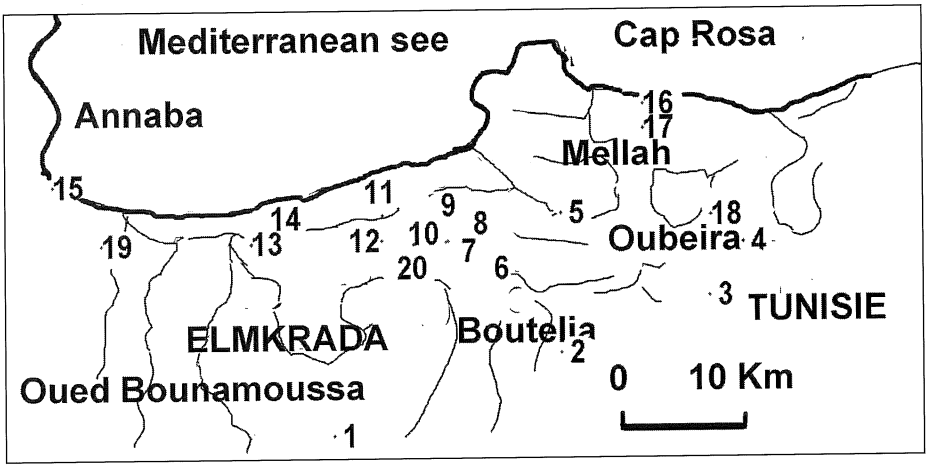

Fig. 2 - Map of the study sites within Numidia, northeast Algeria

Table 2 - list of recorded species (adult males and pupal exuviae) with numbers referring to sites (Table 1). When only larvae were available the identifications are to genus (*) new to Algeria.

TANYPODINAE *TANYPODINI* *Tanypus punctipennis* (Meigen, 1818): (*) 17, 19, 20
CLINOTANYPINI *Clinotanypus nervosus* Kieffer, 1912: (*) 8 *Psectrotanypus varius* (Fabricius, 1787): (*) 3, 6, 8, 17
PROCLADINI *Procladius choreus* (Meigen, 1804): (*) 2, 3, 5, 8, 10, 13, 15, 17, 19, 20
PENTANEURINI *Ablabesmyia phatta* (Egger, 1863): (*) 3, 14, 16, 20 *Larsia atrocincta* Fittkau, 1962: (*) 6,17 *Natarsia punctata* Fittkau, 1962: (*)17 *Xenopelopia falcigera* (Kieffer, 1912): (*) 1, 2, 3, 5, 6, 8, 9, 10, 13, 14, 15, 20 *Zavrelimyia hirtimana* (Kieffer, 1918): (*) 1, 6
ORTHOCLADIINI *Cricotopus flavocinctus* (Kieffer, 1924): 2, 3, 8, 20 *Cricotopus trifasciatus* (Meigen in Panzer, 1813): (*) 8, 19, 20 *Cricotopus sylvestris* (Fabricius, 1974): 2, 3, 4, 6, 8, 9, 10, 12, 13, 14, 15, 16, 17, 19, 20 *Psectrocladius brehmi* Kieffer, 1923: (*) 12 *Psectrocladius dilatatus* (van der Wulp, 1858): (*) 8 *Psectrocladius platypus* (Edwards, 1929): (*) 5, 6, 8, 12, 13, 14, 15, 17, 20 *Psectrocladius sordidellus* (Zetterstedt, 1838): (*) 2, 3, 5, 6, 8, 10, 12, 13, 14, 15, 17, 19, 20
METRIOCNEMINI *Bryophaenocladius* sp. Thienemann, A. & Harnisch, 1934: 19 *Camptocladius stercorarius* (de Geer, 1776): (*)19 *Limnophyes minimus* (Meigen, 1818): (*) 6, 8, 13, 15, 20 *Corynoneura scutellata*, Winnertz, 1846: 2, 5, 8, 9, 10, 12, 13, 14, 15, 16, 17, 20

TANYTARSINI
Cladotanytarsus sp. Kieffer, 1921: 5
Paratanytarsus mediterraneus, Reiss, F. & Sawedal, 1981: 2, 3, 4, 5, 6, 12, 14, 15, 17, 19, 20
Paratanytarsus near *mediterraneus*, n. sp. (?):(*)17, 20
Tanytarsus fimbriatus, Reiss, F. & Fittkau, 1971: (*) 2
Tanytarsus formosanus Kieffer (1912) *(=T. horni*, Goetghebuer, 1934): (*) 3, 14, 19,
CHIRONOMINI
Chironomus plumosus (Linnæus, 1758): (*) 1, 2, 13, 14, 16, 17
Chironomus riparius, Meigen, 1804: 2, 8, 13, 14, 15, 19, 20
Dicrotendipes sp. Kieffer, 1913: 13, 15
Einfeldia pagana (Meigen, 1838): (*) 12, 14,20
Endochironomus tendens (Fabricius, 1775): (*) 1, 2, 12, 17
Glyptotendipes sp., Kieffer, 1913: (*) 12
Kiefferulus tendipediformis (Goetghebuer, 1921): (*) 1
Parachironomus monochromus Lenz, F., 1921:(*) 1,12, 17
Polypedilum sp. Kieffer, 1912: 2
Polypedilum nubifer (Skuse, 1889): (*) 19

species (*Polypedilum* sp., *Dicrotendipes* sp.) belong to genera already captured in the country (Table 2). Other 5 species captured in the present investigation (*C. flavocinctus, C. trifasciatus, C. scutellata, P. mediterraneus, C. riparius*) were already known to occur from Algeria (Moubayed *et al.*, 2007). Two Panpaleotropical species (*T. formosanus* and *P. nubifer*) were also captured, the latter having recently invaded the Nearctic region also (Jacobsen & Perry, 2007).

DISCUSSION

Despite the low species number captured (35) the number of species new to Algeria is high (25), corresponding to 71 % of the species found, this number is still higher if the 5 species determined to genus are considered. This emphasizes that the knowledge of the Algerian fauna is still very incomplete. Temporary ponds are an important feature of the North African landscape and are expected to host an original fauna with probably many endemic species adapted to the dynamics of the local ecosystems. Furthermore other distinct habitats like shallow lakes, brackish marshes, dune slacks (important refuge areas for many rare Afrotropical relict species) and seasonal wadi deserve attention and these are expected to yield even more species.

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