Nai Yang Beach Field Trip
Sirinat Marine National Park

814-113 THAI GEOGRAPHY

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Students from Bunkyo University, Japan, visit Nai Yang Beach
May 3, 2014
Lecture Outline (80 slides)

• Itinerary
• Location
• Park Location & Status
• Tha Chatchai Mangrove Forest Nature Trail
• Fish & Marine Life
• Fishers
• Surf Sites & Conservation
• Coral Mound & Wave Refraction
• Beach and Coastal Erosion
• Marine Debris & Beach Litter
• Point-sourced Water Pollution
• Hotels & Amenity
• Relevant Websites & Research

Photos: Steven Martin
Itinerary

8:30 am – 15:00 pm

• 8:30  Meet at Building 7
• 8:40  Depart for Nai Yang Beach
• 9:30  Arrive Nai Yang Beach (Sirinat National Park)
• 9:30 – 12:30  Beach and coastal study
  – Review case study on site (from class lecture)
  – Beach clean up activity
  – Beachcombing
• 13:00 – 13:30  Travel to *Tesco Lotus* Thalang for Lunch
• 13:30 – 14:30  Lunch at *Tesco Lotus* Food Court
• 14:30 – 15:00  Travel to PSU
• 15:00  Arrive at PSU
SIRINAT MARINE NATIONAL PARK, PHUKET

Sai Kaeo Beach
Mai Kao Beach
Phuket International Airport
Sirinat Park Headquarters
Nai Yang Beach
Nai Thon Beach

1981 Designated as Nai Yang National Park
1992 Renamed Sirinat National Park
View of Northern Phuket

Sirinart Marine National Park

Photo: Steven Martin
SIRINAT MARINE NATIONAL PARK

DESIGNATION
- Thai National Park (i.e., Marine National Park)
- Unofficial Marine Protected Area
- IUCN Category II (National Park)

“Large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities.”

AREA
- 90 sq km total boundary
- 68 sq km (76%) marine
- 22 sq km (24%) terrestrial
- 1.27 sq km of mangrove forest
- 13 km of beach
- 2 sq km of beach forest
- Rocky shore areas
- 3 tourist beaches: Sai Kaew, Mai Khao and Nai Yang

MARINE AND TERRESTRIAL FLORA AND FAUNA
- Coral reefs (plate corals, soft corals, sea fans, tree corals (branch or staghorn corals))
- Seagrass beds
- High diversity of fish and marine organisms
- Mangrove forests
- Diverse flora and fauna, including bird life

AMENITY
- Visitor center, Bungalows and Campground at Nai Yang Park
- Nature study trail, visitor center and mangrove forest at Ban Tha Chatchai
- Hotels and restaurants

SYSTEM BOUNDARIES
Bird’s Eye View of Nai Yang

- National Park Surf Reef
- Coral Mound
- Airport
- Blue Canyon Country Club
- Park HQ
- Indigo Pearl Hotel
- Ko Pling
- Seagrass Beds
Nai Yang Beach

Photos: Steven Martin
Low tide at the southern end of Nai Yang Beach

Photo: Steven Martin
“Nai” (Inside) + “Yang” (Rubber Tree)
Casuarinaceae (she-oaks) Common Beach Ironwood

Photo: Steven Martin
Tha Chatchai Mangrove Forest Nature Trail
Mangrove forest preservation is important as mangrove trees with their extended root systems are imperative in preventing erosion of the mudflats, they also act as a global sink for carbon dioxide, a major greenhouse gas.
Tha Chatchai Mangrove Forest Nature Trail

A nature trail with signs indicating and explaining the various species.

Photos: Steven Martin
MANGROVES
- Evergreen forest type
- Restricted to the area where freshwater and seawater mix (i.e., cannot survive in pure freshwater or pure seawater)
- Occurs in sheltered locations such as the mouth of streams and rivers flowing into the sea (especially in estuaries)

TREE SPECIES
Red mangrove (*rhizophora mucronata*),
white mangrove (*avicennia officinalis*),
olive mangrove (*avicennia marina*),
black mangrove (*bruguiera gymnorrhiza*),
rhizophora apiculata, ceriops spp.,
xylocarpus granatum, xylocarpus moluccensis, lumnitzera racemosa,
heritiera littoralis, finlaysonia maritima and derris trifoliata.

