

CHAPTER II

REGIONAL GEOLOGY OF THE STUDY AREA



The study area is situated in the Khao Sam Roi Yod National Park Amphoe Kui Buri, Prachuap Khiri Khan Province, Thailand (Figure 2.1). The study area was located in the former tidal flat of the Khao Sam Roi Yod National Park (Figure 2.2) (Choowong *et al.*, 2004). In this study, I collected molluscan samples from 5 localities: Wat Ban Khao Daeng, Khao Rap, Wat Thung Noi School, Ban Don Makhham, and Ban Nong Tao Pun Lang (Figure 2.3).

2.1 General Geology

2.1.1 Sedimentary and Metamorphic Rocks

Precambrian rock has 2 units: Hua Hin Group the Pranburi and Khao Tao Formations. Khao Chao Formation is composed of sillimanite-mica schist, marble laminated calc-silicate, quartzited and quartzmica schist. And the Khao Tao Formation is composed of orthogneiss or augen gneiss with pygmatic folding of anatexis.

Ordovician-Cambrian rock has 1 unit: the Khao Tap Tim Formation. It is composed of quartzite, yellowish brown with highly fracturing quartz schist; mica-schist, and spotted schist brown to yellowish brown.

Ordovician rock has 1 unit: the Khao Kralok Formation. It is composed of dolomitic limestone, light gray to dark gray; marble, massive, gray and white recrystalline; phyllite, brown to reddish brown with minor drag fold partly intercalation with dolomitic limestone bed.

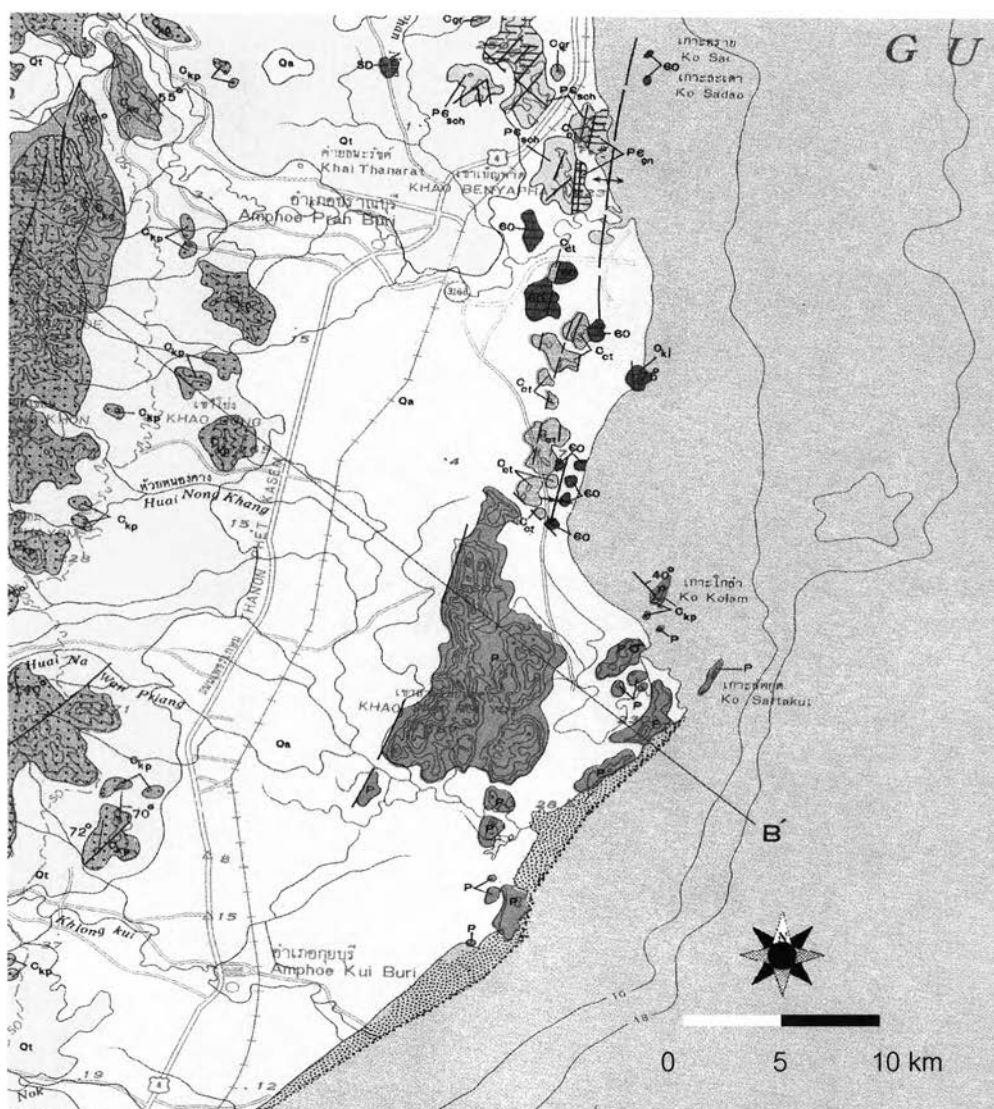
Carboniferous-Devonian rock has 2 units: Kaeng Krachan Group the Khao Chao and Khao Phra Formations. The Khao Chao Formation is composed of orthoquartzite, white and brown; tuffaceous shale, light gray to bluish gray; sandstone, brown, and feldspathic, fine to medium grained; shale and calcareous shale gray to dark gray with fossils. And the Khao Phra Formation is composed of pebbly rock, pebbly mudstone, pebbly shale, pebbly sandstone, pebbles are mainly quartz vein quartzite. Feldspar, minor amount of granite, slate, sandstone and limestone, generally massive, gray to dark gray with fracture cleavage; shale and limestone; calcareous shale with fossil brachiopods and bryozoas; brown to yellowish brown graywacke; arkosic sandstone; conglomerate reddish brown to greenish brown with pebble of quartz; chert; sandstone round to subround.

