



**The 7<sup>th</sup> Meeting of Regional Scientific and Technical Committee  
For the SEAFDEC/UNEP/GEF Project on Establishment and Operation of  
a Regional System of Fisheries *Refugia* in the South China Sea and the Gulf of Thailand**

8-10 November 2022  
Grand Mercure Harmoni-Jakarta, Indonesia

**PROGRESS AND STATUS ON ESTABLISHMENT OF FISHERIES REFUGIA  
IN THE SOUTH CHINA SEA AND GULF OF THAILAND**

**I. INTRODUCTION**

The South China Sea and the Gulf of Thailand is a global center of shallow-water marine biological diversity that supports significant fisheries that are important to the food security and export income of Southeast Asian countries. These fisheries are characterized by high levels of fishing effort from the small-scale sector. Accordingly, all inshore waters of those areas are subject to intense fishing pressure. This high small-scale fishing pressure and declining fisheries resources have contributed to unsustainable fishing methods to maintain catch and increase incomes in the short term. These include using destructive fishing gear and practices, such as operating demersal trawls and push nets in seagrass areas, detonating explosives, and releasing fish poisons in coral reef areas. Therefore, small-scale inshore fishing pressure has been identified as a significant cause of the South China Sea's degradation and loss of coastal habitats.

Although action aimed at reducing the rate of loss of coastal habitats has been implemented by countries bordering the South China Sea and the Gulf of Thailand, the decadal rate of loss of such habitats remains high due to many reasons from not only fishing activities but including other human activities and climate changes. This continued decline in the total area of habitats critical to the life cycles of most aquatic species, combined with the high levels of coastal community dependence on fish, has raised serious concerns for the long-term sustainability of small-scale fisheries in the region. With fish production intrinsically linked to the quality and area of habitats and the heightened dependence of coastal communities on fish, a need exists to improve the integration of fish habitat considerations and fisheries management in the region. This project entitled "Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and the Gulf of Thailand" was developed to meet this need via the fisheries component of the Strategic Action Program for the South China Sea. Executed regionally by the Southeast Asian Fisheries Development Center (SEAFDEC) in partnership with the government agencies responsible for fisheries in the six participating countries, namely Cambodia, Indonesia, Malaysia, Philippines, Thailand, and Viet Nam, the project is comprised of the following four project components:

Component 1 will establish operational management at 15 priority fisheries refugia, with community-based refugia management plans being key outputs.

Component 2 focuses on strengthening the enabling environment for refugia's formal designation and operational management.

Component 3 focuses on strengthening information management and dissemination aimed at enhancing the national uptake of best practices in integrating fisheries management and biodiversity conservation, and in improving community acceptance of area-based approaches to fisheries and coastal environmental management; and

Component 4 will strengthen cross-sectorial coordination for integrated fisheries and environmental management and harness the national scientific and technical expertise and knowledge required to inform the policy, legal and institutional reforms for fisheries refugia management in the

The main focus of the paper is on Component 1: establishing a 15 regional system of fisheries refugia, which are fisheries management areas, in the South China Sea and Gulf of Thailand. Taking into accounts, the integration of habitat and biodiversity conservation into fishery management and practices in the South China Sea and the Gulf of Thailand has been improved through the efforts of concerned communities and governments. Initially planned for 48 months from January 2017 until December 2020, the Project duration was extended until December 2022 due to the COVID-19 pandemic. Nevertheless, as of October 2022, the communities in the fisheries refugia sites of the participating countries have been working towards enhancing the integration of habitat and biodiversity conservation into fishery management and practices for the economically important aquatic species. Table 1 shows the list of 15 Fisheries Refugia. The distribution and location of 15 refugia sites are mapped in Figure 1. The results indicate the effective management of critical threats to 15 fisheries refugia sites of about 1,188,841 ha is expected to be adopted by 2022. It is about 4.4 folds higher than the proposed refugia areas (269,500 ha) adopted by the GEF/CEO. Among these, five fisheries refugia were agreed upon among stakeholders and approved by the governments, including three in Cambodia at Kep Province for blue swimming crab (Fig. 2), Preah Sihanouk for blood cockle (Fig. 3), and Koh Kong Province for Indo-pacific mackerel (Fig. 4), and two in Thailand at Surat Thani for blue swimming crab (Fig.5), and at Trat Province for Indo-pacific mackerel (Fig. 6). In addition, eight fisheries refugia sites were recognized by the stakeholders and will be adopted by the responsible agencies. These include one in Cambodia at Kampot Province for the juvenile grouper (Fig. 7); two in Malaysia at Tanjung Leman, Johor State for spiny lobster (Fig. 8) and at Kuala Baram, Miri, Sarawak State for black tiger prawn (Fig. 9); three in the Philippines at Bolinao for siganids (Fig. 10), at Masinloc for one-stripe fusilier (Fig. 11), and Coron for redbelly yellowtail fusilier (Fig. 12); and two in Indonesia at West Kalimantan for white prawn (Fig. 13), and at Bangka Regency for squid (Fig. 14). Moreover, due to delayed initiatives, Viet Nam could identify two refugia sites: one at the Eastern coastal area of Phu Quoc – Kien Giang for blue swimming crab (Fig. 15), and another at the coastal area of Lagi, Binh Thuan for the *Subcrenata* ark clam (Fig. 16).



**Table 1:** 15 Fisheries refugia sites identified by six countries in the South China sea and Gulf of Thailand (as of 30 Sep. 2022)

No. in map	Fisheries <i>refugia</i> Site	Target Species	Area (ha)	Fishing Closure Period	Status	Habitat Linkages
1	Marine Fisheries Management including Refugia at Koh Po & Koh Tonsay Archipelago, Kep, Cambodia	Blue swimming crab ( <i>Portunus pelagicus</i> )	11,307 (417ha FR)	May-Jul (3 months)	Approved (12-04-2018)	CR-52ha SG-755ha
2	Prek Thnaot, Kampot, Cambodia	Groupers	8,008 (332ha FR)	Sep-Nov. (3 months)	Final process	CR-347ha SG-269ha
3	Prek Sangke, Village, Tek Thlar Commune, Prey Nub District, Preah Sihanouk, Cambodia	Blood Cockle ( <i>Anadam granosa</i> )	116	Jun-Oct (5 months)	Approved (20-08-2020)	NA
4	Peam Krasob, Koh Kong, Cambodia	Indo-pacific mackerel ( <i>Rastrelliger brachysoma</i> )	1,283	Dec-Mar (3 months)	Approved (16-09-2019)	CR-NA SG-NA
5	Off Trat, Thailand	Indo-pacific mackerel ( <i>Rastrelliger brachysoma</i> )	154,600	Jan-Feb (2 months)	Approved (26-05-2022)	CR-2814ha SG-1016ha MG-9553ha
6	Eastern coastal area of Phu Quoc – Kien Giang, Viet Nam	Blue swimming crab ( <i>Portunus pelagicus</i> )	32,860		Ongoing	
7	Around Koh Sed, Surat Thani, Thailand	Blue swimming crab ( <i>Portunus pelagicus</i> )	900	Whole Year	Approved (08-03-2022)	SG-8.13ha MG-2.94ha
8	Tanjung Leman, Johor, Malaysia	Spiny lobster ( <i>Panulirus polyphagus</i> )	171,549	Dec-Feb (3 months)	Final process	SG-706ha
9	Bangka Belitung Province/ Bangka District, Indonesia	Squid ( <i>Uroteuthis chinensis</i> )	239,302.75		Ongoing*	CR-579ha MG-13,372ha
	I. Nurseries & egg laying ground			Apr-May (2 months)	(*Has been proposed and being discussed further in the provincial and national levels for designation and implementation)	
	1) Gugus Karang Jagur		1,790.1			
	2) Gugus Karang Mejan		713.43			
	3) Coastal Riau Silip-Sungailiat		4,187.85			
	4) Coastal Tuing-Riau Silip (KKDP TWP Tuing)		610.67			
	5) Coastal Belinyu		2,279.22			
	<b>SUBTOTAL</b>		<b>9,581.28</b>			
	II. Spawning refugia			Oct-Nov. (2 months)		
	1) Gugus Karang Jagur		78,352.69			
	2) Northern Tuing		69,734.39			
	3) Gugus Karang Sembilan		48,205.32			
	4) Pulau dua		33,429.08			
	<b>SUBTOTAL</b>		<b>229,721.48</b>			
10	West Kalimantan Province/ Kubu Raya District, Teluk Batang District, and Katapang District, Indonesia	Penaeid shrimp ( <i>Penaeus merguensis</i> )	409,432	Nov.-Dec. (2 months)	Ongoing*	MG-3,075ha
11	Kuala Baram, Miri, Sarawak, Malaysia	Black tiger prawn ( <i>Penaeus monodon</i> )	85,200	Aug-Oct (3 months) Feb-Apr (catch/release)	Final process	Miri-Sibuti CR National Park: 186,930ha
12	Off Coron Islands, Palawan, Philippines	Redbelly yellowtail fusilier	163.2	Closure Period	Final process	CR-1151 ha MG-229.6 ha SG-225.78 ha
13	Masinloc coastal area, Zambales, Philippines	One-stripe fusilier	120.69	Closure Period	Final process	CR-1602.2 ha

