From Early Migrations to Colonial Encounters: Archaeological Research on the Mannar-Jaffna Seaboard, Sri Lanka

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Abstract

The Mannar-Jaffna Seaboard (MJS), a region that played a critical role in Sri Lanka's past, has seen over 150 years of archaeological research. While recent research programs employing advanced scientific techniques have been implemented, significant knowledge gaps persist. A comprehensive approach is needed to synthesize the archaeological past from prehistoric times to the recent colonial period. This review highlights some research questions emerging from previous studies advocating for further exploration. Since the MJS possesses an intertwined history with its coastal settings and resources, this article's main focus is on understudied sites and periods to enhance the knowledge on coastal archaeological studies of Sri Lanka. Revisiting overlooked publications and addressing challenges such as data management and research integrity are crucial to gaining a more complete understanding of this region's complex past. This comprehensive compilation encompasses all known works on the MJS, serving as an essential resource for future researchers to build upon.

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Introduction

The Mannar-Jaffna Seaboard (MJS), a crossroads between India and Sri Lanka, has played a vital role in the ancient Indian Ocean world (Figure. 1). It has served as a gateway for cultural exchange and as a potential land bridge during periods of lowered sea levels. Archaeological surface surveys in the 1860s and a published research history dating to 1887 CE, indicate archaeological interest in the region spanning over 150 years (Nevill, 1887b). However, archaeological exploration in the MJS has been sporadic and uneven, hindering a comprehensive understanding of the region's past. While specific sites and artifact types have received considerable attention, others have been overlooked, hindering the construction of a comprehensive regional database. This review highlights major findings within specific timeframes and sites, emphasizing the necessity of a multidisciplinary approach, integrating insights from diverse specialties, crucial for achieving a more holistic understanding of the region's complex past.

Maritime archaeological sites, particularly those on islands, offer valuable insights into past coastal societies, migration patterns, economies, navigation, trade, and commerce (Boivin et al., 2013; Erlandson & Rick, 2008; Flemming et al., 2003; Mellars, 2006; Oppenheimer, 2009; Petraglia et al., 2010; Ray, 2003). Studies in semi-arid environments like MJS (Figure. 1) can inform and benefit present-day coastal communities facing similar challenges. Promisingly, the last decade, marked by the conclusion of civil unrest in Sri Lanka (1983-2009), has witnessed a resurgence of archaeological research in the MJS, with a growing emphasis on interdisciplinary collaboration. However, certain materials and foundational early works remain under-examined, leaving significant gaps in our knowledge. Even early studies have faced scepticism due to the notion that the researchers worked whenever they could secure permissions, funding, and time, as exemplified by the case of Mantai (Reade, 2009).

This work offers a condensed overview of current archaeological knowledge, highlighting the chronological development and areas for further research, enabling researchers to build on established findings rather than retracing earlier steps. While recent years have seen renewed research, significant gaps remain, necessitating a re-examination of existing materials and early works. The present work begins with a summary of the established chronology, followed by a focused examination of the prehistoric period and its remaining questions. A brief historiography of the region sets the stage for a detailed exploration of historical archaeology, highlighting the prevalent site-centric approach and the under-representation of faunal remains compared to ceramics, beads, and metal artifacts. This review covers four phases, from the Late Pleistocene to the colonial period. Coastal sites are significantly impacted by the sea and influence the shaping of local cultures. For this reason, the MJS region is examined along its coastline to demonstrate the impact of the seaboard on cultural trends. However, the inland boundaries are not firmly established and are limited to sites near the coast (<10km).

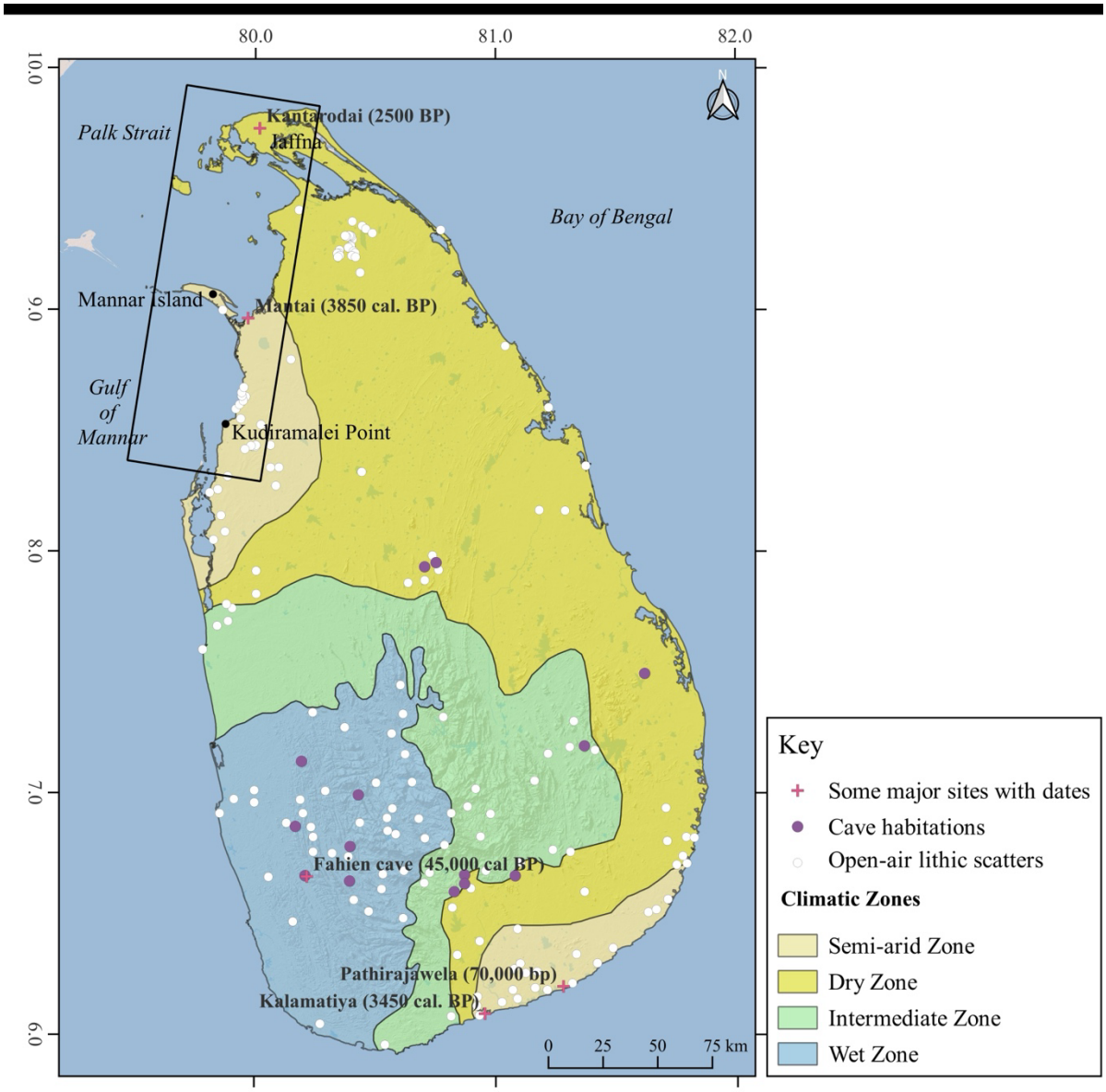

Figure 1. Study area and the climatic zones of Sri Lanka, with selected sites mentioned in the text. The rectangle marks the MJS region examined in this work. Semi-arid to dry tropical climatic conditions characterize the northern-northwestern Sri Lanka's coastal plains corresponding to the MJS. (eco-zone data from Panabokke, 1996).

Understanding the MJS archaeological record necessitates recognizing the critical influence of its dynamic climate, both in the annual cycle and over long-term changes. This unique environmental context has shaped settlement patterns, resource availability, and coastal dynamics, deeply intertwining climate with the region's cultural and historical development. The region experiences a mean annual precipitation of approximately 1,000 mm, with the maximum rainfall occurring during the second inter-monsoon and northeast monsoon periods (September to February). The relative humidity is around 80%, with an average temperature of 28°C. The area also experiences an average wind speed of 10±4 km/h, with warm and dry fall winds occasionally exceeding 10 km/h, contributing to the region's arid conditions (Climatic data from 1890-2022, Mannar Meteorological Station, Department of Meteorology of Sri Lanka).

Summary of Known Work and Scientific Dating

Reviewing approximately 130 publications on the archaeology of the MJS reveals a major focus on Mantai, which boasts over 50 publications. While the Mantai site in the Mannar area and Kantharodai in the Jaffna area are well-documented, other sites lack detailed studies (Figure. 4B and Table 1). This uneven research distribution, with a focus on centres while diverging from studies of settlement patterns, highlights the need for further exploration to understand the region's history.

