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Abstract title

THE CENOZOIC EVOLUTION OF THE ITALIAN HERPETOFAUNA

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Keywords

Cenozoic
amphibians
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evolution
Italy

Abstract

Even if interesting attempts of understanding the origin of the herpetofauna of some limited areas have been made on the basis of modern biogeographical relationships (among others, the papers by Lanza about island), and some researchers tried in recent years to investigate the phylogeography of some taxa (i.e. *Speleomantes*, *Salamandra lanzai*) with a molecular approach, the evolution of the Italian herpetofauna has never been the subject of a general revision and summary. Thanks to a taxon/locality database of fossil occurrences, it is now possible to add direct evidence to the analysis of evolutionary history of Cenozoic Italian amphibians and reptiles.

The Cenozoic record of the Italian herpetofauna consists of 880 taxon/locality data (259 amphibians and 621 reptiles) published (described or quoted), between 1765 and 2003, in 511 papers and concerning 135 taxa (31 amphibians and 104 reptiles) recovered from 349 localities. Altogether the following orders are represented: Caudata, Anura, Crocodylia, Chelonii, Sauria, Amphisbaenia and Serpentes. Choristoderans have never been identified.

If compared with those of the rest of Europe, Italian Cenozoic terrestrial herpetofaunas are deeply influenced by the fact that the country has simply been a system of islands and archipelagoes for most of the time. As a consequence, some salt intolerant taxa are relatively rare (like caudates in general) or absent (like *Andrias*) and others (like giant tortoises or large-sized snakes) show strong adaptations to the insular environment.

The Palaeogene history is nearly unknown since it is represented by 5% of the data only and small-sized taxa are very rare (among the few exceptions, remarkable are the snakes *Anomalophis* and *Archaeophis*). The first diversified herpetofaunas are those from the Neogene (mainly Miocene, since continental Pliocene sites are rather rare), when Italy has been inhabited by thermophilous taxa (like *Crocodylus*, *Tomistoma*, *Trionyx* and *Varanus*) as well as by the first taxa who are osteologically very similar to modern species (like *Bufo viridis* and green frogs). Pleistocene herpetofaunas are among the most informative of Europe in terms of number of remains and overall diversity and retain few taxa that are now extinct in Italy (like *Mauremys*, *Pseudopus* and *Blanus*) or worldwide (like *Latonia*). Although Holocene likely hosted all the Recent taxa, only few of them have been recovered so far.

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in session: "G17.07 - Vertebrate paleontology"

_ **DELFINO M., GENTILI S. & KOTSAKIS T., 2004.** The last occurrence of *Latonia* (Anura: Discoglossidae) and the Early Pleistocene herpetofauna of Pietrafitta (Central Italy). Abstract 32nd International Congress of Geology, 20-28 August 2004, Firenze, Italy, Abstract Volume pt. 1, abs. 150-24, p. 707.

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Abstract title

THE LAST OCCURENCE OF LATONIA (ANURA: DISCOGLOSSIDAE) AND THE EARLY PLEISTOCENE HERPETOFAUNA OF PIETRAFITTA (CENTRAL ITALY)

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Keywords

Pietrafitta

Early Pleistocene

Latonia

herpetofauna

Italy

Abstract

The well-known fossiliferous lignite quarry of Pietrafitta (Umbria, Central Italy) yielded an abundant vertebrate assemblage that has been referred to the Farneta Faunistic Unit (Late Villafranchian, Early Pleistocene). The lignite lithosomes are a good example of plant matter accumulated in situ, over a relatively extended period of time, in a system of marshes at the periphery of a lacustrine intermontane basin. The occurrence of fossil amphibians and reptiles has been quoted since 1977 by Ambrosetti & co-workers, while the chelonian fauna has been described by Kotsakis & Gregori in 1985.

The recent analysis of all the material recovered so far allows to identify the presence of the following 2 amphibians and 4 reptiles: *Latonia* sp., *Rana* gr. *R. ridibunda*, *Emys orbicularis*, *Colubrines* indet., *Natrix* sp. and *Vipera ammodytes*. Anuran and snakes fragments devoid of taxonomical value probably belong to the above mentioned taxa. The amphibians remains outnumber those of the reptiles and, not considering the European pond terrapin, they represent nearly entirely the fossil herpetofauna. From a paleoecological point of view, although the taphonomical conditions of lignite deposit strongly bias the taxonomic composition of the fossil assemblage (it is unlikely that very small and delicate skeletons are preserved and recovered), the relative abundance of anurans and pond terrapins strengthens the presence of a humid environment with permanent water.