					MG- 99.8 ha SG-1182.2 ha
14	Bolinao coastal area, Pangasinan, Philippines	Siganids	99.84	Closure Period Final process	CR-2518 ha MG-15.56 ha SG-1084.6 ha
15	Coastal area of Lagi – Binh Thuan, Viet Nam	Subcrenata ark clam ( <i>Anadara subcrenata</i> )	73,900	Ongoing	
<b>TOTAL AREA</b>			<b>1,188,841</b>		

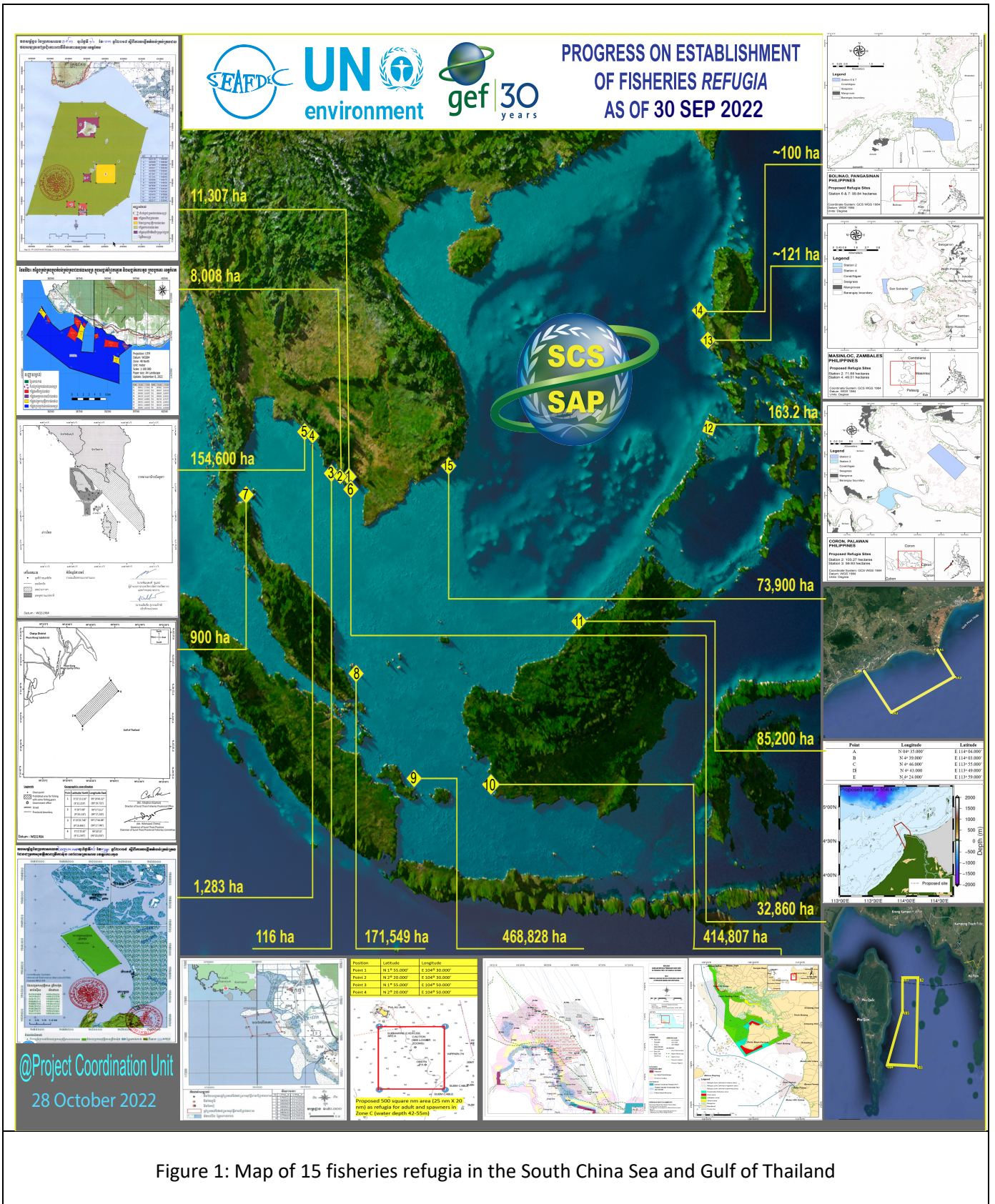


Figure 1: Map of 15 fisheries refugia in the South China Sea and Gulf of Thailand



**ឧបសម្ព័ន្ធ១ នៃប្រកាសលេខ ១៩៣ ចុះថ្ងៃទី ១២ ខែ កញ្ញា ឆ្នាំ ២០១៨ ស្តីពីការបង្កើតតំបន់គ្រប់គ្រងជលផលសមុទ្រនៅប្រជុំកោះពោធិ៍និងកោះទន្សាយ ខេត្តកែប**

