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Author(s)	ADULYANUKOSOL, KANJANA; HINES, ELLEN; BOONYANATE, POTCHANA
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# Cultural significance of dugong to Thai villagers: Implications for conservation

KANJANA ADULYANUKOSOL<sup>1</sup>, ELLEN HINES<sup>2</sup> AND POTCHANA BOONYANATE<sup>3</sup>

<sup>1</sup>*Phuket Marine Biological Center, 51, Vichit, Muang, Phuket 83000, Thailand*

*Email: k\_adulyanukosol@yahoo.com*

<sup>2</sup>*San Francisco State University, San Francisco, CA, USA*

<sup>3</sup>*Marine and Coastal Resources Research Center (Eastern Gulf), Rayong Thailand*

## ABSTRACT

Dugongs (*Dugong dugon*) are seen in limited areas along both coastlines of Thailand, the Andaman Sea and the Gulf of Thailand. Thai researchers have been studying the dugong since 1979. Information on the history of dugongs, beliefs, and the previous use of dugong body parts in Thailand has been gathered from interviews with local people along both coastlines since 1994. Within Thailand various village names and other locations have been derived from the various names of the dugong in the Thai language. Currently, the local belief in magical properties of dugongs are not as strong as in the past, but items made of dugong body parts have been found, especially along the coast of the Andaman Sea. Scientists are making an effort to utilize traditional ecological knowledge on the conservation and management of dugong and other marine endangered animals. It is likely that traditional ecological knowledge would play an important role in conservation and management of dugong and biodiversity in Thailand in the future.

**KEYWORDS:** history, legend, dugong, belief, use of body parts, traditional ecological knowledge, Thailand

## INTRODUCTION

In the past, a number of dugongs are believed to have been distributed along both coastal lines, the Andaman Sea and the Gulf of Thailand (Chantraporsyl and Adulyanukosol, 1994; Adulyanukosol, 1995), but currently they are rare and scattered in small groups in specific areas (Adulyanukosol, 1998, 1999, 2000; Hines and Adulyanukosol, 2001, Hines et al., 2003, 2005a). There are 5 laws relevant to dugong and seagrass conservation in Thailand: Wildlife Reservation and Protection Acts B.E. 2535 (1992), Fisheries Acts of B.E. 2490 (1947), National Park Acts B.E. 2504 (1961), Export and Import Product Acts B.E. 2522 (1979), and CITES (the Convention on the International Trade in Endangered Species) (Saranakomkul, 2002). All laws prohibit the killing, taking, possessing, and trading of dugongs or dugong body parts in Thailand. CITES prohibits the exporting and importing of dugongs and dugong body parts between countries. As a consequence of these laws there has been no dugong hunting in Thailand for more than 40 years (Adulyanukosol, 1999). Currently, a major problem is the death of dugongs from being incidentally entangled in fishing gear, especially gill nets and stake traps (Adulyanukosol, 1995, 1998, 1999, 2004, Hine et al., 2005b, Adulyanukosol and Poovachiranon, 2006; Adulayanukosol et al., 2009).

Recently researchers increasingly recognized the value of so-called traditional

ecological knowledge (TEK), which was defined as “a cumulative body of knowledge, practice and belief evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment” (Berkes et al., 2000). There was no doubt that species were becoming extinct and that ecosystems were being dramatically altered (Casey and Myers, 1998; Jackson et al., 2001), and as a discipline conservation biology was struggling with economic and political inertias that facilitate these tragedies. Using TEK allowed a mutually beneficial relationship to be created between conservation biologists and local people (Drew, 2005). In the earlier period of our study since 1993, we have utilized TEK on the conservation of marine endangered animals (dolphin and whale, dugong and sea turtle). However it is more active currently in particular areas such as Sarai Islands in Satun Province, Tase village in Trang Province etc.

This report has particularly concern to the cultural significance of dugong to Thai villagers and the earlier stage of TEK utilization. Most information is based on the previous studies of Phuket Marine Biological Center including collaborative projects *i.e.*, Adulyanukosol (1998, 1999, 2004), Adulyanukosol et al. (2003), and Hine et al. (2005b).

