Palawan Island Palaeohistory Research Project Report

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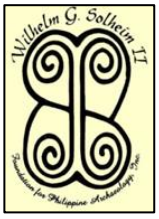

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CONTENTS

LIST OF FIGURES

LIST OF PLATES

1. INTRODUCTION

In this document we share the 2018 results and related data in the annual workings of the Palawan Island Palaeohistory Research Project. Our project has had several previous names, most recently being called the Palawan Island Palaeohistoric Research Project (PIPRP); in 2017 we formally agreed to use "Palaeohistory" rather than "Palaeohistoric". The change embodies the essential characteristic of our work rather than the nature of much of our methods; which we prefer to currently emphasize after almost two decades of research in Palawan. In its first two years the PIPRP concentrated its work around Rio Tuba-Bataraza, and in the Quezon district (Paz 2003a,b). Our first two seasons of fieldwork in Palawan focused on surveys and assessing archaeological sites that may be relevant to our general research objectives, which strive to substantially contribute to the knowledge-base of Palawan's human history. The early years also concentrated on palaeoenvironmental sampling in line with our general objective of gathering proxy evidence towards a better understanding of people-landscape relationships through time (see Paz *et al*. 2003; Lewis 2003; Lewis *et al*. 2007; Wurster *et al*. 2010).

In the last 15 years the PIPRP has concentrated its efforts within the municipality of El Nido, primarily in and around the Dewil Valley. Our research and heritage initiatives are linked with an intensive fieldwork approach, which we believe is the best way to generate new data and knowledge about human history at various scales of time and research interest. This

approach has always entailed full-scale excavations anchored in the Dewil Valley. In addition to excavations at the two main Dewil sites - Ille and Pasimbahan-Magsanib – many more archaeological sites have been discovered and studied by PIPRP within the valley and in other parts of the municipality, such as in Sibaltan village, and Pasimbahan cave in Maligaya, El Nido and Imorigue Island (see Paz *et al*. 2010). Equally of importance is the heritage component of the project, which took the form of public archaeology in the early years to a full articulation of a more comprehensive approach towards a sustainable heritage program geared to help lift the cultural consciousness of individuals and local/national communities.

Yearly for the last 15 years our field season took place between the months of March to May. This year, the season was in the month of April. Post excavation work continues for the entire year, and the preparations for the next excavation season starts around December to January. Our fieldwork team has always been international. This year's team were from the Philippines, Canada, Poland, United Kingdom, and the United States. It has always been a commitment of our project to write substantial annual reports on the work that we do, mindful to share as much data as possible, as soon as possible, to colleagues and the general interested public. Added to the reports is an ever growing literature of publications and datasets associated with the PIPRP. Our continuing post-excavation work that draws from longer periods of study are usually included in the appendices of our reports. We have recently updated our lists as part of an ongoing impact case study for University College Dublin (see 2017 Report Appendix 4), which we now plan to report every other year.

The legal/official authorization to excavate archaeological sites was granted to Dr. Victor Paz by the National Museum of the Philippines through Director Jeremy Barns (Appendix 1); this is on behalf of the other project leaders, namely Dr. Helen Lewis and Prof. Wilfredo Ronquillo. Prof. Ronquillo is now an emeritus member of the project after his retirement from the National Museum of the Philippines. The Palawan Council for Sustainable Development (PCSD) is informed about the project, and there has been close coordination with the Office of the Mayor of El Nido during the terms of Mayor Gacot-Lim, Mayor Coral and current Mayor Nieves Rosento. The support and cooperation of the Barangay administration has been consistent since 2004 under the leaderships of Captains Paulino, Lim, Abis, Legaspi, and currently Lucia Anastacio.

2. OBJECTIVES

For the 2018 season the objectives set have two equally important aims: to advance archaeological knowledge and information, and to continue initiatives towards transforming community/individual consciousness towards a higher appreciation of culture and history. Specifically for this year, at the Ille site we continued to excavate at the East West Connecting Trench and the West Mouth West Extension trench, as well as the newest trench, called Balete. Specific objectives were set for the year, as explained below.

At Pasimbahan-Magsanib (PM), we continued to excavate, with the focus on totally exposing a partially-exposed cremation along the east wall of Trench B, hypothesized to possibly belong to a cluster of cremation burials similar to that exposed at Ille (see previous reports and Lara 2018) We also wanted to complete the excavation at Makangit-Maliit-na–Bato (MNB), and continue excavating Makangit-Pabintana, and Pacaldero cave sites. The exploration of the landscape for new archaeological sites also continued in 2018.

Regarding our heritage initiative, we aimed to improve the contents of the Archaeology and Natural History Exhibit Hall, as well as continue with our community heritage engagement and education initiatives. There is also the matter of how to ethically solve the problem of surrendered human remains to the project that were collected during the 2010-2011 frenzy surrounding the purchase of human remains by unscrupulous individuals who then passed them as the remains of World War Two Japanese missing in action casualties. These bones were surrendered to the project at the tail-end of last year's field season at the Dewil Valley.

3. BACKGROUND

The northern end of the main island of Palawan has been the focus of this project since 2004. Within the Municipality of El Nido is the Dewil Valley, approximately nine km northwest of the town of El Nido, located between 11°00′ to 11°15′ North and 119°29′ East (Fig. 1). One of the largest barangays of El Nido is New Ibajay, located within the Dewil Valley at 11°11′46″ North and 119°30′19″ East, approximately 235 km north of Puerto Princesa, the capital of Palawan Province. It takes >30 minutes by land under current road conditions to reach New Ibajay from El Nido town. There remains a leg of the circumferential road from the Lamoro bridge junction that is very rough road.

The Dewil Valley is approximately seven kilometers long and four kilometers wide (Figs. 2 & 3). The main Dewil River runs south of the Ille site, eastward towards Sibaltan Bay, which is 4 km to the East. During the rainy season the waterways come to life and the water table becomes very high (near surface in the floodplain), while in the dry season the water table is normally low (sometimes very low - >5-10m). We have observed this pattern in the cave excavations, floodplains and in all the seasonal ponds and streams across the valley. New Ibajay remains the biggest barangay outside the main town of El Nido. Its population is mainly composed of settlers from the nearby large island of Panay and their descendants; most of these settlers arrived in the late 20th century, mainly from the province of

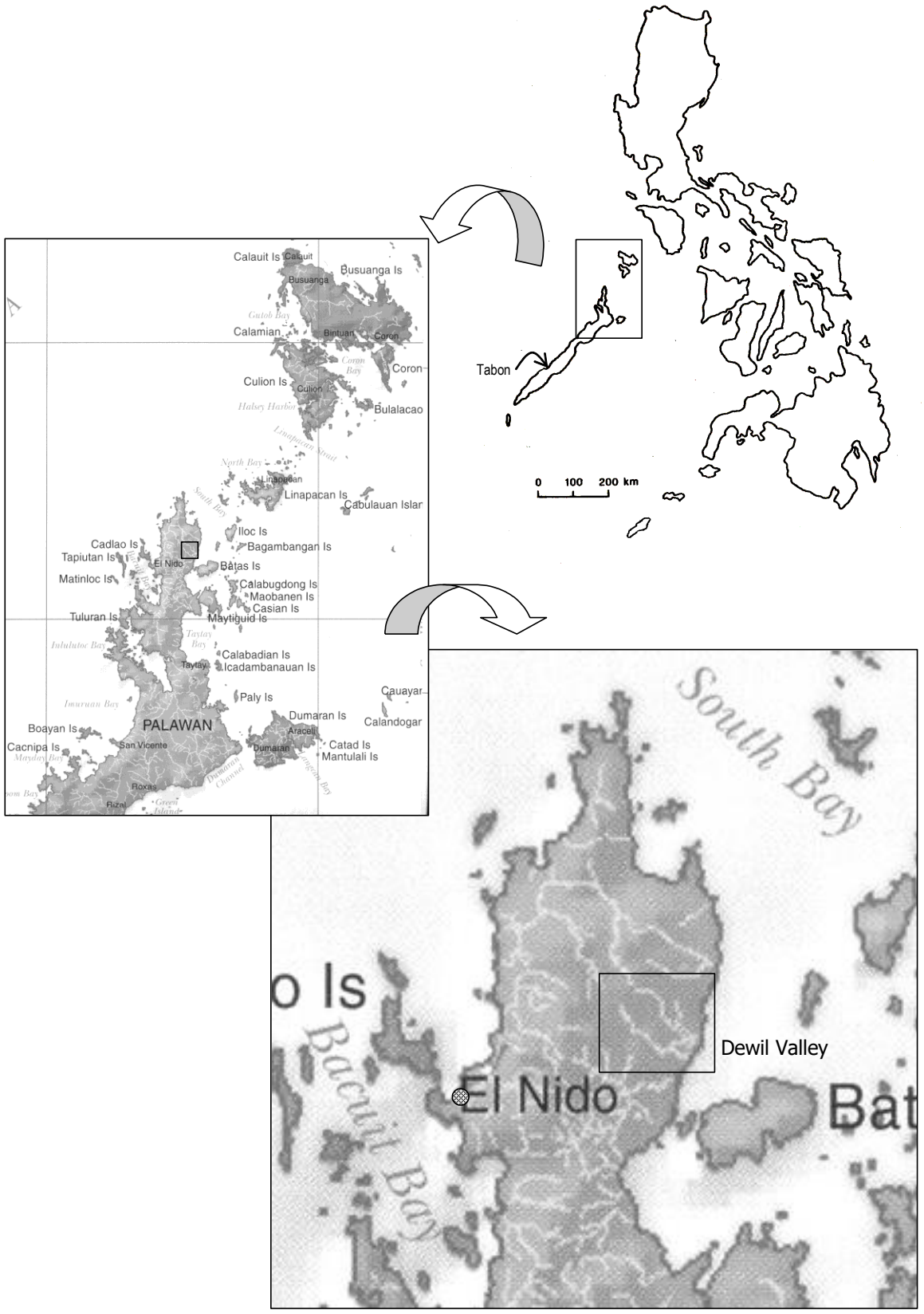


Figure 1. General location map of project area.

Aklan in northern Panay, and to this day their descendants speak the Aklan language, in addition to Cuyon and Filipino. The Dewil area and most of the communities within the Municipality of El Nido, however, are dominantly populated by people belonging to the Cuyon ethnolinguistic group. We, however, have been sharing our basic research results and our heritage initiative goals throughout the years in English and Filipino, the national lingua franca.

The main archaeological site of the project in the Dewil landscape is the Ille cave and rockshelter. This site is within a karst limestone tower named in the Cuyonon language as "Ille". The tower may be accessed from the current main road to New Ibajay by a short walk. The Ille karst is approximately 75 m high from the base. A cave network hollows the tower, with three main mouths located at its base and at least two large openings that can be seen at the middle of the south face of the tower. The main entrance to the cave is composed of two mouths (East and West) leading to a single chamber. There is a large platform in front of the two adjoining cave mouths with an overhang that extends to about ten metres — this is the main Ille archaeological site. A narrow, thickly vegetated band of land surrounds the karst outcrop, which creates a shaded and cool environment around the platform of the cave. The other karst tower formations in the Dewil Valley are also within islands of thick vegetation (Fig. 2; Plate 1), which in turn are surrounded by rain-fed rice fields, fallowed swidden plots, bamboo groves, orchards and vegetable gardens tended by people living in New Ibajay. The Pasimbahan-Magsanib site, another focal point of our work in the Dewil Valley, is another rockshelter and cave complex at the southern shoulder of the large Istar limestone karst. All limestone towers inside the Dewil valley, namely, Ille, Makangit complex, Kulanga Maliit, Kulanga Malaki, Istar, Diribungan, and Sinalakan, have archaeological sites.

Non-antiquarian archaeological work in northern Palawan started back in the first quarter of the 20th century, but there has never been a sustained research effort matching the current project. In the 1920s, the archaeologist Carl Guthe (1927; 1929; 1935; 1938) led a mainly material culture-collecting expedition for the University of Michigan, concentrating on the Visayas, Mindanao and Palawan. Guthe specifically explored northern Palawan as part of his objective to collect archaeological materials from the Philippines. In the process he recorded archaeological sites in Bacuit Bay and around the vicinity of present-day El Nido town (see also Solheim 2002). Guthe's work was mostly recording and reporting what he surveyed and selectively collected. At best, he test-excavated a few sites within the islands in Bacuit Bay, but unfortunately there is not much detail accessible concerning these activities. Guthe did not

attempt to create a synthesis of the data from the large collection of material culture he gathered and brought back to the University of Michigan. The Palawan data were not utilized to better understand human cultural transformation through time, nor were they used by Guthe to articulate his views on the processes involved in the formation of the ancient cultures that left the archaeological assemblages.

Guthe's quality of work is most easily appreciated if we situate it within the work of Henry Otley Beyer, who was the primary archaeologist working in the Philippines in the early 20th century, and had the best knowledge of the archaeology of Palawan through a network of informants. A significant amount of what Beyer would later publish on Palawan archaeology came out of the work of Guthe (see Beyer 1947). Unfortunately, the information coming out of Palawan in these early years came to the specialist Beyer as secondary, relying on the accounts of informants rather than people doing basic systematic research, with a few exceptions, such as Guthe's reports. Nevertheless, Palawan was one of the main sources of archaeological data at that time in the Philippine islands. When Beyer attempted to synthesize Philippine early history and culture, his models were heavily dependent on what was known from Palawan (Beyer 1921, 1948; Beyer & De Veyra 1948).

The nature of research in Palawan was substantially improved by the 1960s, particularly through the work of the National Museum of the Philippines under the leadership of Robert Fox. From the later 1950s, Fox (1970) used Guthe's work in northern Palawan as his lead when pursuing research in the island group. Fox's team recorded new sites from the area, adding to a list of sites that Guthe had already reported. A good number of these sites were from the Bacuit Bay area of north Palawan. Of the sites surveyed within the islands of the bay, a few were excavated, including the well-known site of Leta-leta Cave on Lagen Island. Systematic excavations revealed a burial/votive site associated with the "Metal Age", or about 1500-2000 years old (Fox 1970). The excavations also recovered what is now a famous earthenware jar with a rim fashioned to look like a yawning or shouting person – "The Yawning Jar" – which has been seen as so unique, and representative of the artistic skills of ancestral Filipinos, that it is on permanent display in the National Museum of the Filipino People in Manila (Fox 1970; Guthe 1929).

During the National Museum team's stay in El Nido in the mid-1960s, Gloria Fernandez and her family assisted the archaeological work. The Fernandez clan is an old and prominent family in El Nido, and they opened their homes to the National Museum team of Robert Fox.

The keen interest of Mrs. Fernandez in archaeology was such an asset that she was deputized by the National Museum to continue the exploration of the area for new archaeological sites. Long after active research ended in northern Palawan, Gloria Fernandez noted and reported to the National Museum new archaeological sites from El Nido, some of which she personally located, and some of which were brought to her attention by people who carried out or witnessed looting activities. Fernandez was likely the source for Fox's reference that there were "reliable reports of caves containing cultural materials in the Diwil (sic) and Taytay areas..." (Fox 1970: 179).

The information shared by Gloria Fernandez played a significant role in the 1998 El Nido archaeological survey by the National Museum, which was a precursor to the current project. Although we later recorded an eyewitness account that Fox personally saw the Makangit karst outcrop within Dewil Valley, this was not known during the 1998 survey, when Gloria Fernandez encouraged the team to look at previously-known sites in the valley. The 1998 survey led to the discovery of the site at the Ille karst tower. At that time, Ille was a previously unrecorded site near known archaeological sites within the valley, such as "Star" and "Makangit", all designating sites found within the large karst tower outcrops in the valley (Jago-on 1998; Paz 1998).

From the 1960s to the 1980s, after the initial interest in archaeological sites such as Leta-leta waned, northern Palawan drifted to the sideline of archaeological research priorities. This was because there were very few full-time field archaeologists in the Philippines, and interest in Palawan archaeology was focused on the central area of the main island, where the recovery of human remains dating to around 50,000 years ago from Tabon Cave represented the earliest evidence for modern human presence in the Philippine islands (Fox 1970; Dizon 2003). By the 1970s the national priority for archaeological research was focused on the Cagayan Valley in northern Luzon, consistent with the research goals of the time, which included looking for direct evidence for the existence of pre-modern humans in the Philippines (Fox & Peralta 1974).

Despite the absence of directed archaeological research, interest in antiquity continued, in an unfortunate way, in northern Palawan (and most of the Philippines). Large-scale looting activity was going on throughout the 1970-90s, including "treasure hunting" in search of the fictional "Yamashita treasure", and raids for Chinese ceramic vessels. In the coastal village of Barangay Sibaltan, El Nido, archaeology was reported as far back as the late 1960s (Fox 1970). In

1976-77, however, the scale of looting was unusually large and done in the open, with both locals and looters from as far away as Batangas and Quezon Province joining in the wanton destruction of the archaeology. They found hordes of porcelain in what may have been traders' caches, together with items from many burials. The activity was so long drawn-out and spectacular that the National Museum responded by sending a team from the Cultural Properties Division to attempt to supervise some of the illicit excavation and collection of tradeware ceramics. The National Museum team focused on collecting ceramic samples and did not have the manpower nor resources to expand their control of the situation (National Museum 1977).

Sibaltan was revisited during the 1998 survey (Paz 1998) and during PIPRP seasons in 2008 and 2009 (Paz *et al*. 2008; 2009), and even with the known extent of looting activities, the archaeological survey teams concluded that there was still high potential for systematic research. The area was finally integrated into the scope of PIPRP in 2010, when excavations were done at the Sibaltan Elementary School and the Acosta Property sites. During that year we had a fourth co-director, Dr. Peter Lape from the University of Washington, and the sites were excavated as part of a joint venture with added funds and resources from a Luce Foundation grant. At Sibaltan there was evidence of historic and metal period human burials (not associated with tradeware ceramics), along with evidence for older archaeology at the elementary school site manifested in postholes and highly weathered scatters of earthenware sherds with no association with remains of tradeware ceramics (Paz *et al*. 2010). Sibaltan has since succeeded in coming up with a truly eco-museum like approach in managing and enhancing their heritage. The PIPRP makes it a point to visit Sibaltan annually since the 2010 season.

In the midst of extensive looting during the decades from the 1970-90s there were few systematic archaeological surveys done in northern Palawan. A short survey was initiated by the National Museum in 1990 on the vast landscape of El Nido and Taytay, confirming cave sites associated with pottery (Aguilera 1990). Sustained archaeological interest returned to northern Palawan in the late 1990s by initiatives from NGOs like the Philippine Rural Reconstruction Movement (PRRM), and the Southeast Asian Institute of Culture and Environment Inc. (SEAICE). These initiatives were closely coordinated with the National Museum of the Philippines and Ten Knots – a private company that operates and manages tourist resorts in El Nido. The survey done in 1998 resulted both in improving the data on previously-reported sites (Paz 1998; Jago-on 1998), and in the rediscovery of the high research

potential of the Dewil Valley. Within the same year that Ille was located, the site was mapped (Mijares, *et al.* 1998) and a test excavation initiated.

The Ille site captured the imagination of senior archaeologist Prof. Wilhelm Solheim II, who was part of the 1998 survey team. Solheim led the early seasons at Ille with the help of a team of experienced museum-based archaeologists and UP-ASP graduate students, and in the 2002 season adding Australian National University archaeology graduate students Katherine Szabo and Mary Swete-Kelly and independent scholar Jonathan Kress into the team. Kress carried out previous excavations in Palawan at Sa'gung Rockshelter and Pilanduk Cave in 1968-1970. Kress at this time was being mentored by K.C. Chang at Yale and by Robert Fox in Palawan.

The first excavations done at Ille site was in 1998. A 1.87m x 1m test pit was opened at the front of the West Mouth (site grid location W12N3); time, manpower constraints, the presence of human burials and large buried boulders limited the depth of this excavation to less than a meter (Hara & Cayron 2001). More extensive excavations were conducted in 1999 (Solheim 1999; de la Torre 1999; Bautista 1999) with four excavation areas opened, following the 1m x1m grid previously established across the platform. The excavation concentrated on grid squares W12-13N2-4. Several human burials were excavated, as well as a shell midden. The nature of the archaeological remains found effectively slowed down the work, preventing the excavations from reaching deeper and older cultural deposits.

In 2000, a quick survey of the Dewil Valley recorded additional sites, and excavation continued at Ille with the previous West Mouth trench reopened (Jago-on 2000; SEAICE 2000a; 2000b), but which did not manage to go much deeper than the previous seasons due to rockfalls across most of the trench area. In 2002, equal emphasis was given to excavating both West and East Mouth fronts of the cave platform (Szabó *et al.* 2004; Swete Kelly & Szabó 2002; Kress 2002). The season ended with substantial progress in the understanding of the archaeology of Ille. The 2002 excavations provided better evidence for a thick shell layer in both the West and East Mouth areas, and more burials and artefacts were uncovered, similar to the results of the previous seasons, as well as hearth deposits underlying the shell midden in the East Mouth. Most import, a series of cohesive radiocarbon dates came out from the stratigraphic sequences at the East Mouth excavation area, which led to a clear understanding of the time depth of the cultural deposits from the excavated shell midden layer to around the depth of 125cm from the

surface. There was a consensus in the understanding of the archaeology that there was a strong case for cultural remains below the earliest radiometrically-dated layer of 10,000 years ago (Szabó et al. 2004).

Also in 2002, all previous excavations were synthesized in a status report written by Solheim (2004) for the Solheim Foundation. In this report, insights into the possible fate of Burials No. 1 to 4 at the West mouth were proposed, suggesting we may have been looking at the remains of massacred individuals, hurriedly buried. The Solheim report reiterated a call for the Philippine archaeology community to commit to a long-term research initiative at Ille.

The PIPRP, which had been working mainly in the Bataraza and Quezon areas of South Palawan from 2002, heeded the call of Prof. Solheim by refocusing its fieldwork from the southern part of the main island of Palawan to the north. There was also a sense of urgency when reports reached the archaeology community of sustained looting of archaeological sites in the Dewil Valley after the end of each excavation season from 2000 on. The PIPRP took over the responsibility of studying the archaeology of the Dewil Valley in 2004, and the results of each year's excavation have been reported in the annual reports of the project, which are shared with everyone who is interested in the work being done (see previous reports from 2004 to 2016). Specific findings have also been reported in academic published papers, graduate dissertations and theses, and in numerous talks, seminars and presentations, as well as through exhibits, local signage at sites around the Dewil Valley, and reports to funding bodies (see 2017 report, Appendix 4); articles and dissertations are accessible digitally through the Internet or on request from the project.

At the end of the 2018 season of the PIPRP it is appropriate to mention that based on a robust series of radiocarbon dates representing the stratified archaeology at Ille and Pasimbahan-Magsanib, we now know that human cultures were utilizing and likely flourishing in the El Nido area as far back as at least 16,000 years ago (Lewis *et al.* 2008; Ochoa *et al*. 2014). that there are complex ways people treated their dead within the landscape of limestone karst formation, and that our understanding of human cultural complexity is now far beyond how we understood the past over a decade ago. From our research we continue our attempt to push the borders of our understanding of Philippine and Southeast Asian palaeohistory while cultivating the heritage ground it is part of.

4. THE PIPRP AND RELATED KNOWLEDGE PRODUCTION

From the very inception of the project the data collected and insights created have been primarily through the annual reports that were written. The formal publication of information and data coming from the project were mainly done through graduate level thesis research. To date, there are four dissertations and 11 Masters thesis that have benefited from our project's openness. The project leaders have always taken the view that access to our data should be available to all who are interested, such as scholars and researchers from other academic fields, as well as the interested general public. Since 2016 we have annually updated the exhibit presentation of information and knowledge at the Natural History and Archaeology Exhibit Hall located within the Dewil valley for the benefit of residents of New Ibajay and the growing numbers of visitors living outside the Dewil Valley.

In addition to the annual reports (cited above) and grant reports (e.g. Lewis *et al.* 2006), on several occasions a field season experience has been summarized and published in the UP-ASP publication *Test Pit*. In *Test Pit* short descriptions of what was excavated for a field season, and a few highlights in terms of finds and events are shared with a broader audience (e.g. Eusebio et al. 2006; Canilao 2007; Wright 2009; Ostericher 2010). To reflect on the international nature of our team, and our wide regional interests, we have ensured a broad exposure of the project's results over the years (see Appendix 4 here; Lewis appendix in 2015 report). The archaeology of the Dewil Valley was included in the latest edition of the Cambridge World Prehistory volumes, within the discussion of "The Philippines" (Paz 2014a), and in the latest handbook of East and Southeast Asian Archaeology (Paz 2017). Our work has been presented in many international refereed journals, conference proceedings, and in local and regional journals (see Appendix 4). We also have a growing social media and media presence. Our research from south Palawan has also seen some scientific publication (see Lewis in 2015, 2017 Reports), and as always, various aspects of specialist studies are ongoing.

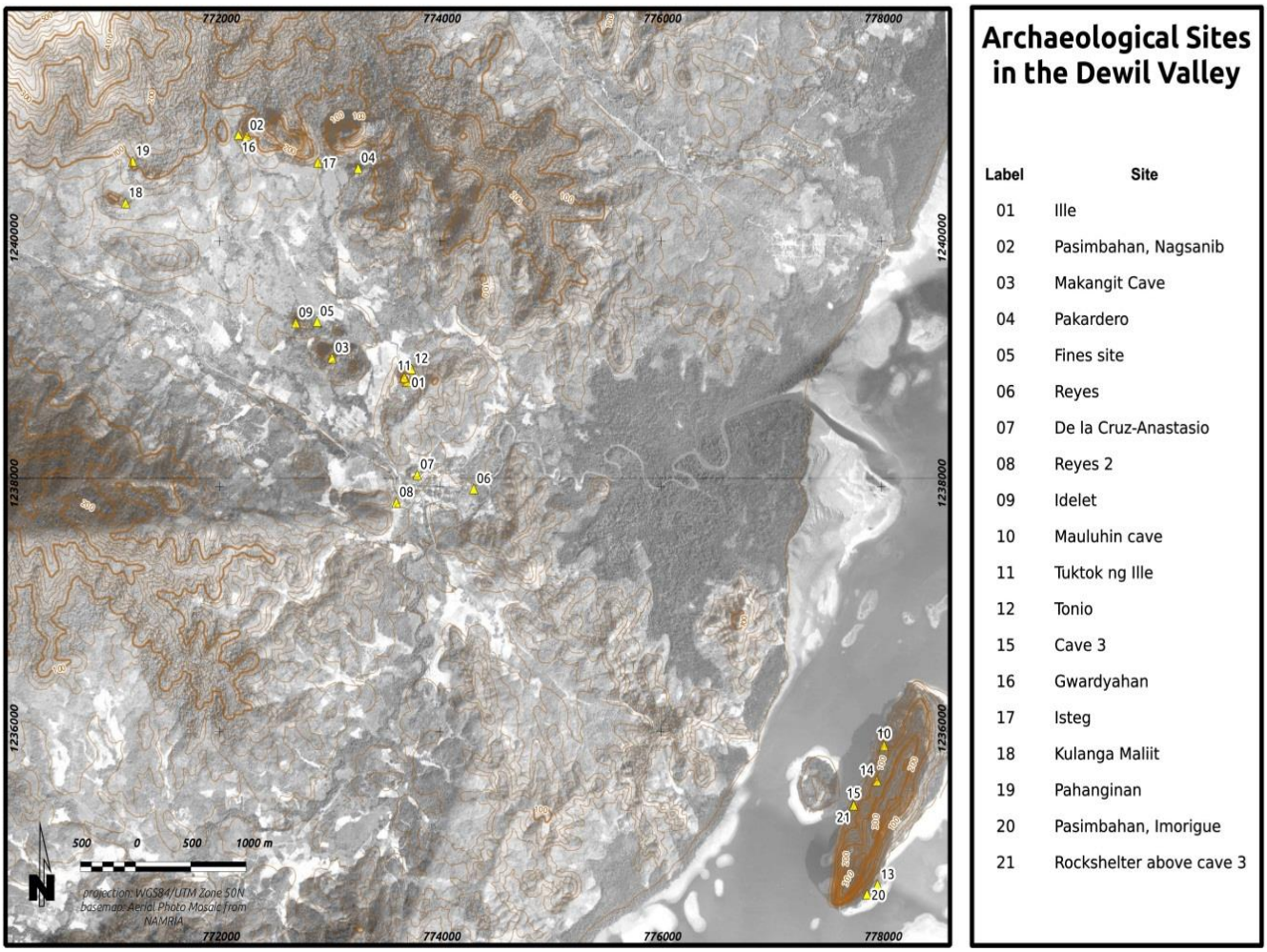
Regarding formal publications, one of the earliest PIPRP publications on Dewil Valley sites was a methodological concern. Pawlik (2004) narrated the challenges encountered in the first technical mapping of the Ille site. This exercise resulted in the creation of the first detailed digital map of the cave's entrance chamber and rockshelter. Our interest on transforming human-landscape relationships and the changing environment has always been central. Emil Robles continues to update and improve the mapping of the two major sites in the valley, Ille and Pasimbahan-Magsanib, in conjunction with his research interest in the temporal

transformation of the larger Palawan landscape. Related to this, Robles *et al* (2014) published a paper on the prehistory of sea level changes in Palawan and the implications of these changes to human-landscape relationships through time.

The study of landscapes and associated ecologies have been approached from the materials recovered from the archaeological sites and the site formation history of these spaces, as well as sampling and mapping in the general landscape. Soil micromorphology address issues at a site-space scale, and is regularly applied in the different sites under the PIPRP, although due to processing cost many results remain forthcoming. Hernandez (2010) reported on the basic characteristics of sediment monoliths from Ille. Animal and plant remains recovered from systematic excavations may inform us of human activity in manifold ways. The various shell remains excavated from Ille have been identified to species level through a preliminary study, interpreted as to their implications regarding the nature of human subsistence strategies in the past (Faylona 2003; 2006). More basic taxonomic work needs to continue on the numerous shell remains from the sites excavated, and this is reflected in our reports on the raw counts of shell types that comprise the assemblage within the Ille and Pasimbahan-Magsanib sites (e.g. Paz *et al*. 2012; Paz *et al*. 2013). The most recent PhD dissertation written directly involving our project looks at plant remains sampled from the Dewil landscape: Shawn O'Donnell (2016) explored human and rainforest interaction during the Holocene in Palawan, and in the highlands of Sarawak, in Borneo, Malaysia.