All the fossil remains are isolated from the matrix and, with the exception of the chelonians, whose shells are sometimes perfectly preserved, all the skeletal elements are completely disarticulated. A specimen of *Latonia*, although disarticulated, is represented by several elements found in a disordered group. The most important element of the Pietrafitta herpetofaunistic assemblage is represented by the large frog *Latonia*. According to a recent summary by Rage & Rocek, this genus seems to appear in the earliest Oligocene of France (MP21), in the Miocene it is widespread from Spain to Russia, while in the Pliocene it is rather rare in central Europe but still common in the Mediterranean area. It was thought to disappear at the end of the Pliocene but the Pietrafitta remains testify its survival into the Quaternary. The unquestionable presence of smooth maxillae contrast with the diagnosis of the only Pliocene species, *L. gigantea*, and requires to reconsider the taxonomy of the genus or the specific chronological ranges.

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DELFINO M., CHESI F., VAROLA A. & ROOK L., 2004. New remains of *Psephophorus polygonus* (Chelonii: Dermochelyidae) from the Miocene of Southern Italy. Abstract 32nd International Congress of Geology, 20-28 August 2004, Firenze, Italy, Abstract Volume pt. 1, abs. 77-15, pp. 379-380.

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Abstract title

NEW REMAINS OF PSEPHOPHORUS POLYGONUS (CHELONII: DERMOCHELYIDAE) FROM THE MIOCENE OF SOUTHERN ITALY

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Keywords

Psephophorus polygonus

Dermochelyidae

Chelonii

Miocene

Italy

Abstract

In the last 150 years, abundant vertebrate remains have been found in the "Pietra Leccese", a sandstone that outcrops extensively in the southeastern tip of Italy and whose age spans the latest Early Miocene and the earliest Late Miocene. The presence of marine (Family Cheloniidae) and soft shell turtles (Family Trionychidae) has been reported by several authors and new species like *Chelonia varicosa* (Costa, 1851) and *Euclastes melii* Misuri, 1910 have been described. Waiting for a review of the original material, recent literature reviews (by Delfino and de Lapparent de Broin) consider these taxa as undetermined Chelonii and Chelonioidea incertae familiae respectively. Here we describe the material recovered by one of us (A.V.) at Melpignano (Lecce, Apulia) and stored at the "Museo dell'Ambiente dell'Università di Lecce" with the collection number MAUL 974/1. The material consists of 5 major slabs (plus several fragments and casts) whose upper surface shows the typical carapax ossicles of the marine turtles belonging to the family Dermochelyidae. The slabs are relatively large (with sides between 40 and 50 cm) and even though the carapax is not complete, the available material allows to understand some details of the fine structure of the shell and of its general shape (that, paradoxically, is poorly known since the shells of these large animals are usually found as little fragments or even disarticulated ossicles). Two kinds of ossicle are present: elongated ones that form the anteroposterior ridges of the carapax, and smaller ossicles that "fill" the spaces between the ridges. The smaller ossicles are not irregularly shaped and sized; their arrangement does not show any "sunflower" pattern. The ridges are dorsally rounded, with gently sloping sides, while their visceral surface is flat. In lateral view, the crest of the ridges forms "peaks and valleys" that coincide with the sutures between elongated ossicles. Ridges are separated by more than 5 ossicles.

According to a recent review of fossil Dermochelyidae published by Wood and co-workers, all these features are typical of *Psephophorus polygonus*, the only Miocene dermochelyid turtle of Europe. This genus has previously recovered from the Miocene of Cusano-Mutri (Campania, central Italy) but the remains from the "Pietra Leccese" are by far more informative and they could represent the best-preserved specimen ever described.

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in session: "G17.10 - The paleobiogeographic history of the Tethys and Mediterranean: evidence from land vertebrate distribution"

_ **ABBAZZI L., CARBONI S., DELFINO M., GALLAI G., LECCA L. & ROOK L., 2004.** Fossil vertebrates (reptiles and artiodactyls) from Capo Mannu (Late Pliocene, Western Sardinia, Italy). Abstract 32nd International Congress of Geology, 20-28 August 2004, Firenze, Italy, Abstract Volume pt. 1, abs. 150-21, p. 706.

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Abstract title

FOSSIL VERTEBRATES (REPTILES AND ARTIODACTYLS) FROM CAPO MANNU (LATE PLIOCENE, WESTERN SARDINIA, ITALY)

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Keywords

Capo Mannu

Fossil vertebrates

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Pliocene

Abstract

A vertebrate fauna has been reported within the middle part of the coastal dune complex of the Capo Mannu Fmt. (Carboni & Lecca 1995). The lower part of this formation yielded in the late 70's a small mammal assemblage (Pecorini et al. 1974) containing a murid assigned to *Rhagapodemus azzarolii*, an endemised species derived by the Early Pliocene *R. ballesioi* (Angelone & Kotsakis 2001). The new interpretation allow to consider the age of this fauna (Mandriola) not to be older than the MN I5 unit. Accordingly, the dispersal of vertebrate taxa of this locality may be referred to a regression phase at the Zanclean/Piacenzian transition, confirming the stratigraphical interpretation of Carboni & Lecca (1995).