The most pristine mangrove forest habitat on Phuket
Mangrove-dwelling animals with unique evolutionary characteristics
Important for studying adaptation and evolution

Photo: Steven Martin
Mangroves Provide Habitat

**FISH**
Mudskippers, Mullet, Groupers and Garfish

**SHELL FISH**
Shrimps, Shellfish and Crabs

**REPTILES**
Monitor lizards, snakes including Mangrove snake, Turtles

**BIRD SPECIES**
collared kingfisher, roseate tern, sanderling, terek sandpiper, bar-tailed godwit, white-breasted waterhen, slaty-breasted rail, white-bellied sea-eagle, brahminy kite and large-billed crow

**PERENNIAL PLANTS**
Mountain ebony (kong kang bai lek), red cycas (prong daeng), black myrsina (samae dam), the Lady's Nails quisqualis (leb mue nang)
FISH & MARINE LIFE
Fish of the Nai Yang Reef (Courtesy of Khun Mak Sarawat)
Nai Yang Reef Snorkel Guide  (Original work by Khun Mak Sarawat)

Naiyang Snorkeling Trail

- **Depth phobia**
  For beginners and those who afraid of the deep.
  Butterflyfishes, Toadfish, Morreys

- **The Lagoon**
  Free from waves in low tide.
  Pipefishes, Anemone

- **The North edge**
  Start in the shallow then to the deep edge
  Butterflyfishes, Parrotfishes
  Lionfishes, Anemone

- **The South edge**
  For a clear water day.
  Big fishes, Lobsters
Underwater photography by Khun Mak Sarawat

Cube boxfish

Lion fish

Morey eel

Lion fish

Clown anemone fish

Other Marine Life
- Leatherback turtles
- Hawksbill sea turtle
- Ghost crabs
- Stingray
- Moray eel
- Leopard Shark
- Black-tip Reef Shark
- Lobster

Lobster
Andaman Coral Reefs

Reef species include plate coral, soft coral, and sea fan.

Photos are Surin Islands, Phangnga
Seagrass Beds

The shallow reefs and coastal areas south of Ko Pling, Sirinat National Marine Park, are host to a variety of endangered seagrass species.

There are roughly 50 species of seagrass worldwide. Thailand hosts approximately 8 species. Southeast Asia is a key area of speciation. Seagrass serves as an environmental monitor.

Photo: Steven Martin
Fishers (northern and southern groups)
Thai Fishers

Photo: Steven Martin
Fisher Group (Northern)

Photos: Steven Martin
Northern group

Southern group

(Northern Group)

Photos: Steven Martin
FISHERS (Northern Group)

Photos: Steven Martin
Fishers
(Southern Group)

Photo: Steven Martin
Surf Sites & Conservation
The Southwesterly Monsoon
May through October
Southwest – West Windswell

Indian Ocean Groundswell
Quality Waves
Potential To Arrive Year-round

Cyclonic activity
Depressions, Tropical Storms & Cyclones
Potential for BIG
Nai Yang Surf Sites

The long left-hand point at Pling Island is a surfers paradise
“Prior to the turn of the Century, this wasn’t even a surf site... then the coral mound surfaced and grew in size... One day the waves just began to form as perfect ‘A-frame’ peaks.”

(Robo, 2008 personal interview)
Surfing waves on the northern beach area at Nai Yang

Photos: Steven Martin
Map and Photos by Steven Martin

National Park Reef

Northern Beach Break

Pling Island

SURFING SITES OF NAI YANG BEACH

Stream

Reef Breaks

Cloud Breaks

Reef Break

REEF

REEF

Restaurants and shops

Map and Photos by Steven Martin
Local beaches slated for surfing reserve shortlist

AT LEAST three surfing locations at Phuket beaches are being shortlisted for recognition as National Surfing Reserves (NSRs).

Brad Farmer, global chair of the non-profit organization National Surfing Reserves (NSR), conducted a site inspection at Kata, Kalim and Nai Yang Beaches on November 4.

“The surfing reserve concept is a symbolic dedication whereby surfing areas are recognized as coastal resources worthy of conservation; a reserve is essentially a badge of merit, a proactive endorsement to recognize iconic natural locations around the world,” said Mr Farmer.

In Australia, Mr Farmer’s home country, the NSR project has gained much high-level support, including that of state premiers.

“Beaches are Thailand’s great income generators, so it makes sense to recognize the special attributes of the coastal resources, such as surfing areas,” he noted.

There are currently 14 NSRs in Australia, two in Hawaii and several more under review in the region, including in Indonesia, Sri Lanka, the Philippines and China.

“The creation of a surfing reserve in Thailand, the first in Asia, is a golden opportunity for Thailand to show its forward thinking and proactive effort toward conservation on the Andaman Coast,” said Steven Martin, a coastal researcher with Prince of Songkla University’s Faculty of Environmental Management.

“Thailand is being considered for this distinction not only because of the existence of the natural resource, but because it is a safe and accessible destination with a favorable climate of environmental awareness, especially with tourism,” he explained.

