
A general survey of marine filamentous fungi at Had Khanom-Mu Koh Thale Tai National Park, Nakhon Si Thammarat

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Three collecting trips were made to four collecting sites at Had Khanom–Mu Koh Thale Tai National Park (October 2006, February 2007, May 2007). Approximately 1,300 substrata were collected, including mangrove woods, fruit, prop roots, sea grasses and sea weeds. One hundred and six fungal collections were enumerated yielding 84 ascomycetes (79.2%), 20 anamorphic fungi (18.9%) and 2 basidiomycetes (1.9%). Forty taxa were identified to species level, 44 taxa were identified to genera level and 22 taxa await further identification. On the basis of species diversity, site 3 (western area of Tan island) showed the greatest percentage of occurrences at 19.5%, while site 1 (Khanom mangrove study center), site 2 (Khanom canal) and site 4 (sandy beach, eastern area of Tan island,) gave lower percentages at 10.8, 9.7 and 6.6%, respectively. Moreover, we found *Lindra thallasiae* and *Varicosporina prolifica* on sea grasses, and *Swampomyces aegyptiacus* on wood was noted as a new record for Thailand. A total of 120 isolates have been deposited in the BIOTEC Culture Collection (BCC). Data is continued being gathered for this project. Comparisons of fungi occurring at different collecting sites at different collecting times, percentage abundances, percentage colonizations, are in progress.

Diversity, distribution, abundance and monitoring of seaweeds at Koh Taen, Had Khanom-Mu Koh Thale Tai National Park, Nakhon Si Thammarat Province, Thailand

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The diversity, distribution, abundance and monitoring of seaweeds at Koh Taen, Had Khanom-Mu Koh Thale Tai National Park, Nakhon Si Thammarat Province, Thailand, were investigated in both May and July 2006. Four study sites were chosen and permanent plots were established in high species-rich areas around the island. Applying a “line transect method” and quadrats, the percentage cover of macroalgae was assessed. A total of 18 species were identified during this study, comprising 1 species of Cyanophyta, 6 of Chlorophyta, 4 of Phaeophyta and 7 of Rhodophyta. The brown algae, *Sargassum* spp. and *Turbinaria* spp., were the most common. As a result of this study we found that seaweed diversity has decreased from 41 species identified in October 2005 to 18 species during this study. For example, *Boodlea composita* (Harvey) F. Brand was the dominant species in site 3 in 2005 but was absent from all sites during this study.

The plankton community in relation to environmental factors along Khanom canal, Khanom beach, Mu Koh Thale-Tai, Nakhon Si Thammarat

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A total of 71 phytoplankton genera in 3 Divisions were investigated from quantitatively collected samples in October 2006, January 2007 and March 2007. The most diverse Division was Chromophyta, comprising the Class Bacillariophyceae with 38 genera, Class Dinophyceae with 19 genera and Class Dictyochophyceae with 1 genus. *Navicula*, *Nitzschia* and *Oscillatoria* were the most frequently found genera throughout all sampling periods. However, based on density, *Chaetoceros* spp. dominated phytoplankton at all stations sampled throughout the sampling periods. Zooplankton samples were identified into 50 genera in 11 Phylum. Arthropoda was the most diverse phylum comprising 24 genera, of which nineteen were members of the Class Copepoda. The nauplii of crustaceans were dominant at all marine stations throughout all sampling periods, and included the genera *Codonellopsis* and *Tintinnopsis*. Environmental factors along Khanom canal, Khanom beach and around the islands during the months of sampling were not much different among marine stations, although nitrate usually showed higher amounts than other nutrients. However, continuous records of plankton diversity and water quality in an annual cycle are necessary to explain the relationships between plankton communities and environmental factors in this area.

Diversity, distribution and abundance of seagrasses at Khanom-Mu Koh Thale Tai National Park, Nakhon Si Thammarat Province, Thailand

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The diversity and abundance of seagrasses were studied at Koh Ta Rai, Khanom-Mu Koh Thale Tai Marine National Park, Nakhon Si Thammarat, Thailand. The study was carried out at 2 study sites. A total of six permanent transect lines were investigated. The first data collection was already conducted in July 2006 and the results indicated that 4 species of seagrasses were found, i.e., *Thalassia hemprichii* (Ehrenb.) Aschers, *Halodule uninervis* (Forsskål) Aschers, *Cymodocea rotundata* Ehrenb. Et Hempr. Ex Aschers and *Enhalus acoroides* (L.f.) Royle.