Archaeological sites in the MJS are mainly open-air settlements. Due to water scarcity and arid conditions, continuous occupation is rare other than in settlements such as Mantai and Kantharodai, which exhibit continuous occupation sequences. Radiocarbon dating based on charcoal, seeds, and shells, provides a general chronology. The Mantai dates range from 2360-2220 cal BCE to 715-967 cal CE (31 radiocarbon dates, primarily on seeds and charcoal) (Ambers et al., 1987, 1991; S. U. Deraniyagala, 1992; Introne et al., 1979; Kingwell-Banham et al., 2018). The Kantharodai radiocarbon dates range from 500 to 100 cal BCE (31 radiocarbon dates, primarily on seeds and charcoal) (Helwing et al., 2022; Murphy et al., 2018; Ragupathy, 1987). The Giant's Tank (Yoda Wewa of Mannar) iron and crucible steel production site dates to 66-222 cal CE and 428-609 cal CE (five charcoal dates) (Wijepala et al., 2022b) (Table 2). Surface finds date the Arnakallu (Aruakkalu) shell midden to 1108-904 BCE (one shell date) (Deraniyagala, 1992), and a potsherd from Kudiramalai to 1080 CE (thermoluminescence dating) (Reuter et al., 2020) (Figures. 2 and 4B). While charcoal and seeds have proven reliable for radiocarbon dating, faunal remains present challenges due to poor preservation, mineralization, and difficulties in collagen extraction (Begley, 1981; Reuter et al., 2020).

Relative dating methods have been employed for the broader Jaffna Peninsula (c. 6th century BCE - 17th century CE) (Ragupathy, 1987), Pomparippu (c. 3rd century BCE - 8th century CE) (Begley, 1981), Kollankanatta (c. 4th-7th centuries CE) (S. U. Deraniyagala, 1972), and Vankalai (c. 11th-12th centuries CE) (Carswell, 1978b). Among these, the Jaffna Peninsula ceramic typology provides the most comprehensive approach by categorizing ceramics into eight types based on form, texture, and origin (Ragupathy, 1987), a typology comparable to other typologies of the island (e.g., Schenk, 2001). Most of this research has repeatedly studied the major settlements to establish the regional, chronological framework and the stratigraphic sequence (e.g., Mantai, Table 1).

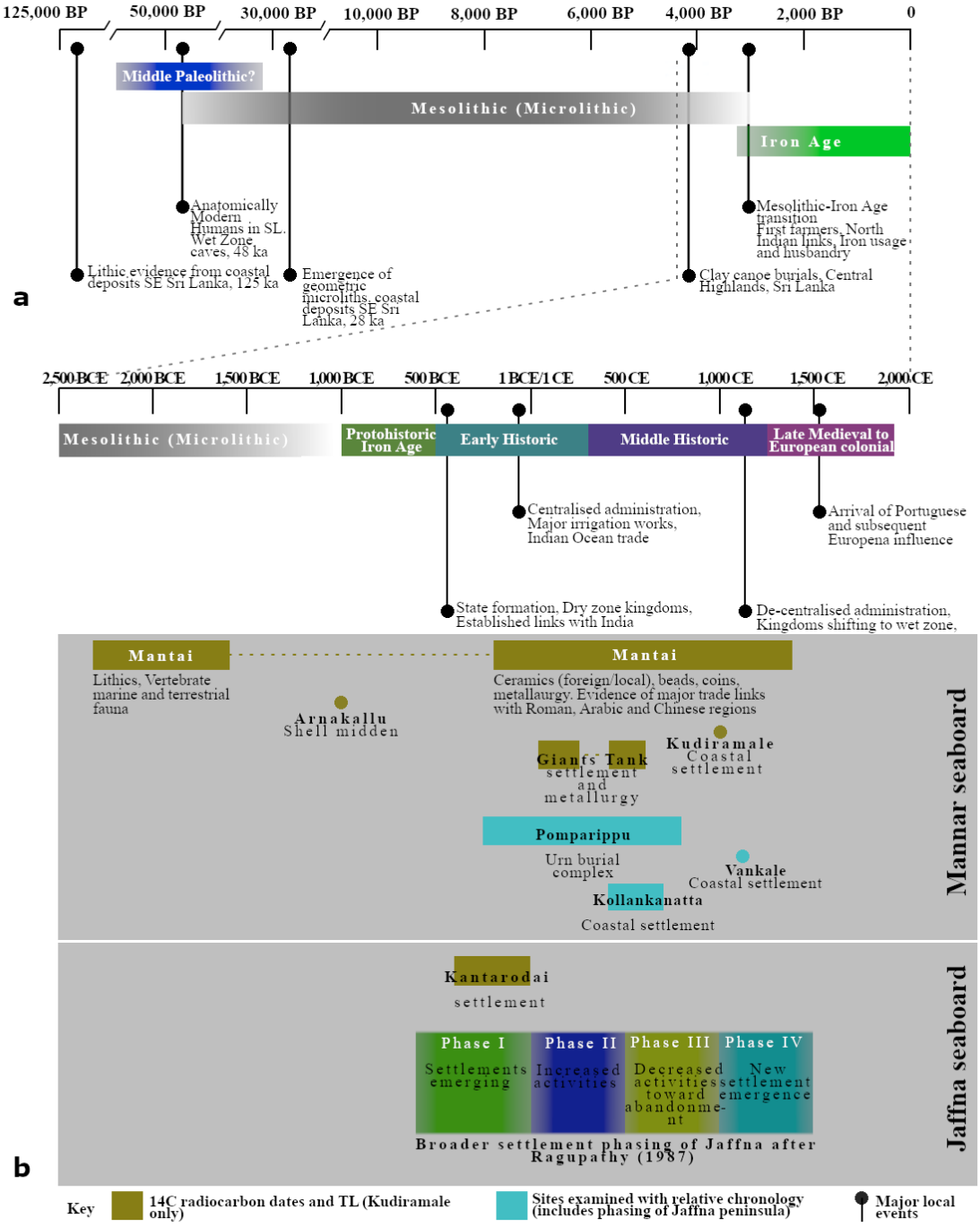

Figure 2. Overview of the timeframe for Sri Lanka and reported chronologies from the Mannar-Jaffna Seaboard (MJS). (a) Broad timeframe spanning 125 ka to the present, illustrating the lack of significant archaeological discoveries until approximately 4,000 BP. (b) Focused timeframe from 4,000 BP to the present, presenting projected chronological data for Mannar and Jaffna separately. (Data sources are provided in the text.)

Sequence of Mantai	No of ^{14}C dates from Mantai	Other sites ^{14}C	TL
Mesolithic (microlithic) (2360 - 1509 cal BCE)	4[a]	1 (possible Iron Age)[d]	0
Mound development phase c. 200 BCE–600 CE	12[b]	2[e]	0
Abandonments, quarrying, and decay, pre-1815 CE	14[c]	3[f]	1 [g]

Table 1. The generalized stratigraphic sequence of Mantai, as proposed by Carswell et al. (2013), with the number of scientific dates yielded from Mantai and other regional sites. The sequence includes references: (a:b:d:-(Deraniyagala, 1992) also (Ambers et al., 1987, 1991; Introne et al., 1979), a:b:c:-(Kingwell-Banham et al., 2018), e:f:- (Wijepala et al., 2022b), g:-(Reuter et al., 2020)

However, the focus has been on the developed cultural trends (e.g., agriculture, animal domestication, and trade) rather than the initial stages of these cultural trends. Additionally, periods after the 10th century CE are often unexplored due to concerns about stratigraphic disturbances (Carswell et al., 2013), which may be a concern across the island's archaeological stratigraphy (see post 9th c. CE phase in Schenk, 2001). This limits our understanding of the MJS up to well-defined historical periods, leaving the earliest and most recent phases largely unknown. Careful stratigraphic control and further investigation of these understudied periods are crucial for a more complete picture of the region's history.

Early Human Dispersals and Dynamic Coastal Landscapes

Despite current evidence suggesting prehistoric habitation dating around the late third millennium BCE, the MJS is vital for understanding early human migration to Sri Lanka. Archaeological and genetic data indicate humans may have arrived in Lanka as early as 48,000 BP, possibly crossing the MJS from the Indian landmass (Langley et al., 2020; N. Perera et al., 2011; Wedage et al., 2019). Although rising sea levels separated the landmasses around 7,000 BP, the exposed continental shelf inevitably facilitated cultural and ecological exchange (Deraniyagala, 1992). The prevailing hypothesis posits that early migrations crossed Adam's Bridge, a series of alluvial sand islands (Deraniyagala, 1992). However, a recent seismic survey by Dubey and colleagues (2023) suggests an alternative scenario with a freshwater reservoir and channels between India and Sri Lanka during MIS 3 (c. 69-29 ka). Although the MJS has the potential to reveal these early human dispersals, such attempts necessitate the re-evaluation of environmental factors influencing early human movement toward the MJS (Figure. 2a).