Permian rock has 1 unit: Ratburi Group. It is composed of limestone, gray to bluish gray, yellowish and white, massive and bedded limestone with fossils, indicating reef limestone interbedded with light brown feldspathic and calcareous sandstone at the base in places.

Quaternary sediments are composed of alluvial deposits: beach sand, river gravel, Beach ridge, silt clay, mud and swamp or marsh area. And Klong Kui Formation are composed of higher terrace: Colluvial deposits, Piedmont deposits, talus and gravel bed which contained boulders, pebbles and fragments of quartzite, sandstone, granite, granite gneiss, generally found at higher elevation in places.

2.1.2 Igneous and Metamorphosed Igneous Rocks

These rocks are exposed in the north of the area. They are cataclastic rocks: blastomylonite, ultramylonite, mylonite gneiss and mylonite and foliated granite, medium to coarse grained, with fairly well orientated porphyroblastic feldspar of Carboniferous age.



Legend

Oa	Alluvial deposits: beach sand, river gravel, beach ridge, silt, clay, mud and swamp or marsh area		Dolomitic limestone, light gray to dark gray; marble, massive, gray and white recrystalline; phyllitic, brown to reddish brown with minor drag fold partly intercalation with dolomitic limestone bed
Ot	Higher terrace: Colluvial deposits, Piedmont deposits, talus and gravel bed which contained boulders, pebbles and fragments of quartzite, sandstone, granite, granite gneiss, generally found at higher elevation in places		Quartzite, yellowish brown with highly fracturing quartz schist: mica-schist, and spotted schist, brown to yellowish brown
P	Limestone, gray to bluish gray, yellowish and white, massive and bedded limestone with fossils, indicating reef limestone interbedded with light brown feldspathic and calcareous sandstone at the base in places		Orthogneiss or augen gneiss with pytygmatic folding of anatexis
Cqp	Orthoquartzite, white and brown; tuffaceous shale, light gray to bluish gray; sandstone, brown, and feldspathic, fine to medium grained; shale and calcareous shale gray to dark gray with fossils	Pca	Inferred Pre-cambrian rocks: Sillimanite-mica schist, marble laminated calc-silicate, quartzited and quartz-mica schist
	Pebbly rock, pebbly mudstone, pebbly shale, pebbly sandstone, pebbles are mainly quartz vein quartzite, feldspar, minor amount of granite, slate, sandstone and limestone, generally massive, gray to dark gray with fracture cleavage; shale and limestone: calcareous shale with fossil brachiopods and bryozoas; brown to yellowish brown graywacke; arkosic sandstone: conglomerate reddish brown to greenish brown with pebble of quartz; chert; sandstone round to subround	P	Quartz dike, with highly deformed fracturing and lamprophyres
	Quartzite, brown to yellowish brown; phyllitic shale or siltstone, gray	G	Granite, fine to coarse grained, biotite-muscovite granite, porphyritic texture, Tourmaline granite including aplite of intermediate mineral composition which is equivalent to diorite
			Cataclastic rocks: blastomylonite, ultramylonite, mylonite gneiss and mylonite
			Foliated granite, medium to coarse grained, with fairly well orientated porphyroblastic feldspar

