

TMS Grant-in-Aid reports

12th International School on Foraminifera, 9–28 June 2019, Urbino, Italy

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The 12th International School on Foraminifera (ISF) took place in Urbino between 9 and 28 June this year. I was fortunate to be awarded the TMS Grant-in-Aid that enabled me to attend the course. I would like to present here a short summary of the summer school.



Figure 17: Standard of the International School on Foraminifera.

The event consisted of four parts:

Introduction to Foraminifera (10–14 June), larger benthic Foraminifera course (15–19 June), smaller benthic Foraminifera course (20–24 June), and planktonic Foraminifera course (25–28 June). Each part consisted of both lectures and practical exercises. The activities included a one-day field trip on the 24th of June in the north-eastern Apennines and some social events such as the ice breaker party, the foraminiferal party, a social dinner with karaoke after the field trip, and a graduation party. The course focused mostly on Foraminifera approached from the Earth sciences perspective, but this was supplemented by information on the biology of this group of organisms.

Introduction to Foraminifera: 10–14 June

The course started on the 10th of June with the welcome speech by Dr Fabrizio Frontalini and lectures by Prof. Michael Kaminski intro-

ducing the participants to the history of foraminiferal research. The scope of the first part of the ISF included basic terminology describing morphology and wall structure of foraminiferal tests (lectures by Prof. Michael Kaminski and Dr Claudia Cetean), introduction to the biology of Foraminifera (lectures by Prof. Johann Hohenegger), the diversity of monothalamous Foraminifera (lectures by Prof. Andrew Gooday), and introduction to the molecular genetics of Foraminifera (by Prof. Jan Pawłowski). Practical exercises allowed the participants to practise identification of foraminiferal wall composition, coiling mode, chamber arrangement, recognizing and drawing of agglutinated Foraminifera, and to learn statistical analyses for ecological studies in the PAST software.

Larger benthic Foraminifera

course: 15–19 June

During the second part of the ISF, dedicated to larger benthic Foraminifera (LBF), Prof. Johann Hohenegger gave lectures regarding biology, morphology, ontogeny, and life cycle of LBF as well as the symbiosis between them

and algae. Morphological diversity and classification of fossil LBF were covered in the lectures by Dr Antonino Briguglio (systematics of alveolinids) and Prof. Cesare Papazzoni (nummulitids and orthophragimids). Other topics covered during this part of the summer school included biostratigraphy of Palaeogene larger Foraminifera (Prof. Cesare Papazzoni), the application of Carboniferous, late Palaeozoic, and Mesozoic larger Foraminifera (Prof. Geraint Hughes), or the determination of depth-based analyses of larger Foraminifera (Prof. Johann Hohenegger). The practical part of larger benthic Foraminifera course included recognizing different groups of LBF in thin sections and estimation of water depths based on LBF.

Smaller benthic Foraminifera

course: 20–24 June

The relation between the morphogroup and habitat of basic morphogroups of agglutinated Foraminifera and the patterns of their distribution have been discussed by Prof. Michael Kaminski. Next, Cretaceous bathyal assemblages of benthic Foraminifera were de-

scribed by Prof. Michael Kaminski and Dr Claudia Cetean. It was followed by an explanation of wellsite micropalaeontology by Dr Claudia Cetean (partially on behalf of Danielle Foy). Dr Fabrizio Frontalini presented comprehensive lectures describing the techniques of experimental studies on living Foraminifera (involving culture or mesocosm methods), and the application of Foraminifera in environmental biomonitoring. Prof. Laia Alegret described changes in diversity of Palaeogene smaller benthic Foraminifera and gave a wonderful presentation on deep-sea drilling and working as a micropalaeontologist on a drillship.

The 24th of June was dedicated to a field excursion to the Gubbio area of the north-eastern Apennines. The field trip started with a visit to a quarry near Furlo Pass; it was an opportunity to see the lithofacies Ammonitico Rosso and to look for ammonites. Next stops during the trip included visiting sections at Bottaccione with the K/Pg boundary and a quarry near Contessa Road with the Palaeocene–Eocene thermal maximum. The field trip included a tourist visit to the historical town of Gubbio. After leaving Gubbio we

headed to Gorgo a Cerbara, where we saw oceanic anoxic event 1a ‘Selli’. The excursion day ended with dinner and a party during which participants and lecturers presented their extraordinary singing and dancing skills.

Planktic Foraminifera course: 25–28 June

On the 25th of July, Prof. Michal Kučera gave lectures covering the ecology, diversity, biogeography, and taxonomy of modern planktonic Foraminifera. The last two days were dedicated to fossil planktonic Foraminifera; it was then that Prof. Bridget Wade presented on the diversity and evolution of planktonic Foraminifera in the Neogene and Prof. Maria Petrizzo described planktonic Foraminifera in the Cretaceous and Palaeogene. The course ended with a graduation party on 18 July.

The course was structured so that it could give a solid basis of knowledge as well as provide comprehensive information for participants having different academic backgrounds (geology, oceanology, biology etc.). The lecturers were very eager to answer students’ questions and stimu-



Figure 18: The field trip during the International School on Foraminifera.

lated participants in their quest for knowledge.

I would like to thank the organizers, lecturers, and sponsors of the

12th International Summer School as well as the TMS committee for supporting my participation in the course.