Prehistoric lithic evidence, crucial for examining hunter-gatherer occupation in the MJS, is available primarily within the exposed basal gravel and red earth formations first documented in the early 20th century (Pole, 1913; P. Sarasin & Sarasin, 1908; Wayland, 1919b). E.J. Wayland first named these formations as paleo-coastal *Plateau Deposits* locally. He attributed the basal gravels to a wet pluvial phase correlating with the Wisconsin glaciation and the red earth to a subsequent dry aeolian phase (Wayland, 1919a, 1919b). S. U. Deraniyagala later termed these

combined units the "*Iranamadu Formation*" (IFm) into a broader region (Figure. 4A). The IFm occurring below 90 meters above sea level provides insights into Late Pleistocene conditions, with gravel beds indicating seasonally fluctuating rainfall and drought, with evidence of massive cyclonic flooding in ancient alluvial plains. The red earth identified as barrier bars and beach dune deposits formed after the Pleistocene wet period suggests a tropical climate (Alwis & Pluth, 1976; Cooray, 1984; Alwis & Panabokke, 1972; Panabokke, 1979; Wayland, 1919a, 1919b). These formations have been dated from 150 ka to 22 ka in southeastern Sri Lanka (Figure. 1) (Abeyratne, 1996; S. U. Deraniyagala, 1992; Singhvi et al., 1986) and 90 ka to recent in South and Southeast India (Jayangondaperumal et al., 2012; Reddy et al., 2013; Vidyasakar et al., 2017). However, a recent study of these deposits at Pathirajawela has proposed a refined chronological framework dated to approximately 25 ka for basal gravels and 14 ka for aeolian sand deposits using Optically Stimulated Luminescence (OSL) (Amano et al., 2024). These findings underscore the need for continued stratigraphic validation within the IFm. Specifically, the relationship between these formations along the northwestern coast and lithics contained in the IFm remains unclear, as the chronostratigraphy of the Mannar deposits has yet to be adequately established.

Additionally, the current landscape of the MJS differs significantly from its Pleistocene configuration. The marine-based chronostratigraphic settings dated 21-38 ka ago from levels at -11 to +14 meters above present sea level are inconsistent with Pleistocene sea levels, complicating the picture (Agrawal et al., 1977; Agrawal & Kusumgar, 1975; Anburaj et al., 2015; Burleigh et al., 1982; Gardner, 1981, 1986; Jayangondaperumal et al., 2012; Reddy et al., 2013; Sarma, 1976, 1978). Evidence of land uplift, fault-bounded depressions, and ridges suggests seismic activity has altered sea floor levels and affected coastal landscapes (P. E. P. Deraniyagala, 1956; S. U. Deraniyagala, 1992; Gamage & Venkatesan, 2020; Katz, 1975; Mahadev et al., 2022; Ramasamy et al., 2011; Resmi et al., 2017; Thanikachalam & Ramachandran, 2009; Vitanage, 1972, 1985). This highlights that future investigations on late Pleistocene human habitations will need multi-proxy approaches to consider complex seismic and isostatic processes on these uplifted landscapes.

The Prehistoric Lithostratigraphy and Technological Uncertainties

The Unresolved Question of the Paleolithic in the IFm

Edward James Wayland, a pioneer in Sri Lankan and Ugandan prehistory, conducted the first extensive study of prehistoric evidence on the uplifted terraces of Mannar (Wayland, 1919a, 1919b, 1926; Wayland & Davies, 1923). Based on surface collections from sites in the Wilpattu wilderness and near the Kal-Aru/Moderagam-Aru estuaries, Wayland described two lithic industries associated with the basal gravel ("Lowland Series"; large lithics) and the red earth ("Highland Series"; small lithics) (Wayland, 1919b). He acknowledged the challenging terrain of the Mannar seaboard but recognized its potential for prehistoric archaeology based on these findings. Wayland's work sparked debate and further investigation. A. M. Hocart (1925b) documented quartz and chert artifacts from Silavathurai to Mullikulam, noting their sources and manufacturing processes, as well as notable geographical limitations of the distribution of lithics, bound within the IFm. On the other hand, F. Sarasin (1926),

studying the Vanniyalaetto (Vedda) hunter-gatherers, questioned the antiquity of Wayland's "Lowland Series," suggesting a later date based on typological and geological comparisons. In response, Wayland (1926) acknowledged the need for more research to refine the understanding of Sri Lanka's Stone Age (Figure. 4A).

Filling this gap, in 1939, Eugene C. Worman revisited Wayland's sites on the Mannar seaboard (Figure. 3). Focusing on small screes (*éboulis* as referred to by Sarasin), exposed formations, and eroded gravels, Worman proposed a revised time frame: "Lower Palaeolithic" for the "Lowland Series" and "Mesolithic" for the "Highland Series", supporting Wayland's initial conclusions (S. U. Deraniyagala, 1992; Satriano, 2021; Worman, n.d.). Unfortunately, Worman's work remains unpublished, limiting further analysis. Subsequent decades saw only surface collections without proper study (P. E. P. Deraniyagala, 1953; Godakumbura, 1965).

A solid basis of Sri Lankan prehistory was laid with S. U. Deraniyagala's extensive work. He developed a lithic typology and examined ecological-geological conditions related to prehistoric settlements (S. U. Deraniyagala, 1984, 1992) (Figures. 1 and 4A). Deraniyagala's focus on microlithic assemblages in Mannar led to identifying potential Middle Palaeolithic sites with Mousterioid traits within the lFm. Recent discussions in South Asian prehistory suggest a transitional "Late Palaeolithic" phase, from the Middle Palaeolithic to the Microlithic around 40-30 ka (Mellars, 2006; Petraglia et al., 2009), potentially applicable to Sri Lanka's lithic findings in basal gravels (Amano et al., 2024). Similarities with non-microlithic traditions in South India (Selvakumar et al., 2012), highlight the importance of understanding Mannar's lithic record, representing remnants of early foragers who potentially shared a landscape with their Indian counterparts. However, limited surface surveys followed Deraniyagala’s initial foundation (Ekanayake et al., 2007; Goonatilake, 2006). This highlights the necessity of further sampling and dating the lithics in Mannar's uplifted terraces for a comprehensive evaluation.