## MATERIALS AND METHODS

Information for this study was obtained through the previous publications of interviews with local people along both coast lines of Thailand including unpublished data of Phuket Marine Biological Center (PMBC). The previous publications were: Adulyanukosol, 1995, 1998, 1999; Hines et al., 2005a, 2005b; Adulyanukosol and Poovachiranon, 2006; Adulyanukosol et al., 2009). Generally the interviews had been made along the coastline of the Andaman Sea from about 600 families in 6 provinces (Ranong, Phang Nga, Phuket, Krabi, Trang, and Satun) and from about 300 families in the Gulf of Thailand in 8 provinces (Rayong, Chanthaburi, Trat, Surat Thani, Patthalung, Songkla and Pattani). The history, belief, and use of dugong body parts in Thailand have been accumulated since 1993. The interview questionnaires were concerned about dugong, seagrass beds, other endangered animals (dolphin, whale, sea turtle and whale shark), fishery issues, and conservation aspects. Meanwhile PMBC staffs have raised awareness on marine endangered animals to those people. Additionally we have also maintained good relationship and kept close contact with local communities since 1993, particularly along the Andaman Sea coast where PMBC is located.

## RESULTS AND DISCUSSION

### Coastal communities and dugongs

#### 1. Local names of dugong and names of the villages and locations derived from the various names of the dugong in the Thai language

Thai people were torn between two conflicting desires in relation to dugongs. The first was the desire to see the animals existing in nature into the future. However, later one Thai person also considered the meat of the dugong to be delicious and believed there to be medicinal or protective benefits from various body parts, such as tears, tusks and bones (Adulyanukosol, 2004; Hines et al., 2005b).

Adulyanukosol (1998, 1999) has gathered information on the names of local villages and places where there used to be dugongs that are named after the name of the dugong in the local dialect. She found examples of this in various villages in 6 provinces. Table 1 shows the designated names of places in 6 provinces; five places in the Gulf and one place in the Andaman Sea. General distribution of seagrass beds and dugongs in Thailand is available in Fig. 1.

Within Thailand, dugongs have been called various names, i.e. "Payoon", "Moonam", "Moodud", "Moothalae", "Nguag", and "Duyong or Tuyong". The most common word used to call dugong in Thailand was "Payoon" while the word "Duyong or Tuyong" was commonly used in the southern part of the country.

**Table 1** The local names of dugong and corresponding names for villages and places. Words called dugong are bold italic. Information was mainly adapted from Adulyanukosol (1998, 1999, and 2004). Meanings of Thai words are: Ban, Moo = village, Wat = temple, Khao = mountain, Had = beach, Pak=mouth, Talad = market, and Moo = village

Local name	Province (Changwat)	District (Amphur)	Subdistrict (Tambol)	Village (Ban, Moo) and others
Moodud	1. Chanthaburi	Tha Mai	Klong Khut	Ban <b>Moodud</b> , Wat <b>Moodud</b> , <b>Moodud</b> School, Khao <b>Moodud</b>
Payoon	2. Rayong	Ban Chang	Pla	Ban <b>Payoon</b> , Had <b>Payoon</b> , <b>Payoon</b> School
	3.Phatthalung	Pak <b>Payoon</b>	Pak <b>Payoon</b>	Talad Pak <b>Payoon</b> (Moo 1)
Duyong or	4.Songkhla	Tepha	Pak Bang	Ban <b>Tuyong</b> (Moo 2)
	5.Pattani	Nong Jig	<b>Tuyong</b>	Ban <b>Tuyong</b> (Moo 1)
Tuyong	6.Krabi	Ko Lanta (Lanta Is.)	Saladan	Ban Lo <b>Duyong</b> (Moo 5)

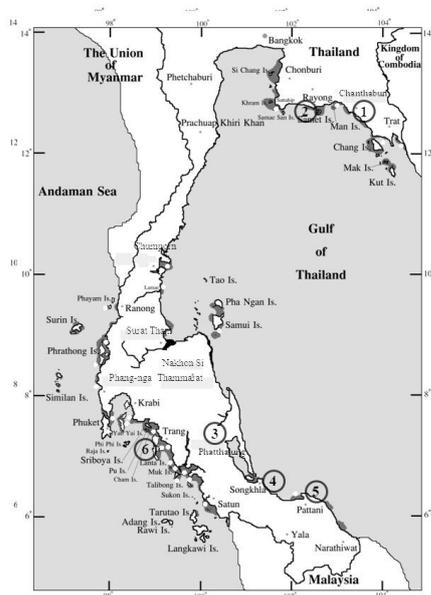
The words "Moonam or Moodud" (Adulyanukosol, 1998, 1999), and "Moothalae" (Boonprakob et al., 1983) mean water pig or sea pig. "Nguag" means mermaid or dugong. "Duyong or Tuyong", derived from the Malaysain language is normally used in southern Thailand, meaning sea pig (Boonprakob et al., 1983; Adulyanukosol, 1998, 1999). "Moonam" is a name used by southern

people based on the pinkish meat of the dugong which resembles pork (Boonprakob et al., 1983) and may also be from the chubby body shape and the feeding behavior of dugong which is seen resemble that of a pig (Adulyanukosol, 1998).