Species diversity of marine sponges inhabiting coral reefs in Had Khanom – Mu Koh Thale Tai National Park, Nakhon Si Thammarat Province, Thailand

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The species diversity and distributions of demosponges inhabiting coral reefs in Had Khanom – Mu Koh Thale Tai National Park, in the southern Gulf of Thailand, were investigated by field surveys undertaken at 12 sites in November 2006 using SCUBA and random observations. Forty-five species of demosponges from 10 orders, 24 families and 34 genera were recorded. The most abundant and common sponges in this area are *Oceanapia sagittaria*, *Neopetrosia* sp. “blue”, *Xestospongia testudinaria*, and *Haliclona (Gellius) cymaeformis*. Most species are common representatives of the Indo-Pacific fauna found throughout the Gulf of Thailand.



Water circulation and suspended sediment dispersion around Khanom Beach, Southern Sea Island

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The purpose of this project is to study the circulation and dispersion of suspended sediment particles at Khanom Beach, Southern Sea Island. The main hypothesis is that the circulation and dispersion of sediment control distribution of the coral. Two field samplings will be carried out, and a numerical circulation and dispersion model will be applied to the dispersion of sediment or coral eggs in the area. The project will be completed in 2 years (Jan 2007 – Dec 2008).

Coral biodiversity at Khanom - Mu Koh Tale Tai Marine National Park

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Coral biodiversity was studied at Khanom - Mu Koh Tale Tai Marine National Park. We went snorkeling and took coral photographs underwater. We compared two sampling techniques. The first random photograph technique did not have a scale reference. The second random photograph technique used a quadrat, 50 x 50 cm², for a scale reference. The image data were classified and analyzed to calculate biodiversity indices such as the Shannon-Wiener index and the Simpson index. Values of the Shannon-Wiener index were for Koh Tan, 1.73 and 1.57, Koh Mud Soom, 1.63 and 1.59, and Ao Tong Yee, 1.61 and 1.57, for the no scale reference technique and the quadrat reference technique, respectively. Values of the Simpson index were for Koh Tan, 0.86 and 0.80, Koh Mud Soom, 0.91 and 0.89, and Ao Tong Yee, 0.85 and 0.81, for the no scale reference technique and the quadrat reference technique, respectively. This investigation revealed a high coral biodiversity at Khanom - Mu Koh Tale Tai Marine National Park.

Species diversity and distribution of gorgonians at Had Khanom – Mu Koh Thale Tai National Park, Nakhon Si Thammarat

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Gorgonians are marine invertebrates that belong to the phylum Cnidaria, as do corals and jelly fish. Gorgonians are classified into the same group (subclass Octocorallia) as blue corals, soft corals and sea pens. Unlike corals and sea anemones, which have 6 tentacles, gorgonians have 8 tentacles, which are used for catching food. The purpose of this study was to investigate the diversity and distribution of gorgonians at Had Khanom - Mu Koh Thale Tai National Park by using the SCUBA diving technique. Samples were photographed and some were collected and preserved in 70% alcohol for further identification and for being reference specimens. Shapes and characteristics of colonies and sclerites of gorgonians were used to identify to genus level. Results from the first survey at Koh Tan showed that there were 10 identified genera of gorgonians while 4 specimens are still unknown. They were found at 5-12 m depth of water and were normally attached to rocks, dead corals, or rubble that lay beneath sand or silt substrates. Their distribution was clumped. The dominant genus was *Subergorgia*. More surveys will be conducted.

Pseudo-imposex in some female volutes (Gastropoda: Volutidae)

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The occurrence of a penis in female gastropods has commonly been accepted as an indicator of tributyltin (TBT) pollution. It mainly occurs in females of the superfamily Muricoidea (infraorder Neogastropoda). Some species seem less sensitive than others, and one belonging to the Columbelloidea has been reported to lack the imposex response. During a survey in S.E. Asian waters, we initially considered female volutes with small penises and an external vas deferens as showing imposex. Doubt arose, however, when 100% of the females had a penis at sites where other gastropods showed no or low imposex incidence. During the present study, hypotheses, such as volutes being extremely sensitive to TBT, or old volutes having a greater chance of coming into contact with TBT than young volutes, or volutes changing sex during growth, were rejected. This forced us to search for museum specimens collected before 1960, which is long before TBT was brought into use as a poison in anti-fouling paint. In the Australian Museum in Sydney and the Zoological Museum in Amsterdam some species were found from Indonesian and Australian waters. All inspected females showed the typical small penis and vas deferens and so it became clear that this is a natural phenomenon in these species, which is unknown in other gastropod species. We consider these male characteristics not to be induced by TBT pseudo-imposex, and have been found in *Cymbiola nobilis*, *C. vesperilio*, *Melo amphora*, *M. melo* and *M. umbilicata*. These species belong to the Volutidae subfamily Cymbiinae. However, pseudo-imposex is missing in species belonging to the subfamilies Odontocymbiolinae and Zidoninae from South America; they show a normal TBT induced imposex response according to recent literature.