Figure 2.1 Geologic map of Amphoe Hua Hin sheet ND 47-15 Scale 1:250,000 (DMR, 1976).

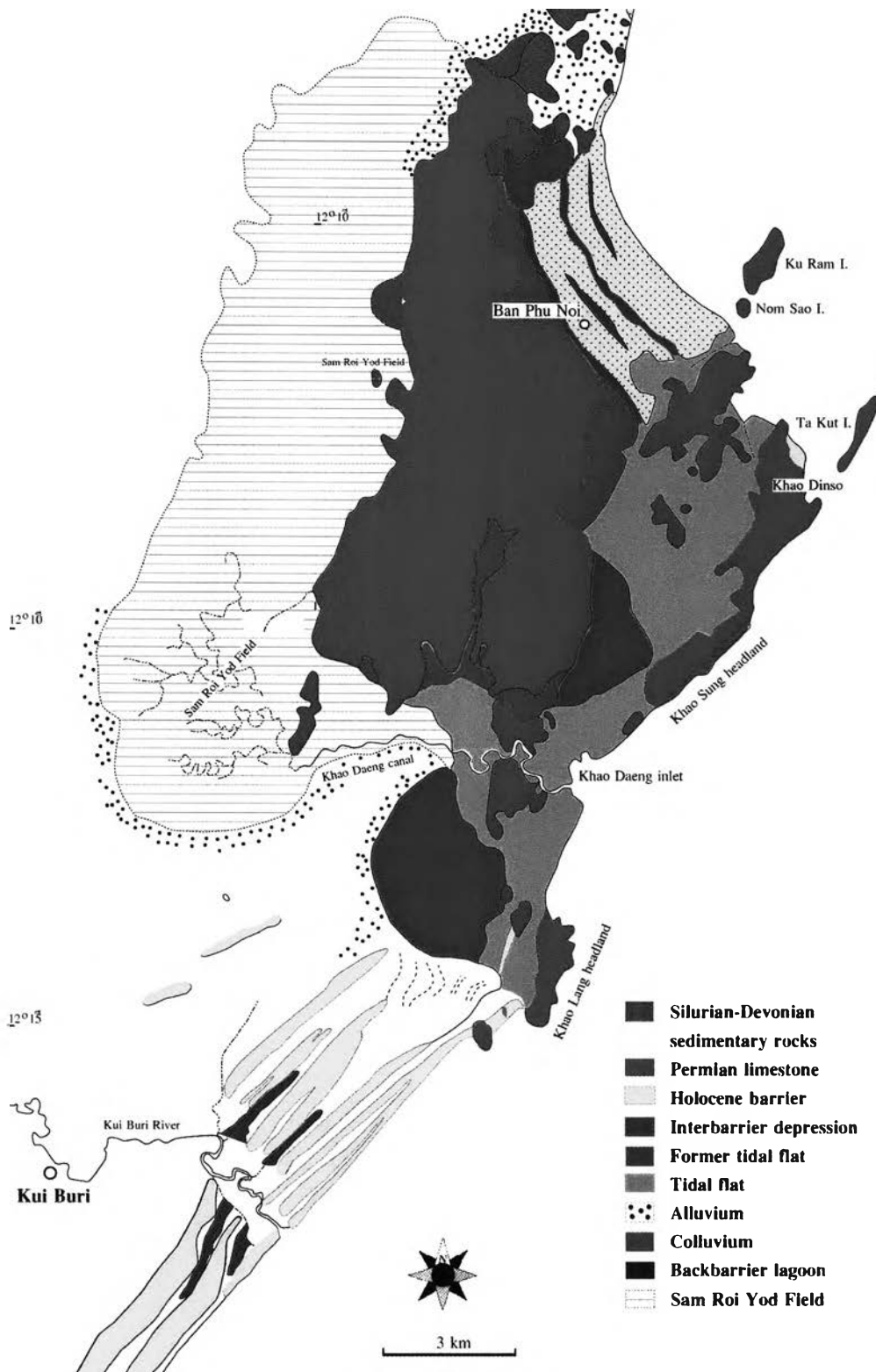


Figure 2.2 Geomorphology map of Khao Sam Roi Yod National Park (Choowong *et al.*, 2004).

2.2 Geology of the study area

According to Figure 2.1, the study area is located within alluvial deposits (beach sand, river gravel, Beach ridge, silt clay, mud and swamp or marsh area). The study area covers 5 localities: Wat Ban Khao Daeng, Khao Rap, Wat Thung Noi School, Ban Don Makham and Ban Nong Tao Pun Lang. (Figure 2.3)

2.2.1 Wat Ban Khao Daeng

This area is recent coastline near Wat Ban Khao Daeng UTM Grid reference 057409 and covered by very fine-fine sand and shell fragments. The molluscan samples along coastline were collected (Figure2.3, 2.4).

2.2.2 Khao Rap

This area is 1.5 km inland near Khao Rap (Shrimp farm) UTM Grid reference 041380 and covered by sandy clay. The molluscan samples from rim of shrimp farm were collected from the rim (Figure2.3, 2.5).

2.2.3 Wat Thung Noi School

This area is 1.8 km inland near Wat Thung Noi School (Shrimp farm) UTM Grid reference 038374 and covered by sandy clay. The molluscan samples from rim of shrimp farm were collected from the rim and systematic pitting 1x1 m (Figure2.3, 2.6).

2.2.4 Ban Don Makham

This area is 4.2 km inland near Ban Don Makham's irrigate canal UTM Grid reference 009399 and covered by sandy clay to clay. The molluscan samples from irrigate canal were collected from the rim (Figure2.2, 2.7).

2.2.5 Ban Nong Tao Pun Lang

This area is 4.3 km inland near Ban Nong Tao Pun Lang (Shrimp farm) UTM Grid reference 008396. The molluscan samples from rim of shrimp farm were collected from the rim (Figure2.3).