Figure 2.

Map of the El Nido landscape and the Dewil Valley area showing the locations of known archaeological sites



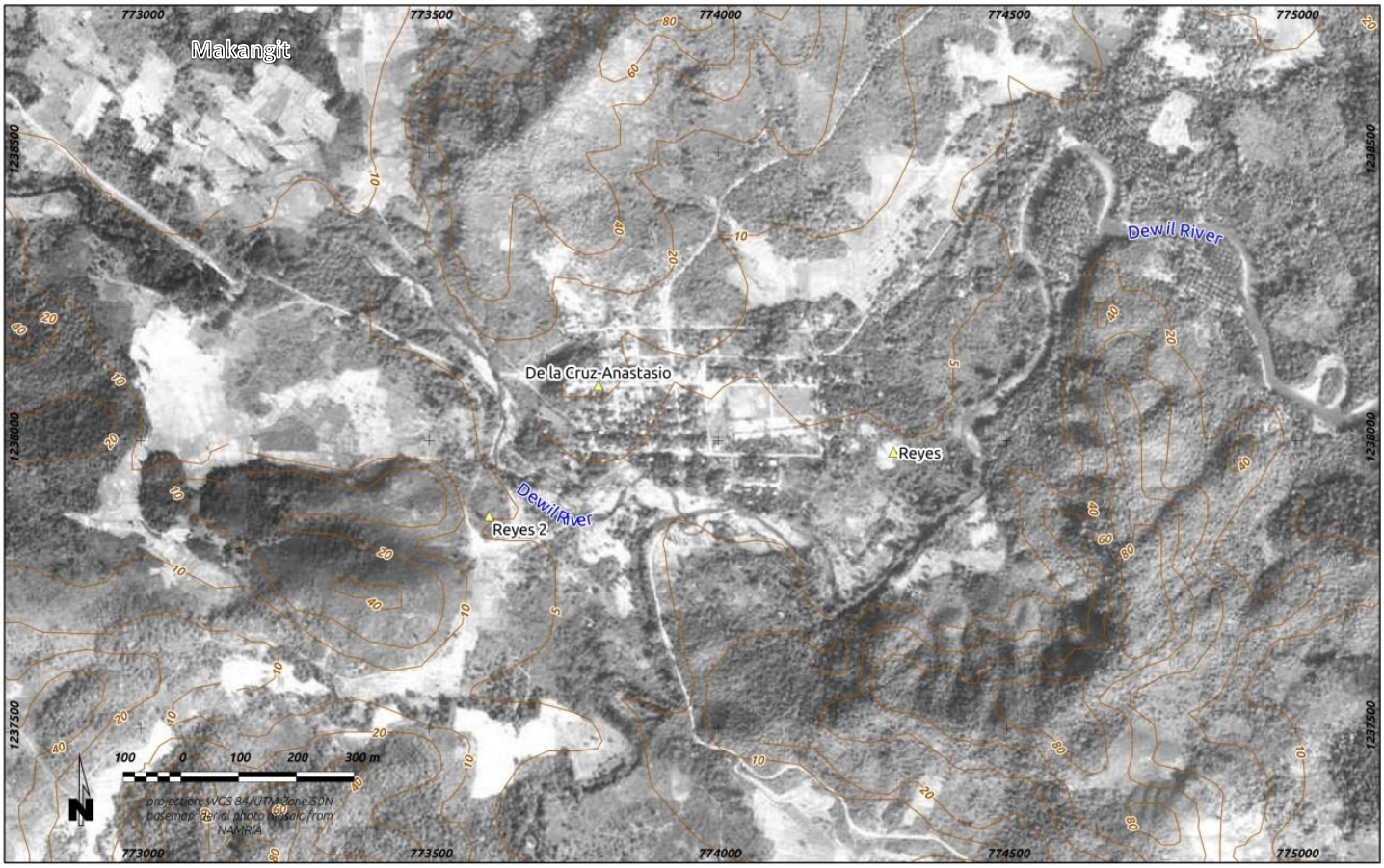


Figure 3. Aerial view of New Ibajay indicating location of sites studied in the barangay

Analyses of the animal bones assemblages from the project have resulted in several publications, and have changed the way we see the Philippine archipelago since the arrival of humans. For instance, the recovery of tiger bones from Ille (Piper *et al*. 2008) expanded the known range of this large carnivore. It also clarified our view of the role of large-scale ancient landscape change, such as the impact of sea level rise in the terminal Pleistocene on animal habitat. The loss of landmass and changes in the nature of the ecosystem likely led to the extinction of specific animals in Palawan, such as the tiger and at least two deer species on the main island; the latter may also have been impacted by human hunting (Lewis *et al.* 2008). An article by Ochoa (2005), analyzing buried juvenile dog remains from the West Mouth trench at Ille situated this find within the larger discourse on the domestication of the dog in Asia. The identification of the remains of the endemic Palawan stink badger – a first archaeologically – was done by Piper and Ochoa (2007). The Ille faunal assemblage was the focus of Ochoa's (2009) Master's thesis, wherein she explained the changing animal resources availability in the valley

through arguments related to animal exploitation patterns. Ochoa also published her study of deer remains from Pasimbahan-Magsanib, and compared it with her earlier results from Ille (Ochoa *et al* 2010). A larger synthesis of the implications of the animal bone assemblages analyzed from the project was put forward in an article on the palaeozoology of Palawan Island (Piper *et al*. 2011). Recently the pig remain assemblages from the Dewil valley have improved our ability to differentiate wild from introduced pig remains in archaeological assemblages (Ingicco 2017).

Regarding the human remains coming from the excavations, those from Ille have been the subject of a few publications and studies, including an analysis of human teeth from the burials excavated in the first two seasons (Medrana 2002) prior to the start of PIPRP at Dewil. Medrana's pioneering work on the project gave us insights into the age range and health condition of some of the individuals buried in the Ille platform, which encouraged more work on the human remains assemblage. A Master's thesis was written on the first cremation burial excavated from Ille (Lara 2009; see also Lewis *et al.* 2008), leading to a clear understanding of how the individual was processed for interment. In describing four of the cremation burials found in detail, Lara's work has also cautioned us on the haste with which scholars sometimes argue, based purely on bone morphological grounds, for the presence of cannibalistic behavior (Lara *et al.* 2013). This publication also situated the early-mid Holocene Ille cremation cemetery with other known cremation sites in the region. A recent Master's thesis connected to the study of human remains was done by Jessica Peña (2015), who studied the non-adult burials from Ille, finding that they are generally preserved well on site, and that many of the non-adults found were placed in the ground wrapped or enclosed before they were buried, suggesting the use of coffins or shrouds/bundles, for which almost no evidence has survived. The Master's thesis by Andrea Cosalan (2017) included two Ille burials in a pan-South East Asian preliminary analysis of population information using geometric morphometrics. Using the pathological data coming from the cremated human remains at Ille Lara *et al*. (2016) engaged with the issue of whether hunter-gatherer subsistence-based individuals are healthier or unhealthier than those who belong to farming societies. Carlos' (2010) initial synthesis of charred plant remains data from Ille also gave insights on ancient subsistence patterns. The archaeobotanical information coming from the project was integrated into a larger regional study, which saw the fusion of knowledge from the Niah site in Sarawak, and Ille in Palawan, to discuss the nature of the transition to farming in ancient Island Southeast Asia (Barker *et al.* 2011; Barker 2013).

The results of isotope dating initiatives are always first reported in the annual reports of the project. There have been three instances where the isotope dates produced by the project were published for a wider academic audience. In the first instance, a short report was published on the Ille mineralized human bones dated through U-series approaches to 3000-6000 y.a. (Paz 2006). A further U-series dating project was published from our work in south Palawan, dating the Tabon Cave speleothem deposit to 18,000 years ago (Lewis *et al*. 2007). Additionally it was found that this speleothem is composed mainly of gypsum, and not calcium carbonate as previously thought. A more significant published set of radiocarbon isotope dates came from Ille, with extensive discussions on their implications – briefly, the valley has clear time-depth evidence for human occupation to at least around 14,000 years, and possibly 16,000 years ago (Szabó *et al*. 2004; Lewis *et al*. 2008). Directly relevant to the dating of the Dewil site and transforming landscape comes from the analysis of mammalian bones from Pasimbahan-Magsanib where the changing ecology of the valley argued at a radiocarbon date range from 8000-10,500 years bp (Ochoa et al 2014). This provides a secure platform for us to argue the contemporaneity of the Ille and Pasimbahan sites which are located at opposite ends of the Dewil valley.

With regards to work done on artefacts and artefact assemblages recovered by the project, stone and bone tool analysis has been central to the study of the Makangit cave sites (e.g. Teodosio 2004; 2005), and a limestone hand-axe recovered from a nook in the wall of the Ille tower (west of the Ille cave mouths) was contextualized in at least two publications, drawing from the previously cited analysis done by Pawlik, which revisit a long-standing discourse on the technological analysis of stone tools in Southeast Asia (Pawlik 2009; 2013; Dizon and Pawlik 2010; see Paz *et al*. 2010). Two polished stone adzes analyzed by Pawlik (2007) through use-wear analysis showed a high-level of edge-sharpening skill on the part of the makers of the tools, and an initial study on use wear by Barton (2006; Lewis *et al.* 2008) suggested Ille was a site of only limited stone tool production, and that many flaked tools found from Palaeolithic levels were used for the processing of plant materials. There were also publications that analyzed and situated the obsidian artefacts found from the Dewil Valley (Lewis *et al.* 2008) in the larger context of Southeast Asian archaeology (Neri 2007; Spriggs *et al*. 2011; Reepmeyer *et al*. 2011). A more focused regional discussion based on the sourcing results of obsidian artefacts from the Ille and Ilin (Mindoro) sites, where the flakes showed identical chemical signatures, has recently been published (Neri *et al*. 2015). The results, which failed to establish the common source of these obsidian artefacts, are nevertheless fascinating for the fact

that we now know that artefacts made of obsidian glass from the same unknown source were found on two separate islands located in the western Philippine archipelago.

The early assemblage of shell artefacts from Ille was included in the dissertation research of Szabó (2004), with interesting insights into the production process of shell implements. Inspired by Szabó's work, Basillia (2012) conducted experimental studies on the production of microperforated shell beads for her Master's thesis, which led to new insights on bead production and the utilization of shells in the region. Another shell artefact type, the T-shaped-profile shell bracelet, was partially analyzed. It is a unique find in the Philippine islands, the significance of which was contextualized by Vitales (2006) by comparing it with the literature from Mainland Southeast Asia, where this type of artefact is more common. A cluster of perforated shells from burial context 727 from Ille was argued by Paz and Vitales (2009) as most likely the remains of a meaningful adornment, perhaps slung over the shoulder of the person buried. Vitales' (2009) interest in cosmological studies and shell artefacts from Ille brought him to study the context of a specific shell artefact-type of *Melo* sp. shells, which he argued are significant in the worldview of the early inhabitants of Palawan Island.

The work done on pottery assemblages coming out of the project has been equally well-represented in post-excavation analysis. Specific ceramic finds have been reported in publication, such as the first whole jarlet recovered from Ille West Mouth, at the bottom of a large and deep filled-in crevice within the rock-shelter (Eusebio 2006). Because of long-term burial and other use of the Ille site, the stratigraphic sequence related to the pottery deposits is very complicated. The ceramic assemblage coming from the Dewil landscape is immense and needs several researchers to work on it. However, progress has been made with the Ille assemblage where a study of a large portion of the assemblage was studied by Balbaligo's (2010). Balbaligo continued this study for her PhD research describing the initial results in terms of quantities, fabric type and forms of pottery collected from the 2004-8 Dewil Valley seasons. She also discussed the manufacture and decoration styles of the assemblage, to better associate the pottery types with the stratigraphic sequence of the Ille site. Balbaligo's (2015) dissertation on the pottery assemblage from Ille critically engaged current large-scale interpretations of culture change in the region between 4000 to 2000 years ago. An article by Carlos (2006) reported on earthenware sherds from Ille that have clear signs of rice imprints or inclusions, which is significant when it comes to questions concerning the introduction of rice agriculture to this part of the Philippine islands. The discovery of a terracotta turtle figurine from Pacaldero cave site in the Sinilakan karst allowed for reflection on the significance of

turtles in the cosmology of the early inhabitants of the valley (Cayron 2004). A later investigation at Pacaldero cave led to the discovery of other parts of this figurine, which has been reinterpreted as representing a bird (Paz *et al*. 2010). Within the large assemblage of earthenware finds at Pacaldero were highly fragmented burial jars with intricately decorated covers; some had human images included in their design, and a large number of disturbed or re-deposited decorated potsherds from both this cave site and the Makangit Idulot site were recovered in 2010 and 2013.

In all seasons of excavation since 1999, metal artefacts were recovered directly associated with burials or found within archaeologically-rich sediment layers that included pottery sherds. Most of these artefacts were organized and initially analyzed for Ille by Carlos (2009).

There are some reflective writings inspired by the project. The Ille data have been utilized by colleagues in a synthesis on the evolution of stone tools industries in the Philippine islands (Patole-Edoumba *et al.* 2011). Paz (2013b) relied heavily on materials from the PIPRP in his rethinking of the Philippine Neolithic, in his presentation of Philippine archaeology in a reference volume on world archaeology (2013a), and in discussing the significance of Palawan archaeology for a larger academic readership (2014b). In a work that looked at the archaeology of the Bicol region, the burial practices at Ille were used to support an argument for ritual interment of skulls (Ragragio 2012). Solheim (2007) saw the Ille pottery assemblage as relevant to his large-scale hypothesis on the transformation of Island Southeast Asian culture through what he called the Nusantao Maritime Trading and Communications Networks. Medrana (2005) did an initial study of the modern weekly butchery practice of pigs in New Ibajay, to look for ethnoarchaeological insights that may be of use when looking at patterns observed in the archaeological remains. Jonathan Kress (2006) looked at the work done by Robert Fox on the Negritos in the Philippines (Fox 1953) and situated the potential of the current excavation work at Ille to elucidate modern human origins in the Philippine archipelago, a case taken up by preliminary research by Cosalan (2017). The PhD dissertation of Cayron (2012) used PIPRP data – particularly beads from the Dewil sites – to discuss long-term and long-range trade and exchange patterns in Island Southeast Asia. Paz (2012) proposed a way to access past cosmologies through material culture and landscape context, relying heavily on the assemblage of material and knowledge coming out of the PIPRP. The PhD thesis by Xhauflair (2014) used the PIPRP as a resource-base for innovative ethnoarchaeological work in Palawan geared to better understand useware remains on lithic tools. In the 2015 Philippine re-participation (after five decades) in the Venice Biennale exhibition Paz (2015) contributed an article discussing

lingling-o artefacts as a rare unifying regional symbol among Nation States in Mainland and Island Southeast Asia at a time of escalating geopolitical maritime conflict; the lingling-o finds from Ille were key examples.

Several members of the project have given many talks in the Philippines and abroad in formal conferences, seminars, and public lectures. An example of these presentations reported in print (see Ragragio 2010) is the regional pattern of finding *Canarium* nut remains in various archaeological sites, which Carlos argues may be of significance beyond subsistence. Another example is the argument of Paz (2012b) that possible boat-shape markers found in both Ille and Pasimbahan-Magsanib can be contextualized to have significance for the understanding of past cosmologies based on a regional pattern. In just one more of many examples, Hernandez and Rice (2009) queried the relevance of the Philippine Neolithic by questioning the actual nature of the 'Neolithic' remains at Ille; this issue was revisited in light of recent evidence of an early Neolithic phase of deposition and cremation burial at Ille in the meeting of the second International Symposium on Austronesia held in Nusa Dua, Bali, Indonesia (Lewis and Paz 2016). Many more examples are listed in the Appendices of the 2015 and 2017 reports of PIPRP.

The study of the Dewil Valley has also benefited from parallel research by colleagues working on related topics. A good example comes from Quaternary geologists, mostly based at the National Institute of Geological Sciences at the University of the Philippines (see Maeda *et al*. 2003), in which the combined analysis of data collected from the study of uplifted tidal notches, sediment cores and coral reef terraces may allow for an understanding of sea levels and possible climatic conditions at the time the Ille tower was utilized as a burial and habitation site. Another example is the research done by Reotita *et al*. (2008) from the UP Marine Science Institute on the palaeoenvironmental reconstruction of the Dewil Valley. Specific to limestone formations, Foronda has contributed studies on the Gangub limestones formation (Foronda *et al*. 2003), and the Dewil Valley limestone formation (Foronda 2010). Recently there was the identification of Permian age fossil beds in Ille cave, including of rare types of molluscs, making Ille significant globally as a fossil site. The first presentation on this was in the form of a poster (Fernando 2017), which was included as an appendix in our 2016 report.

There is also a pioneering study on the use of guano deposits as proxy evidence for local and regional vegetation change. This work provided isotope dates and data from guano deposits in the Makangit tower, and showed much potential for the use of guano as dating material in other archaeological sites in the region and elsewhere (Bird *et al*. 2007). This work

was further pursued by Wurster *et al*. (2010) in arguing for a regional palaeoecological interpretation.

This section of the report is in many ways redundant to the previous year's report. It is the nature of a long, on-going project, such us the PIPRP, to keep stock of its knowledge production. Previous years are narrated and added on by the constant yearly addition of material coming from people who have been and are still involved in the PIPRP.

5. METHODS

The following methods are the regular approaches used in this research project, which are consistently applied in our field research. The methodology is primarily based on the discipline of archaeology. When a unique or innovative approach is introduced and maintained for over one season, it becomes part of the menu of approaches presented below (see previous reports for field-season specific applied methods).

The method of archaeological excavation is the paramount and standard approach of this project in pursuit of basic research work in the Philippines. In this field season, excavation took place at the sites of Ille, Pasimbahan-Magsanib, Makangit Maliit na Bato, and Pacaldero Cave. At Pasimbahan-Magsanib, excavation concentrated at Trenches A and B and B Extension Trench. At Ille, work resumed at the West Mouth West Extension trench, the East West Connection Trench, and the Balete Trench. At Pacaldero the cave was resurveyed and a excavation trench was opened at the base of the large flowstone going up to localities where the burial jars were located; a new locality (locality 10) was also investigated where a singular burial jar was discovered.

A few days before actual excavation started, backfill was removed until the plastic lining from the previous season was exposed. At the end of each season, all excavated areas are lined with tarp and plastic sacks before being covered by back-fill. The practice of backfilling protects both the site's archaeology, and people and animals living in close proximity to the sites. At Ille, backfill sediments include the spoil heaps after excavation and sieving, but also have had to be collected from other nearby areas since the 2007 season, when it first became apparent that there was not enough spoil to fill the trenches to their original levels due to the extraction and dispersal of original sediments in the application of fine-resolution recovery methods, e.g.,

flotation and wet sieving, as well as the removal of archaeological remains for post-excavation study. Sediments from what is now municipal property where the basecamp is located east of the Ille rockshelter was scanned for finds of all types. When nothing of archaeological interest was found, this became the backfill extraction pit. This quarry pit for backfilling is now at the opening of the current path to the site from the exhibit hall building and basecamp; to date no archaeological material has been recovered from the sediments at the pit.

Archaeological excavations remove deposits from the youngest to the oldest (usually), guided at our sites by the approach of single context excavation and recording. This method is adopted by many communities of archaeologists locally and internationally (see Harris 1989; MOLAS 1994). In this approach, all sediment types, features, structures, clusters of artefacts, and layers are given individual context numbers, which are then organized in a stratigraphic matrix that illustrates the formation sequence of these deposits/features. A spit excavation approach was utilized where thick layers existed, to systematically remove non-feature deposits encountered on the sites and control for finds distribution – usually done at increments of 5, 10 or 20 cm per spit, depending on the layer.

The spatial relationships of the sediments and archaeological features across an excavation trench, and between excavation trenches within the archaeological site, are plotted in three dimensions, recorded on excavation forms, and in plan and section (profile) measured drawings. Recovered artefacts are bagged and recorded according to square, quadrant, context, depth from datum (on a case-by-case basis; exact values were used if these were recorded, ranges were used otherwise), and type. Disarticulated animal and human bones are generally recovered with quadrant data. Burials are recovered, wrapped in newspaper, and stored in individual boxes. Loose bone fragments per burial are placed in their own plastic ziplock bag before being stored with the rest of the burial in its box. Small-find artefacts, like ornaments and formal tools are recovered with three-dimensional location data if found *in situ*.

Each layer and feature is recorded in the trench context notebook and on a context recording form, except for burials, which are generally recorded on designated burial forms. Plans and vertical profiles (sections) of the edges of unexcavated areas are drawn on new sheets of permatrace paper or tracing paper, while those of previously-excavated areas are appended on to the corresponding existing drawings. Layers, features, and special artefacts recovered *in situ* are digitally photographed. All context recording forms and burial forms are also digitally recorded (scanned). Most of the activities during each excavation season are documented in digital imaging.

The excavations at Dewil practice high resolution recovery of all possible evidence that may indicate past human activity and environmental conditions, especially human-plant, human-animal and human-soil/sediment interactions. We have a long-standing goal to understand both ecological and cultural patterns within our research landscape. Sediments coming from younger archaeological contexts undergo dry sieving on-site. Many of the sediments coming from the deeper layers of the excavations are subjected to wet sieving and flotation. The method of flotation is applied to many surfaces and features, including shell layers, hearths and pit fills. The heavy fraction that remains after the wet sieving is air-dried, and sorted for biological remains and artefacts at the field base. The light fraction samples from flotation are brought back to the Plant and Sediment Laboratory at the UP- ASP for further sorting and analysis, including microscopic study.

Special interest is also given to the types of shell remains recovered from the site. All sediments above the shell midden layers not associated with hearths and pits are dry sieved. The sediments from the shell middens are usually floated and wet sieved. All contexts from the shell middens down to the lowest levels that are not hearths, pits or combustion features undergo wet sieving. Samples for phytolith analysis were also taken in previous seasons at Ille and Pasimbahan-Magsanib.

The shells from the site are also curated at a fairly high resolution. All shells recovered from the site are collected and sorted by species/species type. The weight of each context is taken and a count made. This process covers all shell remains from Ille since 2007 (earlier samples were retained after excavation, but were lost from storage on-site due to natural causes such as disintegration of bags, invasion by animals, and vandalism, with the exception of selected samples stored at the UP-ASP).

The survey of the landscape continues every field season. Team members are alert to follow-up leads of possible sites coming from accidental finds reported by New Ibajay community members. We also makes it a point to inspect known sites in the valley at a regular interval, to check on their condition and record if there are any signs of looting or vandalism. Locals in the vicinity of these sites are asked if they have found or heard of anyone noticing any newly exposed or discovered archaeological deposits. In 2018 we revisited Imorigue Island to confirm a report of the location of a what is also called “Maulohin” cave.

PUBLIC ARCHAEOLOGY/ HERITAGE INITIATIVES

Through the years we have come to the conclusion that the heritage components of the project must not be treated as a secondary concern, but are as significant as the methodologies that drive our basic archaeological research. 2017 saw much activity connected to heritage and public archaeology. Most resources and efforts were tied to the renovation and improvement of the exhibit hall building donated by Nido Petroleum, and the ever transforming/participative curation of the exhibits housed inside the building. Activities were designed for schoolchildren within the project base camp and in the center of Barangay New Ibajay. Members of the team also participated in the annual El Nido art festival – Kalugtan.

We have also consistent been summarizing the public visits to the Ille site and Dewil exhibit hall by going through the visitor logbook of the Municipal tourism officer assigned at the Dewil valley. This is represented as a table in the *Results* section of this report.

Our commitment to disseminate the knowledge generated from our basic research continues. In the early years the research team conducted dialogues and meetings with local officials, mostly to explain the nature of the project's archaeological work, its methods, and general objectives. Every now and then these dialogues are still held, although mostly in an informal manner. And more recently they have become more preoccupied with the growing ecotourism initiatives of the El Nido government and community. Aside from the natural history and archaeology exhibits at the Dewil Valley Exhibition Hall, our previously-erected site information exhibits on our findings still stand in the sites of Ille, Pasimbahan-Magsanib, and the Barangay of Sibaltan. Since last year, we continue to have initiatives in the form of workshops aimed at local tour guides for the sites.

It must be underscored that all finds excavated systematically under the authorization given by the National Museum of the Philippines are owned by the people of the Philippines. The materials from all the excavations done within the project, especially those from the Dewil Valley, are mainly stored in dedicated facilities at the Villadolid Hall, Archaeological Studies Program in UP Diliman. These facilities serve as an extension of the National Museum storage/curation system. We believe that as soon as the local government and the National Museum have agreed that the facilities within El Nido and the resource commitments are sufficient to sustain proper curation of the archaeological resources collected by the project, the collection must be stored and managed within the municipality, specifically within future Dewil Valley research, curation and museum facilities.

6. RESULTS

This section reports on the results of excavations done this season at the Ille, Pasimbhan-Magsanib, Makangkit Maliit na Baro and Pacaldero sites, It also includes the results of our survey of Maulohin Itaas and the public archaeology/heritage work done for the season.

ILLE SITE (IV-1998-P)

The excavations at mostly the Ille rockshelter area was limited to the East-West Connection Trench, the West Mouth West Extension complex as reported by Cosalan (2018a), and the Balete Trench (Claravall 2018).

WEST MOUTH WEST EXTENSION (WMWE) – WEST EXTENSION (N4-5W19-21)

The west most extension of WMWE, covering grids N4-5W19-21, was first excavated in 2016, and has been continuously worked on since then. The 2018 season for this extension began with three objectives: to investigate the horizontal aspect of the pit feature [c. 2746] whose cut [c. 2747] was mostly noted in the profile section of N5W18 West Wall in 2017; to understand the relationship of the layers c. 2741 and c. 2743 of N4-5W20-21; and to further expose and eventually begin removal of the shell midden [c. B912] (Cosalan 2018a).

However, in the process of cleaning the surface and re-establishing the context numbers after the removal of backfill, other questions arose and some required priority over those previously mentioned. These included understanding the relationship of: (1) the layers c. 2752 and c. B912 in N4W19; (2) the possible pit [c. 2807] with the burial cut [c. 2740] from the c. 2739 burial excavated in 2016; and (3) the layer c. 1835 with the burial contexts [c. 2741, c. 2804, c. 2805, c. 2826, c. 2827, and c. 2828].

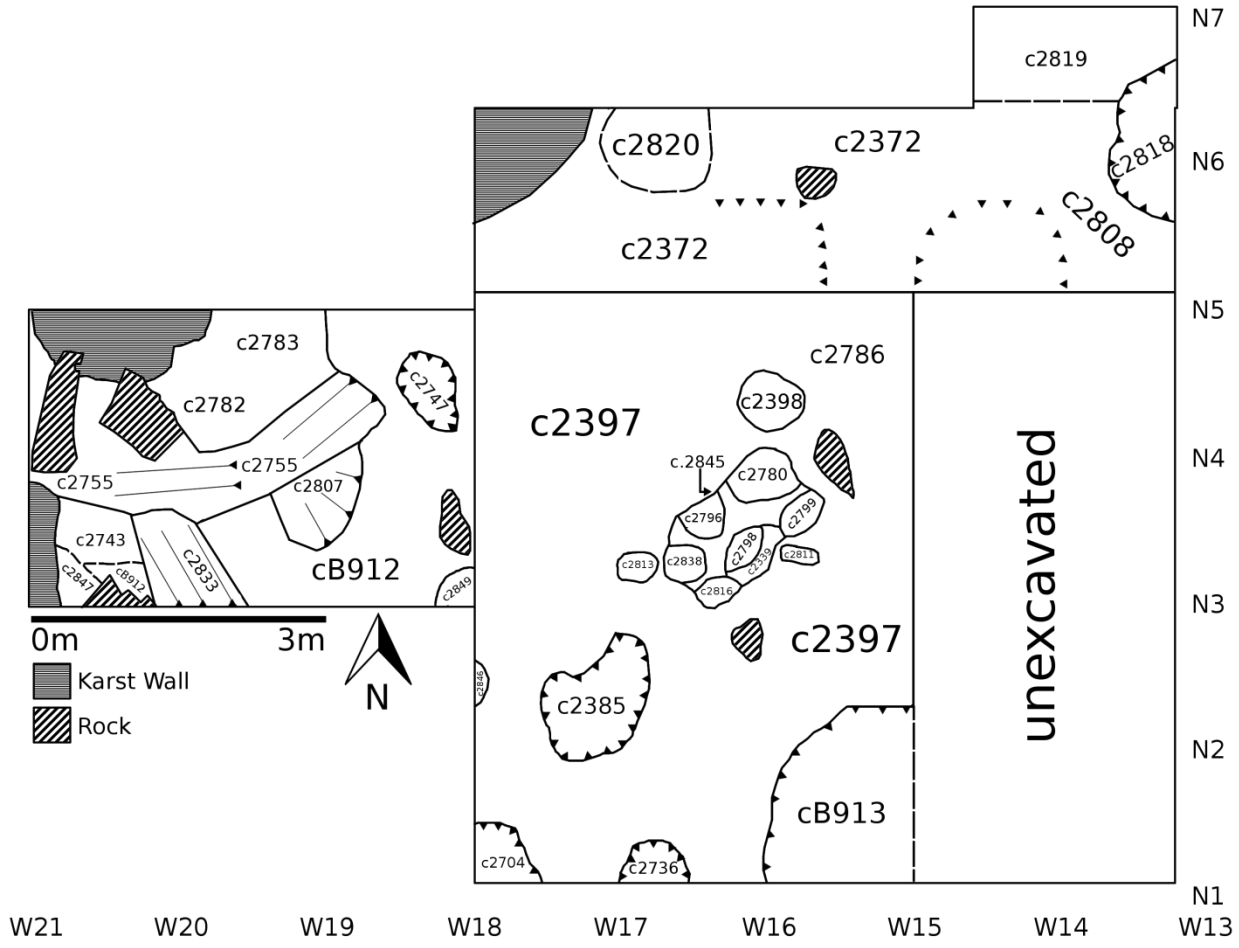


FIGURE 5. Plan of WMWE at the end of the 2018 excavation season

Stratigraphy

Most of the trench was opened to reveal context 2752, a layer underneath context 1835, characterized by numerous shells and earthenware sherds, located mostly within N4-5W19-20. The northwestern portion of the trench (i.e. N5W20-21) was generally left untouched with efforts initially focused on exposing context B912, the shell midden, which was mostly concentrated within the eastern and southern areas of the trench.

