

Analysis and Study of Coastal Erosion Trends in the Rajamangala Beach Area, Thailand

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Abstract

Rajamangala Beach is a beautiful beach and an important tourist destination in Trang Province, widely recognized for its beauty. It is also a venue for significant activities such as the Underwater Wedding, a famous tradition of Trang. However, the beach is currently facing ongoing coastal erosion issues. The coastline of Rajamangala Beach has been noticeably eroded compared to its past condition.

The objective of this study is to analyze the trends of coastal erosion, whether it is increasing or decreasing, to use the data for dissemination and finding suitable solutions. This information will be shared to raise awareness among the local community, along with collaboration with the residents and relevant agencies to collectively find the most appropriate and effective solution. This aims to reduce the impact of future coastal erosion and preserve the environmental condition of Rajamangala Beach for the future.

Results

Three reference points were established, spaced approximately 200 meters apart, with one special study point identified. Data collection was conducted from September 2012 to July 2021, a period of 8 years and 10 months. The study revealed that during this period, the coastline of Rajamangala Beach changed at all reference points. At reference points 2, 3, and the special study point (Sp), coastal erosion occurred at distances of 9.05 meters, 21.62 meters, and 19.38 meters, respectively, with erosion rates of 1.02 meters, 2.45 meters, and 2.19 meters per year, respectively. It is predicted that in the next 10 years, the coastline will erode by 10.2 meters, 24.5 meters, and 21.9 meters, respectively. In contrast, reference point 1 exhibited a different trend, with the coastline increasing by 14.81 meters, resulting in a shoreline change rate of 1.68 meters per year.

Introduction

Ratchamongkhon Beach is a beautiful beach and a prominent feature of Trang.



Now

It is being eroded to the point where only a small area remains.

Objective

Study the coastal erosion trends at Rajamangala Beach over the next 10 years and explore possible solutions to mitigate the issue.

Hypothesis

The coastline experiences erosion each year, influenced by both natural and social factors.

Methodology

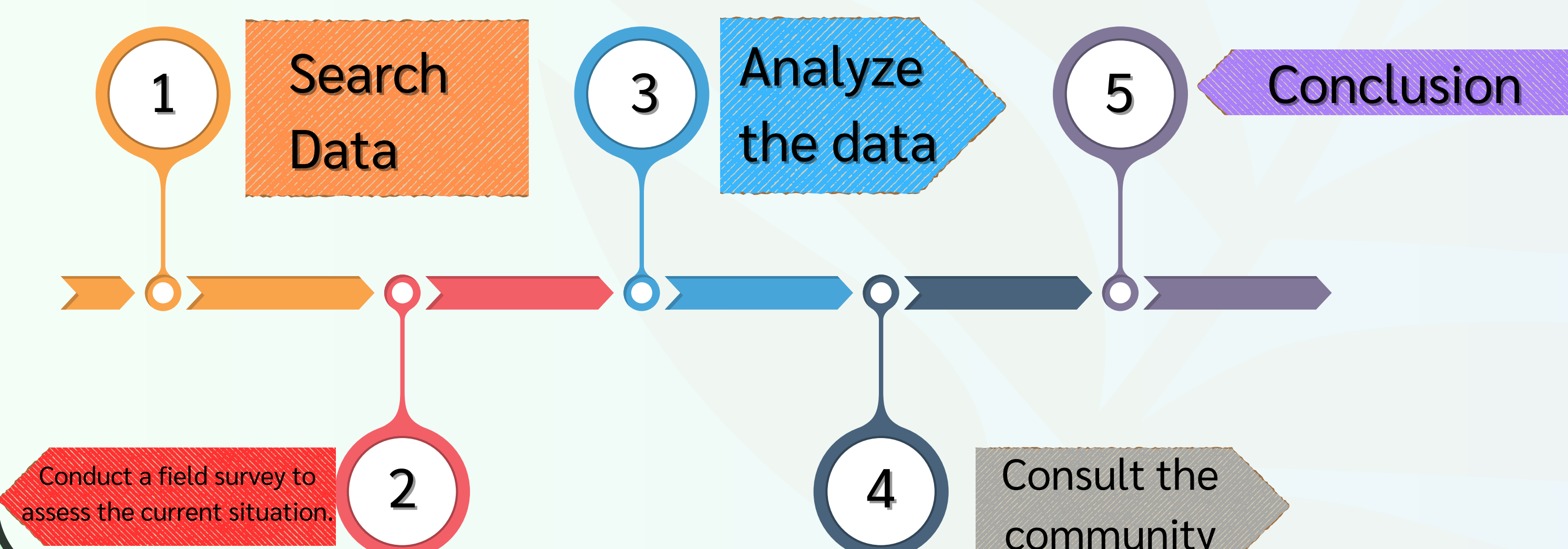


Table showing the changes in the coastline of Rajamangala Beach from 2014 to 2021.

	#07 2021	#01 2021-07 2021	#2018-2021	#2016-2018	#2014-2016	Rate of change (meters per year)	**2020-2023 Triple Lanina
1	0.00	-1.39	27.56	-3.07	-8.29	1.18	2023-2024 El Niño
2	0.00	-3.61	-2.10	9.66	-13.00	1.13	
3	0.00	-7.71	-3.57	-2.89	-7.45	2.70	
Sp	0.00	-7.91	-2.67	-2.75	-6.05	2.42	
	La Niña	La Niña	La Niña	La Niña	Severe El Niño		
	Typhoon Sinlaku	Typhoon Son-Tinh	Northeast monsoon	Monsoon trough			
	Typhoon Noul	Southwest monsoon	Southwest monsoon	outhwest monsoon			
	Monsoon trough	Monsoon trough	Typhoon Tokage	ortheast monsoon			
	Northeast monsoon	Northeast monsoon	Pressure trough	Typhoon Hagupt			
			Typhoon Plabuk				

Figure 1 shows the data of the perpendicular distance difference of the coastline.

conclusion

Based on the analysis of historical data, coastal erosion has been identified as a significant issue, primarily caused by tropical storms and the El Niño La Niña phenomenon. These factors significantly influence the rate of coastal erosion. If these problems remain unresolved, projections indicate that the coastline may recede by approximately 19 meters, which would severely impact local ecosystems and the environment.

Field observations have shown that within less than a year, the coastline has noticeably retreated. This is evident from the death of beach morning glory plants, which occurred due to increased saltwater intrusion in the affected areas.

In response, consultations were held with Rajamangala University of Technology Srivijaya, Trang Campus, to develop an action plan. This includes educating the local community about the issue, its causes, and potential impacts, as well as launching a campaign to promote reforestation as a means to mitigate coastal erosion.

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The globe program



Rajamangala University of Technology Srivijaya

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