ProGEO

International Association for the Conservation of Geological Heritage

ProGEO SW Europe Regional Working Group

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ABSTRACTS BOOK

ProGEO SW Europe Regional Working Group

The ProGEO SW Europe Regional Working Group was founded in 2010, gathering members from France, Italy, Portugal, and Spain.

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Organising committee

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Session 3: Managing paleontological heritage

30 March 2022 15:30-16:45 CET

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Eocene Marine Biodiversity of the Alpone Valley

Giamberto Bochese[a], Fabio Saggioro[b], Massimiliano Valdinoci[c], Roberto Zorzin[d], Domenico Zugliani[e]

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Overall, the fossiliferous deposits of the Alpone Valley constitute a natural site of universal importance. The serial site "Eocene Marine Biodiversity of the Alpone Valley" consists of over 40 fossil deposits located in the province of Verona, in north-east Italy. This candidacy project in May 2021 was inscribed on the Italian UNESCO Tentative List. The over 40 deposits – some better known, others less famous – form a unified heritage site, despite their composite location, and have specific features in which three main types or categories of fossil finds can be recognized: (a) marine vertebrates, (b) terrestrial vertebrates and (c) marine invertebrates. Their excellent preservation (Fig. 1), size, biodiversity and uniqueness (mainly fish, crustaceans and marine mollusks, plus continental vertebrates, insects and terrestrial plants), as well as the variety of the fossil deposits, are essential elements for defining the main features of the Eocene tropical marine ecosystems.

Figure 1. Exquisitely preserved specimen of Eoplatax papilio (Volta, 1796). Bolca, Massimiliano Cerato collection.

For centuries, the extraordinary Eocene fauna of the Alpone Valley played a crucial role in phylogenetic studies and in the reconstruction of paleoclimatic, paleoecological and paleobiogeographical aspects of the ancient Tethys sea, as

demonstrated by the long history – almost 500 years – of scientific research (Mattioli, 1550), and by the large number – over 800 – of relevant publications (Fig. 2).

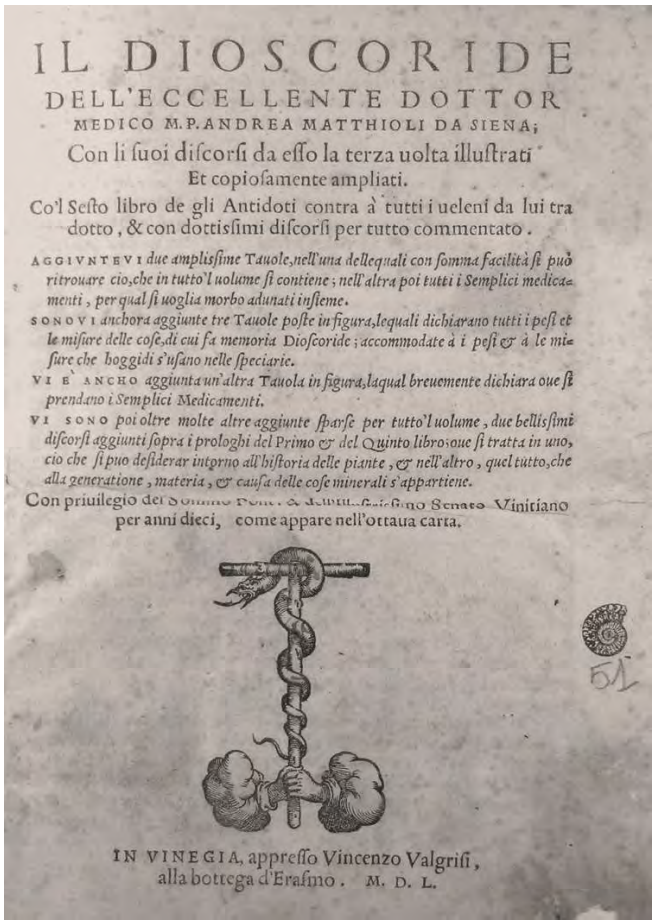
IL DIOSCORIDE
DELL'ECCELLENTE DOTTOR
MEDICO M.P. ANDREA MATTHIOLI DA SIENA;
Con li suoi discorsi da esso la terza uolta illustrati
Et copiosamente ampliati.
Co'l Sesto libro de gli Antidoti contra à tutti i uelení da lui tra dotto, & con dottissimi discorsi per tutto commentato.
AGGIVNTEVI due amplissime Tauole, nell'una dellequali con somma facilità si può ritrouare cio, che in tutto'l uolume si contiene; nell'altra poi tutti i Semplici medicamenti, per qual si uoglia morbo adunati insieme.
SONOVI anchora aggiunte tre Tauole poste in figura, lequali dichiarano tutti i pesi et le misure delle cose, di cui fa memoria Dioscoride; accommodate à i pesi & à le misure che hoggidi s'usano nelle speciarie.
VI È ANCHO aggiunta un'altra Tauola in figura, laqual breuemente dichiara oue si prendano i Semplici Medicamenti.
VI SONO poi oltre molte altre aggiunte sparse per tutto'l uolume, due bellissimi discorsi aggiunti sopra i prologhi del Primo & del Quinto libro: oue si tratta in uno, cio che si può desiderar intorno all'historia delle piante, & nell'altro, quel tutto, che alla generatione, materia, & causa delle cose minerali s'appartiene.
Con priuilegio del Sommo Pont. & dell'Illustrissimo Senato Vinitiano per anni dieci, come appare nell'ottaua carta.
IN VINEGIA, appresso Vincenzo Valgrisi, alla bottega d'Erasmo. M. D. L.