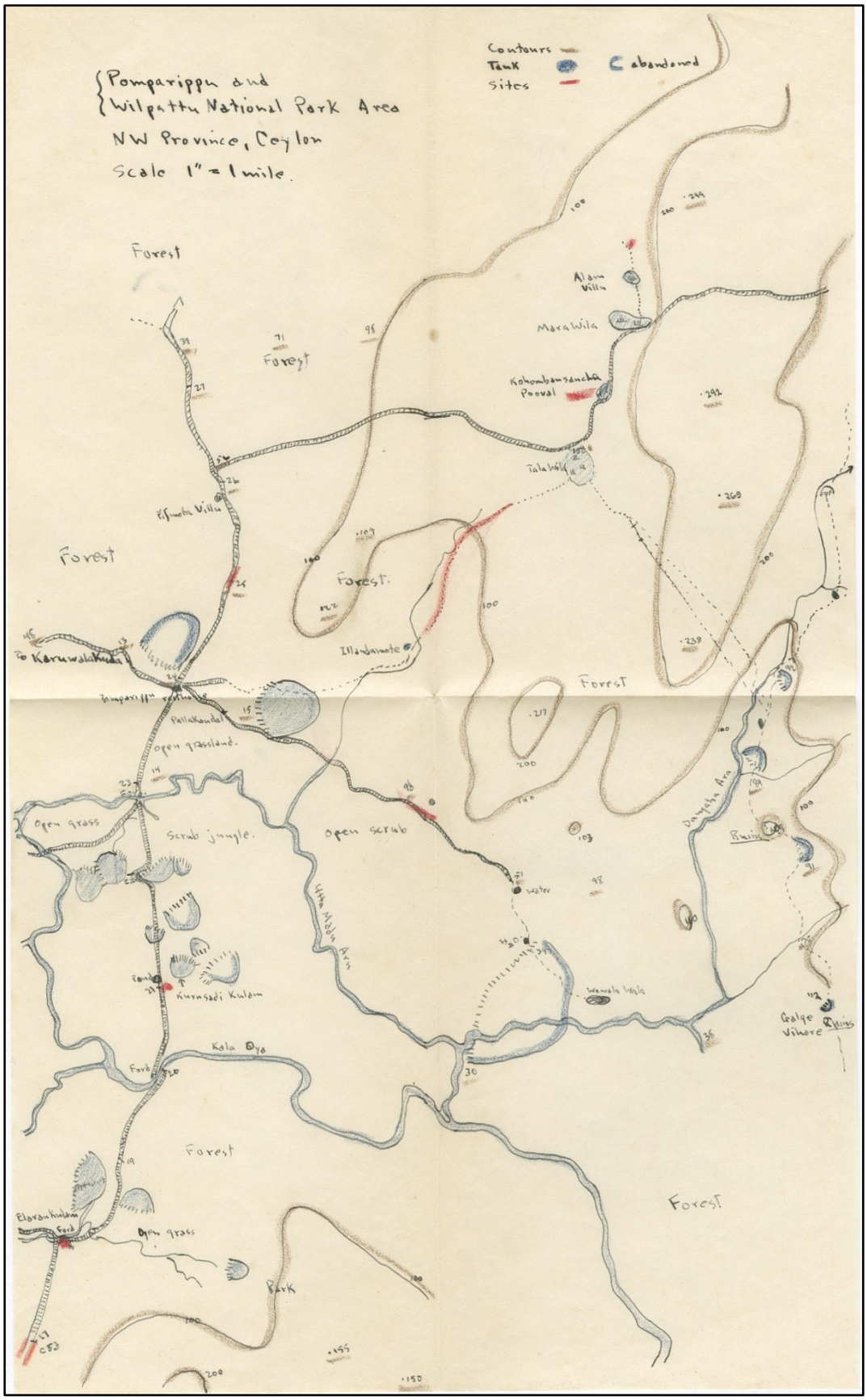

Figure 3. Prehistoric site distribution map by E.C. Worman with marked areas denoting Pomparippu in the Wilpattu National Park. (Courtesy of the Peabody Museum of Archaeology and Ethnology, Harvard University)

Jaffna: Prehistorically Barren?

S.U. Deraniyagala, employing a cultural ecological approach to Sri Lankan prehistory, categorized Mannar (Ecozone A) and Jaffna (Ecozone F) into separate ecozones, emphasizing ecological factors as determinants of prehistoric settlement patterns (Deraniyagala, 1992). He noted that the Mannar coastal region has a higher carrying capacity, while the evidence from further north in Jaffna is debated due to the lack of lithic raw materials and freshwater access (Deraniyagala, 1992). This has sidelined Jaffna in discussions of regional prehistory (Hartley, 1913, p. 120; Ragupathy, 1987; Sarasin, 1926, p. 88). Despite unconfirmed evidence of a potential Acheulian-like industry in the Mayakkai caves of Jaffna (Krishnarajah, 2021), recent excavations found no support (Pers. Comm. B. Helwing, 2022). However, Kantharodai's timeline, dating to the 6th century BCE, suggests a well-adapted community with a long-term presence in Jaffna. Considering local conditions and prehistoric coastal settlement patterns of the mainland (Roberts et al., 2022; Siriwardana & Manusinghe, 2024), it is possible that the early forager settlements of Jaffna could have been located along the coast rather than inland. While Deraniyagala's analysis was mostly based on current ecological conditions, recent studies suggest that different climatic conditions prevailed in these semi-arid to dry regions (Achyuthan, 2022; Mohapatra et al., 2019; Ranasinghe et al., 2013; Veena et al., 2014), calling for a reconsideration of the early views.

Late Holocene Coastal Hunter-gatherers

Although evidence of Late Pleistocene human occupation in the MJS remains uncertain, Deraniyagala's 1982 findings and later studies at Mantai of Mannar provide strong evidence of a Late Holocene microlithic campsite (Figure. 4). Stone artifacts, charcoal, and faunal remains were found 0.9 m below sea level, with radiocarbon dating at ≤ 2360 cal BCE confirming a hunter-gatherer occupation. Marine fauna, including dugongs, turtles, fish, and Turbinella pyrum, further show a higher aquatic resource reliance, indicating an active site with small family groups (Carswell et al., 2013; S. U. Deraniyagala, 1992; Kingwell-Banham et al., 2018).

Shell middens like those at Arnakallu (*Arca granosa* middens) (1108-904 BCE) and Mandakal Aru River (*Ostrea madrasensis* middens) may represent the late Mesolithic (microlithic) or early Iron Age (Deraniyagala, 1992) (Figure 4A). While regional caves lack prehistoric evidence, Deraniyagala's research shows Mannar's appeal to foragers who likely camped on dunes, utilizing diverse food resources from marine, lagoonal, and estuarine habitats (Figure 1). The findings are similar to the midden formations and marine resource consumption during the Late Holocene across the globe (Erlandson, 2001; Rick, 2023).

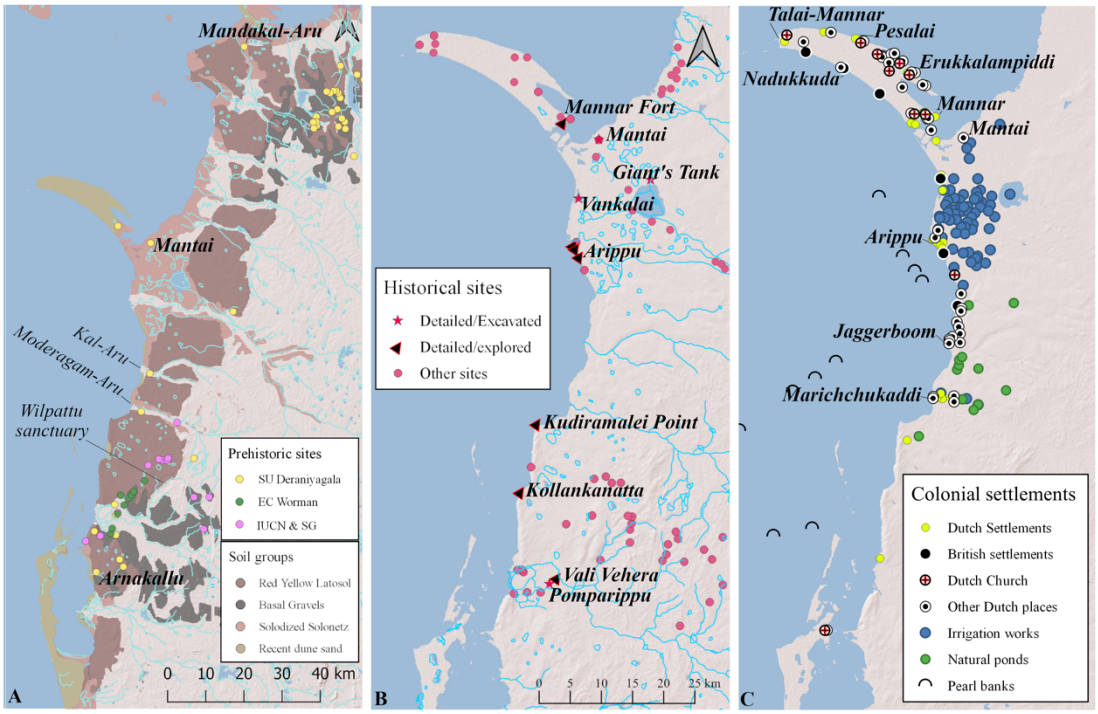

Figure 4. Published sites and locations of Mannar are referred to in the text. A. Prehistoric Sites: Reported by E.C. Worman, S.U. Deraniyagala, IUCN and Sampath Goonatilake (SG). B. Historical Sites: Categorized based on the level of study conducted. C. Dutch and Early British Colonial Settlements: Locations based on archived maps, including various Dutch sites like barracks, elephant kraals, salterns, merchant and slave houses, local rest houses (Ambalam), and temples. Irrigation Works: Depicts rainfed or canal-fed tanks actively used for paddy farming during the pre-20th century. Maps referenced for section C: *Kaart van Ceilon en de kust van Madure* (1625), *Kaart van de oostkust van India en een gedeelte van de westkust van het eiland Ceylon* (1656), *Kaart van het gebied Moesellipatoe* (1719), *Kaart van Ceylon* (1753), *Kaart van het gedeelte van Mantotte en Nanatan te Ceylon.* Light Blue Lines: Indicate river systems and water sources.

From Iron Age Migrants to Historical Archaeology

Archaeological and historical evidence supports the idea that chalcolithic (?)-Iron Age cultural influences from India, from approximately 1000-900 BCE, significantly changed Sri Lanka's culture (S. U. Deraniyagala, 1992; Mendis & Withanachchi, 2017). These changes included shifts to herding and paddy cultivation, introduction of iron and pottery technology, and development of political organizations. The MJS likely served as a key entry point for these transformations.