However, in the process of reconciling the 2016 and 2017 profiles of the N4-5W18 West Wall and N3W19-20 South Wall, there appeared to be some discrepancies regarding the relationship between these two shell-laden layers. Context 2752 was thought to be fully

excavated in 2017 with the existing 2018 excavation surface defined as c. 2741. The c. 2741 description however did not match what was presently observed. Moreover, the N4-5W18 West Wall already defined this as c. B912, though the N3W19-20 South Wall did not quite clearly distinguish it from c. 2752.

Following the recorded descriptions, c. 2741 is therefore re-defined as a burial fill that does not extend to N4W18-19, as its original context description does not match the shell scatter nor sediment above it towards the South Wall. This widespread scatter of shells may already be c. B912, with c. 2752 resting above the latter, as based on the 2016 records and descriptions. It appears that c. 2752 may be an interphase.

Context 2743 is characterized by mid-reddish brown sandy silt, generally soft and loose, with occasionally small compact areas. It was recorded in 2016 as appearing to have cut c. 2752 though no follow-up information has been provided since. Its relationships with c. 2741 and c. 2744 have been under investigation since 2016 and still remain to be so. So far, its distinction from c. 2741 is represented by a general lack of shells and angular rocks, and may perhaps be a natural deposit with the occasional isolated bone fragment or earthenware sherd right along the limestone wall.

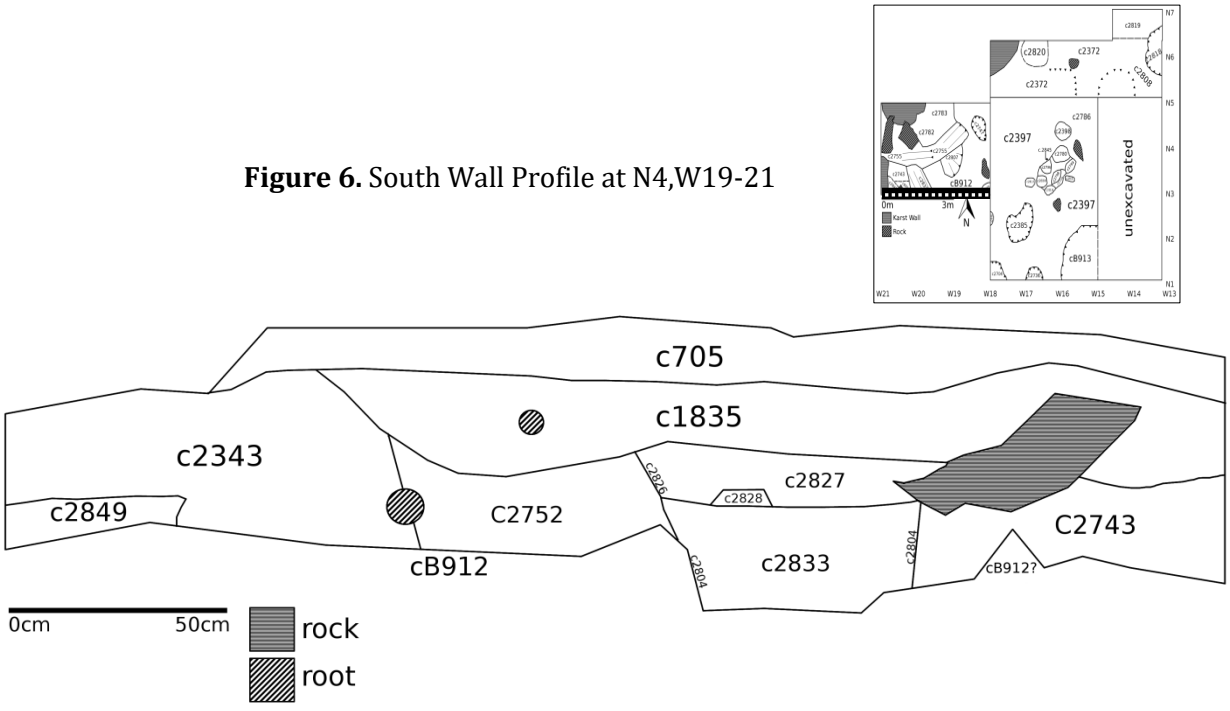


Figure 6. South Wall Profile at N4,W19-21

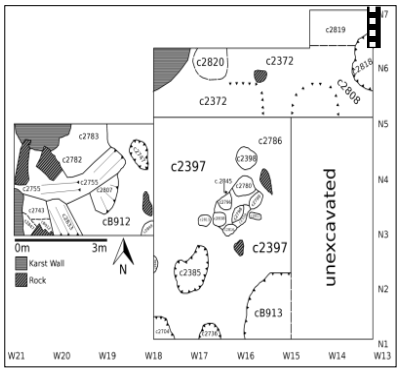
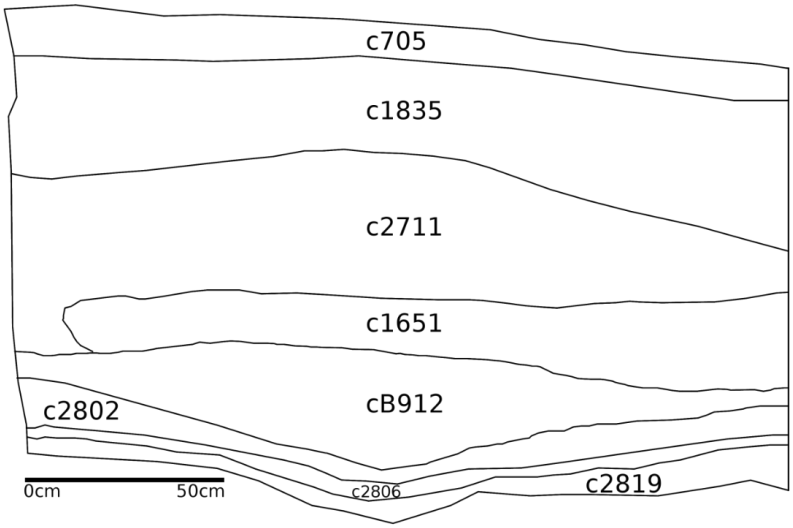


Figure 7. East Wall Profile at N7,W15



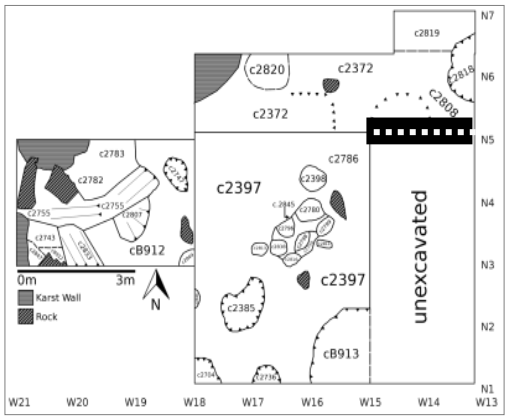
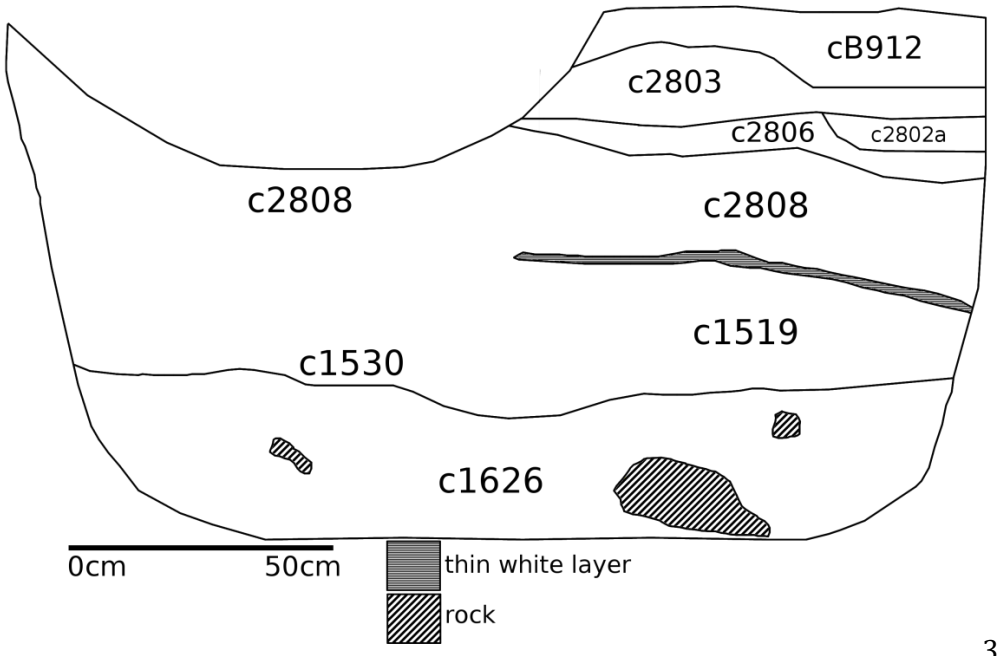
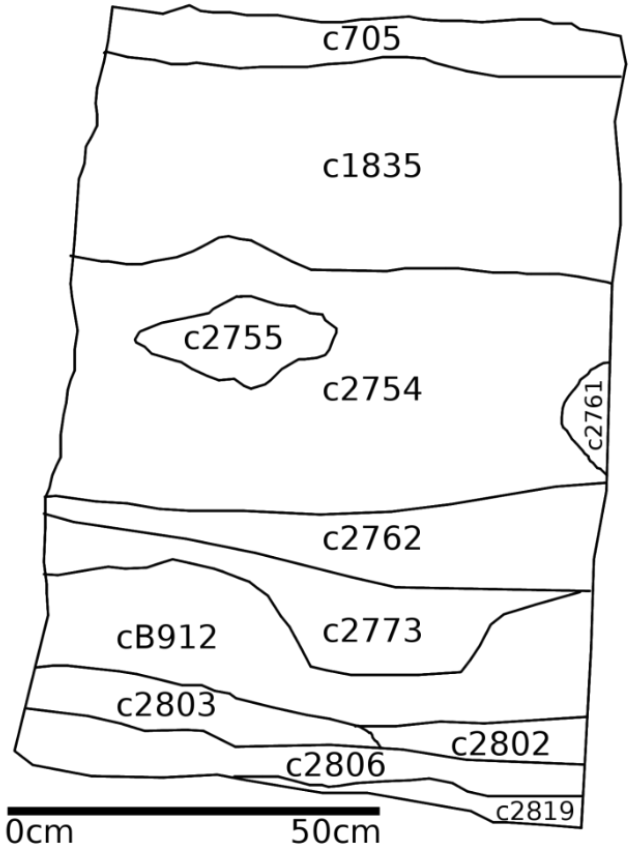


Figure 8. North Wall Profile at N5,W13-15





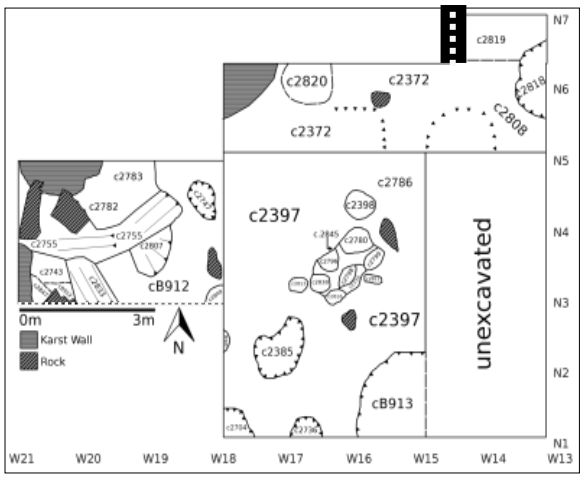


Figure 9. West Wall Profile at N7,W15

Features

In the midst of cleaning and re-establishing the surface revealed in 2017, context 2807 was noted as a possible pit feature that may have cut through c. B912. A similar feature was recorded and described in 2017 [i.e. April 13, 2017 entry in context notebook, page between c. 2765 and c. 2766] but was unfortunately not assigned a context number. This was noted by a general decrease of whole or complete shells when compared to the surrounding area; an increase in fragmented shells; and vertically-oriented or sloping shells possibly indicating a cut. It is also characterized by mid-reddish brown sandy silt, at about -31cm to -36cm BDP. The presence of tradeware ceramics not often seen in c. 2752 / c. B912, accompanied by loose human phalanges and incisors, also made it suspect. The usual animal skeletal remains and earthenware sherds seen in c. 2752, however, were also noted in its fill. The potential cut was not assigned a context number yet in case c. 2807 is associated with one of the nearby burial cuts (e.g. context 2740 burial cut of context 2739 burial excavated in 2016).

Most of the features in the northern half of the trench were left untouched this season. This included context 2747 (possible 45cm-wide fill with shells oriented differently) and context 2748 (cut); and context 2746 (possible layer / fill with sloping shells [2016]) first noted in the N4-5W18 Section / East-facing West Wall in 2016. The extent of examining these features only included occasional surface cleaning this year. While c. 2746 was notable in section view, the shells were not evidently sloping from horizontal / plan view. However, the sediment in this area appeared generally looser than the c. B912/c. 2752 matrix. A large rock rests presumably on top of this feature, though its deposition and purpose remain unclear.

Context 2741 was thought to be the exposed surface/layer during the 2017 excavation, expanding over c. B912 over the rest of the trench, but upon revisiting the 2016 records, it appears to be limited to N4W20-21. This is so as the context description does not match, as previously discussed. It has been redefined as a burial fill and is one of its main distinguishers from c. 2743. Initially, it was recorded as the burial fill for the c. 2805 burial, but towards the end of the excavation season, it was once again redefined as including the burial fills of both the c. 2805 and c. 2828 skeletons. It was too difficult to distinguish between c. 2833 and the other fills at this point, having areas for potentially visible cuts already excavated and a very poorly-lit South Wall, unless a southern extension will be pursued in succeeding seasons.

Context 2805 is a flexed skeleton lying on its left, with its head to the south and its face to the west, in a general NW-SE direction in relation to the cave mouth, between -25cm to -53cm BDP in depth. It appears similar to the c. 2328 burial excavated in 2014 in the main WMWE trench, albeit the legs and feet of c. 2805 seem more tightly bound. The skeleton slopes downward towards the north, clavicles verticalised, and with feet bent and tightly flexed to the point of it being deposited on its anterior surface (i.e. sole / plantar surface of toes towards the pelvis), sloping north-easternly.

The skeletal elements are generally all accounted for although several of the splanchnocranial (facial) elements are either missing or are deposited further into the N3-4W20-21 South Wall. Tunneling (around 15cm southward) had to be employed to retrieve the maxilla, cervical vertebrate, and most cranial elements but could not be extended further to avoid collapse, and the lighting situation was unfavourable. While preservation of the skeleton is generally fair, root action had displaced, damaged (i.e. more old breaks than fresh breaks), and made the recovery of the elements challenging, inevitably adding to the damage of some. The largely poor condition of the cranial area is attributed to this, the numerous air pockets, and potential compressive taphonomy. Concretion appears on some of the skeletal elements.

Context 2804 pertains to the c. 2805 burial cut, with dimensions tentatively at 74cm x 46cm (feet) to 53cm (upper torso), as its extent needs to be verified. The southern extent cannot be ascertained due to tunneling, while the western extent appears muddled towards c. 2743. The eastern extent, however, is slightly clearer in that angular stones appear along it, although there's uncertainty whether pig bones (e.g. mandible) close to the feet but occurring much higher, are included as part of the grave 'furniture' or are part of the c. 2752 / c. B912 matrix. The northern extent on the other hand may perhaps go deeper and needs to be examined in relation to the context 2740 / context 2775 burial cut.

Although the initial stages of the burial's excavation recognized c. 2741 as the burial fill, it was later assigned to context 2833. This is characterized by mid-reddish brown sandy silt sediment; 3cm-5cm angular stones; and some animal bone fragments. The angular stones were observed mostly around, underneath, and within the c. 2805 skeleton, perhaps either intentionally used to outline the body or unintentionally as part of the c. 2804 burial cut, or it may just as well be coincidental. These may also be part of the burial fill with some possibly being debitage [J. Kress, personal communication, April 2018].

Sediment samples were collected around the cranial area (-34cm to -38cm BDP) and left portion of the torso (-32cm to -42cm BDP) for flotation. Possible burnt bone, albeit not part of c. 2805, and an increase of orange nodules with occasional degraded limestone or some form of concretion, were observed under the torso. Loose human bones not belonging to the c. 2805 skeleton were also collected, perhaps originating from burials disturbed or cut into by the plethora of features in the trench. In comparison to c. B912, c. 2833 contained less bivalve shells, more conus shells, and small capiz-like (Isognomon sp.) shells in closer proximity of each other than elsewhere in the shell midden layer. These were noted mostly around the face and hips. A possible modified shell was also found around the cranial area around -34cm to -38cm BDP.

In the process of tunnel-excavating the cranial and nuchal area of c. 2805, long bones and trabecular bones in what seems to be in anatomical position, were uncovered at -40cm to -47cm BDP. These are most likely representative of the tibia-fibula (or radius-ulna), and tarsals (or carpals) [context 2828]. Although left in situ, this may represent another burial on top of c. 2805. Its burial fill was assigned to context 2826, with context 2827 as its burial cut. As had been previously discussed, the current excavation configuration made it difficult to differentiate the fills c. 2826 and c. 2833 and to better define c. 2741. Moreover, c. 2827 was assigned but has not yet been clearly defined.

While preparing the trench for backfill, two more potential features were discovered and documented. Context 2847 occurs in N4W20-21 at *30cm to -35cm BDP, close to the cave wall, and was tentatively designated a separate context from c. 2743 due to the darker sediment and inclusion of large earthenware sherds. If indeed a feature, its stratigraphic relationship with c. 2743 remains unclear. Context 2849 is a possible pit feature noted in the southeast corner of N4W19 and south wall during section drawing. It is generally darker and appears more compact and clayey relative to the surrounding c. 2752 / c. B912 matrix. It was initially thought to have been a result of deposition of a rock saddling W18 & W19 or falling along the cave mouth's dripline. The presence of sloping and vertical shells in the section negates this and may perhaps be interpreted as either an extended feature of or within c. 2343.

Notes for the Succeeding Season

The initial objectives for this season were not exactly addressed and therefore need proper examination in succeeding seasons. These include the definition and characterization of c. 2743; the horizontal exploration of the c. 2746 feature most obvious in section view; and the c. 2747 / 2748 pit feature. The 2018 excavation in this trench also raised several questions about stratigraphic relationships. This includes the relationship of the shell-laden c. 2343 of the west and uth walls to c. 1835 and c. 2752; if the c. 2826 / 2827 / 2828 and c. 2804 / 2805 / 2833 burial contexts cut from c. 1835; if the c. c. 2828 burial cuts into the c. 2805 burial; if the c. 2805 burial cuts into the c. 2775 "burial cut" ; if the c. 2807 possible pit feature is cut by or associated with c. 2739 burial or c. 2775 scatter of skeletal remains; and the relationship between the possible c. 2847 feature with c. 2743.

In terms of investigating the extent of features, these include the c. 2804 burial cut (especially its southern and eastern extent); the definition of the c. 2827 burial cut as it has only been assigned a context number but not properly demarcated; and the c. 2752 / c. B912 shell layers towards the western portion of the trench (or towards the limestone wall).

Lastly, the following features need to be confirmed: c. 2807 as a pit; c. 2847 as a pit or fill or intrusive layer; and c. 2849 as a pit or only incidentally with slightly differentiated sediment characteristics.

Figure 10. Ille WMWE List of relevant excavation context– Shaded entries are updated descriptions from previous reports

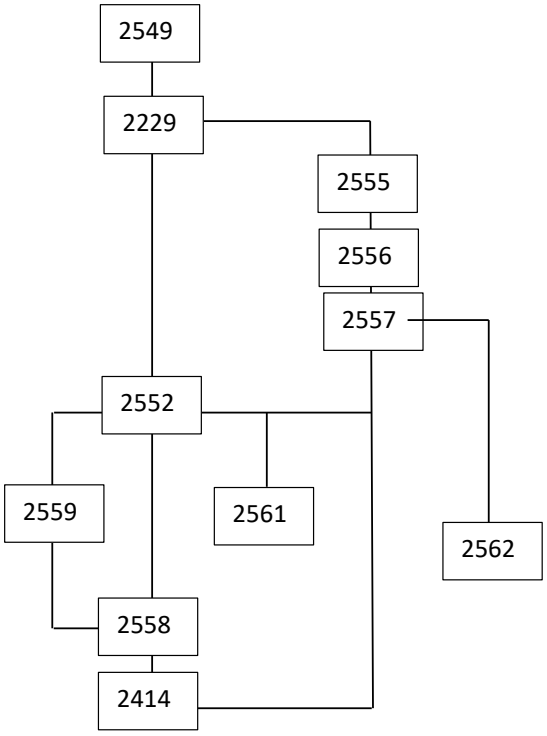
ontext Number	Square	Depth	Descriptions	Remarks
1835	All Squares	--	• Layer (Spit) under 1834 (grey/black) [2008].	
2739	N4-5W18-20	-64 BDP [2016]	• Skeleton of Burial with arms tightly flexed and a shell scoop as a possible grave good [2016].	• Completely excavated [2016]
2740	N4-5W19-20	?	• Grave cut of c. 2739 burial cutting through c. 2752. SW end the top height of grave cut unknown, soil appeared the same fill as to the west of it (now 2743) until the skull appeared after which the cut was found [2016].	• Completely excavated
2741	N4W19-20	-60 BDP [2016]	• Possible feature west of shell clusters exposed in 1835 / eastern edge appears natural sloping of shells in 2752, but just north of this there appears to be a cut (to be continued) [2016]. • May have been misinterpreted in 2017 as expanding over B912 in rest of trench. This year's observations (tapering shells, sediment softer and looser) matches 2016 description including the area it appears limited to. Doesn't extend into N4W18-19 as currently labelled in the plan and profile as well as in the 2017 end-of-season plan [2018].	• Has been redefined as a burial fill because of presence of bones in anatomical position in south wall [2018] • Re-defined again as it may include burial fill of 2805 (2833) and 2828 (2827) [2018]
2743	N4W20	-66 BDP (2016) -20cm to -32cm BDP (2018)	• Sediment cutting c. 2752 with possible border with c. 2741 in SW part of trench, from the large rock up to the opening of the small cave. Relationship between 2743, 2741 (and 2744) unknown [2016]. • Mid-reddish brown sandy silt, generally soft, loose and silty with occasional small compact areas. Distinct from c. 2741 by a general lack of shells and angular rocks, perhaps a natural deposit with the occasional isolated bone fragment or earthenware sherd especially as it's right next to the limestone wall [2018].	• Relationship with 2741 remains to be resolved though perhaps only a thin layer remains before hitting a new context [2018]
2744	N5W19-20	?	• Area north of grave c. 2739 appears to be different deposition to c. 2741 and c. 2743. Blue adze found. Possibly some kind of pit cutting c. 2752 [2016].	• Completely excavated in 2017 [2018]
2746	N4-5W17-18	-36 to -88cm LDP [2016]	• Possible layer / fill with shells which are going in slope shape; compact [2016]. • Sloping shells mostly visible in section view but not in plan view. However, sediment appears generally looser than surrounding matrix [2018].	• Not excavated in 2018 [2018]
2747	N4-5W17-18	-49cm LDP [2016] -32cm to -44cm BDP [2018]	• Potential fill based on position of shells [2016].	• Not excavated in 2018 [2018]
2748	N4-5W17-18	-36cm to -88cm LDP [2016] -32cm to -44cm BDP [2018]	• Cut of c. 2746 [2016].	• Not excavated in 2018 [2018]

2752	N4-5W18-20	-41 BDP [2016] -20cm to -33cm BDP	• Layer under c. 1835 with shells and pottery [2016] • Was thought to have been fully excavated in 2017 and may have been defined as c, 2741 that year. A few portions remain especially towards the south wall. Either an interphase or equivalent of B912 [2018].	• Ongoing excavation? [2018]
2775	N4-5W20-21	-25cm LDP	• Cuts from c. 2743, loose skeletal remains, perhaps burial fill; silty sand, much shell concentration found in area with mixed bone material [2017].	
2804	N3-4W20-21	-10cm (?) to -53cm BDP	• Burial cut of 2805 and c. 2741 / c. 2833 burial fill. Might be coincidental but angular stones appear to occasionally line the cut or the skeleton [2018]. • Remains to be investigated if it cuts through c. 2740 / c. 2775 burial cut & c. 2743 [2018].	• Southern and Eastern extent needs to be properly established [2018].
2805	N3-4W20-21	-25cm to -53cm BDP	• Flexed skeleton, lying on its left, head to the south, face to the west, oriented in a NW-SE direction in relation to the cave mouth, and similar to flexed c. 2328 burial in WMWE [2018]. • Skeletal elements are generally all accounted for. Maxilla, cervical vertebrae, and most cranial elements go into the south wall and tunneling was done to retrieve and record them. The skeleton slopes downward towards north [2018].	• All that remains to be retrieved are more of the cranial elements that appear further into the wall. Tunnelling was no longer accomplished to complete recovery as c. 2828 above might collapse [2018].
2807	N4W19-20	-31cm to -36cm BDP	• Possible feature (pit?) that may have cut through c. B912. F. Claravall recorded and described a similar feature in the "Jadine" context notebook (April 13, 2017 page between c. 2765 and c. 2766) but was unfortunately not assigned a context number. • This was noted by a decrease of whole / complete shells, an increase in fragment shells, vertically-oriented or sloping shells possibly indicating a cut, the presence of tradeware ceramics not seen in the surrounding c. 2752 / c. B912, and loose human phalanges and incisors among the usual animal remains and earthenware sherds seen in c. B912 [2018]. • Sediment is mid-reddish brown sandy silt that's relatively compact compared to the surrounding sediment. A hammerstone appears right above (south) of its southernmost extent [2018].	• Loose finds were collected but this feature was generally left uninvestigated / excavated by the end of the 2018 season.
2826	N3W20		• Burial cut of c. 2828 skeleton and c. 2827 fill [2018].	• Left generally uninvestigated as it lies largely outside the extent of the currently open excavation grids.
2827	N3W19-21?		• Burial fill of burial cut c. 2828 and c. 2828	• Left generally

			skeleton [2018].	uninvestigated as it lies largely outside the extent of the currently open excavation grids.
2828	N3W19-21?	-40 to -47cm LDP	• Probable burial currently represented by long bones and trabecular bone in anatomical position, most likely related to the tibia-fibula (or radius-ulna) and tarsals (carpals). It was found right above the cranial and neck area of c. 2805 burial.	• Left generally uninvestigated as it lies largely outside the extent of the currently open excavation grids.
2833	N3-4W19-21	-25cm to -53cm BDP	• New burial fill context number for the c. 2805 skeleton (i.e. replace c. 2741) given that c. 2741 may have included the c. 2827 burial fill of the c. 2828 (potential) burial [2018].	• Is mostly excavated out already but would still recommend another "sweep" especially in head and foot area in case bones still remain in these areas.
2846	N3W20	-62cm to -74cm BDP	• A feature that's either a bone pit or a burial. Some vertical or sloping shells were noted within c. B912 at -62cm BDP, as well as a big tridacna fragment sticking out (collected as part of dating sample). Sediment was very relatively more than above it and to the side of it (shells much less too) [2018].	• Not excavated with its finds left uncollected and retrieved this year (except if already loose).
2847	N4W20-21	-30cm to -35cm BDP	• A possible feature noted close to the cave wall where sediment is darker (or maybe just organic because of the roots) [2018]	
2849	N3W19		• Possible pit feature noted in the southeastern corner of N4W19 and wall, characterized by generally darker and more compact / clayey sediment relative to surrounding areas (e.g. c. 2752 / c. B912). Initially thought as resulting from deposition related to the rock saddling W18 & W19 or along the cave mouth's dripline. However, sloping and vertical shells were noted in the section. This may either be an extended feature of or within c. 2343 as seen in the wall of c. 2343 itself?	• Not excavated this year as it was found during the last day while profile- and plan-drawing.

EAST-WEST CONNECTING TRENCH (EWCT)

This long-standing trench was reopened, cleaned and records were checked from previous season excavations. No substantial excavation work was done throughout the season due to lack of excavators who were assigned to other prioritized areas of the site and other sites in the Dewil valley. The following is an updated depositional matrix and stratigraphic profiles.