People in Ban Moodud, Chanthaburi Province believed that the word "Moodud" comes from two sources; both from the piggish appearance

of the dugong and the secondly from the dugong feeding's behavior. "Moo" means pig while "dud" means nudging or digging with a snout. While most interview respondents in Patthalung Province did not know about the origin of the name "Pak Payoon", only one person mentioned that the names of the district and market came from the name of the dugong.

The name "Ban Lo Duyong" at Lanta Island, Krabi Province has come from the call of dugong. Ban is the village. "Lo" means chasing or pushing the animals into a shallow area. "Duyong" is dugong. In the past this area had a number of dugongs. Dugongs were chased into shallow water inside the bay and then were killed for food. Nevertheless, recently there was no sighting record of dugong in this area (Chantrapornsyl and Adulyanukosol, 1994; Adulyanukosol, 1995; Adulyanukosol and Thongsukdee, 2002; Hines et al., 2005; Adulyanukosol et al., 2008). Adulyanukosol (1998, 1999) mentioned that Songkhla and Pattani Provinces used the names of "Ban Tuyong" to call dugong. Recent interviews of local people in those two provinces found no information supporting this matter. We cannot confirm whether the word "Ban Tuyong" came from the name of dugong or others (*i.e.* name of local plant or name of respected people in the past).



**Fig. 1** Map of coastal areas of Thailand showing the distribution of seagrass (gray patch) and dugong (white circle). The numbers in circles correspond to the numbers in Table 1. Map was modified from Adulyanukosol (2004).

## 2. "Rong Ngeng", A Song from Southern Thailand

Along the Andaman Sea coast, in southern Thailand and northern Malaysia there was a local song and dance drama called "Rong Ngeng" (or "Li Ke Pa" in Thai = traditional local drama). The coastal local people who sang the "Rong Ngeng", were a special group of people called "Chao Le" (sea people) or "Chao Nam" (water man), or "sea gypsies" (the race of people of unknown origin inhabiting the west coast of Thailand). The words of the song spoke of the love between man and woman as representing the love of a dugong cow for her calf. The sea gypsies believed that the dugong tears were a love potion. One part of the song was "...I am thinking of the lady, I can not eat any food because of touching the dugong tears. I can not eat any food and I am always thinking of you all times..."

Sea gypsies informed us that the perfect dugong tear for a love potion should be from the calf that has lost its mother. Sea gypsies and local fisherman have learnt well from nature about the close relationship between dugong cows and calves. In case of either of them gets lost, the one left will be seeking the other one. If the fisherman could capture the calf, then he could also capture the mother.

In the past several years there was a new country song regarding dugong and conservation. The intention was to raise awareness to local people and young generations. Moreover there were several country songs on marine endangered animals such as leatherback turtle song, Irrawaddy dolphin song.

## 3. A common legend about dugongs

There was a common legend of dugongs from the village of Ban Chao Mai in Trang Province. The story was heard from both old and young people. It was implied that this story has been told inside the village from generation to generation. This story also expressed the love of a couple as the same as the love between a dugong and a calf.

"Once, there was a couple who lived at the sea shore. The wife got pregnant and she wished to eat something different as she was affected by morning sickness. She wished to eat a special dish of seagrass fruit and everyday her husband went to pick the seagrass fruits at the sea for her. However, she was not satisfied with the number of seagrass fruits collected. So she went to collect the fruits herself and eat them while standing in the sea. She was enjoying eating seagrass fruits and did not notice the rising tide. Once the tide was at the highest level, she could not walk back to the shore. She became trapped in the seagrass bed and became a dugong".

In addition, one respondent stated that “the husband then followed his wife to live with her in the sea”. The seagrass fruits in this story are the fruits of *Enhalus acoroides*, the biggest seagrass species in Thai waters. In the past coastal people ate these fruits as a snack. Nowadays there are various kinds of snacks and young generations seldom test the fruits of *E. acoroides*. The fruits have good

taste, a little crispy with nut-like flavor. Several legends or stories on dugongs have been reported in other countries as well (Kataoka et al., 1995). It is likely that the similar legends might be originated somewhere and then expanded to other areas or countries through communications in the past. The stories might be changed or adapted from time to time.

**Table 2** Dugong body parts, their preparation and the belief of coastal communities in Thailand (developed from Adulyanukosol, 1998, 2004, Hines et al., 2005b).

