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► To cite this version:

Clément Zanolli, Florent Détroit, Armand Salvador Mijares, Julien Corny, Guillaume Daver, et al.. The teeth of *H. luzonensis*: a diagnostic taxonomic element. International Conference: Homo luzonensis and the Hominin Record of Southeast Asia, Feb 2020, Quezon City, Philippines. hal-03003975

HAL Id: hal-03003975

<https://hal.science/hal-03003975>

Submitted on 13 Nov 2020

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The teeth of *H. luzonensis*: a diagnostic taxonomic element

Clément Zanolli¹, Florent Détroit², Armand Salvador Mijares^{3,4}, Julien Corny², Guillaume Daver⁵, Eusebio Dizon⁴, Emil Robles³, Rainer Grün^{6,7} and Philip J. Piper^{4,8}

¹Laboratoire PACEA, UMR 5199 CNRS, Université de Bordeaux, Bordeaux, France

²UMR 7194, CNRS, Département Homme & Environnement, Muséum National d'Histoire Naturelle, Musée de l'Homme, Paris, France

³Archaeological Studies Program, University of the Philippines, Quezon City, Philippines

⁴National Museum of the Philippines, Manila, The Philippines

⁵Laboratoire Paléontologie Evolution Paléoécosystèmes Paléoprimatologie (PALEVOPRIM), UMR 7262, CNRS, Université de Poitiers, Poitiers, France

⁶Australian Research Centre for Human Evolution, Environmental Futures Research Institute, Griffith University, Brisbane, Australia

⁷Research School of Earth Sciences, Australian National University, Canberra, Australia

⁸School of Archaeology and Anthropology, Australian National University, Canberra, Australia

The new species *Homo luzonensis* has recently been described based on a set of dental and post-cranial elements found at Callao Cave (Northern Luzon, Philippines) and dated to at least 50 ka. Seven post-canine maxillary teeth are attributed to this taxon, five of them belonging to the same individual (CCH6) and representing the holotype of *H. luzonensis*. All these teeth are characterized by their small dimensions (in the inferior range or below the modern human variation) and particularly large premolars relative to the molars. A small dentition is also found in *H. floresiensis*, another hominin having evolved in an insular environment of Southeast Asia, while large premolars (even if to a lesser extent than in *H. luzonensis*) are also found in *H. erectus*. The post-canine teeth from Callao Cave display a blend of modern-like features in the crown (with a simplified occlusal morphology) and more archaic traits in the roots (three-rooted premolars, large root volume). The internal tooth structural signature also supports an attribution to another species than those already recognized in the fossil record. The enamel-dentine junction (EDJ), demonstrated to be a reliable proxy to distinguish between taxa up to the sub-specific level, shows that the premolars and molars of *H. luzonensis* are intermediate between those of *H. erectus* and *H. floresiensis*, while they substantially differ from the modern human condition. Further analyses of the internal tooth structure, notably of the enamel thickness and pulp morphology, and comparisons with larger comparative samples will likely shed more lights on the phylogenetic relationship of this mysterious hominin. Altogether, the external and internal organization of the dental tissues of *H. luzonensis* teeth attest of the existence of this taxon and highlight the taxonomic diversity of Pleistocene hominins in Southeast Asia.