Figure 2. The edition of the comments of Pietro Andrea Mattioli (1501-1587) to Dioscoride, published in Venice in 1550 reporting on the Bolca fossils.

There is nothing worldwide to equal the extraordinary preservation quality of the vertebrates, invertebrates and plant remains, especially the size, extraordinary diversity and uniqueness of the fossil fishes, including numerous anatomical structures usually not prone to survive the fossilization processes. The various sites include the absolute icon of Italy's paleontological heritage, the "Pesciara" of Bolca. Celebrated for about five centuries for the exceptional beauty and importance of its finds, it is one of the most studied deposits in the world also representing the fossil site with the greatest biodiversity of vertebrate remains. Each single deposit has contributed and continues to contribute, to a varying extent but in a complementary fashion, to the rich fossil heritage which is collected, restored, studied and exhibited in museums all over the world. All the elements that contribute to define the universal value of the serial site can be found in its over 40 deposits, considering them as a whole.

The management and monitoring of the sites are currently under the responsibility of the Superintendence of Archeology, Fine Arts and Landscape of Verona, Rovigo and Vicenza, the Civic Museum of Natural History in Verona and – more in general – of the Ministry of the Environment (Ministry of Ecological Transition since 2021) and Ministry of Culture (MIC). The territory on which the deposits are located has not been affected by urbanization or infrastructures: its scientific value has therefore remained unchanged over time. Use of correct technique in extracting the fossils of the Alpone Valley during more recent scientific research has maintained intact their value and extraordinary preservation, so allowing a full, comprehensive reconstruction of biotic, climatic and environmental variations, as well as favouring understanding of their phylogenetic and paleoecological significance. The abundance of fossil remains extracted in the past has no any way impoverished the deposits, allowing for new and modern excavation campaigns, carried out according to directives provided by MIC and by the Superintendence of Archeology, Fine Arts and Landscape of Verona, Rovigo and Vicenza.

The consolidated collaboration between Verona's Civic Museum of Natural History and the University of Padua's Museum of Geology and Paleontology – the two museums which house the largest share in the world of the Alpone Valley's historical collections – guarantees that the criteria of integrity are met in an exemplary fashion.
A further part of this priceless paleontological heritage, which has played a fundamental role in the history of science, is currently preserved in two public museums local to the Alpone Valley (Zorzin et al., 2018): the Fossil Museum in Bolca, and the Paleontological Museum in Roncà (Fig. 3). Other museums, located in both Europe and the United States of America, possess paleontological finds from the Alpone Valley – the relevant list is held in the archives of the Civic Museum of Natural History in Verona (Tomelleri et al., 2021).

Figure 3. Vertebrae and ribs of Prototherium veronense, Paleontological Museum in Roncà (MCSNV collection V.11735, sample 90 cm).

All of these elements concur to define the universal value of these paleontological sites. Modern studies conducted on the serial site (Marramà et al., 2016) are part of a major scientific research project involving the Civic Museum of Natural History in Verona and numerous other Italian and foreign institutions, both universities and museums. The results of such researches are published in Italian and international journals (Papazzoni et al., 2014), including "Studi e ricerche sui giacimenti terziari di Bolca", a paleontological miscellany published by the Civic Museum of Natural History in Verona since 1969.

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