CONTEXT	DESCRIPTION
2229	Layer of loose light yellowish brown sandy silt
2414	Dark yellowish brown clayey silt
2552	Dark greyish brown clayey sediment, very compact
2555	Fill of burial 2556
2556	Skeleton of burial 2555/2557
2557	Cut of the burial 2555; cuts 2552, 2558
2558 =2217	Layer of loose dark yellowish brown clayey silt
2559	A lens of dark greyish brown clayey silt
2561	A lens of loose light yellowish brownish sandy silt
2562	Dark reddish brown clayey silt

Figure 11. Current depositional matrix of EWCT, Ille site

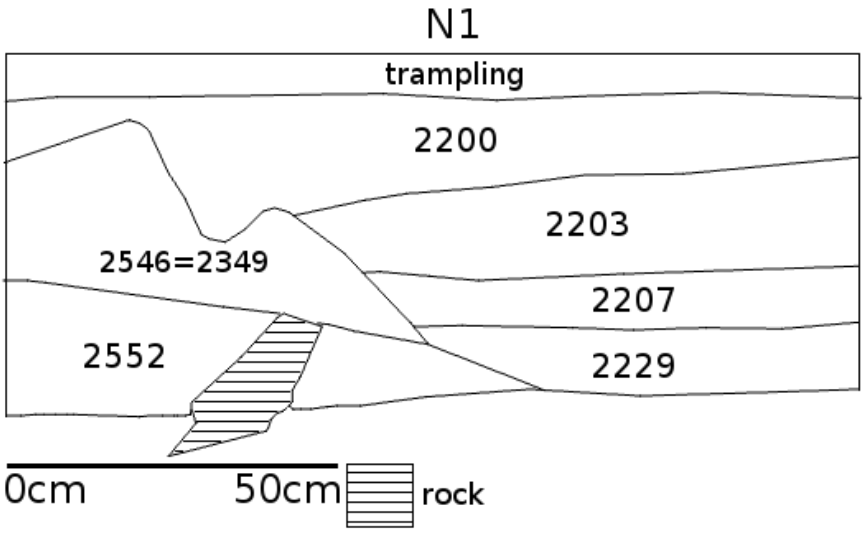


Figure 12. Profile of the East Wall, EWCT

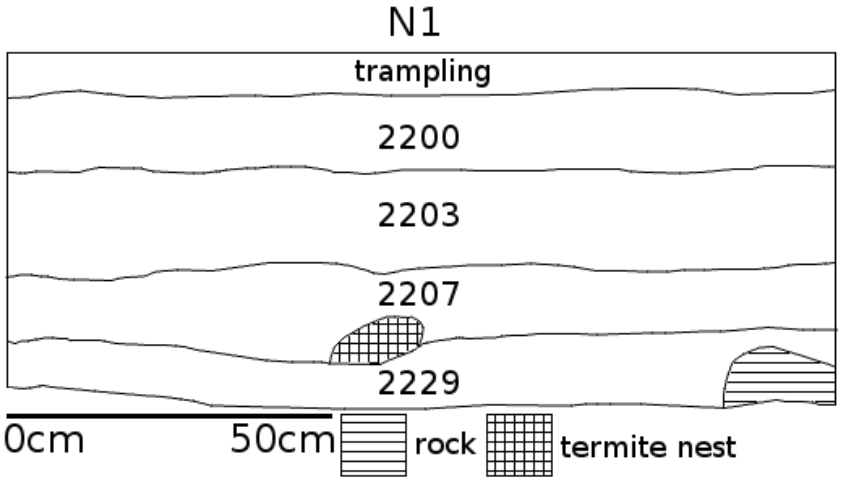


Figure 13. Profile of the West Wall, EWCT

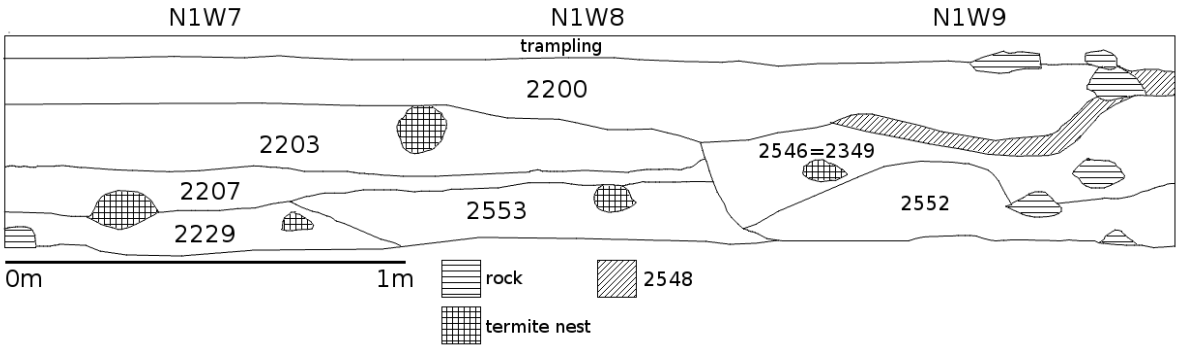


Figure 14. Profile of the South Wall, EWCT

BALETE TRENCH

The Balete Trench in the Ille site was reopened for the fourth time in the 2018 excavation with the objective of exposing more archaeological layers that can be associated with other contexts in other trenches in the site (Claravall 2018). A local datum point (LDP) was established for the Balete trench with a value of -30cm. The initial task that was done was to remove the backfill that was remaining after the reopening of the trench and the cleaning of contexts 5003 and 5006 to remove loose artefacts that were not recovered last season. The artefacts that were recovered in the cleaning of these contexts are decorated earthenware and tradeware ceramics at the depth of -48cm to -60cm from the LDP. A possible pit feature was seen underneath context 5003 near the northern edge of the trench, it was first seen having zoological remains such as pig teeth and mandible. There are also other bones that were recovered and could be part of this assemblage. This was given a context number of 5007 and it was measured from -85cm to -90cm from the local datum point. The sediment feature of this context is light greyish brown for colour and it has a texture of sandy clay. Upon closer inspection of the area where context 5007 is located, it was seen as a depression and not a pit feature, the probable cause of divergence in soil composition could be root action from the nearby Balete tree.

The continued excavation of context 5006 across the Balete Trench has revealed additional human remains such as phalanges and teeth at the depth of -79cm to -88cm from LDP. These were found in the southern area of the Balete Trench at N1 E8. In the southwest quadrant of the Balete trench in N1-2 and E6-7 revealed a cluster feature of earthenware sherds and zoological remains. There are also some burnt bones among the zoological remains. This was first seen at the depth of -92cm from LDP and was assigned the context number of 5008 and its sediment texture is silty clay with a colour of light greyish brown. While in the eastern area of the Balete Trench, a sediment change was noticed at the depth of -82cm from the LDP and still can be seen at -93cm. The sediment has dark reddish brown for its colour and a texture of clayey silt, and was given a context number of 5009. A metal artefact was found at context 5009 at the depth of -91cm and there are also many earthenware sherds and zoological remains that were found at context 5009.

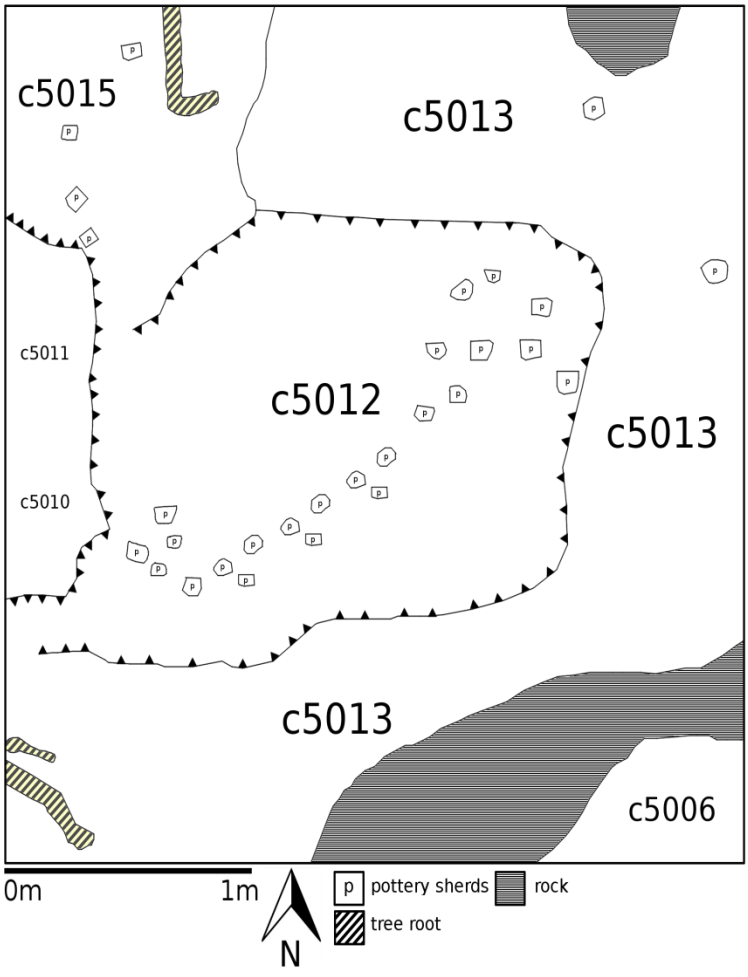
The excavation of context 5008 in N1 and E6 revealed a shell cluster feature, which are mostly fresh water shells at the depth of -95cm to 101cm, and further excavation of this feature exposed further high concentration. This was given a new context number of 5010 and could be part of context 5008 but might have been highly separated due to root action. Its

sediment composition is the same as context 5008. The other artefacts that were found in context 5010 were red glass beads, earthenware sherds, and zoological remains. Human remains were also uncovered in context 5010 with the distal end of a fibula and a possible human metatarsal. Another layer that maybe connected to contexts 5008 and 5010 was seen at N2 and E6. This was given the context number of 5011 and was first seen at -97cm from the local datum point and one distinct feature of this context compared to 5008 and 5010, is that earthenware is more clustered together. As with context 5010, this feature might have been part of context 5008 that was disturbed by root action.

In the continued excavation of context 5008 in the Balete trench yielded the layer below it that covers a substantial portion of the trench and this was assigned as context 5012. This was first near the border of E6 and E7 in N2 and was gradually exposed to almost the entirety of the Balete Trench. The record depth of context 5012 in this season was from -92cm to -105cm from the LDP and the sediment type is clayey silt with the colour of mid greyish brown. The artefacts found at this context were numerous earthenware pieces and some sherds have decoration present in their surface. Four metal fragments were also found in this layer with depths of -93cm to -99cm from the LDP. Mixed among these metals artefacts were 9 human incisors, human phalange, a broken shell bangle, and shells were recovered and this could raise the possibility that context 5008 and the other contexts found below it is a possible pit feature. The dense presence of earthenware was continuously exposed until the last day of the excavation of the Balete Trench.

The eastern corner or N1-3 and E7 of Balete Trench was explored to try to find if there are any similarities with context 5012 with the excavation of contexts 5006 and 5009. The sediment in this area is more clayey in texture and harder compared to exposed areas nearer the cave entrance. This area was given a context number of 5013 and extends southwards in the trench or N1 and E6 to 8 while not being present in the western and centre areas of the Balete trench. The recorded depth of this context was measured from -85cm to -98cm and the artefacts that were recovered in context 5013 were burnt bones, possible human teeth, and earthenware sherds. Compared to context 5012, the presence of the earthenware sherds is less and not clustered. The shells in context 5013 are also fewer compared to the other aforementioned contexts.

A human femur was found near the northern area of the Balete Trench in N3 and E6 within context 5012 and this was given a context number of 5014 in order to be differentiated from the other contexts, if this is a part of possible human burial. Other human remains that were found together with the femur are two phalanges. Aside from human remains, fragments of animal teeth and earthenware sherds were comingled with the femur. The depth of the human femur was measured at -95cm from the LDP. Near contexts 5012 and 5014 towards the northeast edge of the Balete trench, the soil change being more compact compared to nearby areas, this might be a product of root action and was assigned with the context number of 5015 and measured at the depth of -95cm from the LDP.



Context	Description
5007	Depression caused by root action
5008	Layer with shell clusters underneath context 5006
5009	Sediment change in the eastern area of the trench underneath context 5006
5010	Higher concentration of shell clustering and possibly related to context 5008
5011	Similar to context 5008 and 5010 but located in the centre of the trench and higher concentration of earthenware sherds
5012	A layer with heavy concentration of shells and earthenware sherds across the whole trench. Metal artefacts were also recovered in this layer.
5013	Harder sediment found in the eastern area of the trench that extends southwards
5014	Human Femur found within context 5012, a possible human burial
5015	Compact sediment in the northeast area of the trench

Figure 15. Plan of Balete Trench at the end of 2018 excavation season (left) and description of contexts found (right)

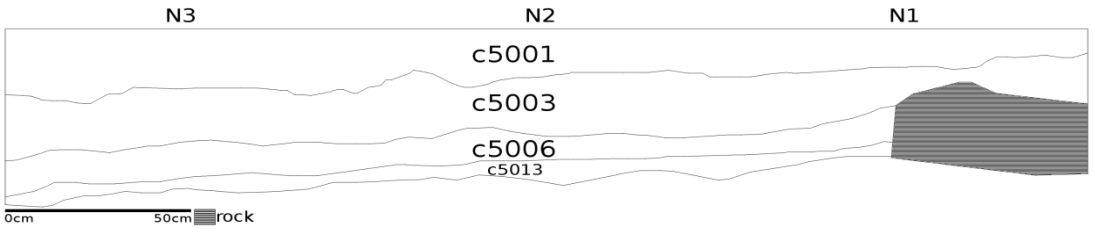


Figure 16. Profile of the East Wall, Balete

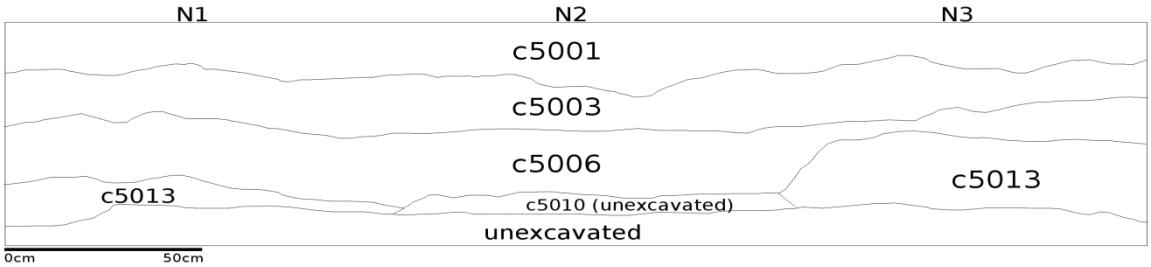


Figure 17. Profile of the West Wall, Balete

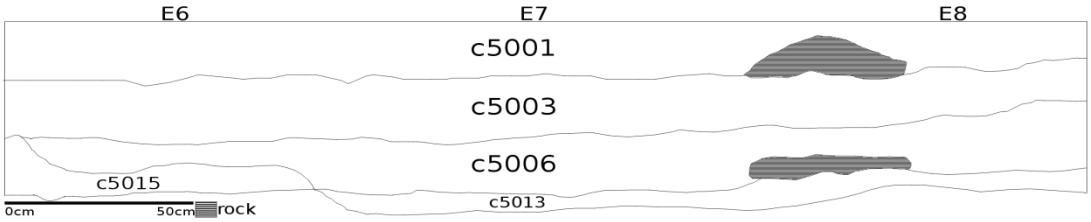


Figure 18. Profile of the North Wall, Balete

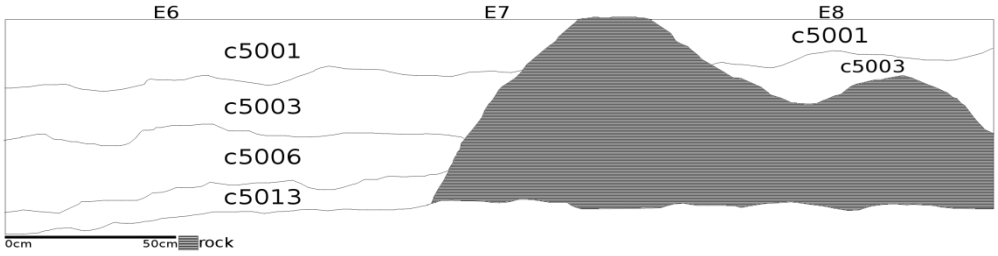


Figure 19. Profile of the South Wall, Balete

COLLECTION OF SAMPLES FOR FUTURE DATING AND DNA ANALYSIS

With the view for long-term research and the possibility and more having more isotope date and ancient DNA analysis, we collected samples from the WMWE and its western extension (Cosalan 2018b).

The samples were generally collected with a trowel and directly stored in properly labeled, clean, resealable plastic bags. The use of a wooden clay modeling tool was limited to the shell sampling column to loosen the surrounding matrix in order to avoid a collapse of shells from the wall, and to deal with shells too fragile to be excavated with a trowel. Nevertheless, the shells were handled using a metal reverse-action tweezer.

All the samples did not, at best, come in touch with human skin, and the trowel and tweezer were cleaned after each collection to minimize opportunities for contamination. The sediment samples for DNA analysis were given separate accession numbers as they belonged to different contexts, while the shell samples for dating were given a single accession number as they ideally belonged to the same context layer. These were differentiated (i.e. samples from different depths) by assigning an alphabetical value at the end of the accession number.

Sediment Sampling for aDNA Analysis

In an attempt to understand how DNA analysis may be carried out in tropical environments and to elucidate potential genetic signatures from selected features or layers, the following samples were collected for exploratory DNA analyses to be processed by colleagues of Dr. Helen Lewis:

Accession Number	Context Number	Context Description and Remarks	Square(s)	Depth
IV-1998-P-65005	c. 2833	Burial fill of c. 2805 skeleton || Around cranial area, towards South Wall	N3-4W20	-34cm to -38cm below DP
IV-1998-P-65006	c. 2794	Pit fill || From soil base / soil at bottom	N4W17	-93cm to -95cm below DP
IV-1998-P-65007	c. 1626	Taken from wall/section under c. B912; 2nd layer of shells	N5W14	-131cm to -133cm below DP

Figure 20. Sediment samples taken for potential aDNA analysis from Ille

SHELL LAYER SAMPLES FOR DATING

Shell samples were collected with the initial intention of dating the shell layers of c. B912 and c. B913 of the West Mouth (WM) and West Mouth West Extension (WMWE) trenches. However, only the collection of c. B912 samples was carried out due to time constraints. While the different shell layers across the site have been dated to *c.* 5,000 to 7,000 cal. B.P. based on radiocarbon estimates [Lewis *et al.*, 2008], this has mostly been anchored on the East Mouth (EM) trench stratigraphy. Chronological information on c. B912 and other shell-laden layers in the WM trench have, for the most part, been dealt with using stratigraphic correlation with the EM trench and therefore await comprehensive dating [Piper *et al.*, 2011].

Apart from the obvious need for a complementary chronological sequence from the WM trench to address the "lack of clear stratigraphic and chronological understandings both within and between different areas within the site…" [Szabó, 2004:256], dating the WM shell layers also slightly addresses the issue of chronological ambiguities arising from the mixing of the upper layers (e.g. Metal Age and Neolithic deposits) especially due to the burials cutting into c.

B912. Moreover, from 2012 to the present, WMWE has been working on said burial-cut, shell-laden layers, and this may therefore aid interpretation.

Sampling from c. B912 was done on the N3W18 East-Facing West Wall, via a 10cm to 15cm-wide column (~5cm into the wall), with the goal of collecting 1 gastropod and 1 bivalve, every 2cm in depth. Selection of a spot for the shell column consciously avoided features (e.g. potential burials and pits) previously identified in the section / wall. Roughly 30cm of the section was sampled, ending at the current excavation surface depth-wise. Said collection is reflected in the section profile illustration and accessioning inventory record.

Accession Number	**Depth** *(Expressed both below DP [BDP] and below local DP [LDP])*	**Samples**	**Remarks / Associated Materials**
IV-1998-P-65171 A	-42cm to -44cm BDP (-72cm to – 74cm below LDP=+30cm)	3 (2 bivalves; 1 gastropod)	--
IV-1998-P-65171 B	-44cm to -46cm BDP (-74cm to -76cm below LDP=+30cm)	2 (1 bivalve; 1 gastropod)	Loose long bone fragment
IV-1998-P-65171 C	-46cm to -48cm BDP (-76cm to – 78cm below LDP=+30cm)	3 (1 bivalve; 2 gastropods)	--
IV-1998-P-65171 D	-48cm to -50cm BDP (-78cm to – 80cm below LDP=+30cm)	2 (1 bivalve; 1 gastropod)	--
IV-1998-P-65171 E	-50cm to-52cm BDP (-80cm to -82cm below LDP=+30cm)	3 (1 bivalve; 2 gastropods)	--
IV-1998-P-65171 F	-52cm to -54cm BDP (-82cm to -84cm below LDP=+30cm)	2 (1 bivalve; 1 gastropod)	Charcoal and animal bone fragments (not burnt)
IV-1998-P-65171 G	-54cm to -56cm BDP (-84cm to -86cm below LDP=+30cm)	4 (1 fragmented bivalve; 3 gastropods)	Charcoal and animal bone fragments (not burnt) || Stone Flake
IV-1998-P-65171 H	-56cm to -58cm BDP (-86cm to -88cm below LDP=+30cm)	4 (1 bivalve; 3 gastropods)	Animal foot bones (-57cm BDP)
IV-1998-P-65171 I	-58cm to-60cm BDP (-88cm to -90cm below LDP=+30cm)	3 (2 bivalves; 1 gastropod)	
IV-1998-P-65171 J	-60cm to -62cm BDP (-90cm to -92cm below LDP=+30cm)	1 (1 gastropod)	Bivalve fragment turned out to be stone || Possible debitage
IV-1998-P-65171 K	-62cm to-64cm BDP (-92cm to -94cm below LDP=+30cm)	3 (2 bivalves; 1 gastropod)	One of the bivalves is a tridacna shell
IV-1998-P-65171 L	-64cm to -66cm BDP (-94cm to -96cm below LDP=+30cm)	3 (3 bivalves)	Animal bone fragments || Possible stone debitage (-64cm to -66cm BDP)
IV-1998-P-65171 M	-66cm to-68cm BDP (-96cm to -98cm below LDP=+30cm)	2 (2 bivalves)	Possible macaque pelvic fragment and tooth
IV-1998-P-65171 N	-68cm to -70cm BDP (-98cm to -100cm below LDP=+30cm)	4 (3 bivalves; 1 gastropod)	One of the bivalves is a tree oyster (*Isognomon* sp.) || Bone fragments
IV-1998-P-65171 O	-70cm to -72cm BDP (-100cm to -102cm below LDP=+30cm)	2 (2 bivalves)	Bone fragments and animal tooth (-70cm to -72cm BDP)
IV-1998-P-65171 P	-72cm to-74cm BDP (-102cm to -104cm below LDP=+30cm)	3 (3 bivalves)	One of the bivalves is a possible oyster || Animal bone fragments (-72cm to -74cm BDP)

Figure 21. Samples taken from shell layer for dating

However, caution must be exercised as it was noted that a possible feature may have been discovered during sampling. Occasional sloping of shells was observed around -62cm BDP, followed by a general decrease of shells and looser, darker, and more organic sediment. Between -62cm to -70cm BDP, some human bones were found in association with a *Tridacna* and tree other oyster shells, of which both shell types were collected as part of the sampling. This was recorded as context 2846, and provisionally described as a potential bone pit or part of a burial feature, especially as human remains remain *in situ* in the wall, slightly south of the sampling column [Refer to WMWE-West Extension Trench Report for more details on c. 2846].

Another issue was encountered while reviewing the records: a 2014 section profile noted the area being sampled as context 2364=context 2368, with c. B912 occurring further north. It is consistent with the description of being cut by an adult burial extending into the west wall [context 2367], however, c.2364/2368 is described as containing earthenware sherds which was not observed during sampling (i.e. appeared generally aceramic). This may also perhaps explain why in more recent seasons, this portion of the wall was recorded as c. B912. If so, c. 2846 may have cut into the c. B912 sampled portion.

Figure 22. WMWE N3-4W18 West Wall with the shell sampling column indicated

Figure 13. WMWE N3W18 West Wall shell sampling column

PASIMBAHAN-MAGSANIB
IV-2007-Q1

This year is the 12th excavation season, at Pasimbahan-Magsanib site. We continue to concentrate on the western end of the rockshelter, away from the opening of the cave at the eastern end of the rockshelter. This is where Trench A-B is located, the focal point of most of the seasons of excavation on this site. In 2018 we concentrated work on the western extension trenches of Trench AB with the objective of excavating the known cremation, and possible cremation likely along the rockshelter wall of the Pasimbahan-Magsanib. .

Trench A-B was extended towards the East, primarily to allow excavation of a previously-found cremation burial (580) from the top, and reveal what we suspect could be the remains of a cremation cemetery similar to what was uncovered at the Ille site. The new trench includes the edge of the 'treasure hunter's' pit located just east of Trench A-B, and measures 3 x 4 m. This pit was found open in 2007 when the site was first surveyed. The active trench is called Trench A-B East Extension. Context deposits 50, 51/81,64,73,71,68,82 were removed during the season from the new trench.

From the 2017 records, the exposed context in the East Extension of Trench A/B was c. 64 but upon cleaning its floor, there were two contexts or deposits. Context 64 was observed to be higher or younger than the other exposed deposit so this was first taken out. A darker deposit was encountered while taking out c.64. Designated as c. 602, this dark gray silt deposit was dense with shells and animal bones. Another distinct deposit was observed while removing c. 64. This new one was reddish brown rather than yellowish brown as in c.64. The shells in it are also in smaller pieces / fragments thus the new c. 603. The remaining column left with the excavation of pit 71 was also taken out when it was understood that the sediments belong to c. 603. From c. 603 a shell disk bead and a hammerstone were recovered.

The northwall profile was edited to insert the new pits (c.609) and a possible large pit towards its west (c.610). We tried figuring out what happened to the grayish deposit with lots of shells (c.603) whether it went under the reddish brown midden or on top of it – both are somehow – for now the new deposit under them were also given a new number (c. 611). All of c. 603 and c.602 seemed gone. What is left is a bit deeper reddish brown deposit (compared to c.603) which has a lot of broken shells. This deposit was given at least four context numbers

(c.612, c.613, c.614, c.615), based on color and location but perhaps these are essentially one deposit. They are very loose, a spoon was used to delineate them with the underlying deposit and all of them contained broken shells. When these deposits are removed what is revealed is another deposit of Batissa shells (c. 616). The shells are quite compact in organization but also loose, and some of them may have been collected with overlying deposits. Once the deposits (c.612 – 615) were removed also, the demarcation of the large pit (visible at north wall of the THP) on the floor was revealed.

All walls of the THP were reviewed to see if c. 610 can be seen from the west and south walls of the THP. What was immediately noted was a line of stones (10-20cm diameter) distributed along the level of the current exposed floor at the East Extension. This line of rocks can also be seen at the east wall of the south extension of Trench A/B, The burnt wood found at the south extension is also at his level. It is possible that the floor now exposed at the East Extension extends to the south baulk of the THP as demarcated by the rocks. Under the rocks to the west side is a possible cut that could be c. 610.

A feature (c.607) at the NW of the East Extension (which is actually the north of Trench A/B) is demarcated by rocks/boulders which contained human and Sus (pig) bones, a shell bead, another shell bead in the form of a disc and a small hammerstone. A lens of shells (Batissa) was also found so the excavation was widened to explore if the lens will turn into a shell layer. One of the rocks demarcating c. 607 could have been used as an anvil due to its flat surface, rounded sides, and an indentation at the center. Below the rocks, which could be c. 64 already, is a concentration of faunal long bones.

At the northwest corner against the rockshelter wall, c. 68 was also taken out to uncover a fine, sandy silt darker sediment which is within the sandy feature designated as c. 606. It was also revealed that flat andesitic rocks seem to be arranged and when we add the flat rock that was part of the north profile of Trench B (now taken out), it becomes more possible that these rocks were intentionally placed where they are now. The excavation was extended to the west to expose the half-buried limestone rock that may be part of this feature. All the sediments taken out in the process of revealing the rock were considered as c. 50.

In the main (deeper) Trench A/B, some rocks on c. 490/495 had been kicked around during removal of the backfill and tarp cover so these were collected while cleaning the floor. A small hammerstone was likewise recovered. Excavation of c. 490/495 was continued and it was

verified that the east of c. 495 was younger than the west. However, removal of this younger eastern deposit was not done since 1) there is an excavation just above it, and 2) the cremation and adjacent contexts are there. If this eastern area was excavated, contexts that could help understand the cremation later on will be removed.

Working to the southern edge of Trench B, deposits similar to those from the NW of Trench A were removed. Contexts 700, 701, 702, 703 were excavated or removed. Context 700 is very similar to c.577 and perhaps soon, similar but spatially separate (or initially recorded as different) contexts will be associated. Contexts 704 and 475 were likewise taken out.

Context 599 at the NW of Trench A was taken down and a shelly lens under it was observed (a new number was given). The lens is difficult to separate from c. 599. After removing deposits around c.599, a burnt patch was encountered to its east. No number was given yet as we will have to check whether it is the same encountered in previous years. On the last day of excavation, deposits of stones and shells were taken out and at last, Myra found the edge of the two major deposits of the trench - the greenish brown clay (given many numbers) and the dark, red deposit (516, 468).