Dugong body part	Preparation	Use/Belief
Skin	-cut the dorsal skin along the body length then fixed each end in order to make it straight and dry under sunlight	-a walking stick
	-cut and dry	-keep as a rare material
Meat	-cook several dishes such as stir fry with vegetables, curry, sweet and sour etc.	-a protein source -support long life and good health
	-ground bone mixed with lemon juice	-drink to cure the poisons from certain food or drink
Bone		-cure the wound caused by fish spine -cure the fever
	-craft the bone to penis like object -craft a set of the ring	-charm, amulet
Oil	-mix some herbs while preparing	-relief muscle pain -cure scald -stimulate sexual desire
Tear	-after rite	-aphrodisiac or love potion
Tusk/ Teeth	-craft the tusk to penis like object, -the whole tusk	-protect the sea spirit -charm or amulet
	-support a cock’s spur -craft a set of the ring or necklace (dugong necklace or dugong ring) -keep inside the wallet	-for a cock fighting game -charm or amulet -richness or good luck
Penis	-dry	-keep as rare material -good luck

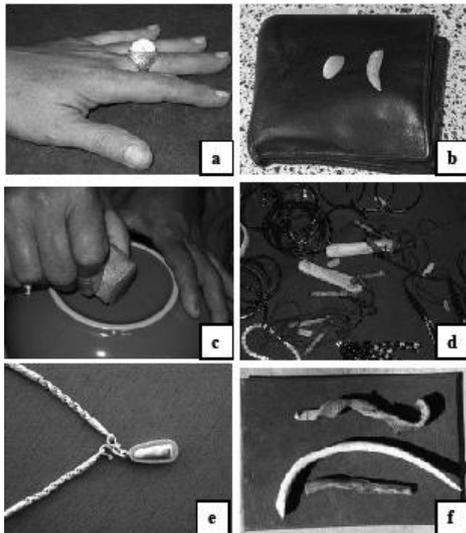
Remarks: The main information of Thai beliefs obtained from the Andaman Sea coast.

#### **4. Use of dugong body parts in Thailand**

Although there were many regulations prohibiting killing dugongs or taking dugong body parts, the illegal sale of dugong meat and other parts of the dugong has occasionally occurred in the black market. The price of dugong meat was considered higher than pork and chicken since it was illegally sold and it regarded in the belief of local people. In the past people utilized dugong

body parts as medicinal purpose or protective benefits. The interviews showed that the dugong meat including its entrails, were made into various kinds of dishes such as coconut milk curry, stir fry with vegetables, sweet and sour, and fried entrails (Adulyanukosol, 2002a). One family in Trat Province used the dugong oil for medicinal purpose to cure the muscle pain.

Rings made of dugong bone and tusks were found in Nua Khlong district, Krabi Province, particularly at Pu and Cham Islands and the villages along Had Yao Beach in Nua Khlong district. One Muslim family at this district informed us that in the past they had illegally exported dugong bones and tusks to black markets in Malaysia for Chinese medicine (Adulyanukosol, 2002b).



**Fig. 2** Some pictures of the utilization of dugong body parts: a) a dugong tusk as setting of a ring at Nua Khlong district, Krabi Province, , b) a tip of tusk and a tooth kept inside the wallet as an amulet for wealth in Nue Khlong district, Krabi Province, c) a piece of vertebra ground for curing fever found

The utilization of dugong body parts and the beliefs of coastal people in Thailand is shown in Table 2. Additionally, some pictures regarding the beliefs are shown in Figure 2a-2f.

Both bone and tusk can be used as gem for a ring; however the tusk ring seemed to be more beautiful than bone ring because of the color and texture (Fig 2a). Dugong tusk was claimed to have similar or equal quality to a tiger canine and has been listed as one element of an ancient Thai medicine. This kind of medicine used many canines from various kinds of animals as the recipes (Adulyanukosol, 2004).

At present the young generations of coastal villagers probably have no idea on the belief in the magic of dugong body parts as their ancestors did. Nevertheless some old local people still believe in the medicinal purposes and protective benefits. For example we found local people in Trat still used dugong oil for curing muscle pain in 2003 and local people in Rayong drank dugong powder water to cure their fever in 2007 (Fig 2c).

## 5. Conservation and Management through Traditional Ecological Knowledge

The recent sensible procedure on conservation and management was to ask the collaboration of local fishermen or traditional people through education and awareness building. Local people learnt the importance of their coastal resources to their work and nation whereas the researches also gained traditional ecological knowledge (TEK) from them. This procedure has been utilized since we started the project in 1993.

