

# THAMBAPANNI

## The Copper Land

An Archaeological Study  
on Historical Copper Production  
at Seruwila Sri Lanka

*a PGIAR publication*



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**An Archaeological Study  
on Historical Copper Production  
at Seruwila Sri Lanka**

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*a* PGIAR publication

*“Thamma bhoomi Rajo puttho  
Thambapanni yatho abh  
so deso chewa deepocha  
thena thannamako abho” (Mahavamsa vii: 41)*

Why this (island) called *Thambapanni*,  
because of the scattered particles in the  
area called *Thamba bhoomi* (copper land) in  
the island, the same region and the entire  
island was named so (by King Vijaya).

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## **Preface**

When Professor Senake Bandaranayake guided me to study Sri Lankan historical bronzes, I had no idea how far I could proceed with this study. Ultimately, the study on Sri Lankan bronzes paved the way for the present research project, entitled "The Ancient Copper Metallurgy in Sri Lanka". This project was a team effort—a multidisciplinary approach in its true sense—which led to its success.

This project was funded by the Postgraduate Institute of Archaeology (PGIAR), University of Kelaniya, Sri Lanka, through its annual research grant scheme. Hence, first of all, I would like to thank the PGIAR for the financial support and other assistance. In this regard, I want to thank Professor Jagath Weerasinghe and Professor Gamini Adikari, the former and present directors of PGIAR, respectively, in particular, and the staff of the library, finance, and administration sections, as well as the Laboratory for Cultural Material Analysis (LCMA). The generous support given by Dr. Senarath Dissanayaka, former Director General of the Department of Archaeology, by giving us permission for the two excavations during this project is also highly appreciated.

There was no archaeological evidence available for the historical copper production in Sri Lanka when this project started. However, the pioneering studies undertaken by Prof. Sudarshan Senaviratne, primarily through historical sources, provided invaluable insights for this project, for which we are grateful to him.

I would also like to thank Professor Jagath Weerasinghe and my colleagues Ranjith Bandara and Prasanna Ranabahu, who always gave their time for lengthy discussions when we needed clarifications. A special thanks also goes to Professor Prishanta Gunawardhana for his participation in the *Ilankaturei* Port site excavation and all his contributions during the excavation. We also owe a world of appreciation to Mr. Medaela, irrigation project officer, *Seruwila*, for his continuous support and enthusiasm for archaeology. His knowledge of the region and his information were absolutely helpful in the fieldwork for the project. A special thank you is also due to Sampath Perera at the LCMA.

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The villagers at *Kawantissapura* and *Seruwila*, especially Sisira, Sarath, and Gamini, deserve a special thank you for their support throughout this project, without which the fieldwork of this project would have been more difficult. A special thanks should also go to Mr. Ananda for his permission to excavate his private home garden, where the copper extraction furnace is located. We are delighted that the experience earned by working on the ancient copper metallurgy project paved the way for a few villagers to join the Central Cultural Fund Project there.

When the PGIAR found it difficult to find funds to print this book due to the current financial situation on the island, Venerable Aludeniye Subodhi Thero, the chief incumbent of the *Seruwila Rajamaha Vihara*, agreed to provide the printing cost. However, ultimately, the Director and the finance division of the PGIAR were able to provide the funding needed. Nevertheless, I would like to record a note of appreciation for the generous support extended by *Nayaka* Thero in that difficult situation.

We would also like to thank our family members, who had a lot of hard times when we were in the field for longer periods.

We would like to dedicate this book to our mentor,  
Professor Senake Bandaranayake, whose vision guided us to the  
subject of metallurgy and the importance of multi-disciplinary  
teamwork in archaeology.