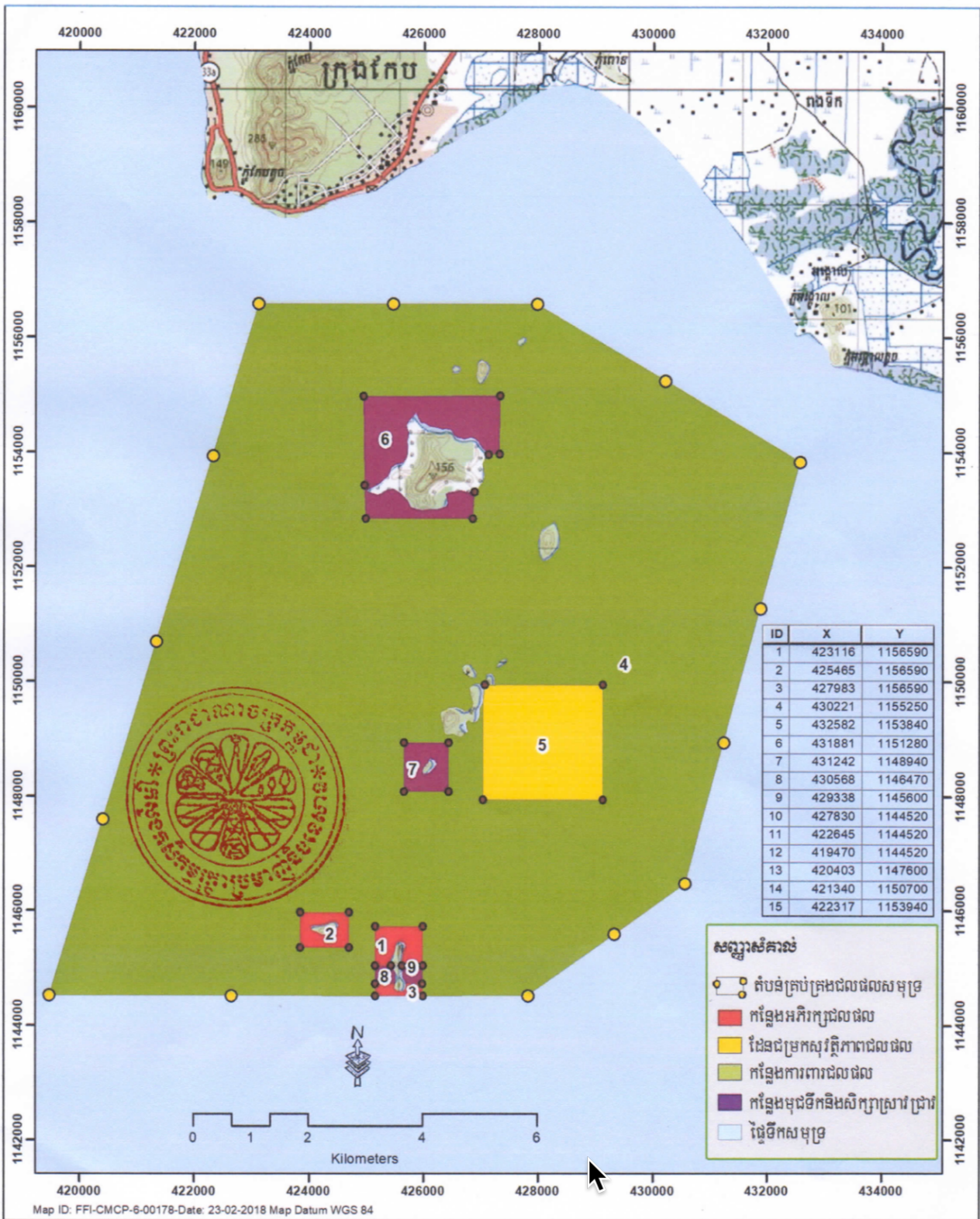


Figure 2: Marine Fisheries Management including Refugia for Blue swimming crab at Koh Po & Koh Tonsay Archipelago, Kep, Cambodia



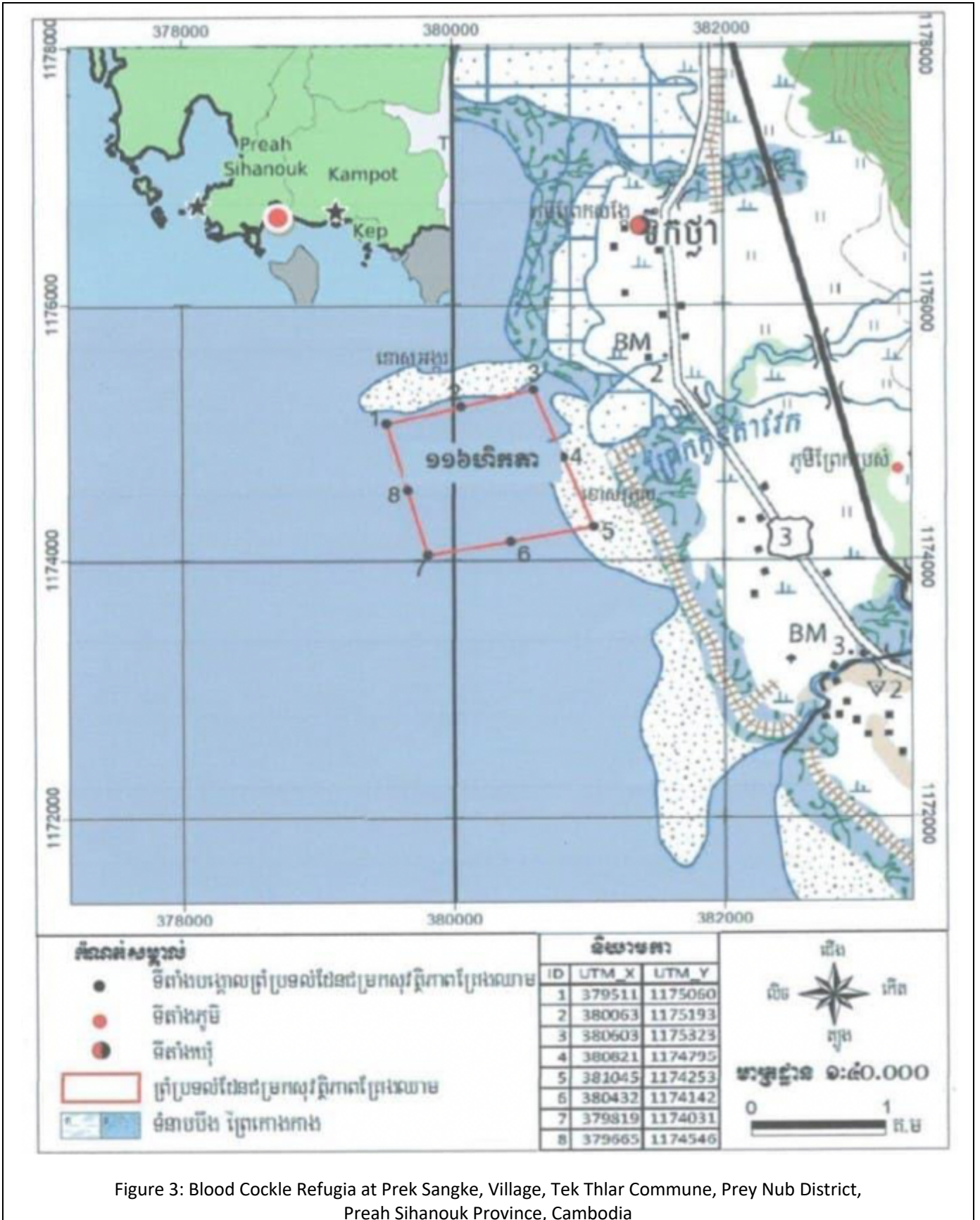


Figure 3: Blood Cockle Refugia at Prek Sangke, Village, Tek Thlar Commune, Prey Nub District, Preah Sihanouk Province, Cambodia



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ដែនជម្រកសុវត្ថិភាពត្រីកម្រិត ទៅរាមក្រសោម ខេត្តកោះកុង**