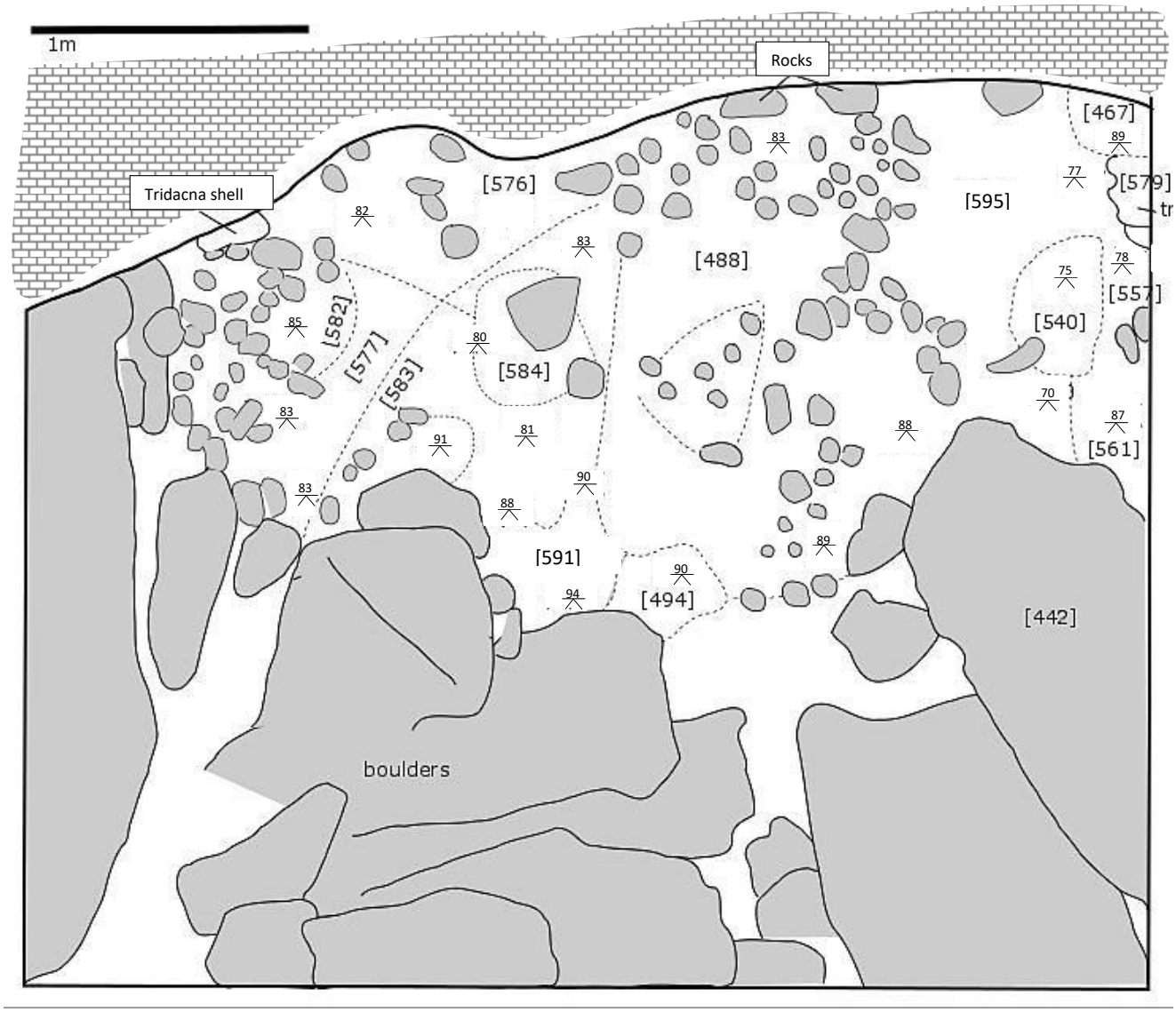


Figure 24. Plan of Trench A-B, Pasimbahan-Magsanib site (excluding east extension)

Figure 25. Plan of Trench A-B East Extension, Pasimbahan-Magsanib

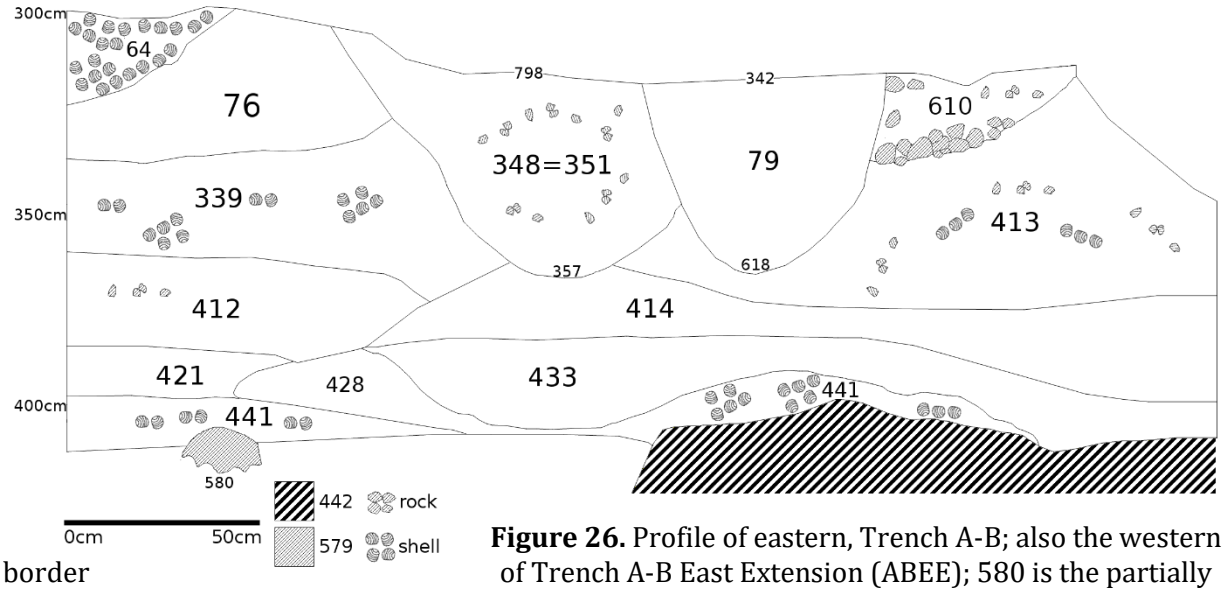


Figure 26. Profile of eastern, Trench A-B; also the western border of Trench A-B East Extension (ABEE); 580 is the partially exposed cremation still mostly within ABEE

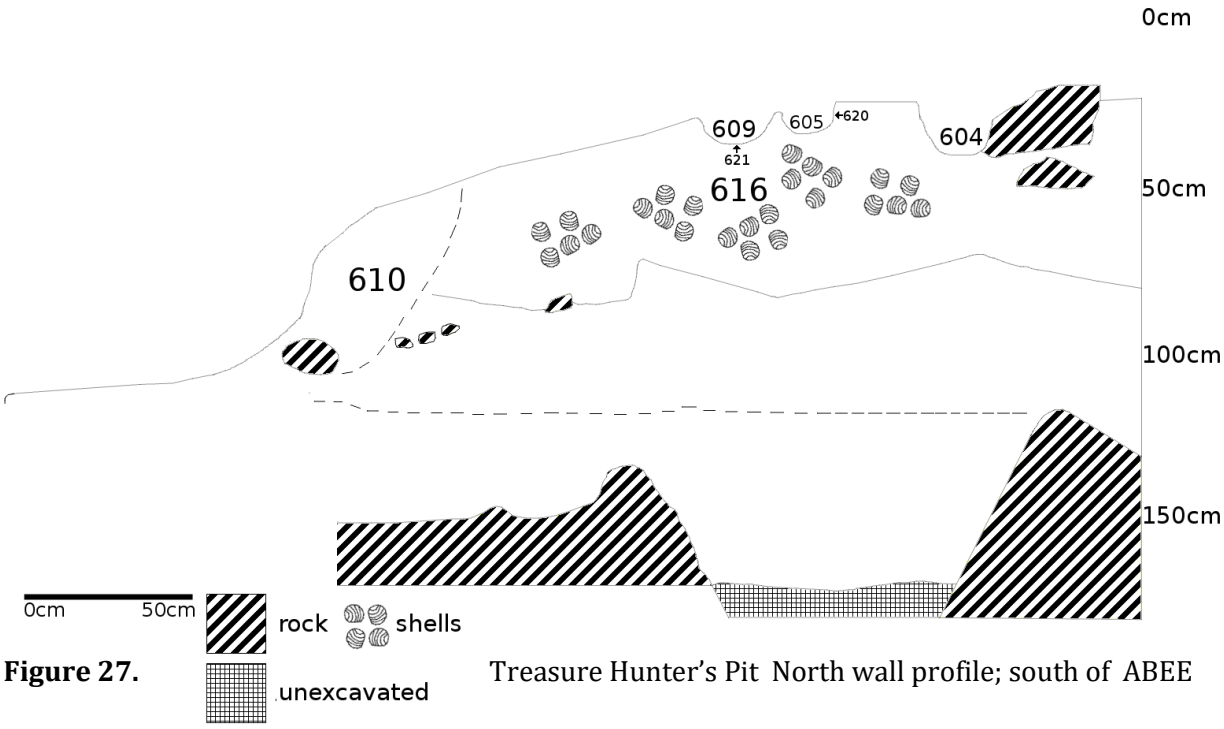


Figure 27. Treasure Hunter's Pit North wall profile; south of ABEE

MAKANGIT MALIIT NA BATO (MNB)
IV-2016-0

Within the Makangit complex of three karst towers is a cave and rockshelter in the smallest tower, hence the name 'Maliit na Bato' (MnB). MnB is a 10-minute walk from the Ille Cave Site, in the western direction The follow narrative is mainly derived from the report of the site director, J. Carlos, A. Favereau, and M. Lara (2018).

The perimeter of Makangit was surveyed in more detail in 2016 and to the west of the MnB Site, another cave was also recorded where three treasure-hunter pits were noted. Two of these were in the mouth of the small cave while the other, a trench measuring around 2.5 x 1.5 meters with a depth of about a meter, was just outside the cave. No surface artefacts were found in this cave.

In MnB, surface finds of human bone fragments and earthenware pottery sherds were first found in the lower part of the site. Upon observing the 'ceiling', cracks with boulders and smaller limestone rocks were noted. This indicated that the materials were coming from above. The upper part, elevated at about 5m from the ground, indeed had more cultural materials. Rockfall was everywhere, with boulders measuring 1 x 0.5m on average and some patches of sediment were also present, and this is where the artefacts were found. Ten patches were designated as Areas A, B, C, D, E, F, G, H, I, and J. All these areas had surface materials of human bones and earthenware pottery sherds. Areas E, F, G and H were in the western section of the site while Areas A, B, C, D, I and J were in the eastern part of MNB.

MnB was first excavated by spits of 5-10cm and then by natural layers of the sediment when these were detected. Excavation by natural deposits used the context system of recording. All excavated sediment were dry sieved with a wire mesh having a 2mm aperture to ensure the recovery of small artefacts, such as beads. All artefacts recovered were documented and accessioned or given numbers following the protocol of the National Museum (NM) of the Philippines.

The datum point was at 5.6m above ground level, set in the northern wall and then reflected or mirrored onto a boulder to the south and the wall to the southwest. A laser levelling instrument (Black & Decker Crossfire) was used to set the datum point and to measure the depths throughout the site.

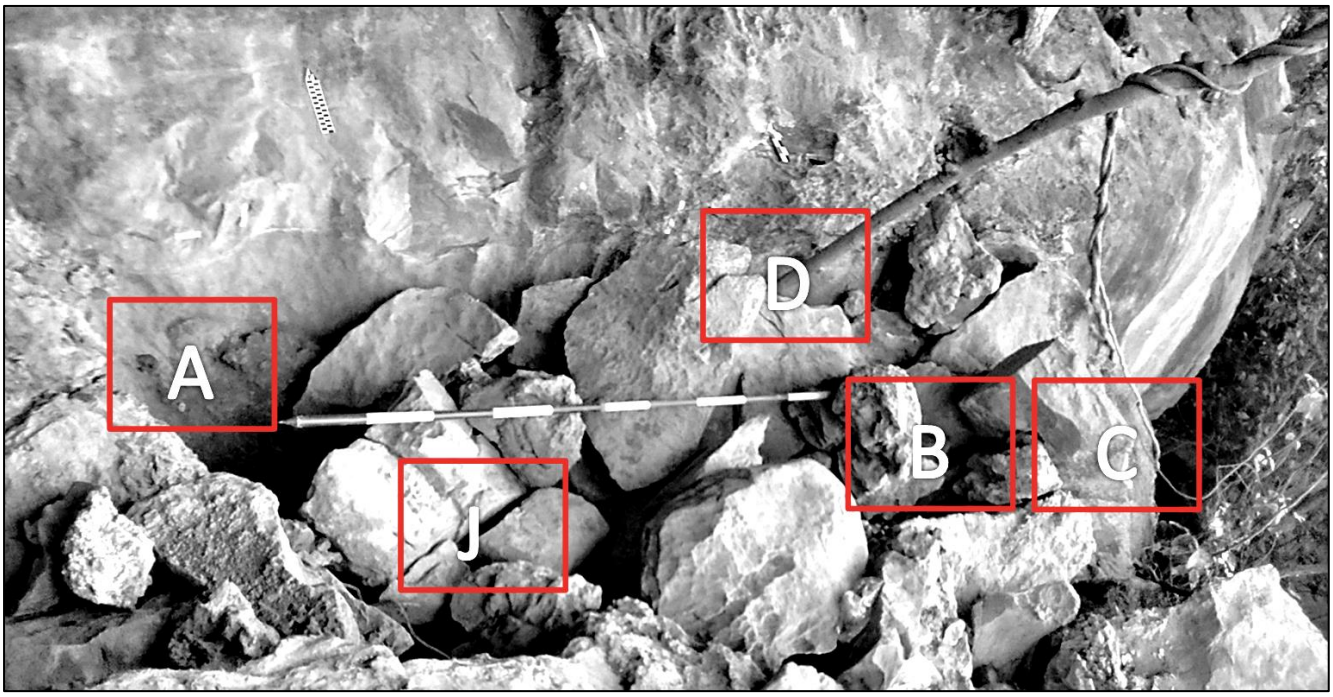


Figure 28. Areas in MNB, after removal of sediment, MNB

BRIEF DESCRIPTION OF AREAS

Area A measured 1.5 x 1m and was divided into the northwest quadrant, southwest quadrant and the eastern part. Area B is surrounded by big rocks on all fours and the sediment in the middle measures about 1 x 1 m. Area C is at the easternmost ledge in MnB with small patches of sediment divided into the upper, middle and lower parts. The long and narrow Area D measured 2m in length and 0.3m in width and was divided into a western and an eastern section. It is parallel to the north wall of MNB and immediately south to it. Area I, the biggest area among the 10 areas excavated, is situated under the biggest boulder (3 x 2m) in the site and had to be accessed from its eastern and western ends during excavation.

In the western section of MnB are Areas E (the smallest and shallowest), F, G and H. Area F is also a small area that measures 25 x 35cm and 29cm in depth. The irregular shape of Area G roughly measures 1 x 0.5m. The sediment here is not deep (23cm) but earthenware sherds and bone fragments were still prevalent. Area H lies at the westernmost end of MnB.

CULTURAL MATERIALS RECOVERED

Beads and Bangles

Different types of beads were recovered in MnB – shell, stone, glass and carnelian. Among the shell beads recovered were also a variety of forms – disc, elongated and small rounded (see Pl. 7). The glass beads are of a variety of colors – blue, red, yellow and whitish to colorless. The beads were found in almost all of the contexts from the surface to the lowest levels. The small Nassarius sp. shell beads are very numerous and total to at least a thousand pieces. The shell beads found on the surfaces of the different areas are whiter than those found in the matrix or lower levels and which is due to exposure to the natural elements. Two fragments of what appeared to be a bangle or bracelet made of shell were recovered from Area E and in context 5 of Area A - east.

Human Remains

A high number of teeth were handpicked during excavation and recovered in the dry sieve. From the surface finds, the initial Minimum Number of Individuals (MNI) was two, a juvenile and an adult but the count is now much higher. Almost all teeth were found apart from the mandible and crania, except for one tooth which was recovered while still attached to a mandible. Almost all bone fragments were yellowish brown in color which indicated a comparable taphonomic history. More than half of the fragments were also covered in some degree of concretion, typical of bones found in rockshelters or caves. The edges of the bone fragments were angular, indicating that the materials did not move much within the depositional environment.

The skeletal fragments represented mostly long bones (leg and arm bones, including metacarpals and metatarsals), crania, vertebrae, some scapulae and ossa coxae, and numerous phalanges and teeth. The fragments represented at least 23 individuals, from both juvenile and adult individuals. Juvenile individuals include at least five children and adult individuals comprised of both males and females. Long bone fragments were already splinters, measuring on average 3.5cm. Larger fragments, or fragments that represent at least 75% of complete elements, came from at least one femur, two ulnae, one os coxa, and two humeri. Most smaller

elements, such as phalanges, carpals, smaller tarsals, patellae and teeth were recovered as whole. No bone fragment, as of yet, has been observed to exhibit any hematite-painting which

Figures 29. Various human bones and teeth (scale in cm)

is found in Neolithic and early Metal period sites (Lara et al. 2016). Many maxillary incisors, however, were noted to display the concave-type of dental, labial surface, filing (see Bautista 2005). Similar dental filing has also been found in the Pasimbahan Site and Ille Site.

Ceramic Assemblage / Pottery

Essentially, it was all sherds of earthenware pottery all throughout MnB, except for one whole blue and white bowl (Fig. 28) and two glazed fragments from Area B, context 6. The b & w bowl is a Kitchen Ching from the 19th century (Melendres pers.com.). This bowl was found under a big rock in Area B upon removal of some sediment.

Figures 30. MNB Blue and white bowl (scale in cm, see also Pl 9)

Lithics: Chert

A total of eight (8) pieces of chert materials were recovered from MnB (see Table 2). These varied in color – gray, yellowish brown and whitish and are composed of flakes and possible core and debitage. The presence of chert flakes, usually associated with older sites (i.e., Palaeolithic or Neolithic) is interesting for a site like MnB which is typical of a Metal Age site. Chert flakes, with their sharp edges, are known to be utilized as cutting tools. Perhaps the chert flakes in MnB also served as votive offerings like the small pottery, or probably also used for cutting.

Two pieces of chert flakes were found in Area A. One is gray in color while the other is yellowish brown (see Pl 6). The unusual presence of chert flakes for a site like MnB which could have a relative age of around (at the earliest) 500 BC could perhaps be understood with further excavation in the other areas of the site (see Pl. 5).

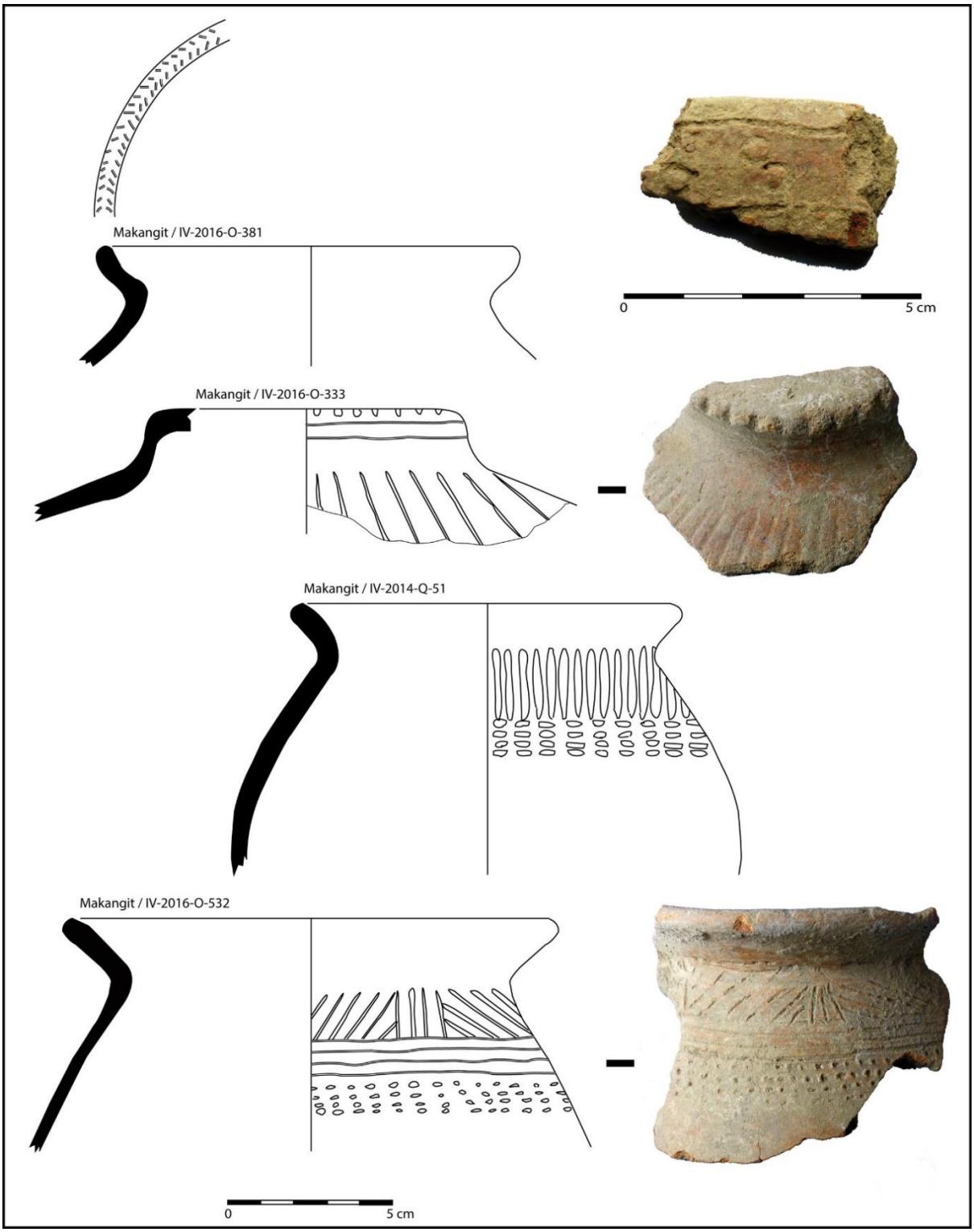


Figure 31. Examples of pottery design elements recovered from MNB

ACCESSION NO.	AREA	CONTEXT	QUANTITY	COLOR	DESCRIPTION
IV-2016-O-102	A nwq	7	1	dark gray	small flake/debitage
IV-2016-O-20	A nwq	7	1	yellowish brown	flake
IV-2016-O-70	A swq	7	2	gray	flake
IV-2016-O-192	C upper	3	1	gray	flake
IV-2016-O-141	D east	7	1	gray	prob. core
IV-2016-O-700 F	2	white/yellowish	prob. debitage		

Figure 32. Summary of Chert Materials at MnB

Metals

Forty nine (49) fragments of metal were retrieved from the site. Most metal fragments (46 pieces or 93.8%) had the characteristic orange rust of iron. Some of these pieces were elongated and flattish, an indication that these could be fragments from blades. Three rings with blue-green patina (copper alloy) were also recovered. The majority of the metal pieces (40 or 81.6%) were recovered from Area A and its adjacent Areas D and B in the eastern part of MnB. The rest of the metals (18.4%) were from the western part of MnB (Areas G and H; see Fig. 27).

Figure 33. Summary of Metal Fragments at MnB

ACCESSION NO.	AREA	CONTEXT	QUANTITY (fragments)	DESCRIPTION / MATERIAL
IV-2016-O-012	A	4	4	iron blade (w/ tang)
IV-2016-O-14	A	7	1	iron
IV-2016-O-95	A	4	1	copper alloy ring (whole, thin)
IV-2016-O-101	A nwq	7	2	iron
IV-2016-O-27	A nwq	4	1	iron, flat, small
IV-2016-O-96	A nwq	5	1	iron, pointed
IV-2016-O-701	A swq	7	4	iron, most likely blade fragment
IV-2016-O-129	A swq	7	2	iron, flattish long
IV-2016-O-144	A east	5	1	copper alloy ring (half, thick)
IV-2016-O-150	A east	5	4	iron, 2 flat
IV-2016-O-87	A east	7	3	iron, flat, small
IV-2016-O-702	B	2	1	iron fragment
IV-2016-O-75	B	6	1	iron, flat, small
IV-2016-O-147	B	5	1	iron, flat, small
IV-2016-O-1	D east	4	1	copper alloy ring (whole, thin)
IV-2016-O-135	D east	7	9	iron, 1 flat
IV-2016-O-124	D west	5	3	iron, 3 flat
IV-2016-O-550	G	23	3	iron flat long, pointed
IV-2016-O-522	H	23	4	iron frags, 1 flat, 1 pointed
IV-2016-O-566	H		2	iron frags, 1 flat, 1 pointed

Shells

Terrestrial shells (*Cyclophorus* sp. and another species) were ubiquitous in this site. These land snails were most likely natural occurrences, not brought to the site by humans. Very few *Batissa* shells have been recovered from this site. The presence of *Melo sp*. shell fragments in Area F reinforces the burial nature of the site since baler shells are usually found in other archaeological sites with burial features.

Plant and Animal Remains

Very few (7 pieces) plant remains were recovered during the excavation of MNB and all were desiccated or dry (see Table 4). No charred plant remains were found. In Area B, dry *Canarium hirsutum* nuts were found on the surface (context 2) and the layer underneath (c3). In Area H and Area C upper section, Canarium nuts were also recovered. In the nearby Ille Site, Canarium nuts were also recovered dry (not charred) on the surface levels. *C. hirsutum*, locally known as *dulit, hagashas* and *takway*, is a wild species. The more common species, *C. ovatum*, is the pili nut, found mostly in the Bicol region.

ACCESSION NO.	AREA	CONTEXT	QUANTITY	DESCRIPTION
IV-2016-O-131	B	2 & 3	2	canarium
IV-2016-O-705	C upper		1	canarium
IV-2016-O- 704	D	9	1	testa / nut shell
IV-2016-O-550	G	23	1	wood fragment
IV-2016-O-573	H		1	canarium
IV-2016-O- 703	J	3	1	testa / nut shell

Figure 34. Summary of Plant Remains at MNB

ACCESSION NO.	AREA	CONTEXT	QUANTITY	DESCRIPTION
IV-2016-O-234	A	5	1	animal vertebra
IV-2016-O-166	A swq	8	1	animal vertebra (reptile: snake)
IV-2016-O-236	A swq	7	1	animal bone pendant (*Sus sp.* canine/incisor)
IV-2016-O-559	H		1	modified bone fragment
IV-2016-O-706	H	23	2	tooth
IV-2016-O-707	H	23	1	vertebra

Figure 35. Summary of Animal Remains at MNB

Figure 36. Description of depositional contexts found in Makangit-Maliit na Bato

CONTEXT	NATURE	AREA	DESCRIPTION
1		all	rocks / rockfall all over the roughly 8 x 2 m area where at least 4 patches of sediment are found (containing earthenware pot sherds and fragments of human bones)
2	layer	B, C & J	surface in Areas B, C and J; sediment with many dry twigs and leaves; with human remains, pottery sherds (earthenware) and shell beads; loose; silty
3	layer	B, C & J	in Areas B, C, & J; silty sediment under context 2; with few dry leaves and twigs; with human remains, pottery sherds (earthenware) and shell beads
4	layer	A, D & J	surface, light greyish grey; sandy silt, compact; about 2 cm thick; with human bones, metal blade and rings (in A), beads and earthenware potsherds
5	layer	A, D & J	under context 4; light brownish grey sediment; sandy silt, loose; after about 2cm of context 4; with human bones and potsherds
6	feature	B	west end portion under big rock where a whole bowl (blue & white porcelain) was found; same silty sediment with fragments of human bones,

			potsherds and beads
7	layer	A	under context 5; rocks of various sizes 25-38 cm length; (see context/excavation form); with human bones; pottery; silty sediment like context 5; with land snails; in NWQ, SWQ and eastern sections of Area A; silt
8	layer	A	loose silty sediment with white inclusions - lots of gastropod shells about 5mm in diameter; with small limestone fragments and small fragments of shells
9		A	under big rock (easternmost); sediment same as context 7 and with same materials; same level as context 8
10	layer		bedrock: exposure of medium to big rocks after removal of all sediment
20		E,F,G,H	surface; light gray and ashy; grayish ashy brown clayey silt
21		E, F	dark gray silt under c. 20
22		G	northernmost section of 'G' looser desposit, mId grayish brown sandy silt; bone frags are more brittle & more yellow/ orangeyish; larger frags of pottery
23		G	moist mid-grayish brown sandy silt; layer 3; same as c. 6
24		H	rocks of various sizes 25-38 cm length; with human bones; pottery; silty sediment like c. 21;
25		H	bedrock
26		I	yellowish gray, gritty, sandy silt; top is compact but easily broken with trowel; layer 3; same as c. 6
27		I	a bit darker than c26; moist deposit but essentially the same (assigned new no. for depth control; layer 3; same as c. 6
28	feature	H	deep se (sw) section; dark gray silt with bones & potsherds; deep 'hole' (~30cm) at se end of area H; w/ fragment of human skull
29		I	yellowish mid gray gritty sandy silt at west area of I under large boulder; layer 3; same as c. 6
30		I	mid grayish brown; firmer than c26, c 27, c29; sandy silt; layer 4; same as c. 8 & c. 25
31	layer	G, I	rocks under c30 in I; bedrock in G

PACALDERO CAVE, SINALAKAN KARST
IV-1999-G

Pacaldero Cave is located in the Sinilakan karst in the Dewil Valley. This cave was first surveyed in 1999 (Cayron 2004). It was explored by PIPRP in 2004 and 2006 to look for other parts of the incomplete figurine found then and associated artefacts, and again in 2010, when the exploration located deposits of highly fragmented jar burials composed mostly of decorated earthenware sherds. Among these were the anthropomorphic sherds of a face, an ear, hands and feet. During this time also, the legs and head or plug of the figurine were also found, giving a twist – that the figurine may be a bird instead of a turtle (see PIPRP reports 2007 and 2010). The excavation in Pacaldero Cave in the Sinilakan karst for this year was in Locality 10, which is towards the northeast end of the main entrance of the cave (Carlos 2018; see Pl 5). It is an enclosed area under a big rock, measuring 2.65m from its entrance to its east end; about 3m from its north to south end and around 1.5m in height. Its opening faces west and measures about 85 x 50cm, enough space to allow the entry of a person (Fig. 1, change figure number).
Locality 10

When Loc. 10 was first documented by the PIPRP team in 2017, thick earthenware pottery sherds along with fragments of human bones were found on the surface. Excavation was initiated then by first recovering and documenting all the surface finds. This year, seven pieces of earthenware potsherds were present again on the surface [58], most likely exposed by water flow (especially during the rainy season) during the past year. As observed in 2017, water drained through a pit [56] in the west end, near the opening or entrance of the locality.

Excavation of the exposed layer of moist mid-gray silty clay sediment [58] started, retrieving several sherds and human bone fragments within the layer. The levels of the surface [58] ranged from 8-22 cm BDP throughout the locality. In the northeast area, a concentration of human bones appeared at 14cm BDP. Further exposure revealed two broken skulls with big fragments of thick earthenware sherds around it (59A and 59B, see Fig 2). This is still within context 58. Two more broken skulls [59C and 59D] with post cranial fragments and potsherds were also exposed near these two skulls, towards the southeast end of the locality, just a few centimeters from the east limestone wall. The top levels of the skull fragments [59A to 59D] ranged from 14 - 18 cm BDP. These four skulls are about 10cm from each other.

In the western end (about 41 x 23cm area) near the opening, still within c58, was a concentration of human teeth and small fragments of earthenware potsherds [63]. Beads were

also find in this context. Under c58 is a thin lens of greenish gray sandy silt sediment [60]. The color of the sediment indicated its being under water or with high moisture content for some time. Its silty texture suggests its alluvial deposition, since water enters the locality through the crevices from its upper part or ceiling of boulders. From the pit or drain [56], a pointed, flat iron fragment (Fig. 3) was found. Finding this 12 cm long iron (most likely a blade) in the pit, could indicate a strong water flow. Many small potsherds and bone fragments were also recovered here which included at least eight human teeth. Other iron fragments (3 pieces), were also recovered in other areas / contexts of the locality.