Pearls and Cotton: A Brief Early History of MJS

The MJS, encompassing the Gulf of Mannar, Adam's Bridge, and Palk Strait, was vital for maritime trade and migration. It was rich in resources like pearls and chank, known as "Salubham" (Sea of Gain) in Tamil (Herdman, 1903) and "Muttakara" (pearl mines) in Sinhala (Figures. 1 and 4C).

Native settlements like *Sirisawattu Pura* existed near Mannar as early as the 5th century BCE. The first region of Sri Lanka to be encountered by external contact was the MJS. Legends in *Mahavamsa* recount Kuweni, a local princess associated with spinning cotton, as encountering Vijaya, an Indian migrant/conqueror prince, upon his arrival in Sri Lanka, marking the island's first recorded interaction with peninsular Indian settlers. These early Indian communities established coastal villages like Uruwelagama and Upatissagama (Geiger, 1912). Uruwela, founded in the early 5th century BCE at the Kala Oya estuary, produced large pearls, as large as great myrobalan fruits (*Terminalia chebula*). The MJS's economic development during the mid-to-late Anuradhapura period was driven by the high demand for regional products, particularly pearls (Francis, 2002; Imam, 2003; Schoff, 1912), supplemented by transparent stones (possibly glass, refer *Seehalawaththupakaranaya* on Sri Lankan glass products), muslins, tortoise shells, cotton (Pieters, 1908; Queyroz, 1992), kochlious (*Turbinella pyrum* shells) (Schoff, 1912, p. 251; Tennent, 1861, p. 371), elephants, local products from the other regions of the island and imported items. Ancient Greek and Roman texts from the 3rd century BCE offer insights into the region's early history, including references to the Palk Strait and seafaring practices. Ptolemy referred to a 'river' between India and Sri Lanka, known as *Sinus Orgalieus*, which is the Palk Strait (Nicholas, 1961; Strabo, 1930, p. 21). Megasthenes, a Greek ambassador to India, described diverse wildlife, aquatic fauna, and coastal-riverine settlements adapted to floods caused by heavy rains (McCrindle, 1877, pp. 169–171, 204). Ptolemy's *Geographike Hyphegesis* shows seafaring knowledge of the northwestern coast from the 1st century CE (Schoff, 1912, p. 47). Roman contact with Sri Lanka began around 50 CE through the port of Hippuros, which is believed to be Kudiramalai. Pliny the Elder noted that the Lankans' (*Taprobanian*s) focus on fishing, turtle hunting, and pearl production, with limited navigation periods (Pliny, 1855) may also refer to the Mannar region.

It is in this context that Mantai, mentioned as a market town *Marallo* of *Sielediba* by Cosmos Indicopleustes (Schoff, 1912, p. 251; Tennent, 1861, p. 371), turned out to be a prominent settlement and trade hub. Indo-Roman trade during the pre-Christian era concentrated around Mantai/Mahatittha in the Mannar channel, possibly indicating a Roman merchant colony, *Modutti Emporium* (Dilke, 1987; McCrindle, 1885). At the same time, Mannar Island, also known as 'Mahapatun-ju' in Sigiri Graffiti (6th century CE) and 'Manār Mandali' in Ibn Batuta's travel records, emerged as a settlement. Even after losing the central role of Mantai, Mannar Island remained a strategic exchange center for colonial traffic and import-export trade (Percival, 1803, p. 53). The region thrived with fertile soils and irrigation systems, including the 5th century CE Giant's Tank.

Being a part of the Anuradhapura kingdom since the 4th century BCE, the MJS was governed through administrative units like the 'western division' Pacchimapassa or Pacchimadesa) and 'northern division' (Uttarapassa) (Nicholas, 1963). The subsequent economic development led to the establishment of the '*District on the sea coast*' and the pearling province (*Rattam Muttakara*), by the 10th century CE, protected by a naval fleet led by a regional army leader (Dandanayaka) and numerous coastal forts (Geiger, 1912, 1929, p. 61:36-40, 70:62-65). However, governance of the region shifted among various kingdoms after India's invasive efforts since the 12th century CE, leading to neglect of infrastructure and economic decline (Barbosa, 1866;

Geiger, 1930; S. Lee, 1829; Masefield, 1908; Gunasekara, 1900; Rasanayagam, 1984).

Jaffna's ancient settlement-port network dates to the 5th century BCE, with Nagadeepa as a significant center housing a vihara and a bustling city center. The region was crucial for the Naga tribe, with Nallur as their capital. Historical records highlight key port locations of Jambukola Patuna Port and Uratota (in Kayts Island). Ancient chronicles including *Sihalawaththupakaranya* and *Rasavahinya* reference Ariyala at Nagadipa, in the present Velanai (Kayts) Island linked to Ariyalatissa's acts of generosity. He offered alms to monks from Mandapadeepa (Mandaitivu) and Puvagudeepa (Pungudutivu) and thus left an indelible mark in the history of Nagadeepa (Dhammanandi, 1959). Another notable historical work is *Manimekhalai*, which further mentions Jaffna and its islands (Aiyangar, 1928). These developments likely peaked in the early middle historical period, yet the northern ports gradually declined in strategic importance around the mid to late Anuradhapura period. This decline persisted until their resurgence in the 10th century CE during the South Indian invasions. However, the factors contributing to this period of reduced activity remain poorly understood.

The European colonial period in the Mannar-Jaffna Seaboard (MJS) under the Portuguese, Dutch, and British administrations offer rich opportunities for studying socio-economic, administrative, and environmental interactions. They shaped the region's history, and specifically, cotton and pearls became two major commodities under the Dutch (Refer to the Memoirs of Julius van Gollenesse, Jan Schreuder, and Joan Gideon Loten, Dutch governors of Sri Lanka for the pearl-cotton conflicts they encountered). Social aspects, such as the use of slavery for agricultural projects like cotton farming and tank repairs (e.g., Mantai tanks), highlight colonial exploitation and workforce control. Economic factors, including establishing various industries including cotton, pearl and chank fisheries, saltern, choya root (Indian Madder - *Oldenlandia umbellate*) dye production, tobacco industries, cattle and elephant reshipping (Baldaeus, 1672, p. 792; Boake, 1888; Brodie, 1853; G. Lee, 1847; Pieters, 1908; Queyroz, 1992, p. 719). Administrative practices, such as price controls, taxation of pearls, and regulation of caste-based labor (e.g., Parawa and Carrias caste in fisheries), reveal colonial governance strategies and their impacts on local communities. Environmental manipulation, through irrigation repairs (e.g., Giant’s Tank), agricultural expansion, and marine resource harvesting (Hornell, 1905; Pieris, 1992; Queyroz, 1992; Pieters, 1908; Fernando, 2021), underscores the transformation of the MJS's landscape under colonial systems. These themes demonstrate the region’s pivotal role in maritime trade, resource extraction, and socio-economic restructuring during the European colonial era. Despite these documented economic interventions of the European colonial powers in the MJS, our archaeological understanding of broader socio-economic considerations for the region remains limited.

Broader Historical Archaeological Approaches

Although historical accounts offer valuable context, archaeological research is essential for a deeper understanding. Until recently, historical studies in the MJS lacked a comprehensive and interconnected approach on a macro-regional scale. Despite the importance of coastal exploration in the Mannar seaboard, only two such efforts have occurred, with only one site (Vankalai) reported, despite explorations by Hocart (Hocart, 1924a, p. 12) and (Carswell, 1978b, p. 27) along the coast. Road networks are also crucial, connecting settlements and enabling the reconstruction of settlement patterns. Researchers like Uragoda (1982) and Vidanapathirana (2011, 2012) have noted the significance of settlement connections. Further, several key works can be identified as significantly enhancing the knowledge about the region's historical archaeology.