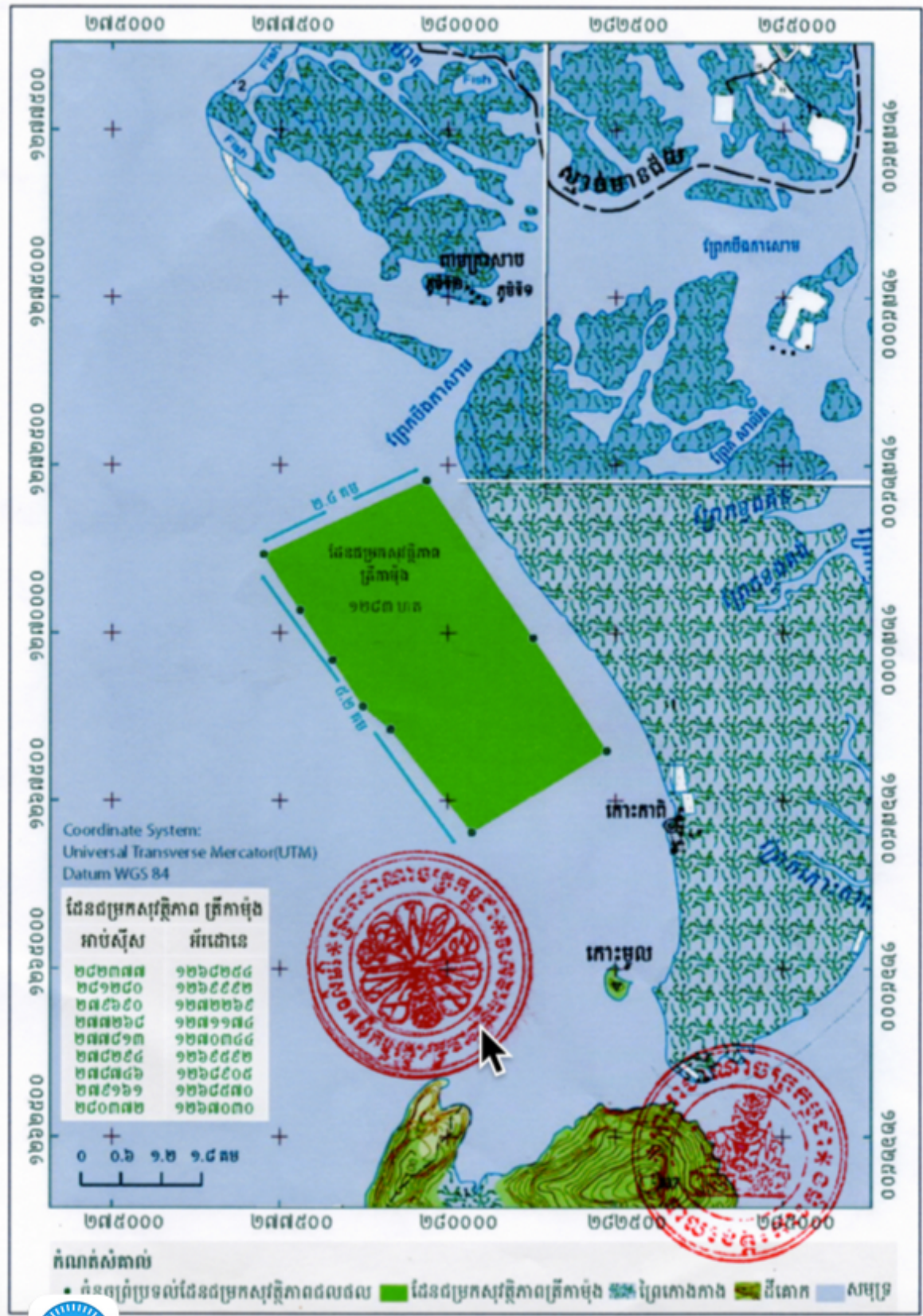


Figure 4: Indo-pacific mackerel Refugia at Peam Krasob, Koh Kong Province, Cambodia

