



Report from the 8th Symposium on Fossil Decapod Crustaceans, Zaragoza (Spain), June 2022

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ABSTRACT

Decapod crustaceans are an important component in modern ecosystems with a rich fossil record spanning more than 400 million years. Last summer (19th–24th June 2022) the 8th Symposium on Fossil Decapod Crustaceans took place in Zaragoza (Spain), a meeting covering all aspects of studies on fossil decapod crustaceans, including information from modern representatives. The Symposium was organized by the Spanish Research Council (CSIC) and the University of Zaragoza with collaboration of organizers from universities of the Basque Country, Alabama, and Barcelona, and the support of the regional Government of Aragón.

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Keywords: Decapoda; Mesozoic; Cenozoic; evolution, field trip

Submission: 10 July 2023. Acceptance: 25 September 2023

Proceedings of the 8th Symposium on Fossil Decapod Crustaceans

Final citation: Zamora, Samuel, Ferratges, Fernando A., García-Penas, Álvaro, and Aurell, Marcos. 2023. Report from the 8th Symposium on Fossil Decapod Crustaceans, Zaragoza (Spain), June 2022. *Palaeontologia Electronica*, 26(3):a39.

<https://doi.org/10.26879/1319>

palaeo-electronica.org/content/2023/3984-symposium-on-fossil-decapods

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THE SYMPOSIUM

The symposium was attended by thirty researchers and passionate palaeontological amateurs from different countries including the Netherlands, Spain, France, Italy, USA, Germany, France, Slovenia, Slovakia, Argentina, and Japan (Figure 1). The program consisted of two days of oral presentations and three days of field trips. The first two days (20th–21st June), 27 oral presentations covering important aspects of decapod systematics and palaeobiology took place, of which the abstracts were published in an abstract volume (Zamora et al., 2022). Each day of oral sessions were introduced by one plenary talk. The first lecture was presented by Dr. Javier Luque (University of Cambridge) with the title “The evolution of compound eyes across extant and fossil crabs” (Luque et al., 2022). In the talk, Dr. Luque and collaborators reviewed eyes preserved in different groups of crabs with exceptional discoveries from fossil material and their implications to the evolution of eyes in decapods. The second lecture was presented by Dr. Matúš Hyžný with the title “Fossil burrowing shrimps: an overview” (Hyžný, 2022). He reviewed the current knowledge of fossil burrowing shrimps, which are important bioturbators in modern and ancient environments. Since their presumed Mesozoic origin, they have acted as ecosystem engineers, impacting their environment in an unprecedented way by changing the physical-chemical conditions of marine sea floors.

The two days talks were followed by three days of field trips (22nd–24th June) (Figure 2). The first trip was focused on Barremian-Aptian shallow-marine decapod communities from the Oliete Subbasin (Maestrazgo Basin, East Spain). During the field trip, García-Penas et al. (2022) introduced the decapod localities found in the restricted Oliete subbasin, dated as Lower Cretaceous. It preserves an extraordinary record of shallow-marine decapod associations (Figure 3) and in some instances their trace fos-



FIGURE 1. Participants and authorities from the University of Zaragoza and Spanish Research Council (CSIC) during the 8th Symposium on Fossil Decapod Crustaceans. Upper row: Denis Audo, Pedro Artal, Sylvain Charbonnier, Javier Martínez, Álvaro García-Penás, Fernando A. Ferratges, Javier Luque, Gloria Cuenca, M^a Jesús Lazaro, Ruth Soto, Rok Gašparič, Adiël A. Klompmaker, Thomas Laville, Zain Belaústegui. Middle row: Yusuke Ando, Alessandra Busulini, Àlex Ossó, Mikel López-Horgue, A. Mariel Andrada, Cristina Robins, Florian Braig, Adam Heteš, Cees Hof, Thea Fraaije-van Boom, René Fraaije. Lower row: Jonathan Wallaard, Samuel Zamora, Barry van Bakel, Matúš Hyžný, Claudio Beschin. Image courtesy of CSIC-Aragón.

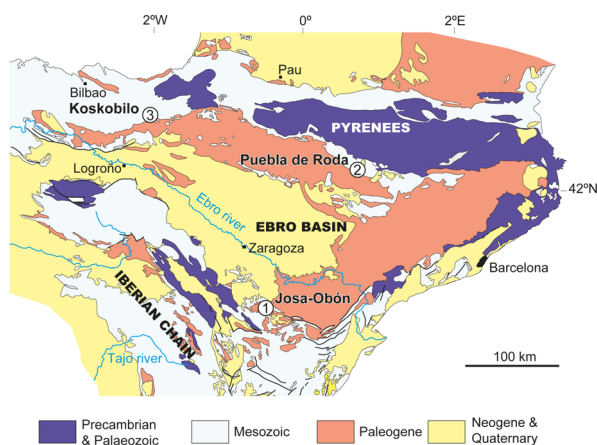


FIGURE 2. Map from NE Spain showing the itinerary followed by participants to the field trip. 1. Oliete Subbasin (Teruel). 2. Graus-Tremp basin (Huesca). 3. Koskobilo area (Navarra). Modified from Zamora et al. (2018).



FIGURE 3. Specimens of *Atherfieldastacus magnus* (M'Coy, 1849) from the Aptian (Lower Cretaceous), collected in the surroundings of Josa (Teruel).

sils. The second day, participants travelled to the Southern Pyrenees, where Ferratges et al. (2022) illustrated exceptional Eocene outcrops with highly diversified communities of brachyurans (Figure 4). Finally, on the third day, López-Horgue et al. (2022) introduced the Albian outcrops of Koskobilo (Navarra) (Figure 5), which preserve a highly diversified fauna associated with reef environments (Figure 6). We also visited a small outcrop in Egiarreta (Navarra) preserving Albian raninids in siderite concretions (Figure 7).

The meeting served as an important event for discussion on the state-of-the-art of fossil decapod crustaceans and to receive important feedback from colleagues around



FIGURE 4 (left). Participants visiting the Roda Formation in Roda de Isabena (Huesca), a classical area with the common brachyuran *Zanthopsis dufouri* (Milne Edwards in d'Archiac, 1850).

FIGURE 5 (right). Two passionate participants splitting limestones in the Koskobilo quarry (Navarra). Left: Matúš Hyžný (Comenius University, Slovakia). Right: Fernando Ari Ferratges (University of Zaragoza, Spain).



the world. Key discussions identified future prospects of research for fossil decapod crustaceans, including the inclusion of fossils in molecular phylogenies based on modern taxa, the combination of fossils and sedimentological data to reconstruct ancient ecosystems, and the use of state-of-the-art techniques in visualizing fossil material. We hope that meetings like this will help improve the attractiveness of fossil decapod crustaceans as a research topic for future generations.



FIGURE 6 (left). Brachyuran *Distefania incerta* (Bell, 1863) from the Koskobilo quarry (Navarra). **FIGURE 7 (right).** Javier Luque (University of Cambridge) showing two specimens of *Joeranina gaspari* Van Bakel et al., 2012 from the lower upper Albian of Egiarreta outcrop preserved in concretions (Navarra).



ACKNOWLEDGEMENTS

This work has been supported by the projects PID2021-122612OB-I00, subsidised by the Spanish Ministry of Science and Innovation, the European Regional Development Fund, and Project E18-20R Aragosaurus: Recursos Geológicos y Paleoambientes of the government of Aragón-FEDER.

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