P. Ragupathy's 1987 research on Jaffna's settlement history provides a foundational framework for further studies. By documenting numerous archaeological sites and outlining ceramic typology, Ragupathy establishes that early Jaffna settlements were heavily influenced by the South Indian Megalithic culture and shaped by local resources and trade. His identification of five settlement phases in northern Sri Lanka (Figure 2) aligns with subsequent research. Future studies could expand this framework by examining periods before the 6th century BCE and after the middle historical period extending beyond Ragupathy's scope. P. Vidanapathirana's (2012) research focuses on settlement patterns in the Malvatu Oya and Kala Oya Basins. It utilized Central Place Theory and stream order analysis to explore the relationship between settlements, resources, and the Anuradhapura capital. The study's comprehensive analysis of archaeological, inscriptional, historical documents, and ethnographic data within the geographical context provides a strong foundation for understanding historical patterns in the Mannar region. This approach offers insights into settlement patterns and provides a testable model for identifying potential archaeological sites through surface surveys. W. Bohingamuwa's (2017b, 2017a) study examines Sri Lanka's external trade from the first millennium BCE to the second millennium CE using excavated material from Mantai, Kantharodai, and Kirinda. It shows that trade patterns changed over time and location, with early connections to India expanding later. It emphasizes the importance of internal technological and industrial advancements and distribution networks in driving external trade. The overall study was a part of the Sealinks Project, which was a large multidisciplinary project studying the earliest maritime connections around the Indian Ocean. It involves collaboration with individuals and institutions to understand the first steps towards globalization in the Indian Ocean through archaeology, genetics, linguistics, and palaeoenvironmental studies. As a component of this project, an archaeobotanical analysis of materials from Mantai and Kantharodai was conducted (Allue et al., 2021; Kingwell-Banham et al., 2018).

These macro-level studies offer a broad perspective on historical settlement patterns and trade in the region. However, site-focused studies, which are more numerous, provide detailed insights into specific locations. Hence, this review consolidates these works, offering a unified resource for future researchers to consider these diverse findings collectively. The following sections describe each site in the region, emphasizing key themes that warrant further investigation.

Mantai / Mahatittha Urban Centre

Mantai, a 31.5 ha ancient urban settlement mound located on the strategically important Mannar seaboard, has evidence of the late Mesolithic (Microlithic) period. From the 5th century BCE to the recent past, Mantai has played a key role in the ancient Indian Ocean trade (Carswell & Prickett, 1984).

The Development of Studies:

Portuguese and Dutch colonists initially plundered and damaged the mound to obtain materials for constructing the Mannar Fort (Pieris, 1992, p. 175). Alexander Johnston later identified it as an 11th-15th century CE emporium and warehouse (Johnston, 1827, pp. 539, 545). However, the mound's identification has been debated for a long time. Various identifications, including a goldsmith's factory (Casie-Chitty, 1834, p. 158), Uruwela settlement (Nevill, 1887c, 1887a), Tiruketheeswaram temple-city (Rama-Nathan, 1887; Vaithianathan, 1957), and Magana Nagara (D. G. A. Perera, 1991) have been conclusively declined. The early identification of the mound as the ancient Mahatittha, proposed in the late 19th century (Boake, 1887; Nevill, 1887b), has gained widespread acceptance over the course of the 20th century and remains generally accepted today (B. J. Perera, 1993; Carswell et al., 2013).

In 1887, two works were published that marked the beginning of the archaeological research in the region. One was conducted by W.J.S. Boake, who excavated trenches and identified Chinese porcelains in Mantai (Boake, 1887). This study has been considered the first comprehensive study on Mantai and has been republished in Carswell and colleagues' 2013 publication. While acknowledging Boake's work, attention to a highly significant work on Mantai, also published in 1887 has been overlooked. It is Hugh Nevill's study focusing on the analysis of surface findings provided by Henry Pole in 1866 and later by F. Fairlie. Through his analysis of these surface findings, Nevill made groundbreaking discoveries about the site's history, revealing its existence as a great emporium from 500 BCE to 1580 CE. Moreover, his research on local ceramics, glass products, glaze, and stoneware indicated transition forms between Persian or Saracenic and Chinese/Japanese wares. Nevill provided a critical edge to his final publication, evident when comparing Boake's '*fragments of chatties'* vs. Nevill's *'Mantotte earthenware*' (Nevill, 1887b). Regrettably, the analysis with illustrations that cover over two decades of work by Nevill was not recognized before the present synthesis.

Following these early studies, various researchers have studied the Mantai mound using diverse approaches. John Still's 1907 excavation focused on sand hills and coins rather than the main mound (Still in Bell, 1911, p. 1674). On the other hand, A.M. Hocart's 1926 systematic approach emphasized the mound's potential for accurate stratification for chronological sequences using pottery and bead typologies (Hocart, 1925b, 1925a). However, the task was never accomplished due to his health issues (Winzer, 1927). Nevill, Still, and Hocart stand as pioneers who recognized the potential of surface collections, peripheral surveys, and detailed excavations, respectively.

The discovery of a 2nd-century CE female skeleton in 1952 initiated the first multidisciplinary research at Mantai (Chanmugam & Jayawardene, 1954). This excavation also reported various ceramics, including Arretine, Roman, Arabic, and Chinese wares (Paranavitana, 1952, p. G-33; Sanmuganathan, 1957). Subsequent

excavations in the 1960s by William Willett and the 1970s by Raja de Silva remain unpublished (Carswell & Prickett, 1984, p. 36).

Growing archaeological interest in Mantai attracted Hindu devotees, who established the Thiruketheeswaram Temple Restoration Society in 1952 and revitalized the Thiruketheeswaram Hindu temple (Vaithianathan, 1957). As noted by Carswell (refer to his personal experience in Carswell, 1981a, which also elaborates the archaeological camp life at Mantai), this led to the local community becoming a key stakeholder in archaeological work.

Despite a growing body of research, Mantai's global recognition remained limited (see Wheeler, 1954) until John Carswell's 1974 assessment highlighted its trade-related significance, leading to extensive multidisciplinary research (Carswell, 1981b, 2017). Carswell's survey of 29 ancient ports of the island provided context for focusing on Mantai (Carswell, 1976, 1978a, 1981b, 2014). An international team excavated the site from 1980-84 to establish the chronology and Near East-Indian-Chinese trade links (Carswell, 1985a; Carswell et al., 2013; Carswell & Prickett, 1984; Prickett, 2003). However, political unrest halted the project, forcing the team to abandon the site (Carswell, 1996) with the findings published only decades later in the acclaimed *Mantai: City by the Sea* (2013). This publication successfully sequences settlement phases from the 2nd century BCE to the 11th century CE and provides analytical data on various artifacts (Carswell et al., 2013; Shinde, 1987). Although overlooking some earlier studies (e.g. Nevill, 1887b), this provides a comprehensive overview of Mantai's history. This study background of Mantai is undeniably intertwined with the complexities of analyzing a site that has faced repeated disturbances and has, at times, been insufficiently documented.

Earthenware, Beads, Glass and Metal:

Ceramic studies at Mantai illuminated its international trade and role in the east-western sea route. Two early works, one by Hugh Nevill and another by Petr Charvat, are not included in Carswell et al. (2013)'s review. Nevill's work offers a detailed analysis based on texture, finishing, and form types suggested as coastal variants produced by regional potters (Nevill, 1987b). Charvat identified various imported Indian, Near Eastern Sassanian, Samarran, and Chinese wares dating from the 2nd century BCE to the 13th century CE (Charvat, 1993), possibly based on Raja de Silva's excavation materials. The 1980-84 excavations unearthed numerous ceramic artifacts, including Indian and Chinese imports, discussed in several publications (Carswell, 1981b, 1985a, 1985b; Carswell et al., 2013; Carswell, 2014; Ford et al., 2005; Jayasingha, 2011; Mohanty, 2013; R. Silva, 1985; R. Silva & Bouzek, 2003). Recent research at Mantai has focused on determining the Chinese provenance of ceramics, contributing to a refined chronological sequence and understanding of historical relations (Pers. Comm. M. Katugampola, 2021). Despite these studies, it should be noted that Islamic and Sassanid imported ceramics still require further analysis, as the only work on these is from Charvat (1993).

Further, only a small section of the local ware was analyzed in the 1990s, with the rest being stored at Anuradhapura Archaeological Excavation and Data Analysis Centre (Carswell et al., 2013, p. 191). As a result, no local typology is available for the Mantai excavations, a necessity identified earlier (See Hocart, 1930, p. 90). Therefore, it is imperative to conduct further analyses of these stored materials to gain more insight into Sri Lanka's international trade links and its role in the east-western sea

trade route. The study of ceramics from Mantai will be critical in providing valuable insights.

Mantai beads are some of the earliest products from Indo-Pacific bead trading (Francis, 1989, p. 5, 2002, p. 31). Traders brought them to Africa, India, Thailand, Vietnam, and Malaysia. Mantai was known for making local red/orange lapidary disk beads and Middle Eastern-type black or dark blue base color with white, yellow, or red striped beads (Francis, 2002, pp. 96, 136). A bead typology and bead drilling/finishing techniques of Mantai are described by Gorelik & Gwinnett (2013). Other related products, such as imported glass products (Carboni, 2013), glass bangles (Francis, 2013), and iron and copper smithing (Juleff, 2013) have been analyzed by other specialists. They need to be better contextualized in the broader Indian Ocean trade.