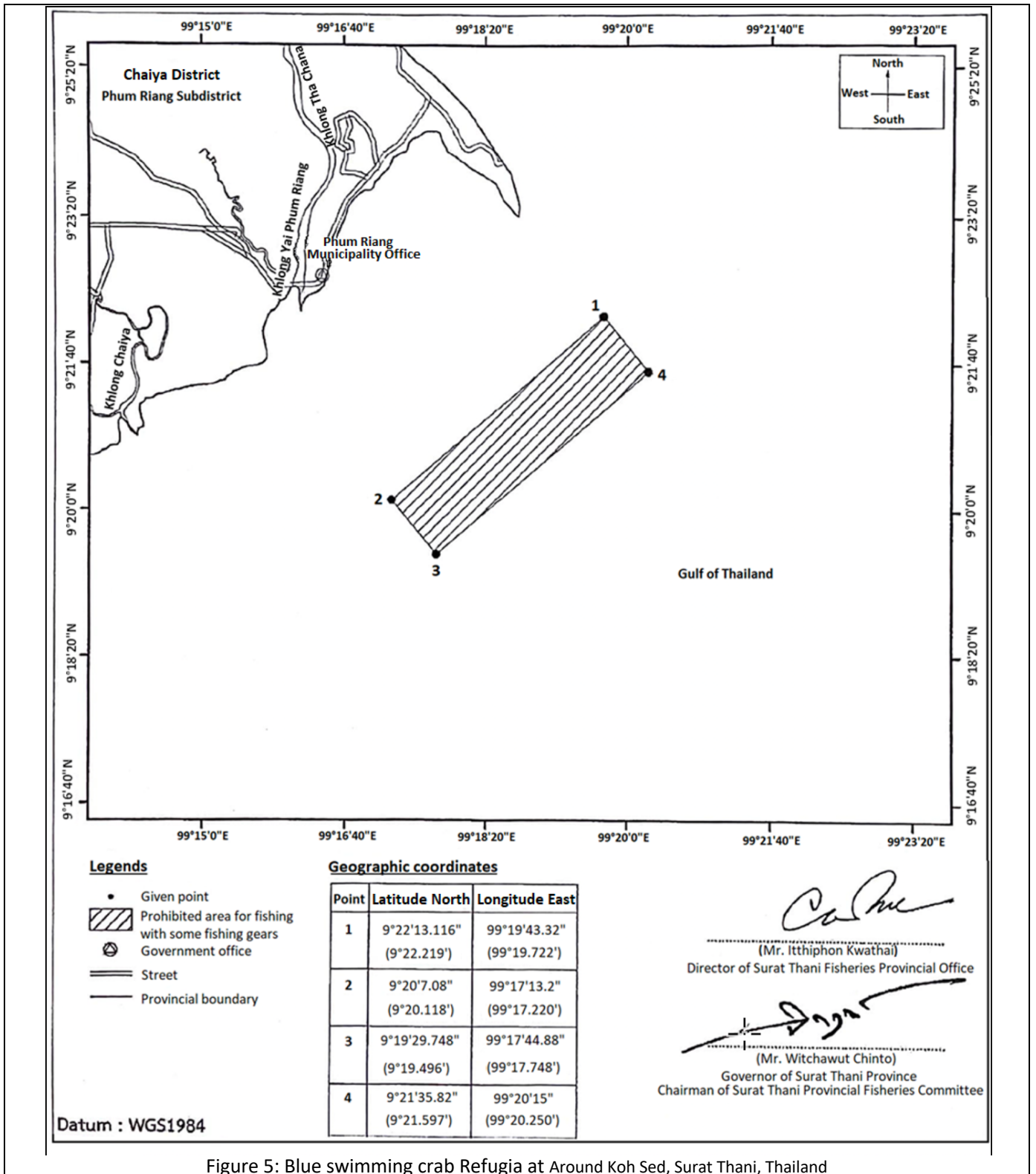


Figure 5: Blue swimming crab Refugia at Around Koh Sed, Surat Thani, Thailand



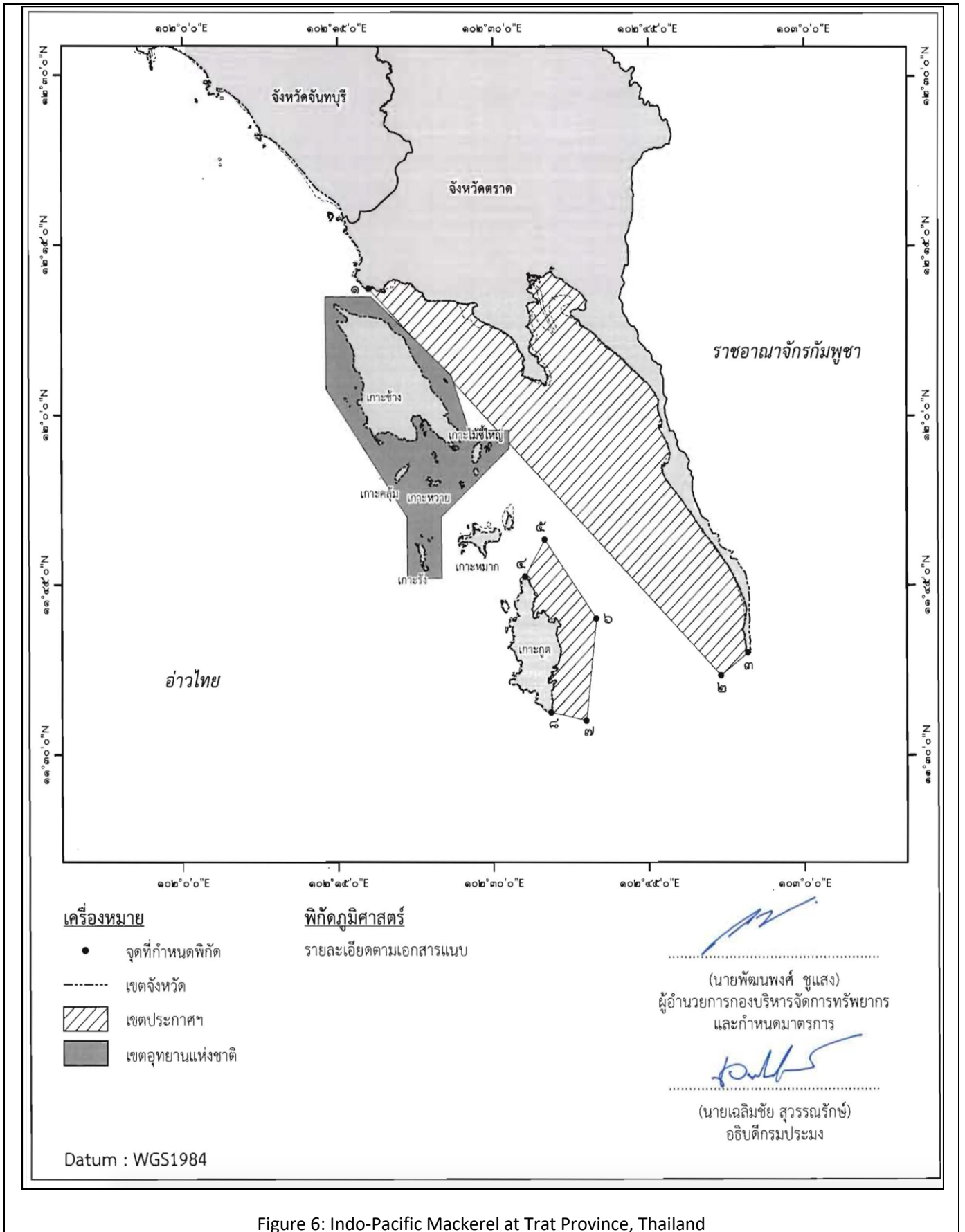


Figure 6: Indo-Pacific Mackerel at Trat Province, Thailand

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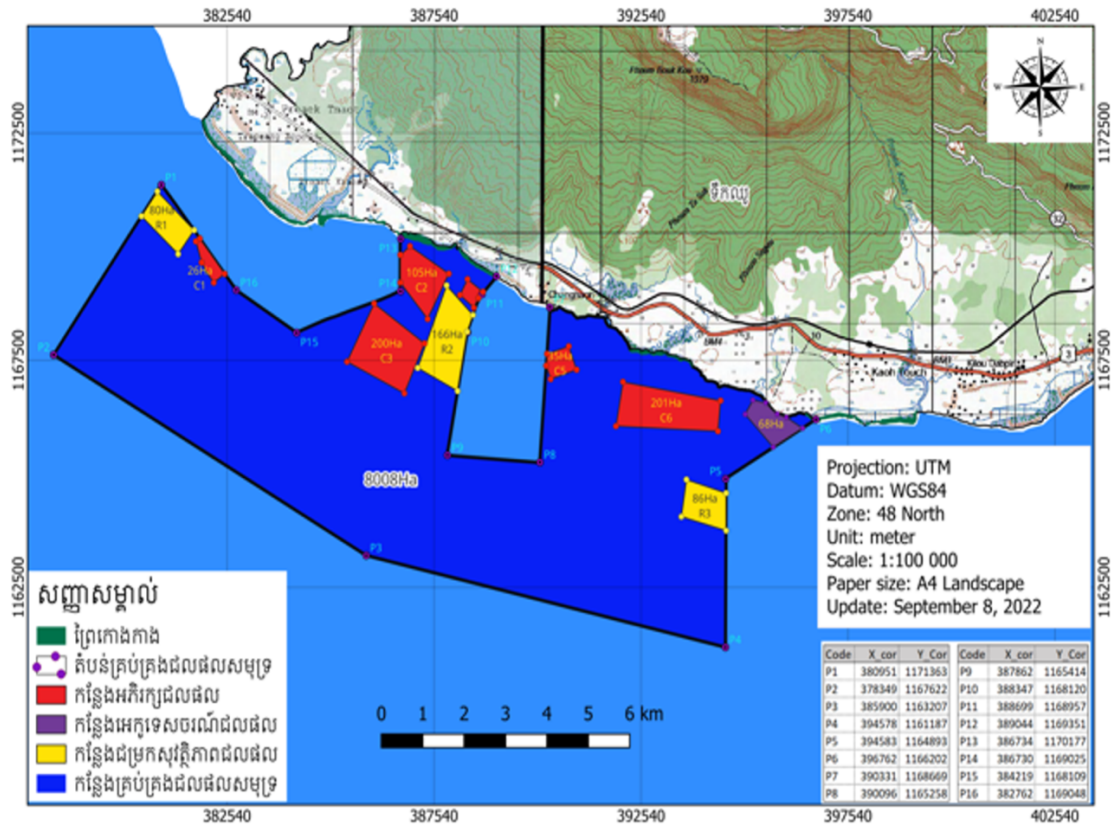