From the total of 72 beads, 51 pieces (or 71%) came from context 62, a concentration of big, thick, earthenware potsherds in the west central half of the locality. There were five types of beads - blue glass (3), small angular (2), carnelian (1), and the dominant orange/white glass of Indo-Pacific beads (65 pcs) (Figs 4a-c). Most of these beads were recovered in the dry sieving. All of the excavated sediment went through a 2mm sieve to ensure the recovery of small artifacts such as beads.

At the end of the excavation season, the drain [56] was lined with a screen (and rocks on the side) to somehow catch possible artifacts that could go into it when the rains come. So far, all artifacts exposed this season have been recovered and recorded. The ending levels for Loc. 10 ranged from 35-43 cm BDP. The drain (c.56] is at a depth of 65 cm BDP at its deepest. Next year, Loc. 10 will be visited again to check if cultural materials will be exposed again as some sediment is still left in the locality.

The potteries recovered from this locality were analyzed by A. Favereau, also in this report.

A NEW SITE SURVEYED

Maulohin Itaas Cave, Imorigue [IVB-2018-K]

In our 2017 trip to Imorigue, a close associate of the project, Boy Sarmiento (61 yrs old), joined us. He was a birds nest collector since the age of 15 and collected birdsnest at Imorigue. He claimed that when he was working in the island he knew of a cave that was called "Maulohin" and the one that we already know was not the one. The Maulohin he knows is further up the steep side wall of Imorigue, further up the known Maulohin site. He pointed the place from where we were discussing inside a boat far from the side of the island. He confirmed that the climb is difficult and therefore we had d to plan the visit well and prepare the necessary stairs and hand holds to allow most of us to reach the site. This was all planned for this season. At the start of the 2018 field season budget was allotted to prepare for the Imorgiue trip. The preparations to make the stairs and rope handles done by Boy and his sons and when it was all ready we went to confirm that the site existed (see Pl 5).

The visit confirmed that indeed there was a cave opening and that it was an archaeological site. To respect Boy Sarmiento's claim that this was the real Maulohin and not confuse our records, we call the site "Maulohin Itaas". A collection of pottery sherds and bones were collected during the visit and the site was given a National Museum Site code of IVB-2018-K (see Lara 2018). There were 114 accession numbers recorded on numerous earthenware pottery sherds, human remains, shell samples, and stone samples.

HERITAGE INITIATIVES

We had a wide range of heritage engagement for this season, which we always consider equally important to the basic archaeological research component of our project. The following are the highlights of the year.

Community Engagement and upgrading of exhibit hall at the Dewil Valley

The bulk of the heritage work for this season focused on the updating of the exhibit (De Castro 2018). The walls were repainted, glass and acrylic cases for the artifacts were installed, and trunks were recovered from trees felled for *kaingin* (swidden) and turned into artifact stands. Precious Tarun also joined the team and created replicas of the artifacts displayed, molding clay

by hand and painting them. Tarpaulin text and image displays were also designed by various members of the team and put up on the walls.

Copies of the coloring sheets previously produced were always made available to the children of the crew who came with their parents to work at Ille. Eight crates of books were also added to the community library at the barangay hall. Some of these books were also brought to the Ille site for local community members to read during their free time.

A significant change in management was also made with the designation of Dhin Gillang as curator of the exhibit for the coming year. He has been instrumental in the renovation of the building and all bamboo fixtures found inside the exhibit hall were created by him. This arrangement, with Dhin reporting directly to the PIPRP team, was also discussed with the municipal tourism officer and other employees of the tourism office who are assigned to Ille cave.

This year also saw an increase in our interaction with the Pilipinas Shell Foundation, Inc. project (PSFI), with project officer Eva Vega Malabanan, called TANDIKAN Turismo at Negosyo Dulot ng Ingat Kalikasan. We participated in giving lectures and orientations during the April 25 seminar that served as the introductory activity of the PSFI. On the following the introductory activity culminated at the basecamp of the project.

There was also a surprise visit and negotiation with the DPWH team District Engineer of Northern Palawan. They informed us of the actual start of the construction of a first class road from the main New Ibajay road to the door step of the Exhibit Hall. They explained that the budget came from DOT. However the project was not bided out yet, and therefore they were interested in our inputs. The original design was a 800 m or 1.2 km road. We managed to shorten the road and proposed a small *cul de sac* so that the visitors to the Exhibit hall and Ille cave will still have a descent walk from their vehicles.

Notable groups of visitors this year while we were excavating were the Children and their families from Potter's school and Waldorf School, both primary private education institutions located in the Town of El Nido. We also hosted the Piopio Foundation staff members and the visit of Anthony Ferrer and his family.

Lectures

As a regular practice of the excavation team, we hold an almost nightly lecture session for the members of the team and for locals who stay at the base camp. The intention is to share new

ideas and established information to members of the team many may be out in the field for the first time with the core members of the project.

The following were the lectures given:

Backgrounder on the PIPRP project - V. Paz and H. Lewis
Seeing infectious diseases in archaeological bones – G. Velarde
Application of digital methods at the plain of jars, Laos. – S. Kowlczyk
The classification of archeometallergical artefacts from the Dewil Valley F. Claravall
The ethics of human remains collecting - M. Lara
Morpohological study of human remains from Tabon, Palawan – A. Cosalan
The enigmatic Igneous Industry of Sang'ung Rockshelter – J. Kress

Tourist and public walk-ins at Ille

Since 2014 we reported on the annual walk-in visitors to the Ille site for the entire year (see 2014 to 2017 reports). The log-books kept by the tourism office and at the Exhibit Hall are the basis for this synthesis. Not all visitors, we realized, to the site and its facilities are technically tourists. We have now noticed deliberate school visits and clusters of students who come to the exhibit hall to use the information as reference. We therefore have tourist and public walk-ins to the Ille site and the numbers have increased by almost 150 percent since last year. We have also noticed that 2017 is the first year where all twelve months of the year recorded visitors to the site; in 2016 the month of June did not report a single visit outside people living in New Ibajay.

Regarding the tourists' places of origin, tourists from the Philippines rank the highest even if we divide the numbers to categories to locals (El nido) n=421; from Palawan in general n=62.

	2015	2016	2017	2018
January		64	170	9
February		39	116	43
March		36	120	0
April		36	140	10
May	21	47	90	147
June			98	88
July		40	45	45
August		85	110	120
September		61	55	171
October	24	129	90	378
November	26	66	164	531
December	66	93	148	489
Total	**137**	**696**	**1346**	**2031**

Figure 37. Comparative summary of walk-in visitors to Ille and the exhibit hall

Reburial of surrendered contemporary human remains

During the 2017 season, human remains were surrendered to the team by a local resident of New Ibajay who felt that he made a mistake in keeping these looted human remains. He also was fearing repercussions from the state (see 2017 PIRP report, Pl. 3). He has been keeping these remains which were gathered from abandoned contemporary cemeteries around 2010, when he joined the frenzy that led to the looting of archaeological sites in the nearby island of Imorigue, and cemeteries across the Philippines, in the prospect of earning money from unscrupulous agents of the Japanese government who were buying indiscriminately human remains to pass has Japanese war dead; in the effort of the government of Japan to provide closure for Japanese families with missing World War II dead (see 2010 and 2011 PIPRP reports). We kept quiet regarding the surrender of these human remains, that were in two plastic sacks, not because we knew the person who surrendered the bones, but because we wanted to think through the best steps forward that will give a lasting positive signal to the community regarding heritage materials, especially human remains.

The analysis concluded that there were at least four individuals represented in the two sacks of bones, and that they were from more recent (a few decades) burials because of the associated fabric remains, the presence of a Christian medallion, and the overall high quality of preservation of the bones. No further analysis was done, and there was definitely no option for

us to curate these human remains due to clear ethical reasons we have already set at the very start of our project; it is likely that direct relatives and descendants of these individuals are still living in northern Palawan. All attempts to find out exactly where the bones came from through interviews of the individual who surrendered the remains, and from other informants, led us to an abandoned burial ground between Barangay Korong-Korong and the main town of El Nido. Unfortunately, we could not find anyone, or any signs (already overgrown area) that could attest to grave robbing activities that took place seven years ago.

We decided to clean the bones, and construct two boxes to serve as coffins. We then informed the local officials and the local religious organizations of our intentions to rebury the bones. We did this with much public display and announcement and invited locals to participate in the reburial of the bones in the public cemetery of New Ibajay. We would like to believe that what we did was the best way to underscore our seriousness in respecting human remains and material cultural heritage in general. We would like to think that the activity left a a mark in the thinking of the New Ibajay community, and hopefully word of the reburial will spread across the rest of the municipality of El Nido for years to come.

7. DISCUSSION

On the continuing excavation of long standing research sites

For several years we have been excavating a few sites for at least over two seasons. The reasons are due to added questions that aroused as we carried-on through the years. New questions made us return to previously excavated, but have left idled, sites. The more persistent reason is our continuing effort to answer questions that we raised at the very beginning of a site's excavation.

At Ille site, the question of finding another example of a boat-shaped burial stone marker at the time-depth of over 4000 years is still going on. Specifically, this is the focus of our excavation at the western sector of the rockshelter portion of the site. The excavation of Balete trench also revealed a totally different depositional history and archaeology at the eastern end of the rock shelter – beyond the east mouth of Ille cave. This made us more determined to find out what was happening at this sector of the site. At Pasimbahan-magsanib we known that there is a cremation cemetery to be excavated to the north of Trench B. The going is slow due to

few excavators and the complexity of the archaeological features that needed to be uncovered carefully. We are still several layers of archaeological context away from the cremations that are more or less contemporary in time with the Ille cremation cemetery; but would they be exhibiting the same pattern of behavior in the cremation and burial of the remains as Ille? This is of course yet to be known.

There were sites that we returned to after seasons of hiatus because there were new research questions that we wanted to address. This was the case for the Makangit-pabintana, which was revisited to further address useware on lithic artefacts found from the site. In the process, it was realized that the site still held much potential for much older archaeological deposits. At Pacaldero site in the Sinalakan karst, where jar burials with human motif covers were found together with an earthenware bird shaped vessel, we wanted to establish if any of these assemblages could be dated to around 3000 years ago – an early time period for jar burials recently established for Pain Hakka site, a jar burial site in Flores island, Indonesia (Galipaud et al. 2016). The goal therefore was to find datable material that we can directly associate with the jar burial assemblage. In the process more localities were discovered within the cave network that held other jar burial practices.

On Makangit-Maliit na Bato

The initial interpretation on the nature of MnB is that it was a ritual site where human remains were placed in big, thick burial jars along with smaller earthenware pottery that most likely served as votive objects. Very few animal bones, plant remains and shells have been recovered in MnB and these did not appear to have been consumed but were either naturally occurring or used as votive (i.e., Melo sp. shells). The scarcity of plant and faunal remains supports the ritual nature of the site.

The ledge or shelf-like formation on the north wall of the rockshelter could have served as a spot where burial jars could have been placed (Fig. 28). Eventually, natural and/or anthropogenic factors caused the jars and other pottery to be broken, along with the contents of human remains, scattering these among the rocks all over the area of MnB. Sediment then collected and filled the crevices and areas between the rocks, most likely through aeolian processes or wind action and through the decay of leaves and twigs. The site is presently surrounded by trees and shrubs and, during the excavation, strong winds have caused the

collection of leaves and twigs in the site. When the site was first documented, dry leaves and twigs covered the surface.

Although jar burials could have contained primary inhumation, the burials placed in the jars in MnB could have been secondary deposits, judging from the representation of skeletal Elements collected, which were mostly long bone and cranial fragments from at least 23 individuals. The presence of small bones such as phalanges has also been shown to occur in secondary burial deposits and are, therefore, not evidence for primary burials (Lara et al. 2013). Dizon (1983) mentioned that metals found in burials were usually placed as status symbols instead of utilitarian objects. Beads from MnB could have been clothing ornaments interred with the human remains.

The numerous glass beads found in the MnB site are suggestive of some access to trade goods as these materials are known to have originated from mainland Southeast Asia like Thailand and Malaysia (Cayron 2006). Several authors are of the opinion that trade, specifically maritime trading, was the main reason for the presence of beads, porcelain, metals and metal workings in the Philippines (Fox 1968; Hutterer 1973; Yankowski 2000). On the other hand, Dizon (1983) and Hutterer (1973) stated that iron was most probably forged locally, and perhaps the type of forge used to work iron in the past was similar to that still practiced among the mountain peoples of the Philippines. The distribution map of Bronson (1992:72) shows the abundance of iron ore in Southeast Asia and its availability in northern Palawan.

The Metal Period is currently not a well-understood period in the prehistory of the Philippines, unlike in other parts of Southeast Asia. For example, in Thailand the Bronze Period is clearly delineated from the Iron Period (Čharœēnwong et al. 1988). In the Philippines, the timing of the use and manufacture of different metals is convoluted. Willhelm Solheim (Dizon 1983) first theorized that iron first came to the Philippines ca. 400-100 BC and it was only later in 100-500 AD that the true Iron Age was formed. For Fox (1968), however, the first metals, i.e., bronze, copper, and gold, appeared along with ornaments made of jade and other semi-precious stones at about 400 BC or even earlier. At about at least 200 BC, iron appeared throughout the archipelago rapidly, stymieing any development of a true 'Copper-Bronze Age" in the Philippines, if ever it would have developed at all. The discovery of different metals from single deposits has also led some researchers to suggest that perhaps there are no separate metal periods in the Philippines and the technology seem to have occurred at the same time in

many parts of the archipelago which led to the term "Metal Periods" (e.g. Dizon 1983). Presently, by practice, the metal periods are accepted to have occurred between 500 BC and 900 AD. In this research, we have described a site in Palawan bearing artifacts that are generally ascribed to the Metal Periods in the Philippines. Pottery of the Novaliches type, copper rings and bangles, glass and stone beads, as well as iron blades are found together, with the general absence of porcelain. In other parts of Palawan, the most well represented site of the Metal Periods were found in the municipality of Quezon in the Tabon Cave Complex. A number of caves yielded assemblages of mostly secondary jar burials that are tentatively dated to the Metal Period (Fox 1970). Caves, such as the Manunggul, Batu Puti and Fabian, contain scattered human remains associated with earthenware potteries (Fox 1970). The pottery from Manunggul cave stands out with the decoration of people rowing a boat applied to one of the jar covers. The results of the excavations from the many caves of the Tabon Cave Complex were reported in what has become one of the most important publication in Philippine Archaeology (Fox 1970).

Our excavation in the Dewil Valley in the northern side of Palawan has been producing good results with regard to the chronology of the sites but deposits tentatively dated to the Metal Periods found, for example, in Ille, Pasimbahan and Idulot, have not been clearly defined. The excavation of Makangit - MnB was envisioned to help clarify the deposits found in these other caves because there was an early reading that the site probably represents a single period, the Metal Period. However since the cultural materials indicate otherwise (most likely not from a single time period), the MnB Site being a site representative of the Metal Periods is uncertain.

The chert flakes and fragments are mostly in Layer 3 (c. 7) but a piece is in Layer 1 and another in Layer 2. The 19th century Kitchen Ching bowl is also in the lower level (Layer 3, c.6). Immediately this shows a 'mixing' of materials from different time periods but perhaps it is a more complicated scenario wherein there is continuous usage of chert flakes probably until the 19th century.

This report mainly presented the cultural materials recovered and the preliminary examination of these. Further analysis of the artifacts will definitely provide more interpretation of the data from the Makangit Maliit na Bato Site, which hopefully will contribute in clarifying the Metal Periods in other sites in the Dewil Valley and other areas in the Philippines.

MnB earthenware pottery

Preliminary observations focusing on surface treatments, decorative techniques and decorative motives allowed distinguishing several groups. Within each group, basic observations on fabrics and manufacturing techniques were also conducted but this should be re-examined in the future in order to confirm the groups' relevance.

The vast majority of fragments was tempered with minerals including coarse grains (~ 1 mm). The use of coils is evidenced by horizontal grooves (visible on the surfaces) and cracks (observed in cross-sections). These have been observed in particular on rim sherds (upper rims and ring stands) but also on body fragments. Some cavity and the uneven thickness of sherds suggest discontinuous pressures. Elongated voids have been observed (in cross-sections) as well as cupules (on inner surfaces), suggesting the use of paddle-and-anvil technique. However, this is not the case for all sherds (in some cases, the distribution of temper in section is quite uneven), suggesting that the paddle-and-anvil technique was not used for forming all the pots. This needs to be further analyzed and may have implications on the pottery classification and its interpretation. Surfaces were slightly smoothed. Shaving (on leather hard clay) can also be observed on internal surfaces of ring stand fragments. Some sherds are red slipped. The surfaces are light red or grey, indicating oxidizing firing conditions. The core of the fragments is usually darker. Decorations are rare and performed using different techniques and tools. These

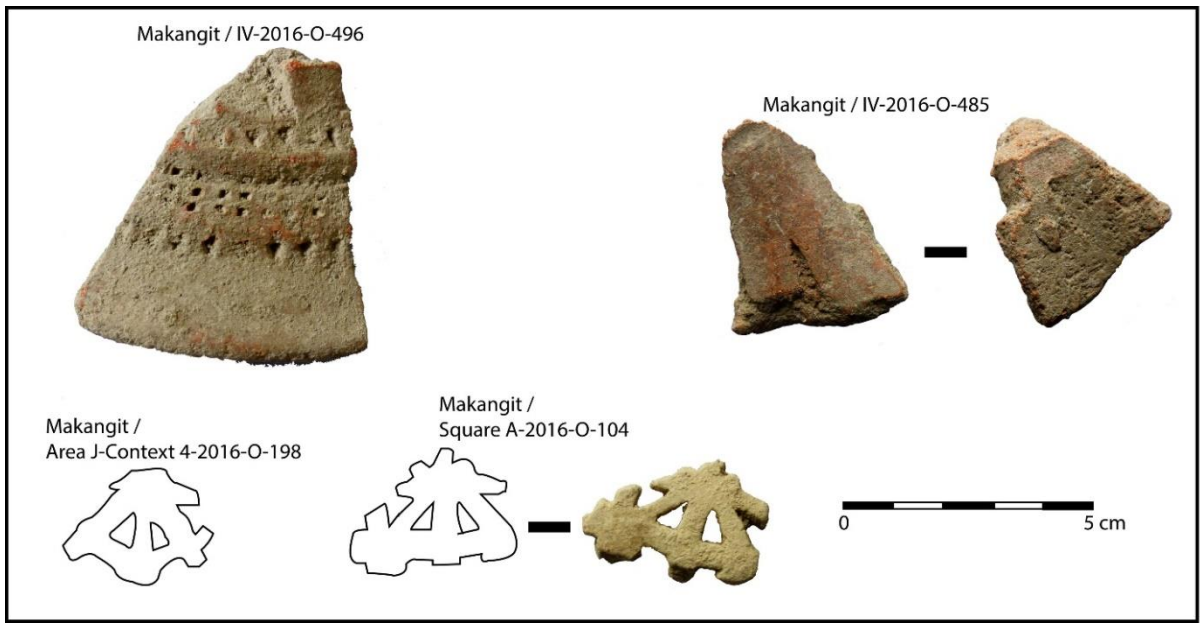


Figure 38. Novaliches-related decorations. These were manufactured using a paddle and an anvil

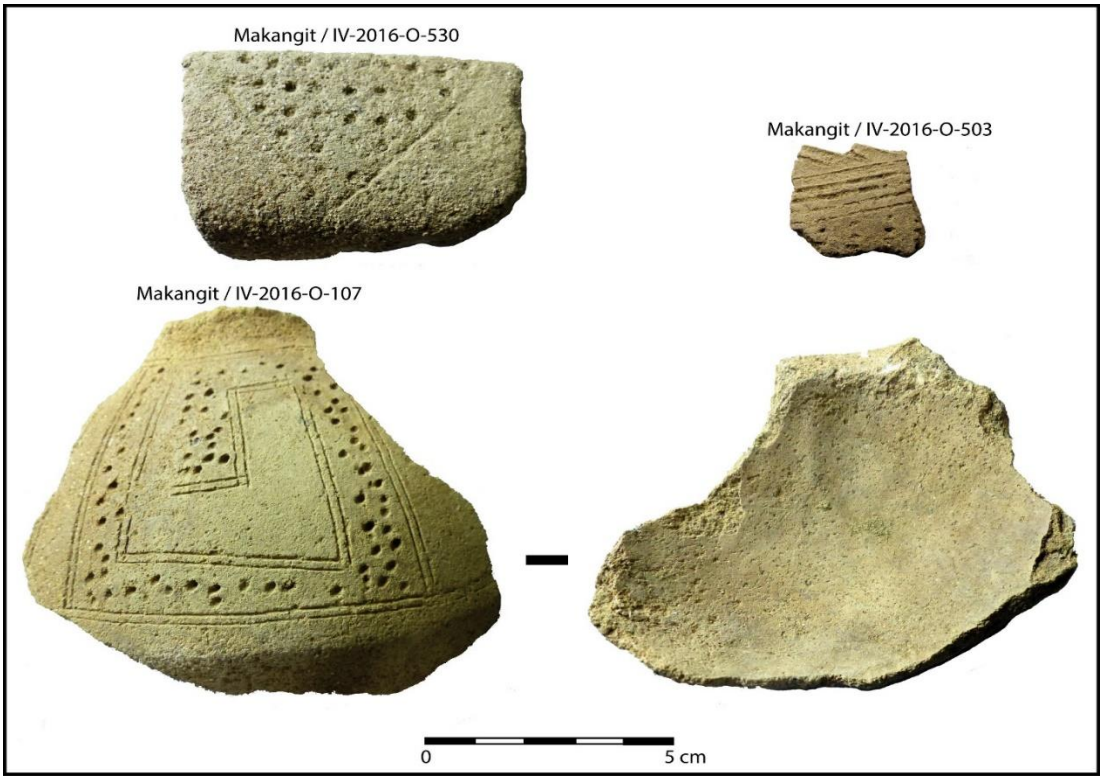


Figure 39. *Kalanay-related decorations*

Figure 40. Example of decorated fragments from the Novaliches-related site C65, kept in Guthe collection (Michigan Museum of Anthropology)

can be carved, incised and/or impressed. Most of them are made without specific care (clumsy). Some evoke the Novaliches decorative lexicon (illustration 1) while others evoke the Kalanay decorative style (illustration 2), as it was described by Solheim (1964) . Other decorative motives are not clearly associated with one or the other diagnostic lexicon (illustration 4). Novaliches and Kalanay styles may be distinguished not only looking at the decorations but also looking at the pottery shapes. For instance, high circular pedestals are systematically associated with Novaliches-related decorations, while carinated forms are likely to be associated with Kalanay-related decorations.

Novaliches-related decorations in MnB are often located on pedestal fragments. These include simple impressions, sometimes associated with burnishing, made using a triangular or diamond or rectangular headed tool (illustration 1). Various types of impressions can be combined on the same surface (see for instance, #496). Carved decorations (i.e., through the vessel and in low relief on the surface) are also found in MnB. They create triangular cutouts and row of alternating cutout triangles on ring stand fragments, which is common among Novaliches-related pottery. These are often associated with impressions performed using a tool with triangular headed tool. Cutout triangles on pedestals are also associated with incised horizontal lines that are common in the Novaliches style (see Solheim 2002: p.14, fig. 4: 2a & b; p.15, fig. 5: 1a, b, c). In one case, the use of a comb-like tool is attested. According to Solheim, the area of distribution of Novaliches-related potteries « is restricted […]. The sites are on the northern end of Palawan and in the Calamianes just to the north, and […] an island just north of Panay. The sites in Luzon are around Manila Bay in Bulacan and Rizal provinces and probably also in Cavite and Batangas provinces » (Solheim 1964: 136), which is consistent with Makangit geographical localisation. Similar Novaliches-related potteries are also found on nearby sites such as Idulot for instance (see Paz et al. 2014: 85) and site C65 (Guthe collection) on Coron Island (see examples of decorated fragments from site C65 in illustration 3).

Kalanay-related decorations include simple incised and incised & impressed decorations (illustration 2). Such decorations are hardly ever found in MNB (for instance, see sherds #107, 505, 518, 526, 530, 710). Potteries displaying very similar decorations are found on Imorigue Island and Ille, but also on several sites in the Visayas and Luzon Island (see, among others, Bacus 1997, 2004; Paz et al. 2014; Solheim 2002).

Other types of decorations are found in each area and context in MnB (illustration 4). These can be incised & impressed and simple impressed. Sometimes, impressions are performed on the lip, creating notches (in two cases) or on shouldered inflexions (in two cases, on lid fragments). C-stamped impressions are also found on one fragment (#IV-1998-P-63151) (see illustration 4, top right). C-stamped impressions are found elsewhere in Palawan, specifically in Ille cave (see Balbaligo 2010; Balbaligo 2015; Paz et al. 2014: 79) but also on other sites such as Linaminan in the South of Palawan (Balbaligo 2015: 106, after Szabó 2010).

A dozen of pottery sherds was impressed with lines. Given the features observed, these were probably shaped using coils, formed using a carved paddle and an anvil, and fired in oxidation. They are found in area A, contexts 4 and 7; area C, context 4; area D, context 4; area J, contexts 3 and 7. Some large and thick (0.9 cm) fragments probably belong to bigger vessels.

Progress on the heritage front

After 14 years of presence in the Dewil valley, in close proximity to the Barangay of New Ibajay, the archaeological research created positive conditions for the advancement of heritage consciousness among locals. One substantial reason for this is the contribution of the project to infrastructure improvements in the valley. Aside from the continuing improvement and popularity of our Archaeology and Natural History exhibit hall within the one hectare property purchased by the Municipality of El Nido for the archaeological and natural resources of the Dewil valley, there is now clear signals that a first class road shall be constructed by the Department of Public Works and Highways funded by the an allotment from the Department of Tourism, which was quietly campaigned by the PIPRP with then Secretary of Tourism, Ramon Jimenez, and followed up by Mayors of El Nido until finally funds were earmarked for the road project. We were consulted to the route of the road and how far it could go into the valley towards the Ille Karst. We could only hope that our input would be taken seriously in the actual construction of the road.

The infrastructures mentioned, with our continuous presences every summer in the Dewil valley, and our constant engagement with all age groups of the community of New Ibajay has definitely made a mark in the enhancement of local individual's sense of belonging to the landscape that is rich in both natural and cultural resources. Our act of solemnly reburying

the looted remains of unknown recent ancestors in the public cemetery would hopefully add to the statement that we are steadfast in our efforts to learn, conserve, and respect our common heritage.

8. SUMMARY AND FUTURE WORK

For the 2018 the dual main aims were to advance archaeological knowledge and information, and to continue initiatives towards transforming community/individual consciousness. These objectives were reached without qualification. Specific objectives, however, were not all achieved. Specifically, we did not manage to excavate the West Mouth West Extension Trench beyond the shell layers; the exposure of complex features, such as pits, slowed down the excavation process. The excavation of Trench B East extension at Pasimbahan is still far from achieving its main purpose; to properly expose the cremation context at the bottom of the east wall of Trench B. While Makangit- Maliit-na-Bato excavation was completed as planned, and we have located a new archaeological site (Maulohin Itaas) in Imorigue, the excavation of Makangit-Pabintana did not happen. We did not manage to open Makangit-Pabintana because the archaeologist who was suppose to lead the excavation did not manage to join the field season.

We are general satisfied with the results of our latest revision of the exhibit inside the Natural History and Archaeology Exhibit Hall in the Dewil Valley. We still await the full blooming of consciousness within the New Ibajay community that will allow for the full implementation of a ecomuseum approach, a bottom-up, approach to the curation of the space. We are also satisfied with the way the modern human remains surrendered to the project was ethically resolved - through reburial - involving the municipal government, the barangay leadership and members of the New Ibajay community.

The next of the PIPRP will continue to work on Ille, Pasimbahan-Magsanib together with other sites that we deem workable given the extent of our manpower and material resources for the year. The exhibit hall will continue to be improved, and we shall further advance our heritage advocacies. This project still has years to go before completion.

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Lorenzo Incad
Liza Incad
Donna Libudan
Lineboy Magluyan
Jenix Naranjo
Jake Naranjo
Jeven Naranjo
Joel Naranjo
Jovenly Naranjo
Lannie Naranjo
Jhun Pamplona
Oniol Pamplona
Titin Reyes
Efren Sarmiento Sr.
Efren Sarmiento Jr.
Emman Sarmiento
Mark Jude Sarmiento
Mediatrix Sarmiento
Grimaldo Sugbo
Joey Sugbo
Jomar Sugbo
Junnie Tanguiran
Jemarie Valejo
Lorens Vinluan
Cesar Vitorin
Mary Anne Vitorin
Teode Villarin

Field season guests/project visitors

Anthony Ferrer and family
Potter's School Children and parents
Waldorf children and parents

10. PLATES

View of the Dewil valley looking towards the ridge of Singkukan; in the front of the mountain ridge are the towers (left to right) of Kulanga maliit, Kulanga malaki, Istar and Diribungan;

The Ille karst looking eastwards ; the rain-fed field awaits the coming of the rainy season;

Makangit Malaki with Ille tower at the background ; the arrow points to the location of Makangit maliit na Bato (MnB);

Ille tower looking northward with pathway leading to the Municipal property and the project's basecamp.

Plate 1: The current landscape around the base camp

Fine-tuned excavation; image shows excavation of burial using sticks and brushes;

Dry sieving of all excavated sediments;

After sorting and washing; small find artefacts and environmental samples are catalogue using National Museum Accessioning system;

Night lectures and discussions open to all;

Daily visits from tourist; image shows participant of workshop on heritage and tourism of Dewil valley supported by the project;

All excavated areas in all sites are backfilled; image shows tarp lined EWCT, Ille in the process of backfilling.

Plate 2: Images of Some Methods

The WMWE trench looking North-East, in full excavation; shell layer and several pit features were in the processes of being excavated and recorded;

Excavation at the westernmost quadrant showing the remains of burial feature and a good exposure of the main shell layer,

End of season exposure at the Balete Trench.