The yet unpublished vertebrate remains from the middle part of Capo Mannu dunes belongs to large mammals (Bovidae and Suidae) and reptiles (Chelonii). Bovids are well represented in the assemblage although quite fragmentary. They have been identified as belonging to two forms of different size. The smaller one is comparable by morphology (e.g. occurrence of Caprinae fold, absence of basal pillars in lower molars) with the Caprinae *Nesogoral*, one of the most characteristic taxa in Late Pliocene?-Early Pleistocene Sardinian endemic fauna ("Nesogoral complex"). These remains show a slightly larger size respect the samples of *Nesogoral*, which is consistent with a lesser degree of endemisation. The other bovid, represented by very few fossil remains is referred to as Bovidae indet. As a matter of fact however, the occurrence of other species than *Nesogoral* is documented in other Sardinian late Pliocene-early Pleistocene localities. The suid material is made up by few specimens among which a fragmentary palate and a partial mandible (by G. Pecorini in 70's), smaller than the endemic species *Sus sondaari* from Capo Figari. The fossil of tortoise retains the general external shape but lacks of the majority of the diagnostic characters because of the presence of a thin concretion or the alteration of outer bony layers. The surface corresponding to each of the 5 vertebral scutes is distinctly raised in a way not known in any Recent European tortoise. On the whole, the Capo Mannu assemblages open a new windows on the Plio-Pleistocene terrestrial faunas of the Sardinian Island.

Carboni S. & Lecca L. 1995 C.R.Acad.Sci.Paris., 320

Pecorini G. et al. 1974 Rend.Sem.Fac.Sci.Univ.Cagliari, suppl. vol. 43

Angelone C. & Kotsakis T. 2001 Boll.Soc.Pal.It., 40

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**ROOK L., AMAHA S., DELFINO M., YOSIEPH D., FERRETTI M.P., LIBSEKAL Y. & MARTINEZ-
NAVARRO B., 2004.** Fossil vertebrates from Dandero Basin (Buya, Northern Danakil Depression, Eritrea):
biochronology and paleoenvironment. Abstract 32nd International Congress of Geology, 20-28 August 2004,
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Abstract title

**FOSSIL VERTEBRATES FROM DANDERO BASIN (BUIA, NORTHERN DANAKIL DEPRESSION,
ERITREA): BIOCHRONOLOGY AND PALEOENVIRONMENTS**

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Keywords

Fossil Vertebrates

Early Pleistocene

Buia basin

Eritrea

Abstract

The sample of fossil vertebrates collected in the Buia basin* during 1995-1997 has been object of a recent revision. The preliminary faunal list published in Abbate et al. (1998) is updated as follows: *Homo erectus*, *Theropithecus cf. oswaldi*, *Hyaenidae* indet., *Elephas recki*, *Hippopotamus cf. gorgops*, *Hexaprotodon* sp., *Kolpochoerus olduvaiensis*, *Kolpochoerus majus*, *Metridichoerus cf. modestus*, *Giraffa* sp., *Pelorovis* sp., *Kobus cf. ellipsiprymnus*, *Hippotragus cf. gigas*, *Tragelaphus* sp., *Caprini* indet., *Gazella* sp., *Ceratotherium simum*, *Equus cf. tabeti*, *Crocodylus niloticus*, *Pelomedusinae* indet., *Varanus* sp. and *Python gr. P. sebae*

The faunal elements are associated with widespread abundant and predominantly Acheulean lithic industry. A site of the basin also yielded a human skull and few associated postcranial remains. human remains. Geological / sedimentological survey and paleomagnetism are in good agreement with data of mammal assemblage biochronology, attesting for the Homo-bearing levels an age of approx. 1My.

The mammal assemblage is predominantly composed by taxa with a strong water dependence (hippos, water-buck, *Kolpochoerus*), associated with elements (although much lesser represented in terms of abundance) of more open landscapes. The herpetofauna also is composed by predominantly water-dependent taxa since the crocodile and all the *Pelomedusid* chelonian are found to all kind of aquatic environments and the African Rock Pythons are most abundant near low altitude rivers, lakes and swamps. The paleoecological characteristics of the fauna fully agrees with the kind of environment testified by the sedimentary succession, corresponding to a fluvio-deltaic and lacustrine environment.

Abbate E. et al., 1998, A one-million-years-old *Homo* skull from the Danakil Depression (Afar) of Eritrea. *Nature*, 393: 458-460.

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