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UP study offers clues to ancient biodiversity, early human movement in Southeast Asia

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The prehistoric shell tools uncovered in Mindoro by the team of archaeologists, geologists, ecologists, geneticists and social scientists from the University of the Philippines could point to the start of a transition from hunting/gathering to the agricultural or semi-agricultural subsistence strategies of our ancestors.

Since 2012, the team has been working on an ambitious multiyear project funded by the Emerging Interdisciplinary Research Program to answer questions about ancient biodiversity and early human movement in Island Southeast Asia.

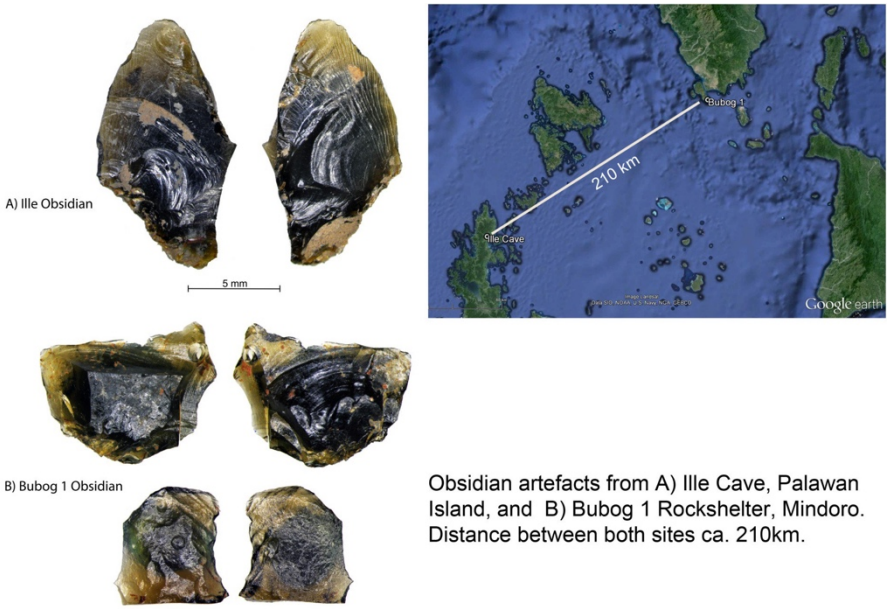
Using Mindoro as the site of study, they hoped to find not only further clues to how early humans arrived in the Philippine islands and how landscape formation, sea levels and landmass affected their movement but also indications of how such movement changed fauna and flora.

Two aspects are being examined in the peopling of Mindoro.

For the bioarchaeological aspect, researchers are looking at the palaeobiogeography/biodiversity of Mindoro, the forest and coastal resource exploitation and the transition to cereal agriculture on the island, as well as the origins and timing for the introduction of domestic animals in the Philippine archipelago.

Members of the project team with local collaborators and exchange students from Europe participating in the excavations on Ilin Island at Bubog Cove

For human movement–or the timing and distribution of human occupation in the island–they are identifying sites, reconstructing human cultural remains and understanding their adaptive subsistence strategy.

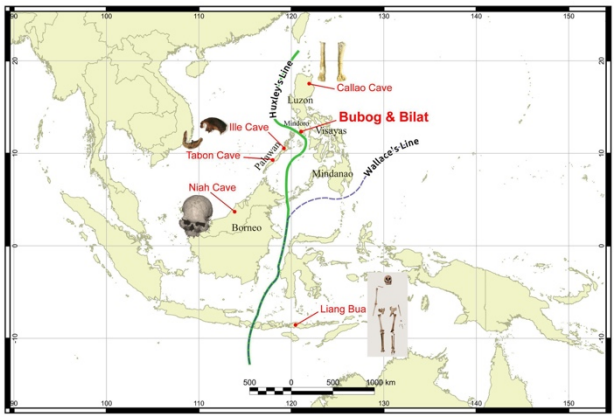


Obsidian artefacts from A) Ille Cave, Palawan Island, and B) Bubog 1 Rockshelter, Mindoro. Distance between both sites ca. 210km.

10-14,000 year old Obsidian artefacts from Mindoro and Palawan. Prehistoric artefacts made of Obsidian with identical geochemical signature have been excavated in Bubog 1, Mindoro and Ille Cave, Palawan. Since neither island has Obsidian sources, these finds point to the exploitation of a shared source of unknown location, possibly in the Visayas region, and the indirect evidence for the capability of those early islanders for long-distance seafaring already during the Terminal Pleistocene.

The researchers argue that Mindoro could have been the stepping stone for the early humans in their movement from Eurasia to Luzon through the Borneo-Palawan-Mindoro Luzon route, given that one of the earliest evidences of modern human occupation in Southeast Asia some 47,000 years ago was found in Tabon Cave in Palawan.

Mindoro is a land formation between the main Philippine archipelago and the Sundaland (Borneo/Palawan), a biogeographical Southeast Asian region consisting of a large land mass that lay exposed in the last Ice Age when the sea level was lower. Landscape study and modelling revealed that in prehistoric times the distance between Mindoro and the northern Palawan Islands was much narrower.



Map of the study area with the location of some relevant sites for Island Southeast Asia Archaeology

The discovery of shell artefacts dating back to over 48,000 years ago suggests that the earliest human occupation of the site where the shells were found was associated with the earliest human populations in the region.

Aerial view of the eastern shore of Ilin Island and Ilin Channel with the locations of the excavated sites Bubog 1 and 2. Visible in the background is the southwestern end of Mindoro with Brgy. Sta Teresa, Magsaysay and the location of Bilat Cave, where archaeological materials similar to Bubog were retrieved.

Specifically a shell adze found in the early assemblage adds to a growing body of evidence of a well-established shell material based culture industry in Island Southeast Asia before the coming

of Austronesian speakers from Mainland Asia and Taiwan.

Prehistoric shell midden deposits exposed in a vertical profile at Bubog 1 Cave in Ilin Island, Mindoro, and dated to between 4,000 and 30,000 years ago. Illegal treasure hunting activities at Bubog 1 have exposed the stratified remains of marine shells brought to the cave for consumption. The remaining deposits were then carefully excavated and sampled by the team to retrieve as much archaeological information from the disturbed site as possible. The different shell species per layer chronicle climate, environment and sea-level changes during and after the last glaciation and provide important detailed information to human interaction with those fast-changing environments.

Possibly indicating the start of a transformation in subsistence strategies, from hunting/gathering to agriculture or semi-agriculture, this discovery furthermore challenges the hypothesis that rice agricultural people moving out of Taiwan and spreading across Southeast Asia and the Pacific only encountered a few scattered bands of gatherers and hunters with minimal maritime technological skills.

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