Mr Martin added that surfing in Thailand is gaining in popularity and surfers are inevitably custodians of the coastal environment.

“The surfing reserve program globally promotes stewardship of the natural environment, including the reefs and aquatic life,” he said.

“If anything good came out of the 2004 tsunami, it was the rise in awareness of coastal resources and the support from the Thai government alongside international organizations and NGOs.

“It’s really an honor that Brad has taken the initiative to visit Phuket and consider surf sites, such as Kata, Kalim and Nai Yang Beaches, for this internationally-recognized distinction,” he added.

PHUKET NEWS

PROS
Potential to cosset the area’s surf resources
Protection of habitat
Recognizes surfers as a key stakeholder group
Help to ensure public access

CONS
May increase usage and crowding resulting in increased social tensions and ‘surf rage’
May increase usage resulting in increased environmental impact on the reefs
The Coral Mound
The Coral Mound

- Appeared in approximately 1999
- Made up of dead corals
- Mainly branch corals and sand
- Expanding toward the shoreline
- Widening toward the south
- Potentially new coral deposits building to the south

3 explanations based on Interviews

- A period of higher than normal ocean temperatures resulting in coral bleaching
- Trawlers which drag large nets along the seafloor may break apart fragile staghorn corals which are transported toward the coast by natural processes
- The 2004 Indian Ocean Tsunami is somewhat responsible

Photos: Steven Martin
INTERVIEW WITH MAK SARAWAT

The tsunami brought much of the natural marine debris (dead corals).
I don’t remember that there was much of a coral island [coral mound] before the tsunami, I think it mainly came to its present state after the tsunami.
The coral island is mainly made up of broken staghorn corals.
The coral island has changed the direction and pattern of the local currents.
Pre-tsunami, the living coral used to protect the beach and coastal area from the waves.

The Coral Mound
Wave Refraction

- As ocean swells approach the reef and coral mound they begin to slow
- Ocean swells continue to move faster in the deeper water to the north and south
- This causes the swells to bend (wave refraction)
- Waves now approach the shore at side angles
- Potential for changes in erosion patterns along the beachfront
Small waves refracting along the southern end of Nai Yang

Photo: Steven Martin
Has the increased wave refraction had any affect on the local coastal erosion?
Beachfront Erosion
Southwest Monsoon Windsea

Photo: Steven Martin

Photo
July 2007
Nov. 2011

Photo

Photo: Steven Martin
Beachfront Erosion

Fallen trees (as of 2014) are marked with an X

Photo: June 2007

Photo: Steven Martin
Beachfront Erosion

Photo
June 2007

Fallen trees (as of 2014) are marked with an X

Photo: Steven Martin
Fallen Trees during 2011

10 + large trees fell during the 2011 Southwest Monsoon

Photo: Steven Martin
Trees fallen by 2014

Photo: Steven Martin

Photo
Nov. 2011
10+ trees fell along the northern stretch of Nai Yang Beach in 2012.

Photos: Steven Martin
Fallen trees between 2007–2014

Photos: Steven Martin
Northern Nai Yang Beach

Key Area Experiencing Beach Erosion

Photo
July 2008

Photo: Steven Martin
Northern End of Nai Yang Beach

Key Area Experiencing Beach Erosion

Photo: Steven Martin

Dec. 2011
Marine Debris & Beach Litter
Marine Debris

Photos: Steven Martin
Indonesian label

Burmese label

Photos: Steven Martin
The Nai Yang Trash Tree

Photo: Steven Martin
Beach Litter

Local dogs may spread the trash

Trash left behind by beachgoers and picnickers

Trash bins were put in place in recent years

Photos: Steven Martin
Unregulated Burning

Photo: Steven Martin
Green Nai Yang Group
Beach Clean Up — Nov. 29, 2011

Environmentalist
Mr. Nick Anthony

Kelly Franklin with Sustainable Smiles

Photos: Steven Martin
Point-sourced Water Pollution
Point-sourced Water Pollution Northern Klong

Photos: Steven Martin
Southern End of Nai Yang Beach

Intertidal area exposed on low tide

Mouth of the Southern Klong
Water polluted from local sewage, agriculture and development

Photo: Steven Martin
Hotels &

Amenity
Andamas Beach Resort

The ‘abandoned’ Hyatt

Photo: Steven Martin
Thanks for your attention...

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Relevant Websites

Department of National Parks

Tourism Authority of Thailand (TAT)

ICUN: Protected Areas Category II
http://www.iucn.org/about/work/programmes/gpap_home/gpap_quality/gpap_pacategories/gpap_pacategory2/