

Jury Report

East-West Seed Thesis Award for Plant Sciences 2020

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Paleoenvironment reconstruction in the Central Myanmar Basin across the Eocene-Oligocene Transition (EOT) with a special focus on Sapotaceae pollen morphology

Daniel Pérez Pinedo was born in 1994 in Madrid, Spain, and defended his MSc thesis in Biological Sciences, specialization Ecology and Evolution, at the University of Amsterdam in August 2020. His thesis, entitled “Paleoenvironment reconstruction in the Central Myanmar Basin across the Eocene-Oligocene Transition with a special focus on Sapotaceae pollen morphology” received grade 8.5 and is expected to result in at least two peer-reviewed publications. The research project was supervised by Dr. Carina Hoorn and was carried out in collaboration with scientists of the Myanmar Paleoclimate and Geodynamics Research Group directed by Dr. Alexis Licht of the University of Washington, Seattle, USA. His supervisor mentioned that Daniel “showed a clear understanding of the research questions, demonstrated great initiative and determination, synthesized complex information and wrote an excellent thesis that provided insight into changes in the ancestral Myanmar forest”.

The jury members read Daniel’s thesis with much interest and admiration. It contains a detailed table of contents with a logical structure. In the abstract Daniel provides a clear description and interpretation of the results: three cluster zones showing a paleoenvironmental turnover during the cooling period between the Eocene and Oligocene epochs and a transition from evergreen tropical forests to cooler and drier temperate forests with needle-leaved gymnosperms. The extensive introductions to the paleoenvironmental history of SE Asia, and the floral, climatic, and topographic context in Myanmar are truly excellent and well documented. Daniel clearly explains the long-standing scientific hypotheses about the origin (African or Australasian) of the tropical tree family Sapotaceae justifying his research. The introduction is followed by a description of the research setting and the locations in Myanmar where pollen and environmental samples were collected. Analyses of the pollen measurements are illustrated with light-microscopic and scanning electron microscopic photographs of pollen samples. Daniel analyzed the data using various up-to-date multivariate analyses. Stratigraphic and lithological information was combined with paleomagnetism dating, using palynological zonation analysis and two ordination analyses. Cluster analysis of the pollen data reveal three bio stratigraphic zones, each with a characteristic vegetation with diminishing numbers of palm species and increasing gymnosperm species. Detailed data are presented on the different taxa in the three zones, with special emphasis on Sapotaceae. Results of ordination analysis clearly show a separation between the zones and the responsible genera. Subtribes of Sapotaceae are identified in all strata, suggesting that they were present before the Australasia-Sunda collision and thus originated from Africa. Yet, Daniel also acknowledges the limitations of the data through the small number of reliable samples. The discussion on the palyno-assemblages and paleoenvironmental reconstruction, and the differential pollen morphology in Sapotaceae was excellent, with proper comparisons with the literature.

Thus, the jury members are unanimous in their judgement of this thesis: EXCELLENT. The jury and members of the Koninklijke Hollandsche Maatschappij der Wetenschappen (KHMW) congratulate Daniel Pérez Pinedo with receiving the 'East-West Seed Theses Award for Plant Sciences 2020'. This achievement is well-deserved! Congratulations! The jury wishes Daniel a bright future as a PhD student in Earth Sciences in Newfoundland, Canada.

Prof. dr. ir. A.H.C. (Ariena) van Bruggen, Emeritus Professor Plant Pathology University of Florida in Gainesville

Prof. dr. ir. P.J.G.M. (Pierre) de Wit, Academy Professor/Emeritus Professor of Phytopathology Wageningen University

The jury meeting took place on 15 October 2020, was chaired by Ir. B.M.Th. (Boudi) Dortland-Bier, Director KHMW and also attended by Prof. dr. A.P. (Ad) IJzerman, Secretary of Natural Sciences KHMW and S. (Saskia) de Boer (minutes).