Bull. Soc. neuchâtel. Sci. nat., tome 116 - 1 (p. 241 à 244) / C.R. XIIIe Coll. europ. Arachnol., Neuchâtel 2-6 sept. 1991

Pardosa nigristernis Denis, 1966. A North African component of the Italian and Spanish arachnofauna

par
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1. INTRODUCTION

A revision of the Italian Wolf Spiders of the genus Pardosa by TONGIORGI (1966) had assigned, with reserve, three female specimens of a species collected in Sardinia to *Pardosa naevia* (L. Ikock, 1875). The finding of one male and several female specimens together (June 24, 1987) and the recent revision of the *Pardosa naevia* group by M. ALDERWEIRELDT and R. JOCQUÉ (1990) prompted a revision of the previous assignement; thus, our specimens are now more correctly assigned to the closely related *Pardosa naevia* Denis, 1966 (figure 1). The new identification was carried out by comparing our specimens with *P. nigristernis* from Baniou, Algeria (R. BOSMANS, leg. 13.V.1988, ALDERWEIRELDT & JOCQUÉ, det. 1990).

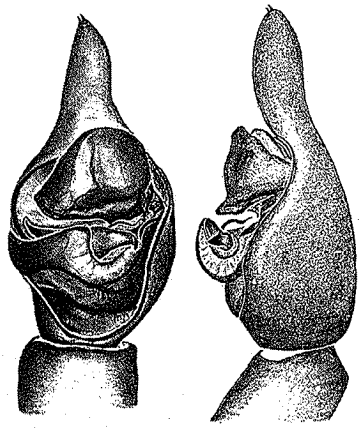

Fig. 1 - *Pardosa nigristernis.* Left palp of a specimen from Piscina Rey (Cagliari), Sardina.

2. DISTRIBUTION

In Sardinia, *P. nigristernis* was found in salt marshes near Oristano and on the edge of a brackish pond at Piscina Rey (Cagliari) (figure 2). At the latter site, together with *P. nigristernis*, numerous specimens of *Pardosa proxima*, *Arctosa variana*, *A. leopardus* and *Pirata piraticus* were present. A female of *P. nigristernis* was also collected by A. Senglet in Spain, on June 16, 1971, along the shore of the La Albufera coastal lagoon, south of Valencia. *P. nigristernis* is apparently widely distributed in northern Africa, its areal ranging from Libya to Morocco, through Tunisia and Algeria. It is worth noting that the type locality (Tràghen) is a mountaneous region of the central Fezzân, a habitat quite different from the salty coastal environments inhabited by our specimens.

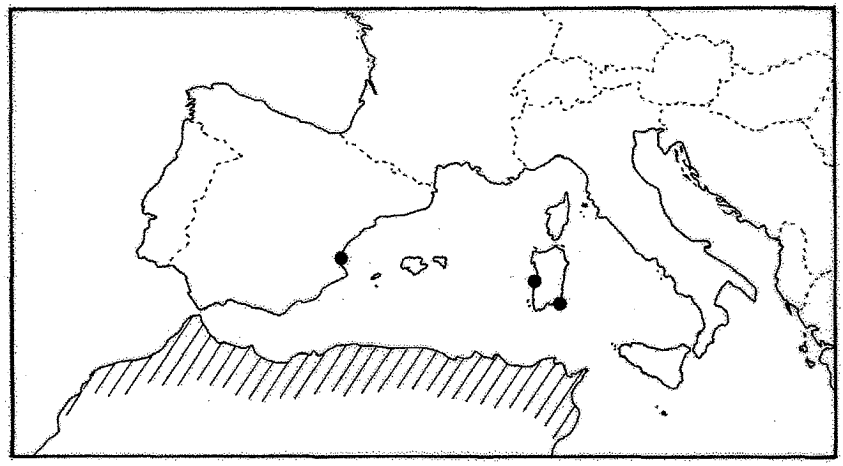

Fig. 2 - Location of the collecting station, indicated by black dots. The dashed area roughly indicates the presence of the species in North Africa.