Various government sectors have involved dugong and seagrass conservation i.e. Department of Marine and Coastal Resources, Department of National Park, Wildlife and Plants, Department of Fisheries, Royal Forestry Department. Regarding the conservation, government officers have held many meetings with local communities and built awareness through dugong museums, dugong statues, advertisement etc (Fig. 3a-3e). The main efforts have been in Trang Province where local communities have a mutually beneficial relationship with government to conserve the dugong and seagrass beds. Local fishermen sometime helped promoting dugong conservation such as making a sea-tower to be a platform for observation of dugong, drawing dugong image on his boat (Fig. 3e and 3f). Officers together with local people have guarded the seagrass beds in order to arrest those illegally fishing. Local communities could get more benefit for their work particularly the small scale fisheries in seagrass bed.



**Fig. 3** Campaigns for dugong and seagrass in Trang Province: (a) advertisement for dugong and seagrass ecosystem beside the road to National Park, (b) advertisement set in front of the Had Yao fishing village, (c) statue of 3 dugongs at the walkway along Pak Meng Beach, (d) statue of

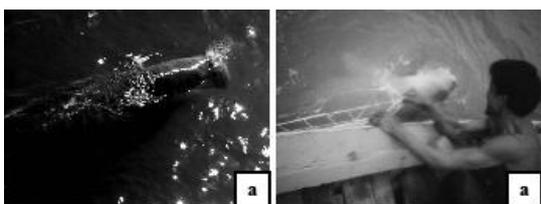
dugong with 3 Thai children in front of the governor's hall in Trang town, (e) a sea tower in seagrass beds as a dugong observation platform at Talibong Island made by local fishermen, and (f) a dugong drawing on the long-tailed fishing boat anchored at Chao Mai River mouth.

In addition non-coastal villagers in Huai Yot district, Trang have made dugong souvenirs from a special fragrant wood "Tep Tharo". Tep Tharo is a kind of a large tree whose bark, leaf and root are aromatic with a scent of camphor. This product became one of the well-known products under the government policy project called 'one village one product' or "OTOP product" (Fig. 4a and 4b). OTOPI is from the word "One Tambon (village) One Product". This village became famous for dugong souvenirs for about 15 years.

In general there are few people who have the chance to see wild dugongs in Trang. Therefore the dugong images and various campaigns are very useful tools for their understanding of dugong biology and conservation of dugongs and seagrass beds. The conservation of dugong brought development to the villages particularly at Chaomai village, Talibong Island and Muk Island such as roads, small port and hotel. The economy of the local communities in Trang increased in an indirect way from the conservation of dugongs such as from small scale fisheries and tourists. However the overall economy from tourism was not only from dugongs since there are several places for tourists to visit i.e. waterfalls, national park, beach, coral reef, etc. Dugong has recently become the symbol of Trang Province.



**Fig. 4** Wooden craft of dugong images is one village one product at Huai Yot district, in Trang (a) wooden craft of a dugong pod, and (b) a dugong image made of "Tep Tharo fragrant wood".



**Fig. 5** (a) a photo of wild dugong taken by fishermen from Tung La Ong village, Phang-nga Province, and (b) local fisherman released a dugong

from his net. (pictures courtesy of fishermen in Phang-nga)

Besides being involved in the stranding network of marine endangered animals, local fishermen also helped collect scientific information such as releasing dugong from nets or taking photographs for officers (Fig. 5a and 5b).

In Thailand coastal people along the Andaman Sea coast give more attention to dugong and seagrass conservation than the people in the Gulf of Thailand (Adulyanukosol, 2004). This is particularly true in Trang. Local awareness of the importance of dugong and seagrass conservation in Trang is advanced because of high level efforts and cooperation among various sectors such as government officers, NGOs, local conservationists, and particularly the local fishermen (Adulyanukosol, 1998, 2004; Hines et al., 2005a, 2005b).

Long-term survival of the dugong population in Thailand depends on proper policies on the conservation and management of dugong and seagrass beds including dugong habitats. Although there are many tools to conserve dugongs and seagrass beds i.e. a strategy on conservation and management on seagrass and dugong, several laws and regulations, but it is still hard to reduce the number of strandings per year. There have been about 10-12 dugongs deaths per year with most of them caused by drowning from fishing operations. The fishing activities were the main threat to dugong (Adulyanukosol and Poovachiranon, 2007; Adulyanukosol et al., 2009). In the future TEK would play important role in conservation and management of marine endangered animals and biodiversity in Thailand.

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