Faunal and Floral Remains:

The faunal remains from Mantai have been mentioned starting from early studies (Boake, 1887; Hocart, 1925a; Winzer, 1927). A complete analysis of a diverse range of wild, domesticated, and marine fauna consumed by the people of Mantai has been conducted only by Karunarathne (2013). His analysis focused on the vertebrate fauna by analyzing the Minimum Number of Individuals (MNI) and the taxonomic lists of the species. He proposed that the reliance on marine fauna during the prehistoric hunter-gatherer phase had shifted to using wild fauna during historical periods as a sign of wild animals coming to farming lands (Karunaratne, 2013). Joglekar (2013) re-examined Karunaratne's analysis of materials from 1980-84 excavations and analyzed the excavation materials stored by Raja de Silva from 1972-77 excavations, emphasizing mollusks. However, missing contextual information from the stored artifacts negatively impacted Joglekar's work (Joglekar, 2013). The faunal studies also revealed that Mantai was a significant chank manufacturing locale, with large quantities of carved chank artifacts dating to the 2nd century CE (Bell, 1911; Boake, 1887; Carswell & Prickett, 1984; Hornell, 1914; Shinde, 1987; Waddington & Kenoyer, 2013).

The paleoethnobotanical analysis carried out by M.D. Kajale, based on the 1984 excavations at Mantai, revealed significant information about the subsistence and industrial economic activities of this coastal port settlement (Kajale, 1990). The collaborative research ventures post-civil war further refined the chronological framework and revealed the use of various plant products associated with the spice trade, including the first archaeological evidence of cloves (*Sysgium aromaticum*) in Sri Lanka (Allue et al., 2021; Bohingamuwa, 2017a, 2017b; Kingwell-Banham et al., 2018). Recent studies are proving to be more promising, with a multidisciplinary approach to research the social-ecological conditions in Mantai.

Inscriptions and Chronicles:

Mantai was a trading center that brought together diverse cultures, as seen in inscriptions in Sinhala, Tamil, and Arabic Kufic (Brodie, 1855; Carswell & Prickett, 1984; P. E. P. Deraniyagala, 1957b; Indrapala, 1963, 1971, 2013; Paranavitana, 1928; Pathmanathan, 1997). Unfortunately, many of these inscription-bearing pillars lack contextual information. For example, John Still discovered six inscriptions dating from the 4th to the 12th century CE, on pillars that had been used to repair the *Sinna Odaippu* breach of the Giant's Tank (Bell, 1911, p. 1675). Numerous inscriptions reported during the colonial era were removed from their original locations. However,

along with historical sources such as the *Mahavamsa* and *Kokila Sandesa* (Koel Messenger), these inscriptions contribute to the discussion of the historical value of Mantai (Bohingamuwa, 2017a; Indrapala, 2013; Kiribamune, 2013; Nicholas, 1963; B. J. Perera, 1957; Rasanayagam, 1957).

Other Major Sites in the MJS

Apart from Mantai, there are other site-centric studies that could pave the way for broader research approaches, expanding our knowledge and enabling more sophisticated questions. Settlements like Pomparippu, Kudiramalai, Vankalai, Mantai, and Kantharodai have gained prominence, enabling our understanding of protohistoric and later developments (refer Figure. 4B).

Pomparippu and Wilpattu Sanctuary:

Pomparippu, situated within the Wilpattu Sanctuary, has been known for its ruins since the mid-19th century, as Barrow (1857, p. 120) reported. A significant protohistoric urn burial complex was discovered 6km inland, and based on ceramic analysis, this burial complex dates to the 3rd century BCE (P. E. P. Deraniyagala, 1958, p. 13). Evidence also points to an associated settlement from the 3rd century CE. Based on an 8th-century CE inscription (Anon, 1956) and historical sources (Brohier, 1929; Geiger, 1912, pp. 58, 189 ft. nt. 2; Hocart, 1924a, p. 12; Nevill, 1887c), it has been suggested that the region could be the ancient historical Uruwela settlement, established in the 5th century BCE.

Several small-scale excavations were conducted in the burial ground at Pomparippu (Anon, 1956, p. 14; P. E. P. Deraniyagala, 1957a, p. 8, 1958, pp. 16–17; Godakumbura, 1965, p. 24, 1967, p. G-94; Hocart, 1924b, pp. 50–51; Sitramplam, 1990, p. 264). Following Deraniyagala's detailed 1958 excavation, a few small pots were analyzed to find food residues, but the results were inconclusive (Anon, 1956, p. 14).

Vimala Begley's 1970 study (from Pennsylvanian University) at Pomparippu aimed to investigate cultural transitions during the Mesolithic (late microlithic) and Early Historical periods, focusing on cultural-commercial parallels between India and Sri Lanka. The study uncovered 14 urn burials containing over 23 individuals and various artifacts including copper and iron items, stone tools, beads, and terracotta artifacts, representing a proto-historic culture with diverse techno-cultural inputs (Begley, 1967, 1973, 1981; Jayawickrema, 1972). Despite broader methodological and analytical interests in dental remains (Lukacs, 1973; Lukacs & Kennedy, 1981), other descriptions were limited to ceramics. Therefore, Pomparippu remains a unique settlement that needs to be fully understood in its expanse, agency, and chronology.

As several explorations have reported, the Wilpattu National Park, Sri Lanka's most significant natural reserve boasts many other prehistoric and archaeological sites. These sites include prehistoric, protohistoric, and historic sites and irrigation work (Ekanayake et al., 2007, p. 131; Goonatilake, 2006; IUCN, 2006). Several other regional burial complexes have also been reported; yet site recording is limited due to a lack of further detailed studies (Seneviratna, 1984, pp. 245, 247; Sitramplam, 1990).

Kudiramalai/ Kollankanatta:

Evidence of an extensive settlement area distributed along the coast from Kudiramalai to Kollankanatta in Wilpattu has attracted significant attention. R.L. Brohier documented stratified remains visible in its eroded coastal cliff sections, with ceramics dated to c. 50 BCE. The site, potentially identified as *Hippurus*, where a group of Romans arrived, as Pliny mentioned, was linked to the pearl fishery industry (Pliny, 1855; Brohier, 1929). S. Kiribamune proposed the settlement could be a harbor from the 1st century BCE to the 7th century CE (Kiribamune, 2013, p. 41). P.E.P. Deraniyagala's 1938 small excavation found faunal remains and evidence of the chank industry. John Carswell did another excavation and stated, *'….*(I) *stored artifacts in a base archaeological camp in the jungle'* (Carswell, 1978a, p. 26)*.* However, the publication or whereabouts of these artifacts is unknown. Siran Deraniyagala's brief exploration data was published along with a typology of cultural remains collected from three locations from the mid to late Anuradhapura period (S. U. Deraniyagala, 1972). However, some reported ceramic types will need to be re-evaluated as Grooved Rim Ware may be datable to a recent period rather than its suggested early dates. Numerous Dutch records states that an outpost at Kudiramalai (Figure 4C) could be linked with Deraniyagala's findings. Also, the documented lore of the submerged coasts will need to be assessed with any archaeological examination. Recently, Kudiramalai surface findings were dated to 1080 (by TL) using a potsherd (Reuter et al., 2020). These sites across the Wilpattu region offer a promising foundation for constructing a comprehensive techno- cultural and chronological sequence of the area, shedding light on cultural transitions, trade networks, and socio-economic developments from the protohistoric to historical periods. However, studies in this region are hindered by the challenges of dense wilderness, limited accessibility, and poor visibility, which have left much of its archaeological potential untapped.

Giant's Tank Settlement:

Recent site-specific studies at a settlement near Giant's Tank of Mannar have provided conclusive evidence of a network of inland villages connected to Mantai and other regional urban/sub-urban centers through iron smelting and crucible steel production around the 1st-8th centuries CE). Based on the findings, W.M.T.B Wijepala has focused on integrating scientific and localized approaches in regional archaeology. X-ray fluorescence (XRF) analysis of soil and slag samples from Mannar's metallurgy site to reveal localization. The study aimed to trace the archaeological and geochemical relationship and has revealed some crucial insights into the unique metal processing technology through soil chemistry analysis (Hiroaki et al., 2022; Wijepala et al., 2022a, 2022b, 2023). Extending the scope of such multi-faceted studies will provide valuable insights into ancient metal production of Asian regions (Schoff, 1915) and demonstrate the potential of scientific analysis to enhance our understanding of local archaeological contexts.