Species diversity of nudibranchs at Had Khanom – Mu Koh Thale Tai National Park, Nakhon Si Thammarat

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The purpose of this study was to investigate the diversity and habitat ecology of nudibranchs at Had Khanom - Mu Koh Thale Tai National Park. Nudibranchs belong to the mollusk group (subclass Opisthobranchia), but have no shell protecting the soft body. Specimens were collected by using the SCUBA diving technique. Then, specimens were photographed and recorded by using VDO camera before they were preserved in alcohol. Shapes, body colors, and color patterns of nudibranchs were used to identify to species level. The results showed that nudibranchs can be found on coral colonies, coral reefs, and sand substrates between 1-15 m depth of water. At least 11 species of nudibranchs were found at Had Khanom - Mu Koh Thale Tai National Park. The species included *Phyllidia* cf. *elegans*, *Phyllidiella nigra*, *Phyllidia coelestis*, *Chromodoris preciosa*, *Flabellina rubrolineata*, *Glossodoris atromarginata*, *Jorunna funebris*, *Glossodoris cincta*, *Dendrodoris* sp., *Bornella* sp., and *Phyllodesmium magnum*. The dominant nudibranch species were in the Family Phyllidiidae. More surveys will be conducted.

Diversity study of Echinoderms of Khanom Beach, South Sea Islands National Park, Nakhon Si Thammarat Province

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Echinoderms of Had Khanom – Mu Koh Thale Tai National Park, Nakhon Si Thammarat Province, located in the southern part of the Gulf of Thailand were studied at 12 sites, namely Koh Tan (4 sites), Koh Mudsum (2 sites), Koh Wang Nai (2 sites), Koh Wang Nok (2 sites) and Koh Rab (2 sites) in November, 2006. The investigations were carried out by SCUBA diving in the daytime and random searches throughout the reefs. The results yielded 13 species of Echinoderms from 4 classes, 5 orders, 8 families and 10 genera. The most abundant Echinoderms in this area are: *Lamprometra palmate*, *Ophiothrix exigua*, *Holothuria (Metensiothuria) leucospilota*, and *Diadema setosum*. All observed species are commonly found in the Gulf of Thailand and the Indo-Pacific.

Species diversity of marine Ascidians dwelling in coral reefs of the Khanom-South Islands, Nakhon Si Thammarat Province

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The species diversity and distribution of ascidians dwelling in coral reefs in Had Khanom – Mu Koh Thale Tai National Park, Nakhon Si Thammarat Province, in the southern Gulf of Thailand were investigated. The investigations were conducted at 12 sites in the Mu Koh Thale Tai area in November 2006. The investigations were carried out by SCUBA diving during the daytime and random observations throughout the reefs. The results yielded 10 species of ascidians from 3 orders, 3 families and 5 genera.

Status of dolphins in Had Khanom -Thale Tai Archipelago, Thailand

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The status of dolphins was surveyed in Had Khanom-Thale Tai Archipelago, Thailand, from Koh Tarai to Thong-yang bay and covering Koh Tan, Koh Rab, Koh Vangnai, Koh Vangnok and Koh Madsum, during August 2006 to July 2007. Interviews of 43 persons, comprising fishermen and tourists, in Amphur Khanom, Nakhon Si Thammarat, were conducted. It was determined that 100% of fishermen and tourists saw three types of dolphins, namely *Sousa chinensis*, *Orcaella brevirostris* and *Neophocaena phocaenoides*. A ship-based survey of 17 trips resulted in two species of the Family Delphinidae being found. For the first species, the Indo-Pacific hump backed dolphin (*Sousa chinensis*), about 17 individuals were found. It seemed to be a native species because it was found every trip, and was distributed along Thongshing bay, Koh Tharai, Koh Vang nai, Prathup cave, Taled bay, Kokao beach, Kwang Phao bay. For the second species, the Irrawaddy dolphin (*Orcaella brevirostris*), about 5-7 individuals were found, which were distributed along Thong Por bay, Tong Ta Khum bay and Taled bay. Behavior was studied. Data on stranding of dolphins during 2004-2007 showed 3 species among 10 stranded dolphins. Six Indo-Pacific hump backed dolphins (*Sousa chinensis*) were stranded at Thongnian bay and Niphao beach. One stranded Irrawaddy dolphin (*Orcaella brevirostris*) was found at Thongnian bay. Three Finless porpoises (*Neophocaena phocaenoides*) were stranded at Khanom golden beach hotel and Niphao beach. Most strandings were caused by fishing gear and for some the causes were unknown. The statuses of dolphins in Had Khanom-Thale Tai Archipelago are those of critically endangered species.