Arjuna Thantilage  
PGIAR -July 2023

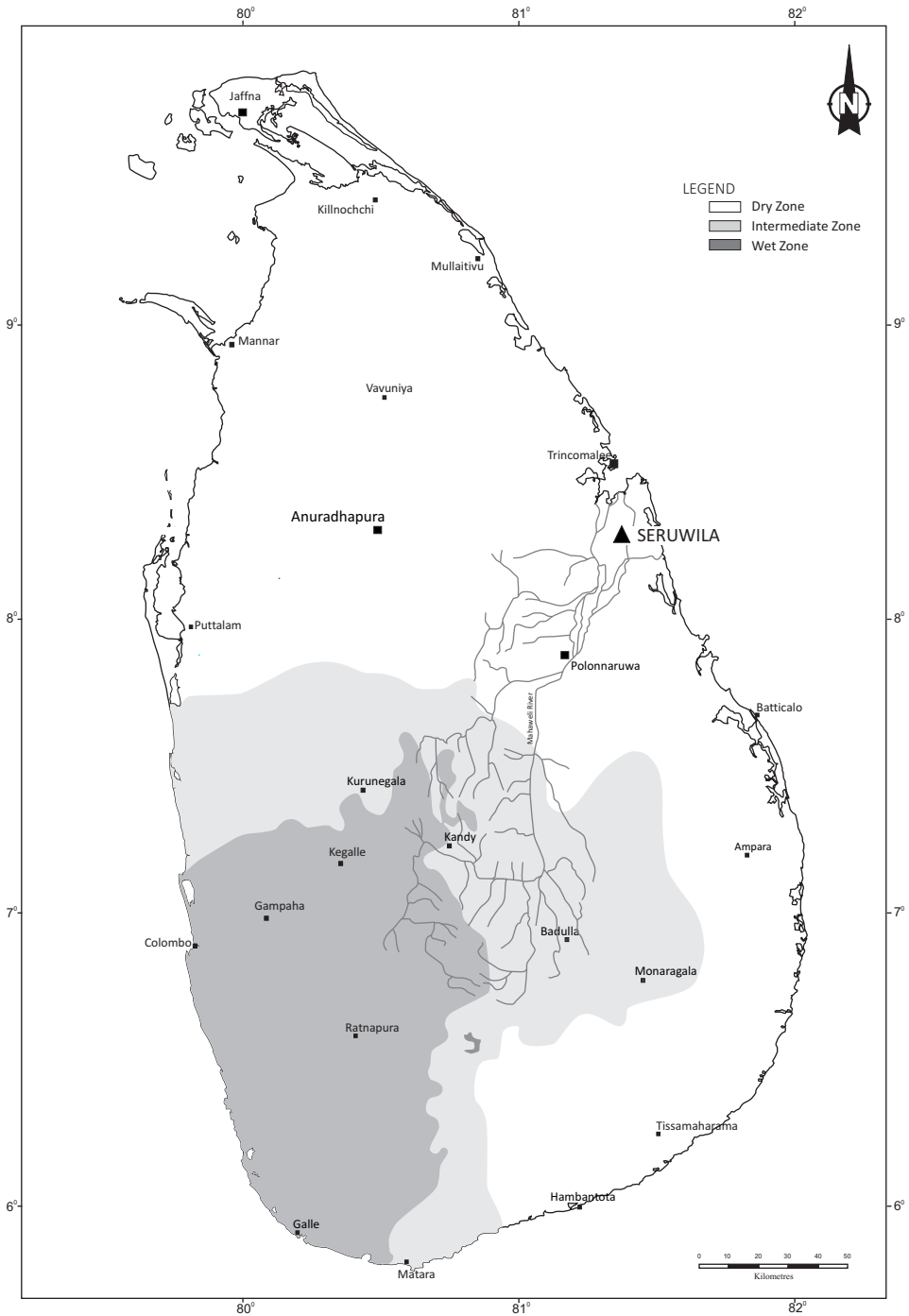
# 1

## INTRODUCTION

### 1.1 Introduction to the study

The information in literary sources on ancient copper production in the island (*Mahavamsa* XXVII:16,17) stimulated the authors to conduct a scientific study during 2002-2007 on Sri Lankan bronze (Thantilage 2007). The study outcomes clearly showed that most of the Sri Lankan historical bronze icons had identical trace elements and stable lead isotopic signatures, indicating their possible common metallurgical history. Further, the study on trace element ratios, cobalt/nickel, and iron/nickel matched the already conducted trace element results of the *Seruwila* Copper Magnetite deposit by the Department of Geological Survey, Sri Lanka (Jayawardhana 1984, Thantilage 2007). These scientific findings compelled a search for archaeological evidence, resulting in local copper production in the *Seruwila* area. Unfortunately, the separatist war situation in that area during that time delayed the research programme. Soon after the conclusion of the separatist war situation, the copper metallurgy project was started with financial support given by the Postgraduate Institute of Archaeology, University of Kelaniya, in 2013. Four field seasons were conducted between 2013 - 2016.

This project aimed at searching for clear archaeological evidence for copper production during historical periods. The aspects of metal production, such as raw materials, mining, ore preparation, copper smelting and technology, the spatial distribution of production sites, and other structural and artifact associations were mainly focused.



Map 1.1: Location of the *Seruwila* at *Mahaweli* delta, right bank of the *Mahaweli* river in the dry zone, the eastern coastal plain of Sri Lanka

This research project also discusses the impact of the ancient copper production industry on the country's historical development.

Through data collected from the explorations and excavations in a four-year archaeological survey in the *Seruwila* region of Sri Lanka (Map 1.1), it was possible archaeologically to establish that by at least from the 4th century BCE, there had existed an extensive copper production industry which fostered international trade. The copper production in the area was carried out on a large industrial scale, using high technology with a vast output. The furnaces used were possibly of indigenous origin. Archaeologically, it was also possible to show that the naturally occurring copper magnetite mineralization in the region had been exploited for copper extraction. The discovery of ancient activities about obtaining the primary copper-bearing mineral chalcopyrite by deep mining, also ore sorting sites where unwanted accompanying minerals with chalcopyrite such as magnetite and quartz were separated; further, discovering places where copper extraction activities were conducted also confirmed that large-scale copper industry existed there.

Such large-scale copper mining and smelting activities indicate the importance of the industry during that time. No evidence has been found in any other place in Sri Lanka showing such organized, intense industrial activity during the same period as early as the 4th century BCE. It is also clear from the findings of surveys that this area would have been industrialized even before the start of the process of state formation in Sri Lanka, and *Seruwila* existed as a vital urban centre in the island as well as in the region. It is also clear that this area would have been detrimental to the process of state formation in the country and in developing its social economic systems and urbanization process. Since the state's primary function was to acquire resources used by different individuals under one administration of kingship, undoubtedly, *Seruwila* would have been a significant main resource area with immense trade potential even during the pre-state period in the island. The epigraphic evidence in the area indicates individuals who appear to have been the leaders of that area before the state formation (See Chapter 4). Archaeological evidence shows continuous habitation from circa the 5th century BCE (even before the establishment of the state) up to the 11th century CE. Further, the present study, entitled "Ancient Copper Metallurgy Project" findings, challenges the general notion that this area was not of much importance on the country's prehistoric occupation. In contrast, our findings reveal that there is a possibility of the region being central to