Vankalai:

John Carswell explored a medieval settlement in the dunes near Vankalai Lagoon in 1974. In 1977, he excavated the site, hoping to establish a sequence of imported Islamic and Chinese ceramics and local ware (Anon, 1979; Brown, 1979; Carswell, 1978b, 1981b). This short-lived village settlement, dating to the early 12th

century CE, led Carswell to suggest its ceramic typology could be used to date other sites, making it potentially more valuable than Mantai for detailed study (Brown, 1979; Carswell, 1978b, p. 136; Carswell & Prickett, 1984, p. 19). Despite his interest in further analysis, some crucial findings (e.g., shells) were lost during post-analytical collaborations. However, considering the annual reports of the Oriental Institute, the University of Chicago, and his lectures, unpublished data may still exist.

Jaffna Peninsula and Islands:

A comprehensive review of Jaffna's archaeological past is necessary, as this review is limited due to my exclusion of inaccessible Tamil publications, leading to a biased review. Early studies focused on the site distribution (Pieris, 1919; Pieris & Rasanayagam, 1917), later shifting to Kantharodai, since identified as an early urban settlement emerging around the 4th century BCE (Begley, 1967, 1973; Godakumbura, 1968a, 1968b; Pieris, 1919; Pieris & Rasanayagam, 1917). Begley's subsequent analysis of the findings, including radiocarbon studies, was conducted in 1983 and 1984, and these dates are available in Ragupathy's 1987 publication. Her study data is available at the University of Pennsylvania: Penn Museum Archives under the Ceylon (Sri Lanka) Proto-History Project Collection title (Pers. Comm. A. Glazier, 2017). The published data from this early research on Kantharodai, along with the artifacts stored from those studies at the Archaeological Excavation and Data Analysis Centre in Anuradhapura, exhibit certain discrepancies that must be carefully considered in any archaeological study (Pers. Comm. N. Dissanayake, 2024). Recent research based on faunal and floral remains revealed aspects of the lifestyle of the Kantharodai occupants' development and decline over centuries (Allue et al., 2021; Helwing et al., 2022; Murphy et al., 2018). Any researcher aspiring to work at Kantharodai or any other site at Jaffna must fully understand community interests, settlement patterns influenced by the local climate, paleo-coastal geomorphology, and local soil settings. Several studies focus on Jaffna's ports and forts, emphasizing foreign ceramics and heritage management (Carswell, 1985a, 1985b; Gunawardhana, 2022; Ragupathy, 1987). The islands associated with Jaffna also contain a rich archaeological record, yet little work has been carried out (e.g., Devendra, 1969). Though less commercially important than Mantai, these ports served as landing points for South Indian invaders and their archaeological remains, including ceramics, dot the coastline. Furthermore, the rich collection at the Jaffna Museum offers an opportunity for researchers to analyze the assemblage, most of which remains unpublished.

European Colonial Era Sites:

Tombstones and colonial remains offer research potential (Lewis, 1906; Nicholas, 1963). The remnant landmarks, including forts, churches, watchtowers, beacons, mosques, Kovils, and temples, are significant sites listed by the Coast Conservation Department (Prematilleke, 1989, pp. 223–234) (Figure. 4C). The unique Doric Bungalow at Arippu, built in c. 1804, is worthy of mention (Prematilleke, 1989; Uragoda, 1975; Wisumperuma, 2005). However, few studies focus on these landmarks or Dutch forts and maps (Nelson & de Silva, 2004; Paranawitana & de Silva, 2002). The strategic value of regional ports regarding cultural transmission has also been the subject of studies (Brohier, 1929; S. U. Deraniyagala, 1972; Kiribamune, 2013; Ray, 1989, 2003; Weerakkody, 1985). Beyond these studies on architectural remains, knowledge gaps persist about the region's unique socio-ecological

conditions and complex resource usage patterns, such as industrialized pearl fisheries, cotton farming, elephant kraals, salterns, and choya root productions under European colonial rule.

Magana and Other Ancient Settlements:

Magana-nakara (also known as Margana and Bhu-Mangana) is an ancient coastal settlement that has been mentioned in various historical texts and inscriptions dating to at least the 2nd century BCE (Brodie, 1855; Codrington, 1920; Dhammanandi, 1959; Divyāvadāna, 1886). According to Nicholas, it is believed to be the buried remains of a settlement located at the Mouth of Moderagam Aru to Mullikulam. However, it has not been correctly identified and located so far (Nicholas, 1963, pp. 81, 153). Attempts have been made to identify other ancient settlements, such as Sirisavatthu Pura and Tammanna Nuwara, by using historical and linguistic methods (Casie-Chitty, 1834, p. 208; Nevill, 1887c, p. 161, 1887a, p. 42). It is important to note that regional folklore also references settlements, palaces, and people such as Kuveni and Alliyasarani, as well as massive coastal submergence events described in the Rajavaliya (Gunasekara, 1900). These topics should be considered and explored more thoroughly in future archaeological interpretations.

From Oversights to Insights: Refining MJS Research

Archaeological research on Sri Lanka's Mannar-Jaffna seaboard (MJS) spans 150 years, yet significant gaps persist in our understanding of this unique region. These gaps include the unexplained presence of Middle Palaeolithic lithic traits within Pleistocene coastal deposits, the absence of confirmed prehistoric habitations on the Jaffna peninsula and its associated islands, and the limited evidence of early settlements from the protohistoric Iron Age transition. Additionally, the settlement patterns following the decline of Mantai as a major port and the region’s colonial remains remain underexplored. The influence of regional resources such as pearl and chank fisheries, marine fisheries, and the bead and metal industries on developing settlement patterns, particularly in conjunction with agrarian settlements, also requires further investigation. Moreover, the region's ceramics lack a proper typology, and research into the socio-ecological conditions at Mantai remains limited.

While such broad questions persist, research in this region has been hindered by issues such as poor communication among researchers, inadequate data storage and documentation, and challenges related to accessibility, visibility, infrastructure, human resources, and security. Therefore, it is imperative to refine previous studies' objectives, questions, and materials for situating the existing knowledge base and effectively integrating new data. Another critical concern for researchers is ensuring research integrity and proper post-analytical artifact storage, both of which have been neglected in many studies.

Many studies conducted so far invite us to re-evaluate their archaeological provenance. While the previous sections offer an overview of the existing research, I will focus on a single example to underscore the importance of in-depth analysis. The prehistoric layers at Mantai have yielded numerous faunal remains, including skeletal remains of goats. Initially, these remains were thought to have been mixed from upper historical layers with lower prehistoric levels. However, a later evaluation suggested that the assemblage might be *in situ* rather than displaced, based on the quantity and

distribution of the remains (Joglekar, 2013). This finding implies that goats (*Capra hircus*)—a species present in Neolithic South India since 2500 BCE (Fuller et al., 2007; Joshi et al., 2004; P. Silva et al., 2017) may have been introduced to northern Sri Lanka around 1800 BCE. This possibility opens new dimensions in the understanding of Sri Lankan history and peninsular connections. This example highlights the critical need to revisit earlier studies by refining research questions and recontextualizing early findings and interpretations.

Refining research questions based on previous studies is essential to avoid the accumulation of unanalyzed artifacts (e.g., inconclusive studies on major sites). It is crucial to begin exploring less visible sites to address complex questions that are difficult to resolve by studying major sites as stand-alone locales, undermining their complexity. As P. Ragupathy (1987) noted, settlement longevity in these semi-arid regions was often dictated by trade opportunities and access to fresh water through surface ponds or dugout wells. Consequently, many settlements were short-lived, with only a few evolving into major centers that endured for centuries. These smaller settlements, often overlooked in favor of larger, more enduring centers, may provide crucial insights into the earliest phases of occupation and the nuanced ways in which communities adapted to the challenges of the MJS environment. It is time to take well-planned action to address these gaps and achieve a more comprehensive understanding of the MJS region.

Figure 5. Coastal landscape viewed from the uplifted terraces at Kal-Aru, illustrating distinct sedimentary units associated with various phases of human occupation and related archaeological evidence. The image captures the "Desert Tracts" described by E.J. Wayland, revealing underlying Pleistocene calcrete and prehistoric lithic-bearing Iranamadu Formation sediments, overlain by Holocene dune formations containing settlement evidence linked to the historical pearl fishery industry and coastal habitations. (Photo by Thilanka M. Siriwardana).

A maritime and coastal archaeological approach can offer a promising starting point for addressing many of these unresolved questions about the MJS. By focusing on the dynamic interplay between the coastal landscape and human activities, this approach can illuminate patterns of settlement, trade, and resource exploitation (Figure 5). Coastal sites are often at the crossroads of environmental and cultural changes, making them ideal for examining how communities adapted to shifting ecological and economic conditions. The intent of this overview is to help future researchers build a stronger foundation by identifying and tracking existing knowledge gaps to uncover critical insights into the interconnected histories of the region.

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