Figure 7: Group Refugia at Kampong Province, Cambodia

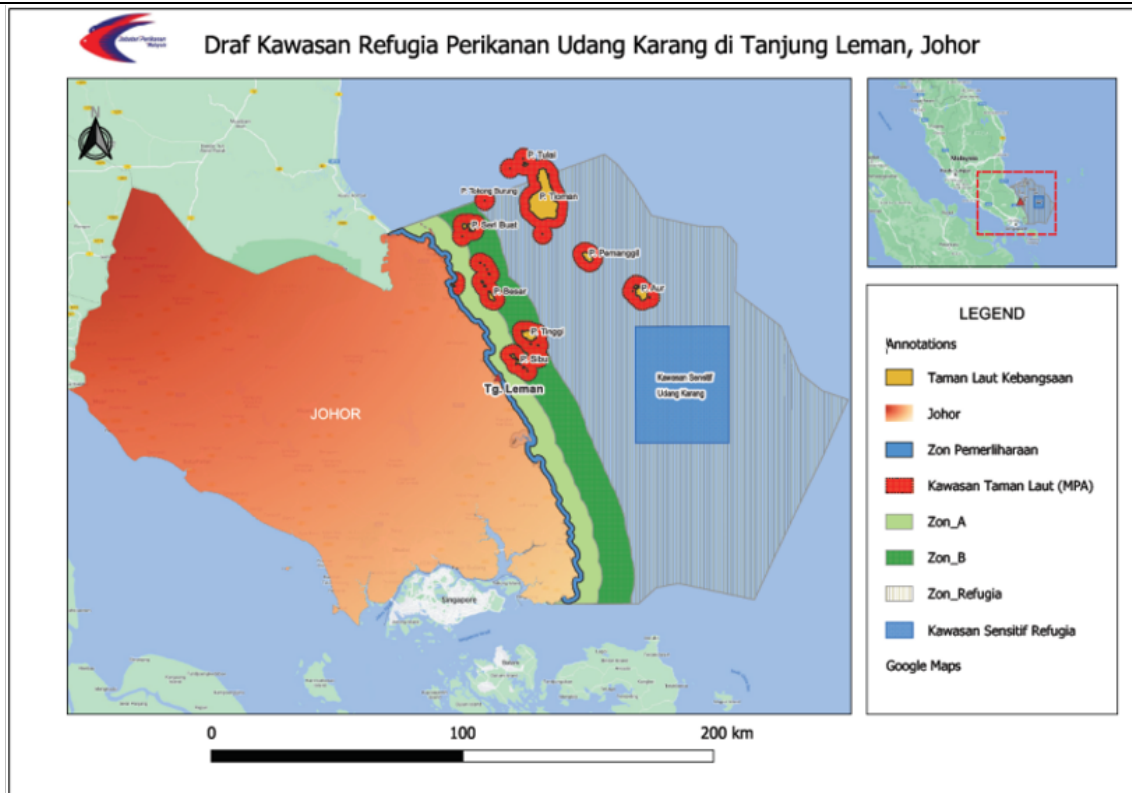
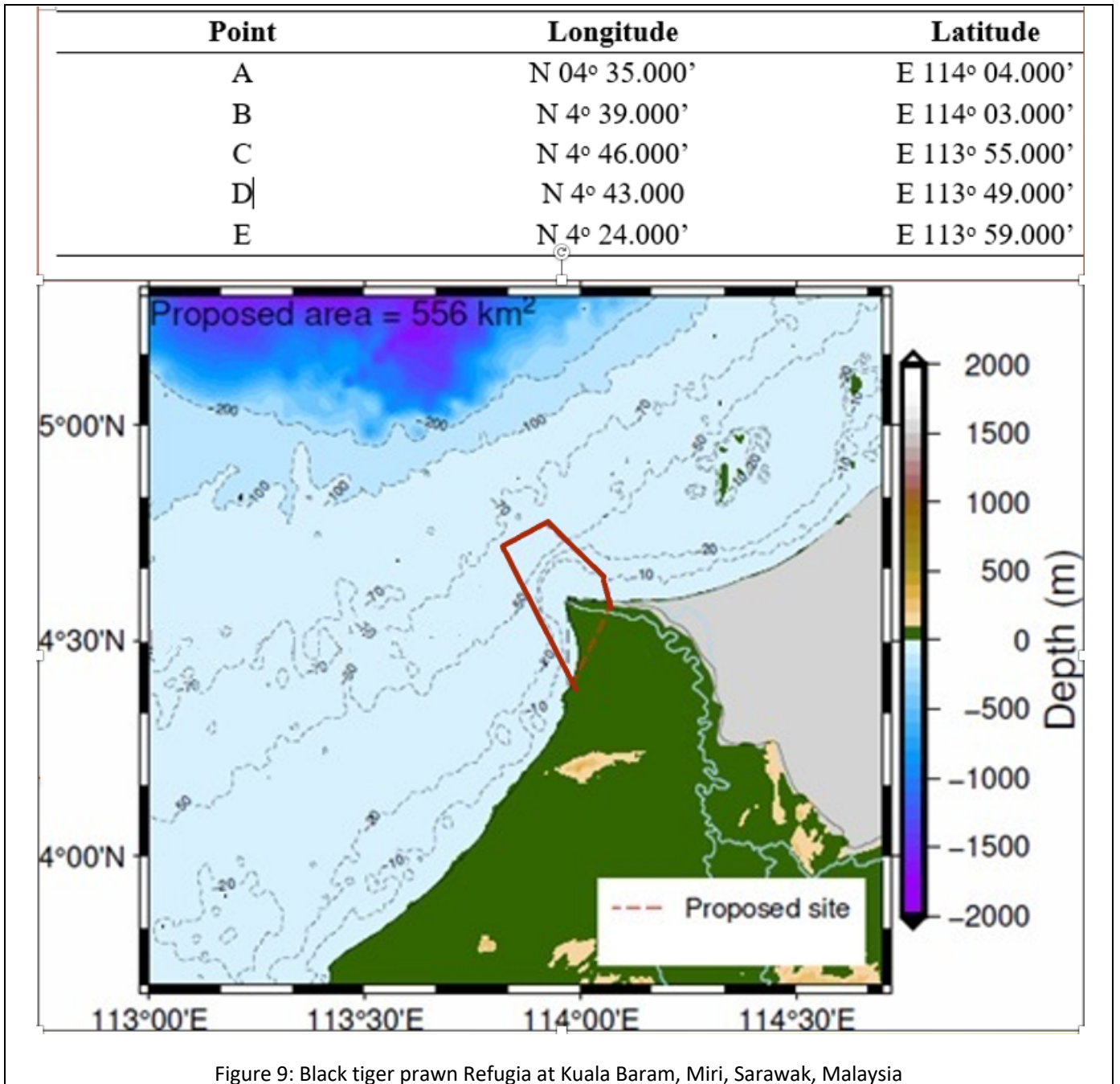