Plate 3: Images from Ille Site

View of rockshelter looking westward;

Excavating Trench B extension trench;

Trench B and B extension at the bottom after cleaning; cremation burial pointed by arrow; left image looking eastward towards cave mouth and right image looking northward;

Careful excavation of Trench B, which still contains signs of human occupation;

End of season re-burial of partially exposed cremation; there is still much excavation to be done at the extension trench before exposing what we think is a cremation cemetery.

Plate 4: Pasimbahan-Magsanib Images

Makangit Maliit na Bato (MNB) site is on top of a rockfall cave; the cave itself contained material that fell from the top where the archaeology rested on top and in crevices between boulders;

Pacaldero cave in the Sinalakan karst (left, foreground to Diribungan karst); ground level chamber (right, Locality 10) with jar burial (center, c59A);

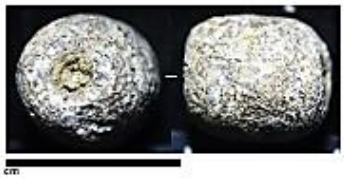
Imorgiue Island where Maulohin itaas is locate, above the well-known Maulohin site; a ladder had to be constructed for the team to get to the cave and survey it; it contained many pottery sherds, bone fragments and shell artefacts in its two chambers.

Plate 5: Makangit Maliit na Bato, Pacaldero, & Maulohin Itaas

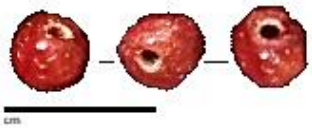
Chert flake from Ille site, IV-1998-P-64525;

Chert flake from MnB site, Area F, IV-2016-O-700;

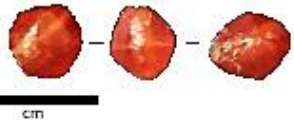
Chert flake from MnB site, Area A NWQ, c7, IV-2016-O-102;



Stone bead from MnB site, Area A, c. 7, IV-2016-O-18;



Carnelian bead from Ille site, IV-1998-P-64353a;



Carnelian bead, Ille site, IV-1998-P-64812a;

Pacaldero site, Locality 10: Carnelian, c.62B;

Carnelian bead IV-1998-P-64180 from Ille site, EWCT, c558;

Pacaldero site, Locality 10. various spherical glass and stone beads, c.62;

Andesitic hammerstone, Ille site, WMWE, c2372, IV-1998-P-64356;

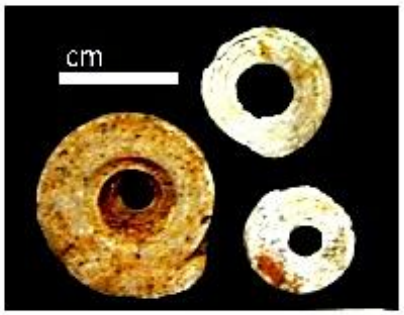
Andesitic hammerstone, Ille site, WMWE, c2770, IV-1998-P-64127;

Pacaldero site, iron adze, Pacaldero site, c56, IV-1999-G-2406;

Iron fragments from MNB site, Area D West, c5, (left; IV-2016-O-124), and Area C upper, c3 (top, IV-2016-O-194).

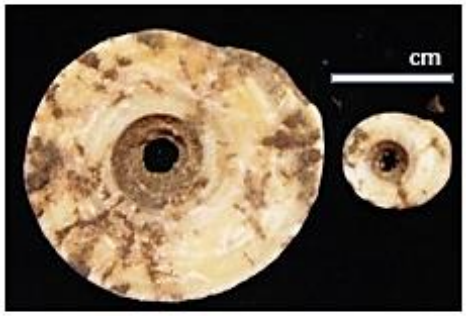
Plate 6: Example of Stone and Metal artefacts

Plate 6: Examples of Stone and Metal artefacts



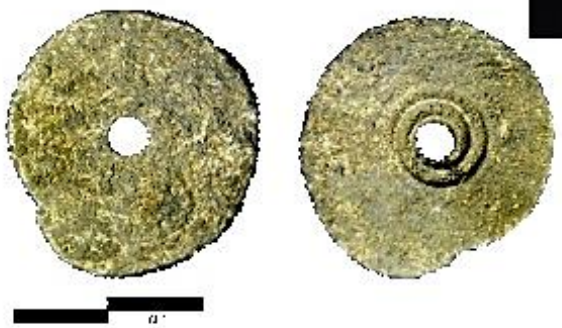
Beads from Maulohin itaas site, Imorigue, IV-2018-K-9

Pasimbahan-Magsanib site, IV-2007-Q1-3933;



cm

From Ille site IV-1998-P-64353b;



From MnB . Shell disc bead from Area J, c.4, IV-2016-O-3;

Shell beads and preform bead, from Pasimbahan-Magsanib site, IV-2007-Q1-3893 (scale in cm);

Broken Conus disc, Ille site, IV-1998-P-64945

Fragment of shell bangle from MnB site, Area E, IV-2016-O-698

Shell micro bead, Pacaldero Site, Locality 10: c.62

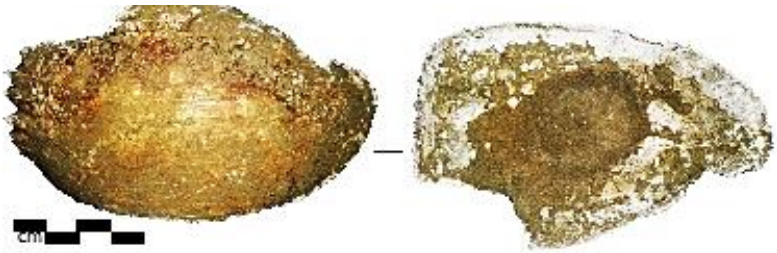
5 mm

Bangle fragment, from Ille site, IV-1998-P-64435

Nassarius shell beads, from MNB site, Area C, lower section; IV-2016-O-133.

cm

Plate 7: Examples of Shell beads and bangles

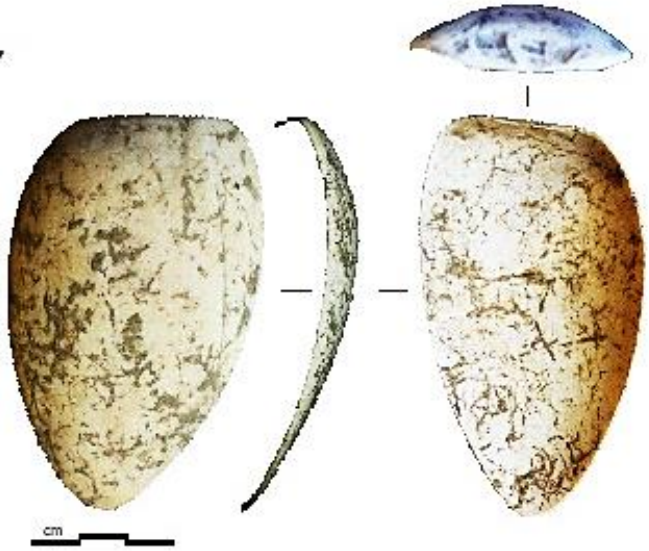


Melo sp. shell with red pigment, Maulohin Itaas, IV-2018-K-3;

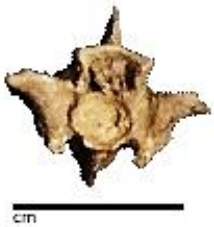
Melo sp. shell fragments from, MnB site, Area F, IV-2016-O-551;

Gastropod terrestrial shells from MnB site, IV-2016-O-572; possibly processed for food offering;

Modified shell fragment, MnB site, Area J, c.4, IV-2016-O-196;



Shell or tooth bead, Area J c.7, IV-2016-O-229;



Reptile (snake) vertebra, MnB site, Area A SWQ, c.8, IV-2016-O-166;

Melo sp. Shell scoop , Ille site, WMWE , c2723, IV-1998-P-63495;

Pig incisor, MNB site, Area H, c.23; IV-2016-O-706;

A bead made from the tooth of a pig, MnB site,Area A, SWQ c.7; IV-2016-O-236;

Desiccated *Canarium* spp. nuts from MnB site, Area B, Area C upper and Area H.

Plate 8: Examples of Shell, Bone, and Plant Artefacts

19th century blue & white bowl found under a big rock in Area B, ~13 cm rim diameter, IV-2016-O-94;

Sherds with impressed & incised design surface of Area E (topmost IV-2016-O-532), Area B c.3 (leftmost IV-2016-O-488); Area A NWQ, c7 (left IV-2016-O-340); and Area C, c. 4 (above IV-2016-O-520);

Cut out sherds, Area A NWQ, c. 5 (left, IV-2016-O-800) & Area J, c. 4, IV-2016-O-801;

Rim sherds with impressed & incised design, Area J, c.3, IV-2016-O-403 & 476;

Base sherd with incised design, Area I, c.30, IV-2016-O-655;

Sherd with impressed design Area G, c.20, IV-2016-O-695;

Body sherd with paddle impressed design Area D, IV-2016-O-51;

Rim sherd with incised design Area D, IV-2016-O-371;

Plain rim sherds, Area D, IV-2016-O-369;

Rim sherd with incised design, Area H, IV-2016-O-590.

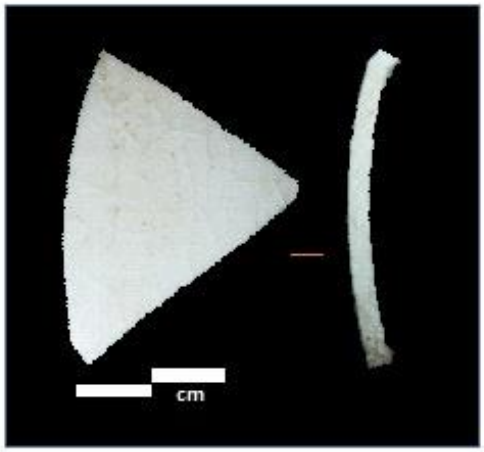
Plate 9: Makangit Maliit na Bato Ceramic Artefacts

Broken earthenware spindle whorl
Ille site, IV-1998-P-64562;

Incised and impressed design with red paint; Ille site, WMWE, c2752, IV-1998-P-63294;

Lug handle from a large brown glazed stoneware jar, Ille site, MWME trench, c2752, IV-1998-P-63292;

Whiteware glazed tradeware ceramic sherd; MWME Trench, c.2752, Ille site, IV-1998-P-63292;



Lip and neck sherd from a wheel produced earthenware jar, Ille site, small west chamber, west mouth, surface find, IV-1998-P-64134.

Plate 10: Ille Site Samples of Ceramic Artefacts

Children sandbox archaeology on the spoil area at Ille site;

Seminar with series of lectures at the New Ibajay brgy hall, in collaboration with SPFI;

Officials of different El Nido villages visited the Ille site;

Preparing the reburial of looted human remains;

Box coffins taken by slow cart, across barangay New Ibajay, to the local cemetery;

Vacant space provided by the barangay at the local cemetery;

Burial after short ceremony; a cross was commissioned from a local artisan, and was made to mark the burial;

Team members D. Gilliang & P. Tarun updating and improving the exhibit at the Dewil Valley exhibit hall;

Anthony Ferrer of Nido Petroleum visiting the exhibit hall with his family in-time for the reopening of the updated exhibit;

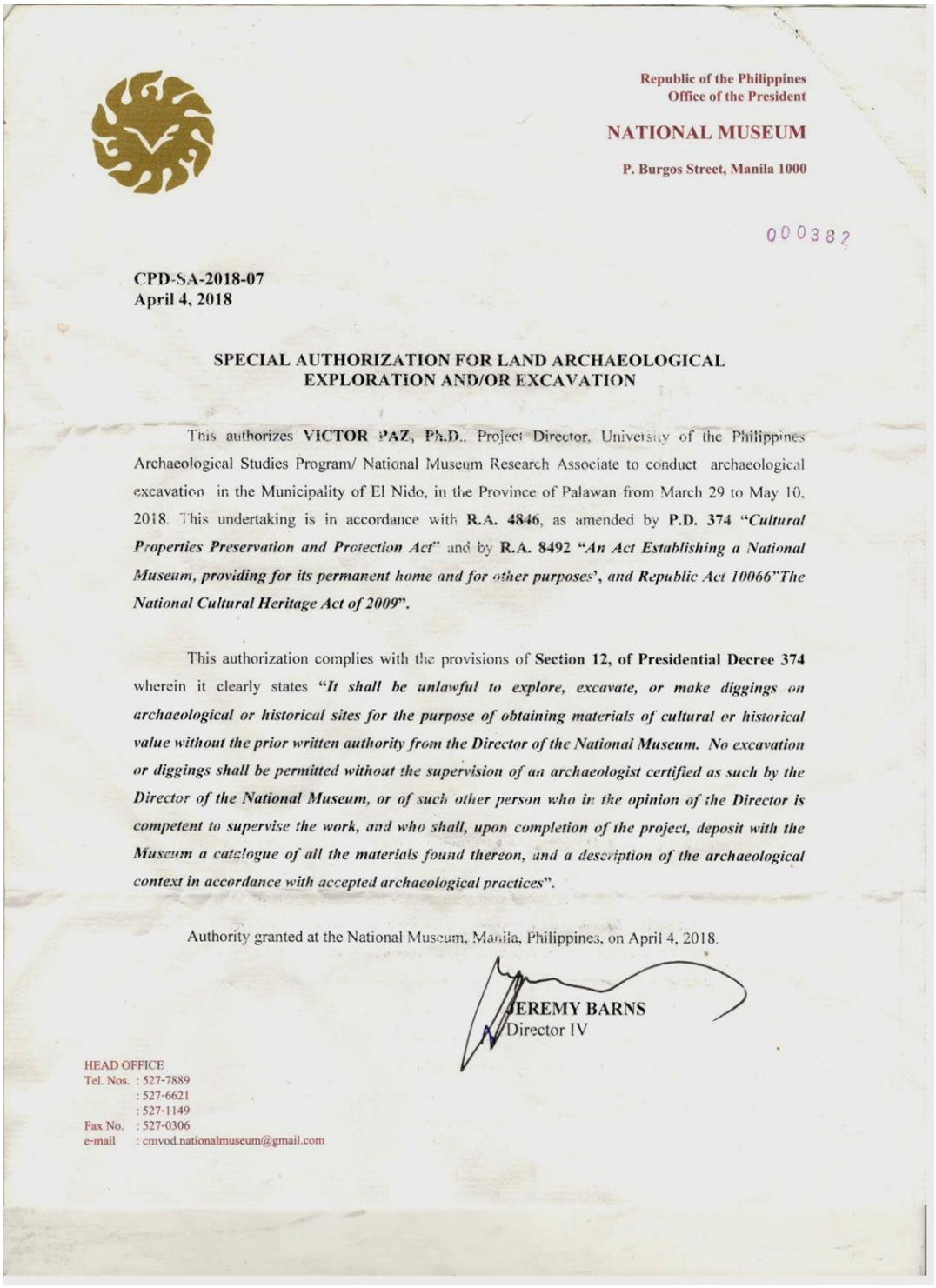
Many of the team members of the 2018 season.

Plate 12: Heritage Images

11. APPENDICES

APPENDIX A

NATIONAL MUSEUM AUTHORIZATION



Republic of the Philippines
Office of the President

NATIONAL MUSEUM

P. Burgos Street, Manila 1000

000382

CPD-SA-2018-07
April 4, 2018

SPECIAL AUTHORIZATION FOR LAND ARCHAEOLOGICAL EXPLORATION AND/OR EXCAVATION

This authorizes **VICTOR PAZ, Ph.D.**, Project Director, University of the Philippines Archaeological Studies Program/ National Museum Research Associate to conduct archaeological excavation in the Municipality of El Nido, in the Province of Palawan from March 29 to May 10, 2018. This undertaking is in accordance with **R.A. 4846**, as amended by **P.D. 374** "***Cultural Properties Preservation and Protection Act***" and by **R.A. 8492** "***An Act Establishing a National Museum, providing for its permanent home and for other purposes***', ***and Republic Act 10066"The National Cultural Heritage Act of 2009***".

This authorization complies with the provisions of **Section 12, of Presidential Decree 374** wherein it clearly states "***It shall be unlawful to explore, excavate, or make diggings on archaeological or historical sites for the purpose of obtaining materials of cultural or historical value without the prior written authority from the Director of the National Museum. No excavation or diggings shall be permitted without the supervision of an archaeologist certified as such by the Director of the National Museum, or of such other person who in the opinion of the Director is competent to supervise the work, and who shall, upon completion of the project, deposit with the Museum a catalogue of all the materials found thereon, and a description of the archaeological context in accordance with accepted archaeological practices***".

Authority granted at the National Museum, Manila, Philippines, on April 4, 2018.

JEREMY BARNS
Director IV

HEAD OFFICE
Tel. Nos. : 527-7889
: 527-6621
: 527-1149
Fax No. : 527-0306
e-mail : cmvod.nationalmuseum@gmail.com

APPENDIX B

A SHORT REPORT ON THE PACALDERO POTTERY
Pacaldero Cave Site, Sinilakan, Dewil valley (IV-1999-G)

Aude Favereau

INTRODUCTION

Pacaldero cave is located in the Sinilakan karst formation, Dewil Valley, northern Palawan (north of Ille cave). Pacaldero was surveyed for the first time in 1999 by J. Cayron (project headed by E. Dizon and W. Solheim under the National Museum of the Philippines, the UP-ASP and the Southeast Asian Institute for Culture and Environment). The cave was then revisited and surveyed in 2004, 2006, 2010, 2014, 2017 and 2018 by members of the Palawan Island Palaeohistoric Research Project headed by V. Paz and H. Lewis (see Paz et al. 2010: 48-51).

A report on some of the pottery fragments was written by D. Stojanovski (see Paz et al. 2011: 76-87) who conducted macroscopic observations on 21 earthenware fragments in particular. More recently, the pottery assemblage from Pacaldero was also examined by ASP scholars, however reports have not been published yet.

MATERIALS & METHODS

This preliminary research was undertaken in 2018 at the UP Diliman-Archaeological Studies Program. All the sherds examined were collected from the surface during surveys conducted by members of the Palawan Island Palaeohistory Research Project in 2010, 2011, 2017 and 2018. In total, 1,358 pottery fragments were examined (including 42 rim sherds). The total weight is 30.984 kg. The surfaces and sections of the 1,358 pottery fragments were examined with the naked eye, a magnifying glass (x10) and a USB microscope (x55). Almost all the fragments display decorations. Most of the plain pottery fragments from Pacaldero have not been examined yet. Pottery fabrics

were also not much investigated (the classification only distinguished between mineral and organic temper). Further observations should be conducted on all the fragments to provide more details.

Pottery was analysed using a technological approach as developed by Roux and Courty (2007) and Roux (2011, 2016a, 2016b). This report proposes a preliminary classification of the pottery fragments from Pacaldero examined, based on the concept of *chaîne opératoire*. The term *chaîne opératoire* was defined by R. Cresswell as "the series of operations that transform raw material into finished product, either consumption object or tool" (Cresswell 2010: 26). Analysing pottery using the *chaîne opératoire* approach aims at identifying techniques used to make a pottery, as well as tools and gestures, in order to characterize "ways of doing". Ethnoarchaeological research has shown that "ways of doing" are socially inherited within a group (see for instance Gosselain 2000; Longacre 1991): during the apprenticeship, the artisan-potter uses techniques and acquires gestures, which are associated with specific tools. These techniques, gestures and tools characterize the social group in which he develops his knowledge and skill, to the point where it can become difficult for him/her to do otherwise than what he/she has learned (Roux 2011). Through the detailed analysis of traces and features created on the pottery surfaces and in the pottery paste during its preparation, shaping, finishing, decorating and firing, it becomes possible to classify pottery sherds into technological groups, which may be interpreted in social terms.

POTTERY TECHNOLOGICAL GROUPS IDENTIFIED

In the current state of research, 5 pottery groups have been identified. Group 2 includes 4 sub-groups, which links still need to be clarified. All groups are described below.

- **GROUP 1 - Coiled, paddled & impressed jars (likely to be burial jars)**

This group includes 526 fragments [weight=21.821kg; MNI=2 (the 11 rim sherds examined belong to 2 vessels)].

abric: all the fragments are mineral-tempered.
Primary forming: assembled elements (i.e., coils or slabs) have been used for forming the body of the vessels, as attested by the presence of horizontal grooves and cracks at different locations of the body. Junctions between assembled elements are diagonally oriented. Upper body fragments display several long horizontal cracks on the inner surface, suggesting that coils about 1.5 cm high were used to form the upper body. The coils were thinned and joined using discontinuous pressures, as shown by the uneven and bumpy inner surface fragments. The rim was added after the body was formed (more precisely, after secondary forming, i.e. after paddling). Breakage at the junction between the body and the rim clearly appears. The rim was made up of several coils: on the outer surface of the rim, horizontal cracks show that at least three coils were pilled to form the rim (here, junctions are U-shaped and the clay was pushed downwards to join the coils).
Secondary forming: vessels have been paddled, as attested by the presence of flat areas delimiting the edge of the paddle and overlapping impressed patterns on the outer surface. An anvil was used, as attested by the circular depressions (or cupules) left by the anvil on the inner surface. Thin elongated voids can be spotted in section. These voids are parrallel to the pottery surface and more numerous on base fragments. Their orientation, shape and distribution support the hypothesis that vessels were paddled from the base to the upper body.
Finishing and surface treatments: the outer surface of the rim is slightly smoothed, as attested by horizontal striations. Most body and base sherds are covered with impressions, made with a paddle. These impressions are less visible on base fragments.
Firing: the yellowish surfaces of the fragments indicate that vessels were fired in oxidising atmosphere.
Morphologies: given the rim diameter (39cm), the thickness (around 1.1cm and up to 2.3cm at the junction between the body and the rim) and the size and profile of the sherds, vessels were likely to be large jars with rounded base, globular profile and everted rim, perhaps burial jars (Fig. 2).

- **GROUP 2 – Pottery with compact surfaces and inserted grains**

Group 2 includes four sub-groups sharing similarities, in particular regarding the surface treatments. Nevertheless, more information and comparisons on the fabrics and the shaping of the vessels are needed to determine whether the sub-groups belong to the same pottery tradition.

- **Sub-group 2.1 - Pottery with compact surfaces & incisions**

Fabric: all the fragments are mineral-tempered.
Forming: profiles are irregular (about 0.4 to 0.7 cm thick). Pieces of clay have been added on inner and outer surfaces in several areas. Clay additions on inner surface were likely made to strengthen the vessels, while clay additions on outer surface seems to have been done to accentuate carinations.
Finishing and surface treatments: surfaces are compact, with inserted grains. Surfaces are smoothed, as attested by horizontal striations. Few fragments display traces of burnishing. The decorations were made while clay was still humid, as attested by the bulges surrounding the incisions. Decorations are organized in horizontal bands and are located above the carinations or on the upper body or on fragments which could correspond to lids. All decorations include incisions performed with pointed tool. Incisions are first used to organize the space. Incisions may be associated to impressions and red painting. Red painting may have been applied after firing: it is highly volatile and disappears as soon as the surface is rubbed. Some carinations are notched with incisions and one lip is incised. Several incisions' overlapping and bulges suggest that decorations were not done with specific care. No decorations appear on the lower body except cordmarked impressions.
Firing: vessels were fired in oxidising atmosphere. Several surfaces display fire clouds.
Morphologies: this group includes carinated profiles, upper body fragments and lids.

- **Sub-group 2.2 - Pottery with lower body paddled, compact surfaces & incisions**

Fabric: all the fragments are mineral-tempered.
Forming: the paddle-and-anvil technique is attested under the carination by cupules on inner surfaces and impressions on outer surfaces.
Finishing and surface treatments: surfaces are compact and decorations under the carination are impressed by paddling.
Morphologies: this groups includes rounded bases, lower body fragments and carinated vessels paddle-impressed on the lower body.
Remarks: sub-group 2.2 is very close to sub-group 2.1. However, since sub-group 2.1 chiefly includes upper body fragments, it is hard to say for now if those pots were bottom paddled (like sub-group 2.2) or not. That is the reason why, as a precaution in this report, pottery fragments have been classified into 2 sub-groups (2.1 and 2.2).

- **Sub-group 2.3 -** Pottery with compact surfaces & appliqué anthropomorphic decorations

Fabric: all the fragments are mineral-tempered.
Forming: to investigate.
Finishing and surface treatments: surfaces are compact and sometimes display overthicknesses. Surfaces are decorated with appliqué anthropomorphic elements. Some fragments also display incised decorations.
Remarks: sub-group 2.3 has been classified here under group 2 chiefly because of the surface treatment which is similar to sub-groups 2.1 and 2.2. However, further analyses should be conducted, in particular to better understand which techniques have been used for forming the vessels.

- **Sub-group 2.4 -** Pottery with compact surfaces, large incisions & painting

Fabric: all the fragments are mineral-tempered.
Forming: to investigate.
Finishing and surface treatments: surfaces are compact and incised with a tool with flattened tip. Striations visible within the incision suggest a vegetal tool may have been used. Surfaces are also red-plainted.
Remarks: sub-group 2.4 has been classified here under group 2 mainly because of the surface treatment which is similar to sub-groups 2.1, 2.2 and 2.3. However, further analyses should be conducted, in particular to increase data on the forming techniques used.

- **GROUP 3 - Pottery with friable surfaces & incisions**

Fabric: all the fragments are mineral-tempered.
Forming: to clarify (sherd thickness about 0.3 cm).
Finishing and surface treatments: inner and outer surfaces are grainy. Decorations may be incised and/or impressed and can be found on the outer surface. Lips may be notched-incised.
Firing: the yellowish surfaces of the fragments indicate that vessels were fired in oxidising atmosphere.
Morphologies: the group includes carinated vessels.

- **GROUP 4 - Pottery with friable surfaces & black painting**

  So far, 8 sherds belong to group 4 (#IV-1999-G-222). The temper is mineral and the texture of the surface is grainy to coarse. Black painted lines and motives can be spotted on the outer surface.

- **GROUP 5 - Organic-tempered & impressed pottery**

  Group 5 includes two pottery fragments (#IV-1999-G2226 & #IV-1999-G2240; total weight=32g). The temper is organic: vegetal inclusions are showing on the surface. Both surfaces are smooth and soft. The outer surface displays some light impressions. The inner black surface and the outer reddish surface suggest that sherds were chiefy fired in reducing atmosphere and only experienced a brief oxidation phase (vessels were probably been taken out of the fire before the oxidation process was completed).

  After analysing the plain pottery sherds, another step would be to check and correct the groups established so far, to provide more technical details for each group and to also provide quantitative data for each group. Finally, the pottery data should be examined in relation to their distribution in the cave.

  Ideally in the future, Pacaldero pottery groups may also be compared with those from other sites located in the Dewil Valley, in the Philippines and across the South China Sea pottery (specifically southern Thailand where highly similar sherds were recovered (the Kalanay-related and Sa Huynh-Kalanay-related pottery (see Favereau & Bellina 2016; Favereau et al. 2017)), in order to examine the distribution of the technological groups, investigate technological and/or stylistical transfers and better understand the connections between communities from both shores of the South China Sea.

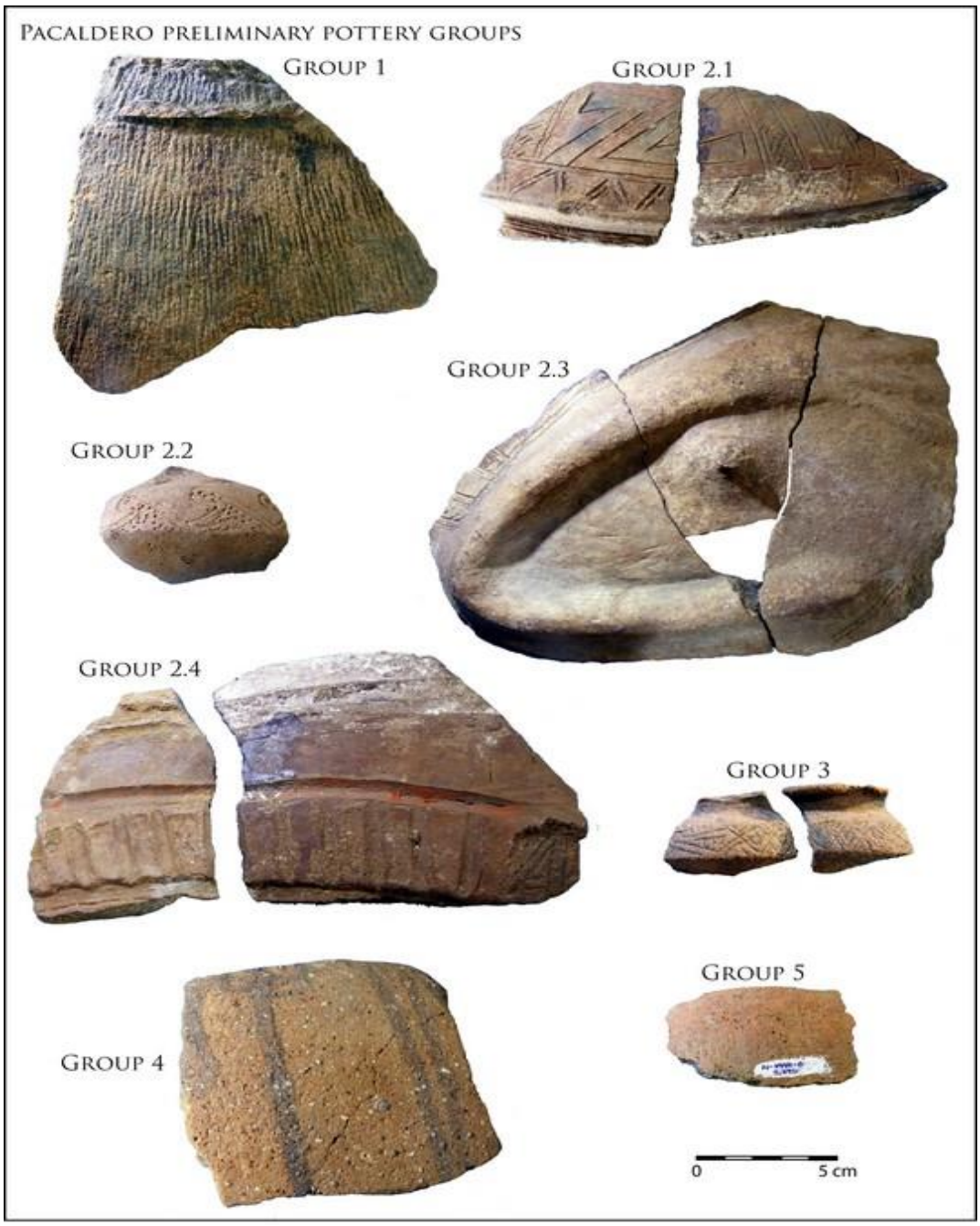


Fig. 1: the five technological pottery groups identified so far at Pacaldero cave

Fig. 2: pottery fragment from group 1 found in Pacaldero cave

PERSPECTIVES

Plain pottery fragments from Pacaldero have not been examined yet. It is fundamental when doing technological analyses to consider all the pottery sherds available. The next step of the analysis would thus be to examine plain pottery sherds from Pacaldero. Pottery fabrics were also not much investigated and may be further analysed.