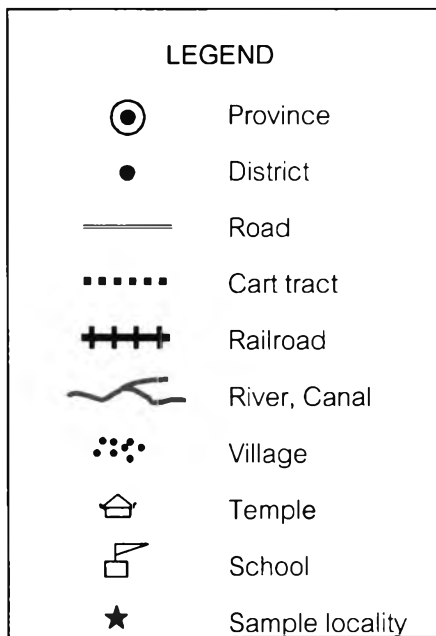
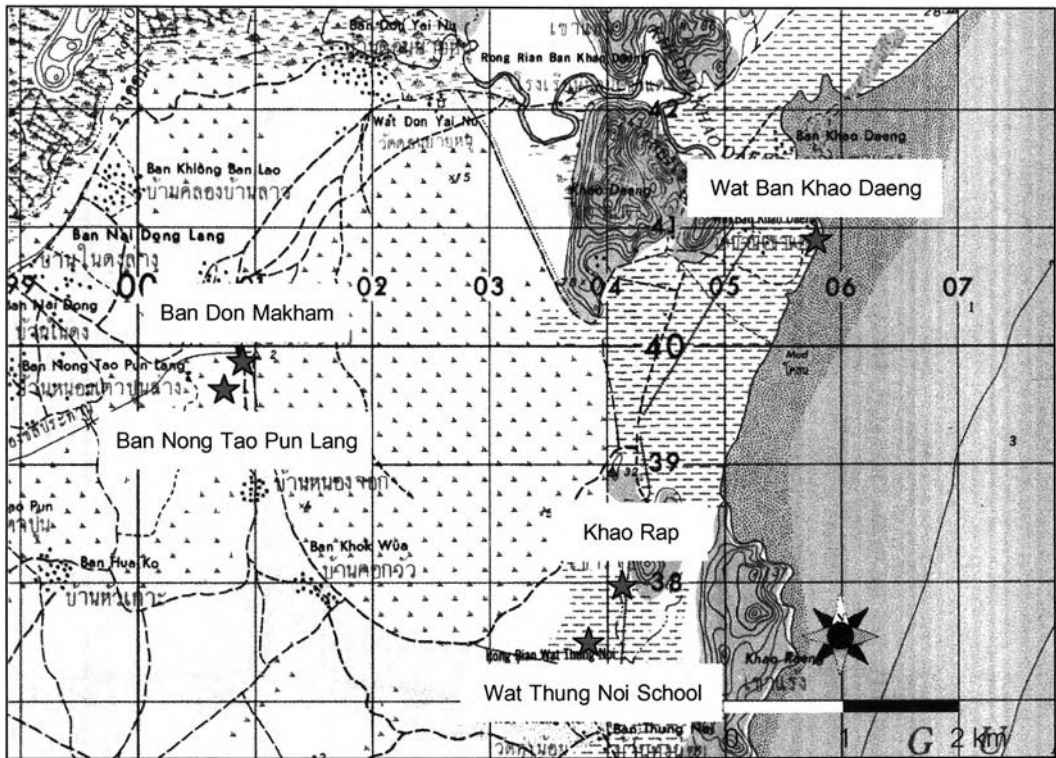


Figure 2.3 Topographic map of Amphoe Kui Buri (Map sheet 4933 II Royal Thai Survey Department 1969).

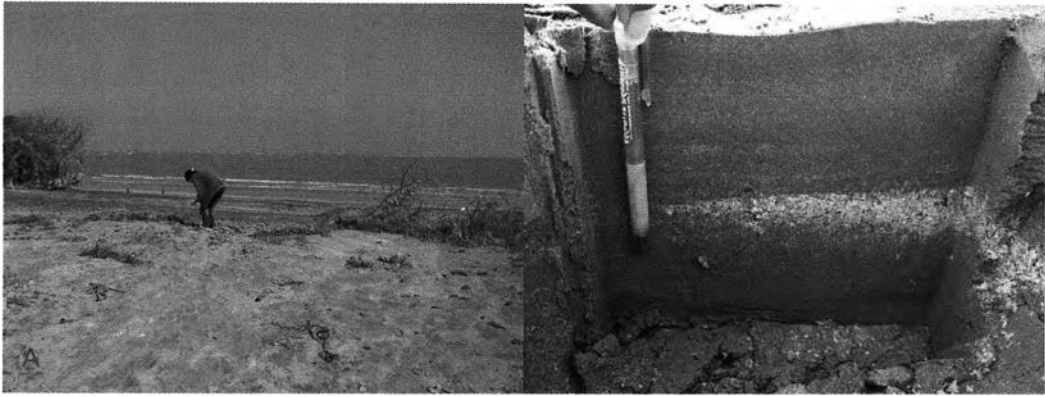


Figure 2.4 (A) Wat Ban Khao Daeng area.

(B) The profile of the sediments at Wat Ban Khao Daeng area.



Figure 2.5 (A, B) Khao Rap area.



Figure 2.6 (A, B) Wat Thung Noi School area.



Figure 2.7 (A) Ban Don Makham area.

(B) The profile of the sediments at Ban Don Makham area.