Figure 8: Mud Spiny lobster Refugia in Tanjung Leman, Johor, Malaysia





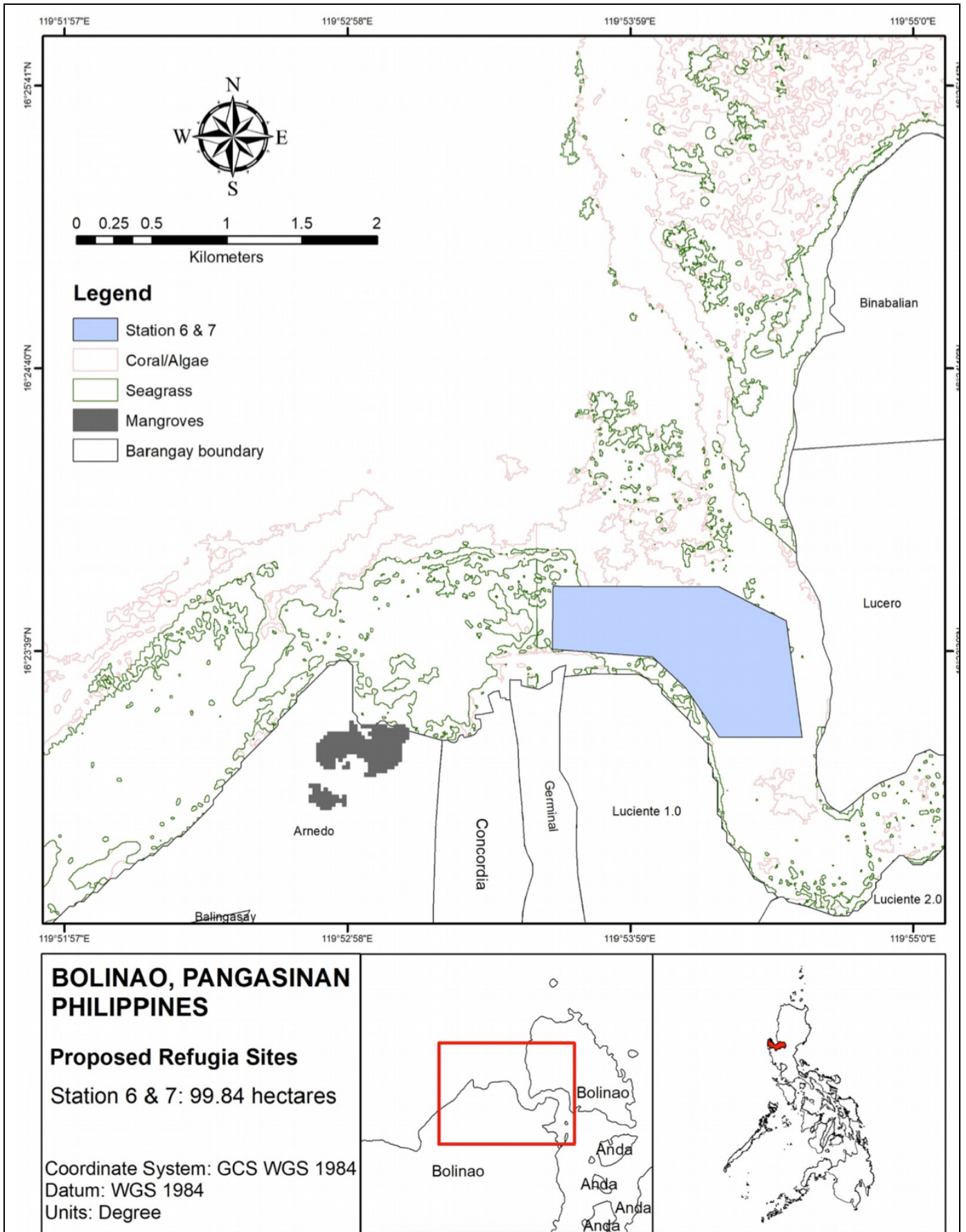
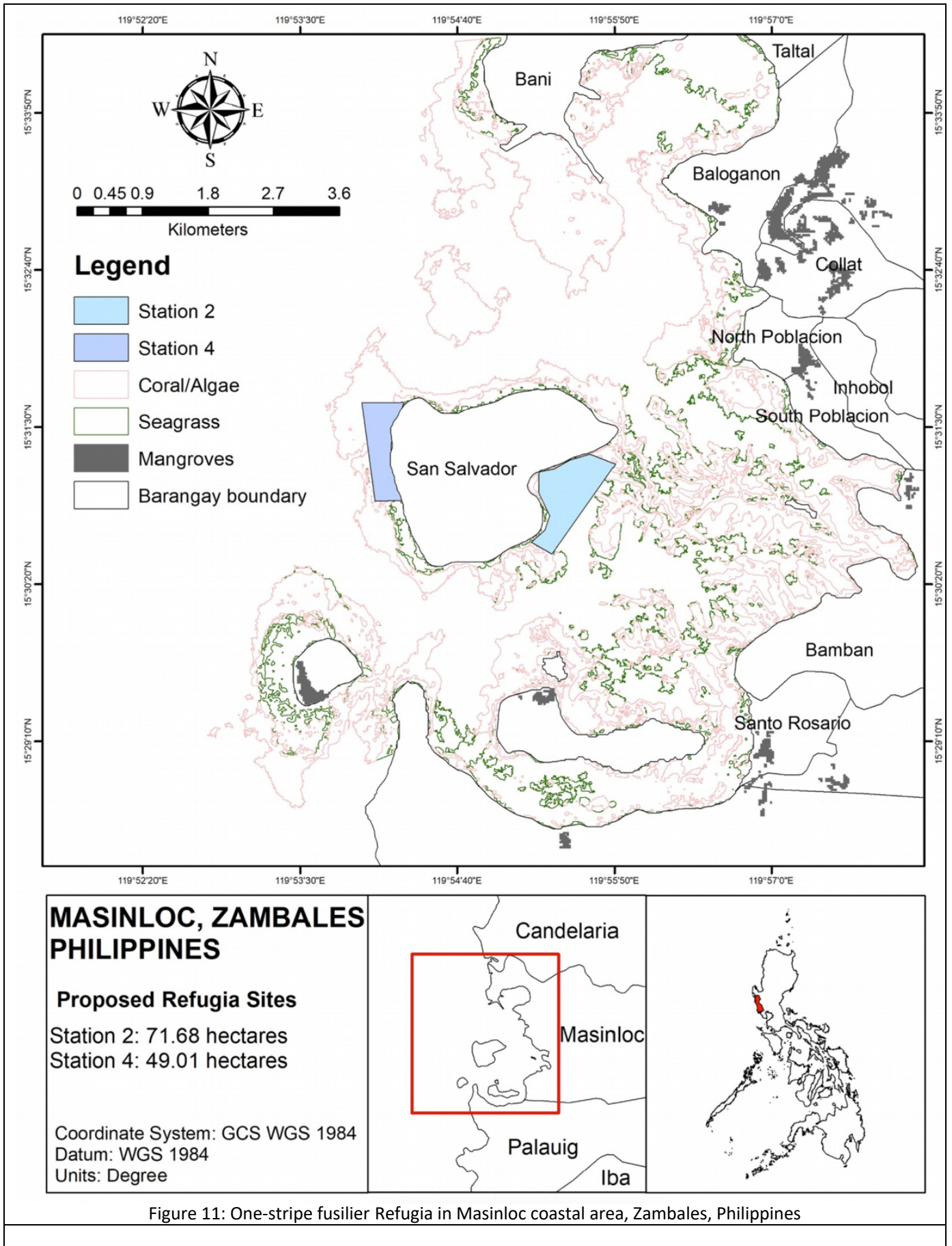
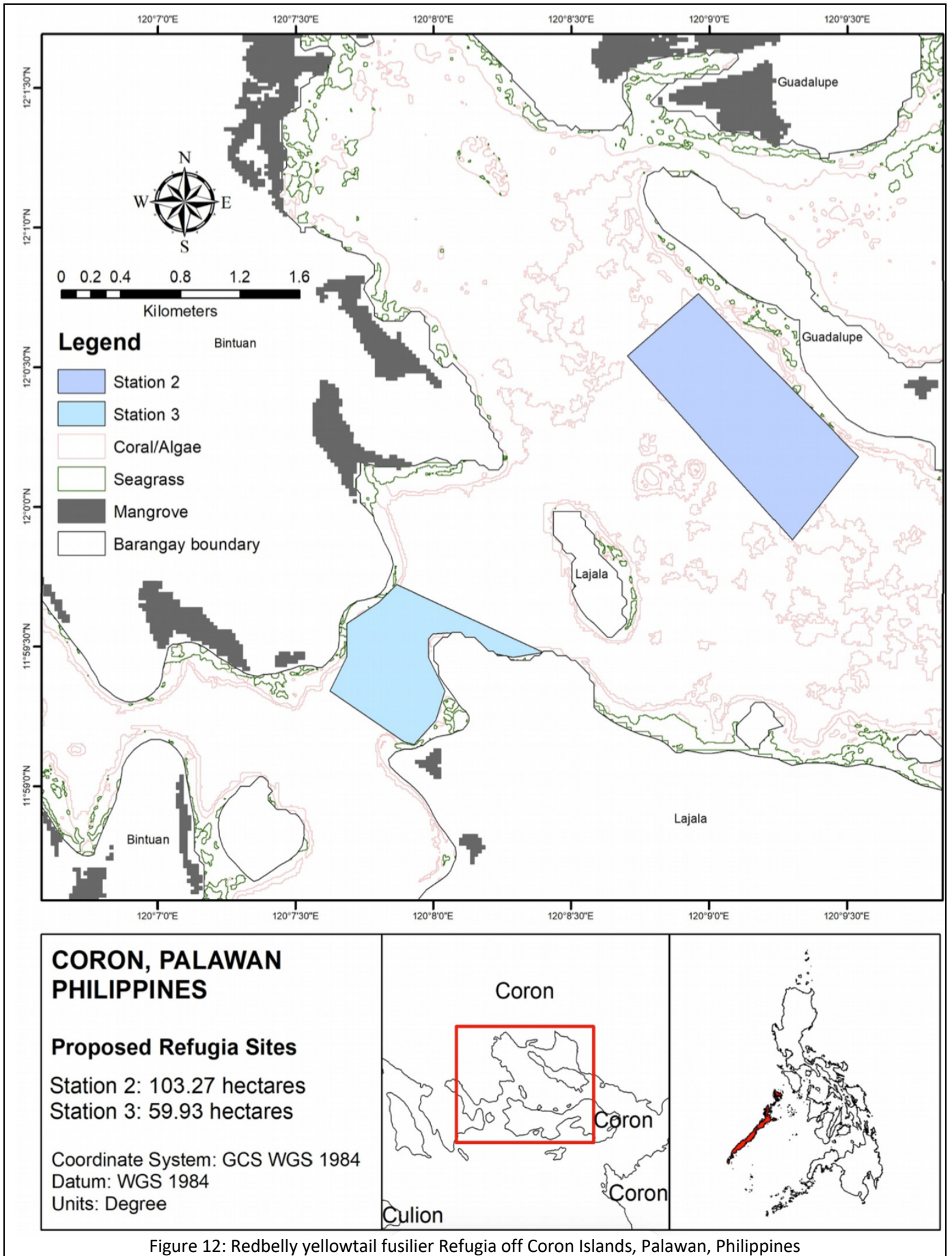