After analysing the plain pottery sherds, another step would be to check and correct the groups established so far, to provide more technical details for each group and to also provide quantitative data for each group. Finally, the pottery data should be examined in relation to their distribution in the cave.

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APPENDIX C

Chronology and Characterization of Shell Artefacts and Adhering Residues in the Prehistory of the Philippines

Pauline Basilia, Michelle Eusebio, Timothy J. Vitales, Philip Piper and Alfred Pawlik

1. PROJECT SUMMARY

Using systematic dating, analytical, and chemical characterization methods, the project aims to reconstruct the chronological sequence of the Philippine shell bead manufacturing tradition exhibited by Northern Palawan communities. Results of the study show a continuous and developing shell bead manufacturing tradition that implies strong working knowledge of shell as a raw material. Chemical analysis also suggests innovation of the bead manufacturing tradition at the time of its supposed demise.

2. PROJECT BACKGROUND

Ornament production from marine shell species appears to have been an integral part of ancient communities in the Philippines. Since the beginning of the Neolithic, there is a compelling amount of evidence for shell ornament preference (Santiago 2003). Unfortunately, little is known about the chronology of shell artefact types from the simplest shell beads to new types produced with innovative manufacturing techniques.

An example of these new techniques is the addition of appliqués. This is the first documentation of this technique on organic ornaments. Use of this additional technique on an already laborious undertaking suggests a highly advanced bead manufacturing tradition with master artisans and a complex society that supports them. However, appliqués on organic beads have yet to be fully described in literature.

The project aims to characterize shell beads, artefacts and specimens through systematic dating, and chemical characterization. Molluscan artefacts are dated using Accelerator Mass Spectrometry (AMS), which is an absolute dating technique developed for carbon-based

materials. This dating technique is ideal for shell artefacts and specimens, providing a secure date for the artefacts and its associated contexts. Chemical characterization is through two techniques, namely, Scanning Electron Microscopy coupled with Energy-Dispersive X-Ray Spectroscopy (SEM/EDX) and Gas Chromatography-Mass Spectrometry (GC-MS). The former is used to identify the chemical composition of specific residues on the artefact surface, while GC-MS provides a more in-depth analysis of the material.

Ille Site shell artefacts were specifically selected by the project since it has the most documented bead assemblage in Philippine archaeology. The burial layers and the upper shell midden are rich in ornaments (Paz *et al*. 2008). The majority of the assemblage is composed of marine shell beads. Recent studies have described these shell beads as either belonging to the Neolithic or Post-Neolithic or Metal Ages and older (Basilia 2012). Because of the mixed burial contexts and the lack of previous analysis, the chronology of these beads still needs much investigation.

The assemblage was first analyzed by Szabó (2005) and by Swete-Kelly and Szabó (2002), where new bead types were described. These preliminary studies suggested two compelling hypothesis: there are more undescribed bead types absent in literature, and that the widely accepted notion of the development of organic bead manufacturing tradition is false.

Francis (2002) suggested that organic bead production started in the Neolithic. By the end of the Neolithic, foreign beads made of inorganic materials, such as glass and stone, began to be traded into these communities. The preference for inorganic beads had adverse effects on local bead manufacturing traditions. Eventually production of shell ornaments declined and ceased completely. This postulate was reflected by earlier studies of Fox (1970) and Solheim (2002).

The Ille Site organic bead assemblage provided a prime opportunity for the reinvestigation of the Philippine bead manufacturing traditions. The aim of the project was to systematically date selected newly described bead types as well as shell artefacts and specimens of interest. Additionally, chemical analysis of the appliqués provided further details of the bead manufacturing tradition.

Methodology: sample selection

A total of seven shell ornaments, artefacts and specimens were selected for AMS analysis. Five of the AMS samples were two *Conus* sp. disc beads, two cut shell beads, and one microperforated cut shell bead. The artefacts selected represented most of the shell bead types in the assemblage. A *Turbo mamoratus* fragment and a *Tridacna* sp. fragment associated with specific burial contexts also underwent AMS dating. Samples analyzed using SEM/EDX were one microperforated cut shell bead, one *Conus* sp. disc, and two *Melo* sp. specimens possibly

from bailer shells. For GC-MS analysis, residues from four samples consisting of two cut shell beads, a *Melo* sp. fragment and a *Conus* sp. disc bead were analyzed.

All specimens received clearance and permits from the National Museum of the Philippines for transportation outside of the country with the purpose of scientific analysis.

3.1. *Sample Selection for AMS dating*

3.1.1. *Sample Selection for AMS dating: Conus sp. disc pendants*

Conus sp. disc beads were the first local shell ornaments systematically dated using AMS. Szabó's (2009) analysis of shell artefacts from Leta-Leta Cave in Palawan revealed calibrated dates of 1678-1141 cal. yr. BC. This landmark study showed not only of the effectivity of these shell artefacts for AMS dating, but also of the importance of shell artefacts as possible chronological markers. The study also outlined protocols for shell bead analysis (ibid.) that were used in this project.

The *Conus* sp. disc beads selected were IV-1998-P-20221 and IV-1998-P-46121. Unlike other shell artefacts, e.g. shell adzes, the *Conus* sp. discs appear to have been manufactured from gathered live molluscs. The artefacts selected for AMS dating showed no signs of "old shell". Old shell indicators, such as beach-rolling, parasitic action from worm-casts or similar, and boring sponges, are absent from the selected discs. It appears that manufacturers were highly selective of raw material acquisition, in that, live molluscs were collected for the purpose of ornament production. The issue of "old shell" does not apply to any of the shell artefacts in the project. Furthermore, the disc beads were from secured burial contexts of Burial 874 and Burial 727 (see Lewis *et al*. 2008).

3.1.2. *Sample Selection AMS dating: Cut Shell Beads*

There are two types of shell beads present in Ille Site: whole shell and cut shell. Whole shell beads show minimal modification, with the purpose of using the natural form of the shell as part of the decoration as part of the final product. On the other hand, the manufacture of cut shell beads treats the parent shell only as a raw material. Modifications tend to be dramatic, with multiple production techniques effectively removing nearly all diagnostic characteristics of the parent shell.

This project is the first systematic dating of cut shell beads. It was proposed that cut shell bead production have begun from *Conus* sp. disc beads. Eventually, the manufacturing process improved and evolved into a highly complicated tradition creating cut shell beads. One possible example of this improved process is the shell *ling-ling-o*, an artefact type strongly associated with the Neolithic cultures.

Two cut shell bead types were selected for systematic dating: a biconical cut shell bead, IV-1998-P-30659, and a barrel cut shell bead, IV-1998-P-36974. These artefacts were both recovered from probable historic or late prehistoric (Metal Age) burial layers at no more than 10-20cm depth from the surface. Intense burial practices have disturbed many contexts, making it difficult to associate many of the small beads found with specific burial contexts. In cemetery sites with multiple intercutting burials and superimposed graves, it is common to find small artefacts and small bones intermingled and dispersed within the profile both vertically and horizontally. The bioturbation common in both cemeteries and cave platforms/rockshelters adds to this effect. While there are shell beads that were directly associated with burials (as ornaments preserved on or immediately beside the skeleton), I chose to study these two beads instead of those others because of their typology.

3.1.3. *Sample Selection for AMS dating: Microperforated Cut Shell Beads*

Two of the beads were identified as new bead types, described and named as Microperforated Cut Shell Beads (MCSB). Manufacturing techniques used for the MCSB are similar to cut shell bead technology with many improvements. It shows the first strong evidence of metal tool use for shell artefacts (Basilia 2012). The maximum diameter of the bead perforation is only 2 mm. The perforation itself has straight walls suggesting that the drill bit used was needle-like. This kind of perforation can only be achieved with a specialized metal drill bit.

3.1.4. *Sample Selection for AMS dating: Shell Specimens*

Two shell specimens from secured burial contexts also underwent AMS dating. These specimens were grave goods from two burials at 100 cm to 70 cm from the surface. The specimens appear to be unworked. The state of the fragments did not lend itself to further investigation. However, both specimens showed red staining that was suspected to be hematite powder.

3.2. ***Sample Selection for SEM/EDX Analysis***

Due to budgetary constraints, only 4 artefacts were chosen for SEM/EDX analysis. The results of SEM analysis of these shell beads can be found in Basilia (2012). All artefacts selected exhibited

signs of residues that were suspected to be decorative appliqués. Additional treatment of beads has been documented for inorganic beads and bead subtypes. For example, acid etching of carnelian/agate beads became a common practice for additional decoration on beads. If analysis confirms the presence of appliqués, it would be the first documentation of this technique on shell ornaments.

3.2.1. *Sample Selection for SEM/EDX Analysis: Shell Pendant and MCSB*

Conus sp. disc bead (IV-1998-P-20221) and the MCSB (IV-1998-P-30274) showed traces of two residue types. Initially, light microscopy was conducted to verify residue. A significant proportion of the MCSB in the collection was revealed to have residue (Basilia 2012). The *Conus* sp. disc bead appeared to exhibit similar residue types from that of the MCSB. This is a significant observation since the bead appears in older contexts (Lewis *et al*. 2008). The MCSB selected, on the other hand, showed a unique residue type that does not appear on other MCSB in the assemblage.

3.2.2. *Sample Selection for SEM/EDX Analysis: Melo sp. fragments*

Melo sp. were harvested by ancient people, and their shells were used as utilitarian vessels (Vitales 2006). The finished artefacts are referred to as bailer shells. Some bailer shells are hypothesized to have been used for ceremonial purposes. These are highly decorated and crafted into ornate shapes. Some *Melo* sp. shells were crafted into shell scoops, complete with a decorated handle also made from the body of the shell.

Highly decorated shell scoops have yet to be recovered from Ille, but a number of anthropogenically modified *Melo* sp. shells were recovered associated with the inhumation burial phases (Vitales 2009). Residue was noted from initial analysis. In order to clarify the nature of the residue, two *Melo* sp. fragments (IV-1998-P-35347 and IV-1998-P-20192) from burial contexts were selected for analysis.

3.3. *Sample Selection for GC-MS*

Similar to the previous analytical method, budget constraints limited the number of samples to four specimens. Three of the samples were formal artefacts, with two cut shell beads and one *Conus* sp. disc. A fragment of the *Melo* sp. shell was also selected since the specimen surface was covered by red residue. It was suspected that the *Melo* sp. residues were hematite powder.

3.3.1. *Sample Selection for GC-MS: Cut Shell Beads*

The cut shell beads selected were flat and barrel types. These are the most common types of cut shell beads in the assemblage. Characterization of the residues on these shells may shed light on the history of the appliqués. Based on the morphology of the cut shell beads, they should have preceded the MCSB. However, the similarity between the two residues suggests the same technology for appliqués was used. The samples were selected in order to test this hypothesis.

3.3.2. *Sample Selection for GC-MS: Conus sp. disc pendant and Melo sp. specimen*

Conus sp. disc bead IV-1998-P-20221 was the only artefact that went through all of the analytical procedures in this project. A portion of the adhering residues was scraped off using a scalpel. This disc bead was intended to serve as a control to determine the best analytical procedure to characterize residue material.

The *Melo* sp. specimen was sent to the GC-MS laboratory together with the cut shell beads to determine if there are any commonalities between residues on the different shell artefacts. The residue on all was reddish in hue and appears to be amorphous, almost powder-like. This is in contrast to the other residue, which appears film-like.

4. METHODOLOGY: ANALYTICAL METHODS

The project uses four analytical methods to characterize the shell artefacts and specimens. One method is to address absolute dating, while the rest are focused on characterization of adhering residues..

4.1. *Accelerator Mass Spectrometry*

Accelerator Mass Spectrometry is a type of mass spectrometry that is used to isolate stable isotopes. It is different from other mass spectrometry in that it is able to ionize atoms at a high kinetic rate. This enables isolation of difficult isotopes like C14 from C12. It is especially useful for dating calcium carbonate derivatives, in particular bones and shells. The calibration used for the project was MARINE13, as recommended for marine based materials. Other dates used for the study are also recalibrated using INTERCAL13, used for non-marine samples.

The first use of AMS for Philippine shell materials was by Szabó (2009) with shell artefacts from Leta-Leta and Ille. Though there have been many Philippine artefacts dated using AMS (see Pawlik *et al*. 2015), this project is the second study that dates shell ornaments.

Two AMS laboratories collaborated with the project: the NSF-Arizona Accelerator Mass Spectometry Laboratory at the University of Arizona, and Waikato Radiocarbon Laboratory at the University of Waikato. Samples sent to NSF-Arizona AMS Laboratory were run using a National Electrostatics Corporation (NEC) Pelletron 3.5MV AMS machine. The artefacts dated by the NSF lab were, . a cut shell bead (IV-1998-P-35090), a *Tridacna* sp. shell (IV-1998-P-46120) and a *Conus* sp. disc bead (IV-1998-P-46121). Samples sent to Waikato were run using what protocol (&cite), and were: IV-1998-P-46112 and IV-1998-P-36974 (two cut shell beads), IV-1998-P-20221/1 (a *Conus* sp. disc bead), and IV-1998-P-20204 (a *Turbo mamoratus* fragment). Laboratory protocols from Arizona and Waikato were followed without any significant changes. There was no negative feedback on sample stability when prepared for testing, e.g. regarding crystallization.

4.2. *Scanning Electron Microscopy with Energy-Dispersive X-ray Spectroscopy*

SEM is a type of electron microscopy that uses electron beams to scan the sample. The data collected are represented in a 2D image. Elemental analysis at a nano-level is possible by coupling with an EDX. The EDX reads the amount of atoms excited by an electron beam. Atoms are excited at different levels allowing recognition of different elements.

SEM/EDX was conducted locally at NASAT Ltd. laboratories in Alabang, Muntinlupa, Philippines. The machine used was a Hitachi Tabletop SEM TM-1000. SEM was used to describe the morphological characteristics of the adhering residues. The micrographs served as a guide to pinpoint specific areas on the material. As per standards, three points were taken along a line to confirm results. Some points were deliberately placed on the shell surface to eliminate the carbon and oxygen content from the results.

Prior to testing, the specimens were cleaned using an ultrasonic cleaning tank. Other pre-treatments were unnecessary for the test, such as gold sputtering. An advantage of the SEM/EDX method is its non-destructive capabilities. This is the only non-destructive analytical method of the project.

4.3. *Gas Chromatography and Mass Spectrometry*

GC-MS combines gas chromatography and mass spectrometry to be able to identify the chemical composition of a sample. Gas chromatography is a type of chemical analysis that separates compounds that vaporizes without decomposing. Mass spectrometry is used to identify the elements by ionizing atoms. This method is regarded as highly effective for chemical characterization.

Four samples were run by the Archaeological Chemistries Laboratory, Department of Archaeology, University of York. The laboratory used an Agilent 7690A GC that is coupled to an Agilent 5975C MSD. The four samples were cleaned using an ultrasonic cleaning tank. The *Conus* sp. bead (IV-1998-20221) could not be sent as is for GC-MS, since the sample was chosen to be sent to Waikato for AMS dating. Instead of sending the artefact, a less than one gram sample of the adhering residue was scraped off using a scalpel. The residue sample was placed in a centrifuge tube for transport. The remaining artefacts were wrapped in aluminum foil after drying to avoid any future contamination.

5. RESULTS

5.1. *AMS Dating*

Results from both laboratories show a long development of shell bead manufacturing. The delta R used for the study was based on calibrations by Southon (2002) and was run through GIVE the name and year – Website is for the bibliography:. Both 1 sigma and 2 sigma are presented. 1 sigma dates are taken at 63.8% probability, while 2 sigma are taken at 95.4% probability (see AMS results below). The probabilities are for the whole of the sample at 100%, except for 1 sigma of IV-1998-P-20204 at 0.96 and 0.04 and IV-1998-P-46121 at 0.992 and 0.008. The inconsistencies in the readings are typical for all artefacts dated by AMS and largely depend on sample integrity.

The oldest dates come from IV-1998-P-46121, a *Conus* sp. disc bead, and IV-1998-P-20204 at 2908 BC and 2848 BC . It appears that both samples exhibited inconsistencies in calibration. It is possible that, although neither is old shell, the depositional environment surrounding both samples had promoted rapid crystallization. All molluscs will eventually crystallize. The rapidity and nature of crystallization is based on the burial environment. Other molluscan artefacts in the Ille site also showed signs of degradation, such as the mollusc shell lingling-o.

Morphological and chemical degradation of shells is rapid. Once the creature expires, degradation is immediate. The first to degrade is the protein layer on top of the shell microstructures. This is the layer that gives the shells a lustrous sheen. The next is the degradation of the pigment, which gives the shell its vibrant color. Although fading occurs, the shell is able to retain its deeper colors. Chemical changes within the shell follow. The proteins binding the microstructure begin to decay as soon as the creature dies, but it can be promoted through heat treatment. Once shell undergoes high heat, the shell becomes brittle. Aragonite rods can begin to disassemble and the surface of the shell becomes powdery. This is not conducive for working shells into artefacts, and is disregarded by study. However, the inconsistencies exhibited by the two old specimens are unfortunate but expected.

Perhaps the rapidity of degradation can be attributed to the surface residue. The metal content of the residues may have aided in the rapid decay seen on the samples. However, there are no other reports of degradation on other shell artefacts with the same time depth. Szabó and Ramirez (2009) did not mention any inconsistencies and neither did O'Connor (2005).

Both artefact and specimen belong to the same context, Burial 727. The dates are separated by about 60 years (with error margins). It may be possible to infer the date of the burial using the AMS dates of the two artefacts.

Samples IV-1998-P-20221 and IV-1998-P46120, from Burial 874 are a *Conus* sp. disc and a *Tridacna* sp. specimen. Both are also suspected to have been deposited as grave goods. The difference between the absolute dates is significantly greater than for artefacts of Burial 727. The younger artefact is the Tridacna? specimen. Although this suggests an ‘heirloom’ effect, wherein artefacts are kept in use for multiple generations, this merits further investigation. One or other of the artefacts may also be intrusive – which one had a better context in relation to the skeleton?

The other shell beads have more straightforward results with different forms occurring at different times separated by a hundred years per bead type.

5.2. SEM/EDX Results

Three points were taken along the surface of the sample with one point as control. Readings on points directed on the residue consistently show traces of Fe at varying amounts.

Although Fe occurs in some plant materials, the Fe readings suggest an inorganic source. Hematite powder is the suggested source of the Fe traces. Ethnologically, hematite is known to have been used in burial rituals, cave art, painting pottery, and other activities.

5.3. *GC-MS Results*

The four samples sent to the laboratory were not viable for GC-MS testing. The nature of the failure of the testing is unclear. However, contamination, high soil acidity and other factors may have contributed to the failed experiment.

DISCUSSION

The project has explored the effectivity of several analytical methods on shell artefact and specimen characterization. Most significantly, dating using AMS is viable and most useful for shell artefacts. Raw material acquisition for shell artefacts tend to be purposeful. Once raw material is acquired, it is processed immediately.

Based on the results of the AMS dating, there seems to have been a long history of bead manufacturing technologies exhibited by the Ille - assemblage. The earliest bead type is the *Conus* sp. disc beads. By 1000 CE, the bead assemblage includes cut shell beads. Later, the MCSB entered the assemblage. Development was not abrupt. The bead manufacturing tradition appears to have evolved organically through time. It may suggest that all beads were involved in a single continuous manufacturing tradition. However, further investigations on style and manufacturing is needed.

Chemical characterization of the residue also provided interesting results. Evidence suggests that the residue is a remnant of appliques. However, only trace elements were collected. The true nature of the residue still needs investigation.

7. CONCLUSIONS

Through systematic dating, the project has proposed a preliminary chronology of bead types from the Ille assemblage. AMS dating had clarified any questions on context,.

The study recommends further analysis on manufacturing techniques in order to better characterize bead manufacturing technology.

Using systematic dating, analytical, and chemical characterization methods, the project aims to reconstruct the chronological sequence of the shell bead manufacturing tradition exhibited by northern Palawan communities. Results of the study show a continuous and developing shell bead manufacturing tradition that implies strong working knowledge of shell as a raw material.

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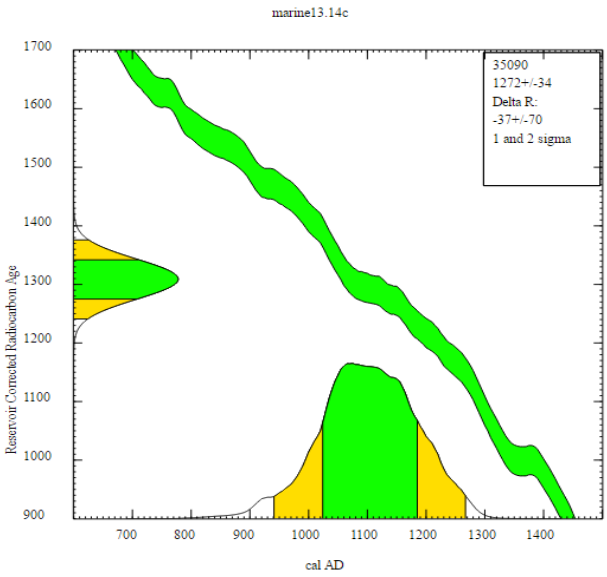
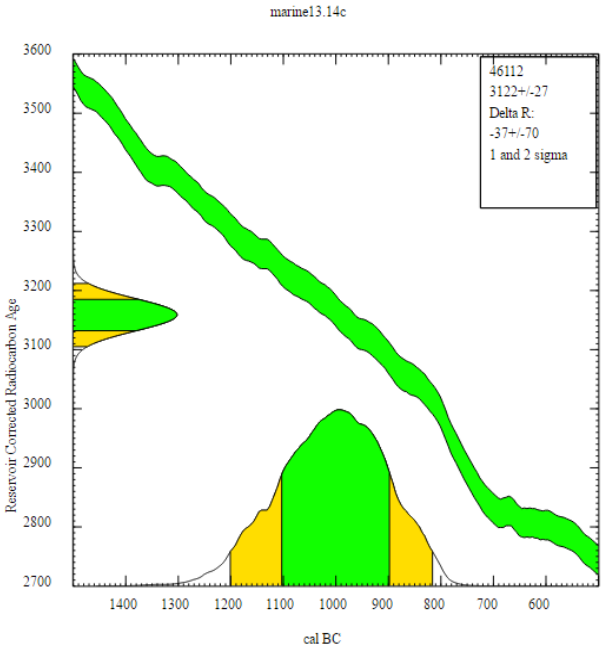
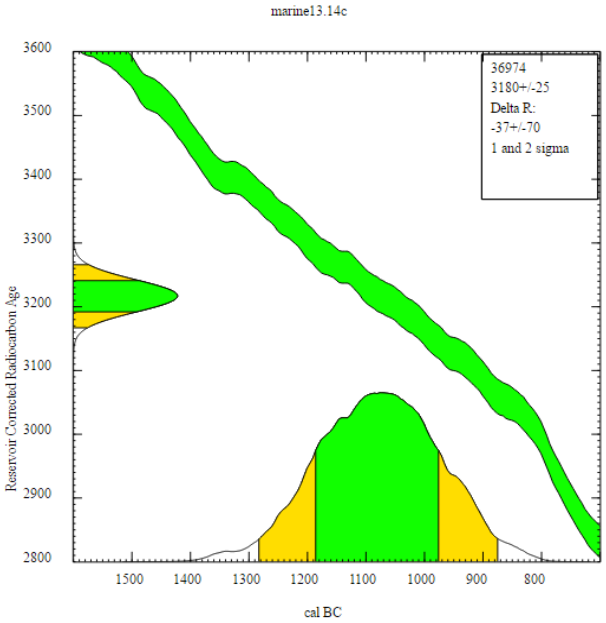
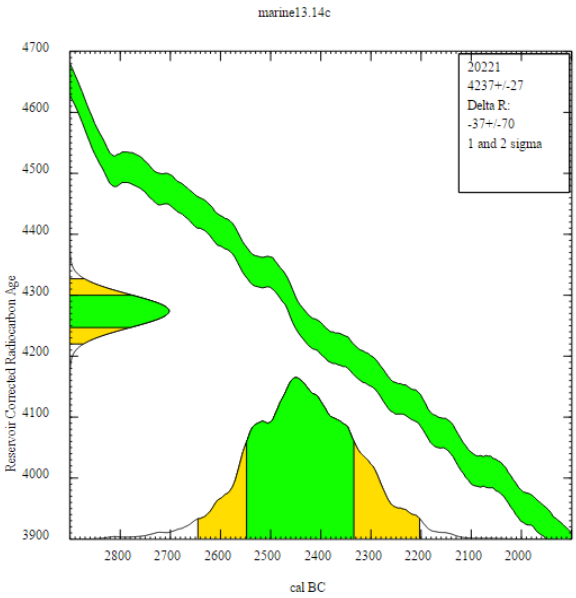
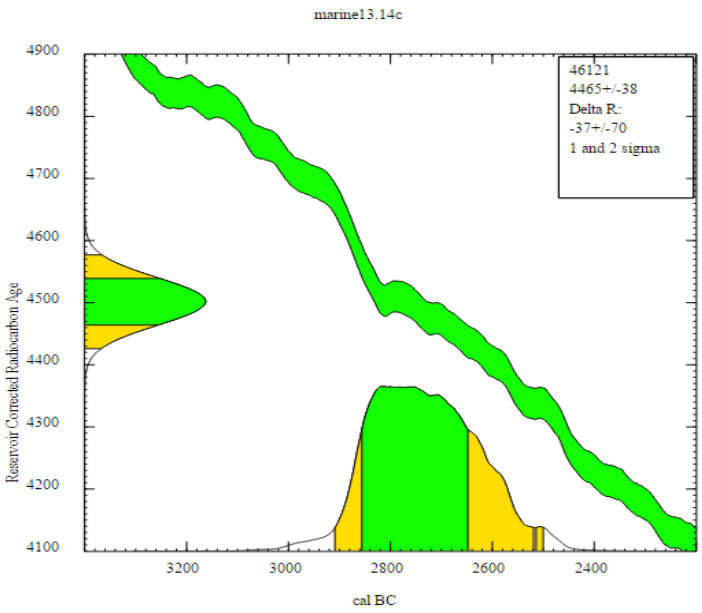
AMS RESULTS







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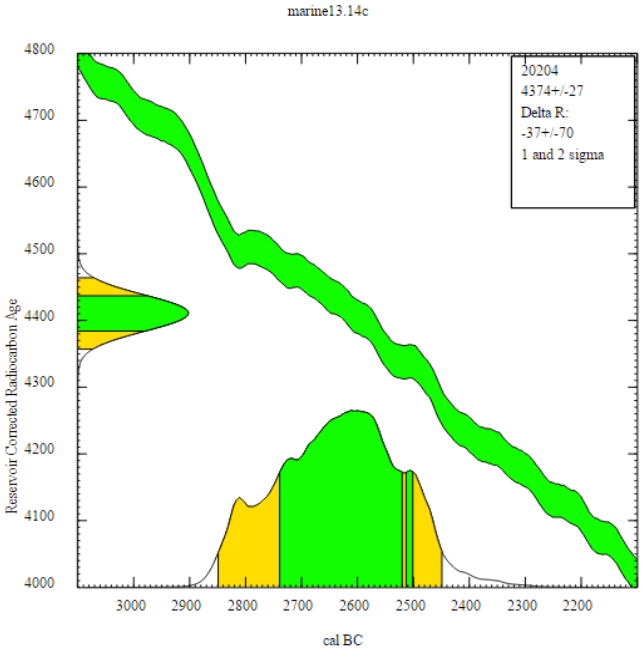
46121
4465+/-38
Delta R:
-37+/-70
1 and 2 sigma
Reservoir Corrected Radiocarbon Age
cal BC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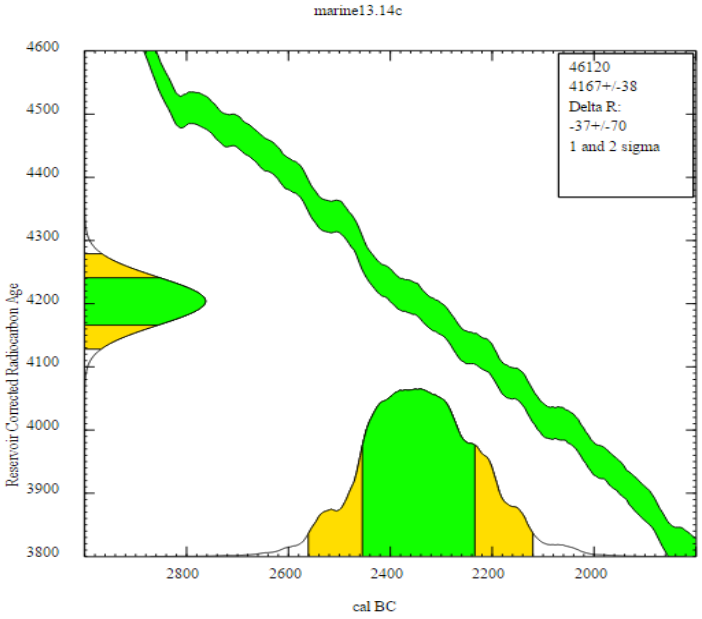
20204
4374+/-27
Delta R:
-37+/-70
1 and 2 sigma
Reservoir Corrected Radiocarbon Age
cal BC


marine13.14c
46120
4167+/-38
Delta R:
-37+/-70
1 and 2 sigma
Reservoir Corrected Radiocarbon Age
cal BC

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