3. BIOGEOGRAPHY

Though much controversy remains over the details, the geological history of the western Mediterranean is today fairly well understood. About 35 millions years ago the African and European land masses collided. The connection between Africa and Iberia through the Rif arc seems to have reached its maximum in the middle Miocene. Probably during this period elements of the African fauna, among these *P. nigristernis*, pushed northward, colonizing what at that time was the eastern edge of the Iberian Peninsula. Indeed, the present Sardo-Corsican Complex, Calabro- Peloritan Complex, both Greater and Lesser Kabylia, the Rif, the Betic Cordillera and Balearic Complex all

originally lied in strict contiguity. Between the late Oligocene and early Miocene (28 m.y.), forces exerted by the African continent broke off the eastern margin of the Iberian Peninsula, which subsequently fragmented into a series of microplates (between 28 and 13 m. y.) which began to migrate towards North Africa (The Kabylias) and Italy (Corsica, Sardinia, Calabro-Peloritan). The Rif separated from the Betic Cordillera and merged with Morocco. A part of the *P. nigristernis* population was probably transported along with the microplates in their east, south-east migration whereas the other remained on the eastern margin of the Iberian Peninsula. These tectonic events provide a fairly good explanation of the fragmented distribution of the species we now observe. A similar story may also be hypothesized for *Pardosa occidentalis*, a species with French-Iberian-Sardinian geonemy (TONGIORGI 1966; LEDOUX 1973).
We do not know whether it was actually *P. nigristernis* which arrived in Spain from Africa or another species of the *P. naevia* group from which *P. nigristernis* then evolved. In the second case, the current distribution of *P. nigristernis* in northwestern Africa (Maghreb, Morocco, Tunisia, Algeria, Lybia) would have been established subsequent to the collision of the African continent and the microplates from which the Greater and Lesser Kabylias and the Rif Massif in Morocco originated (early Messinian, about 6 m. y.). Anyhow, it is today soundly proved that the most typical faunistic elements of Maghreb derive from that part of Tyrrhenid which broke off from Europe during the Miocene.
Less likely could have been a diffusion of *P. nigristernis* along the coasts of the Mediterranean basin during the Messinian saline crisis (6.7-5.2 m. y.), when the Mediterranean Sea dried out almost completely and a thermophilous fauna penetrated the Mediterranean area. In this case the species would have had an ample opportunity for displacement and should have colonized new coastal salty environments besides those of eastern Spain and Sardinia. Accordingly, notwithstanding the transitional nature of these environments, evidence of a wider distribution of *P. nigristernis* should be observed, as for *Pardosa luctinosa* (TONGIORGI 1964). Instead, investigations along the Italian coasts never revealed *P. nigristernis*. The presence of this species in Sicily, where it may have arrived along with the Calabro-Peloritan plate, has not yet been investigated, but it should not be excluded a priori. Unfortunately, the coastal salty environments inhabited by this species are very scarse in Sicily. In the Pliocene, the opening of the Strait of Gibraltar again flooded the Mediterranean basin and definitively severed all connections between North Africa and southern Europe.

4. CONCLUSIONS

Arachnological research, in particular on the Lycosidae, has only given a marginal contribution to the biogeography of the Mediterranean basin. In this regard, *P. nigristernis* together with few other species of lycosids, represents a useful element to understand the processes leading to the establishment of present day western Mediterranean arachnological fauna. However, coastal areas all over the Mediterranean are highly endangered by housing and turist developments and by land reclamation for agriculture. Together with these environments, species of biogeographic interest, such as *P. nigristernis*, also risk extinction or a severe reduction of their areal. Only the creation of well managed and protected coastal areas can assure the conservation of these environments and their interesting fauna.

Acknowledgements: The authors would like to thank Dr R. Jocqué who kindly supplied African specimens of *Pardosa nigristernis*. Research financially supported by the Italian Ministero dell'Università e della Ricerca Scientifica e Tecnologica (40% funds) and by the Consiglio Nazionale delle Ricerche.

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