Figure 10: Siganids refugia in Bolinao coastal area, Pangasinan, Philippines







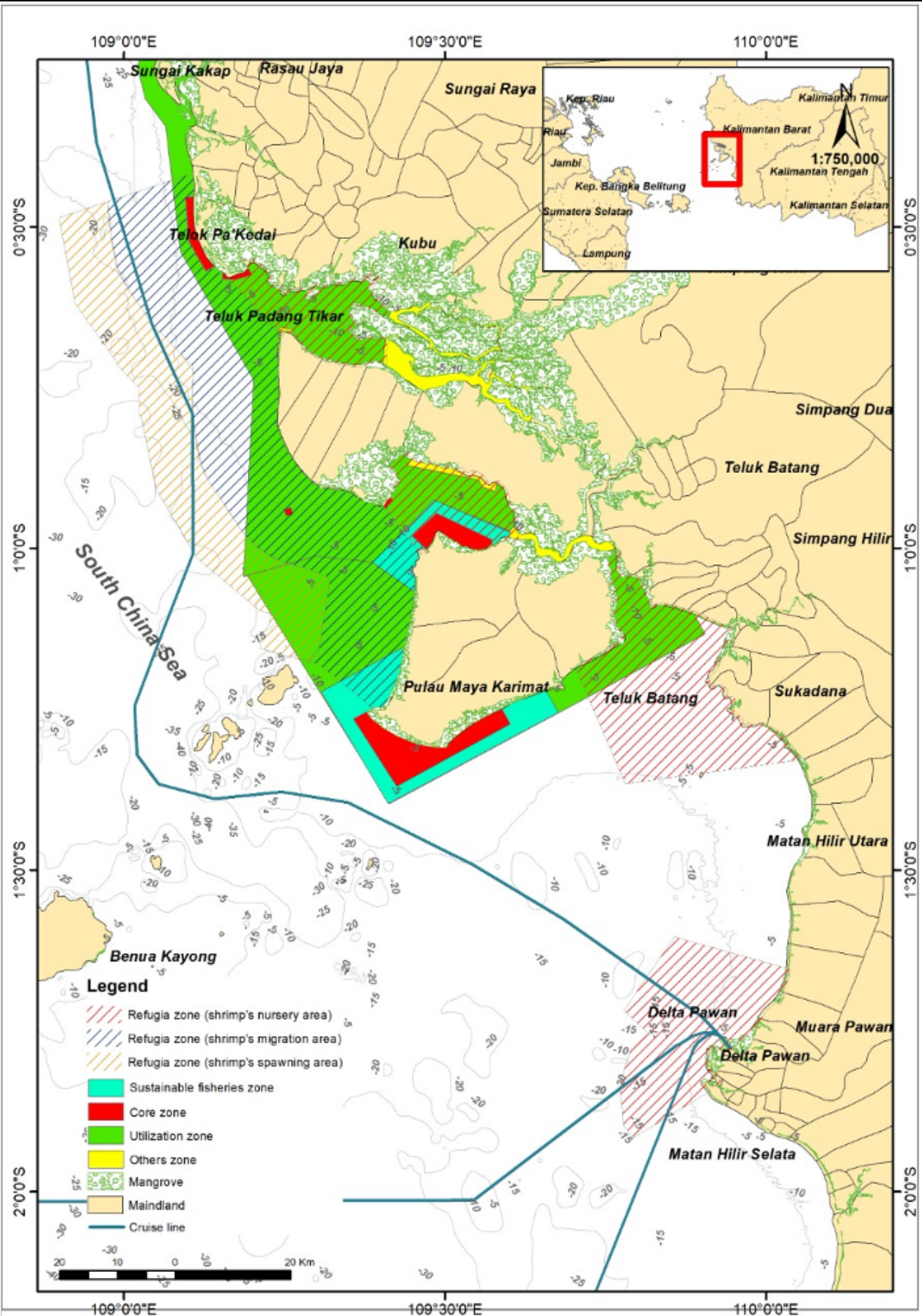


Figure 13: White prawn refugia in West Kalimantan Province/ Kubu Raya District, Teluk Batang District, and Katapang District, Indonesia



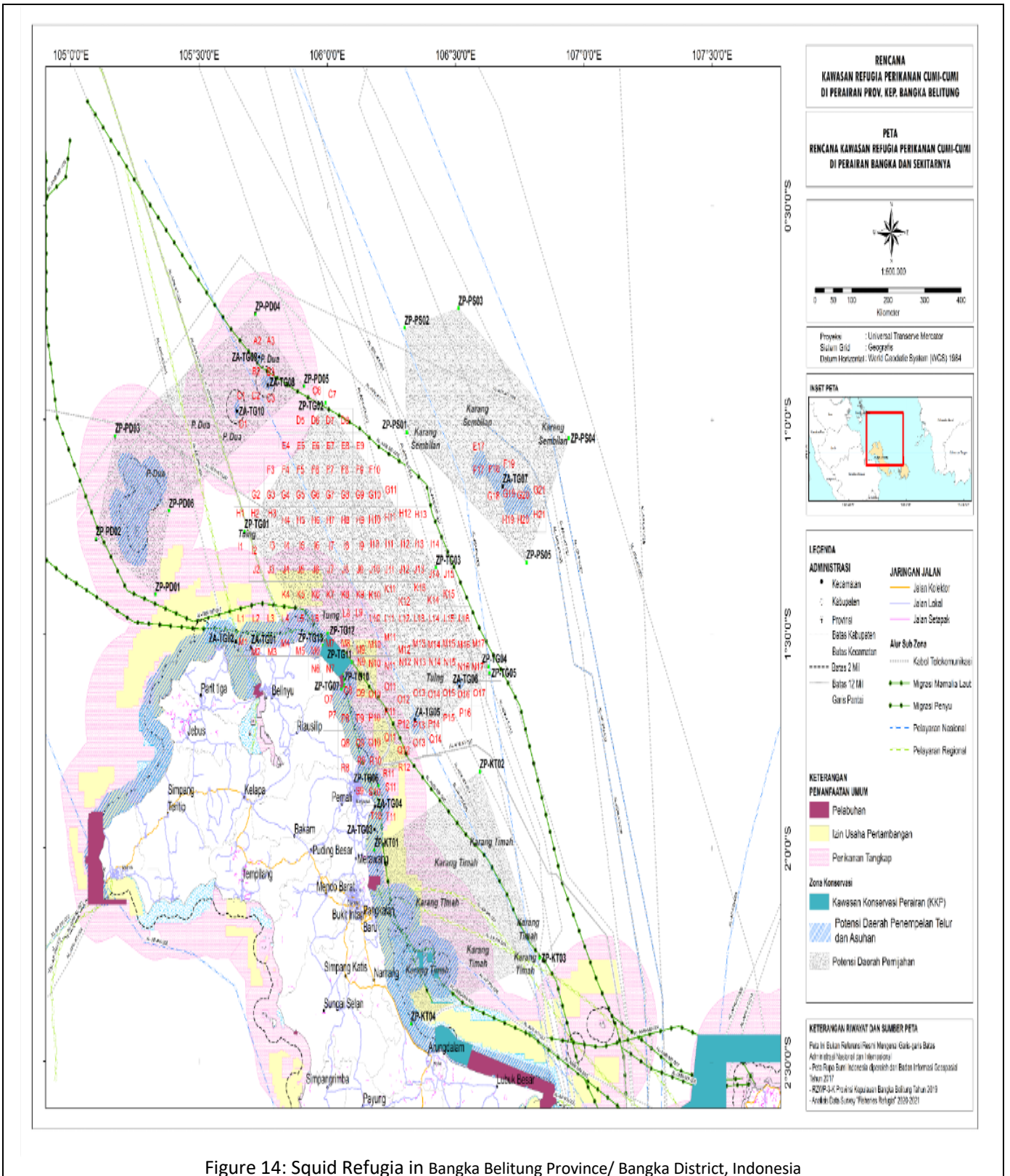


Figure 14: Squid Refugia in Bangka Belitung Province/ Bangka District, Indonesia



Figure 15: Blue swimming crab in east coast of Phu Quoc Island, Kien Giang Province, Viet Nam



Figure 16: Subcrenata ark clam Refugia in Coastal area of Lagi – Binh Thuan, Viet Nam