

## INTRODUCTION TO THE THAI–DANISH BIOSHELF SAMPLING PROJECT AND THE POLYCHAETE WORKSHOP HELD IN PHUKET, THAILAND, JUNE–AUGUST 1997

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### Introduction

This *Special Publication* of the Phuket Marine Biological Center (PMBC) describes a significant part of the polychaetous annelids collected in 1996 and 1997 in the Thai section of the Andaman Sea, Indian Ocean, within the framework of the Thai–Danish BIOSHELF Project. This material was initially studied by invited polychaete specialists during the International Thai–Danida Polychaete Workshop held at the PMBC from June to August in 1997. In this introductory paper we will provide some background information on the context of the BIOSHELF Project, with special emphasis on polychaete research, on how and where material was collected, and on the workshop itself.

In November of 1995 the R/V *Chakratong Tongyai*, built in Esbjerg, Denmark, was delivered to the Department of Fisheries of Thailand. The vessel was stationed at the PMBC and its arrival triggered the start of the Scientific Cooperation Programme (SCP) between Thailand and Denmark, jointly financed by Thailand and Danida, the Danish Agency for Development Assistance. The SCP was carried out from 1996 to 2000 and contained a number of subordinate projects, one of which was the Biodiversity of the Andaman Sea Shelf (BIOSHELF) Project.

The objective of the project was to expand our general knowledge of benthic diversity within the Thai Exclusive Economic Zone (EEZ) of the Andaman Sea. The Zoological Museum, University of Copenhagen (ZMUC), was contracted by Danida to provide scientific advisors to the project. In practice this meant that most activities connected with the BIOSHELF Project were carried out in close cooperation between personnel from the PMBC and the ZMUC.

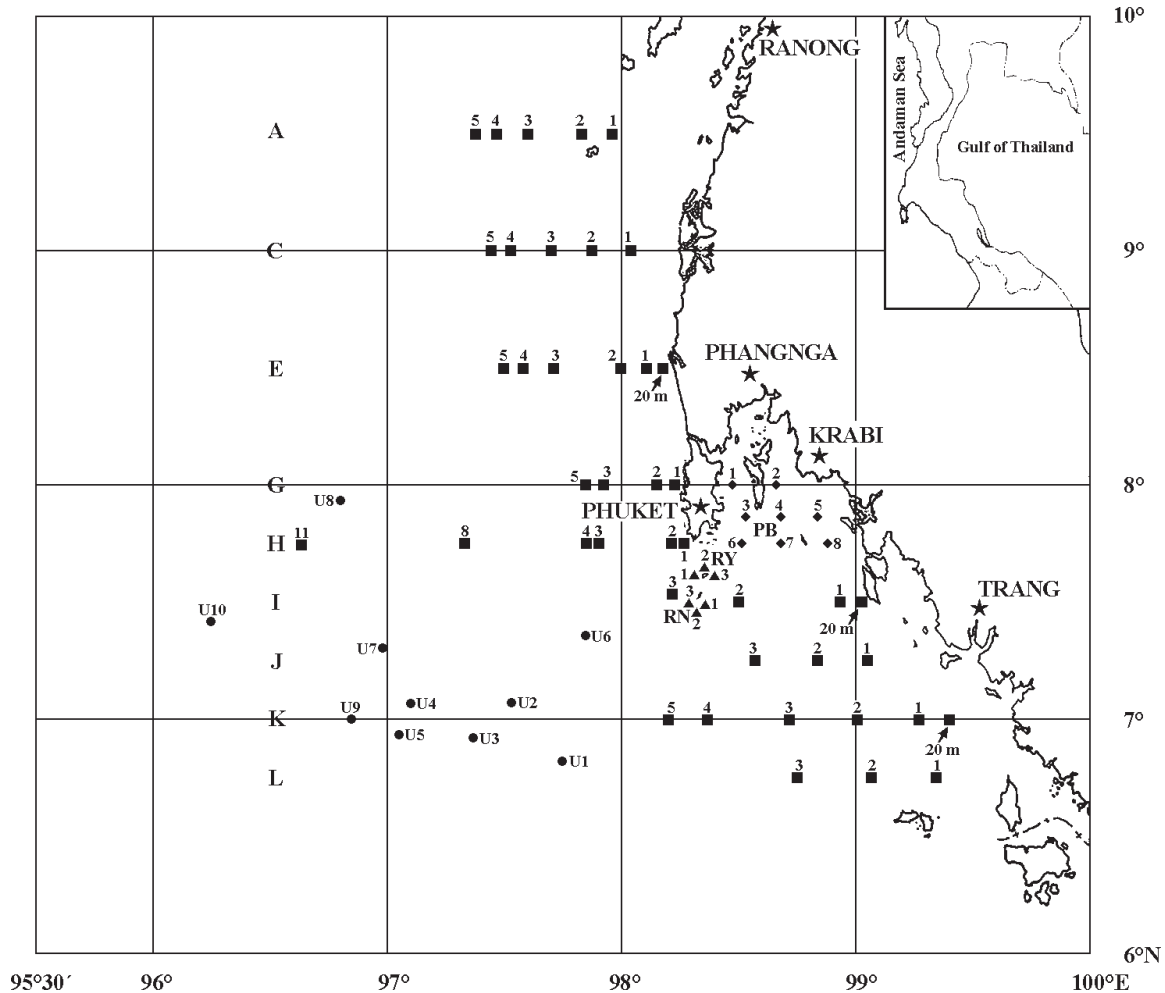
### Collection of material

More detailed information on the entire BIOSHELF Project may be found in Aungtonya *et al.* (2000). This volume is concerned only with the collections made in 1996 and 1997.

As the backbone of the BIOSHELF sampling program twelve transect lines were established across the continental shelf running perpendicular to the Thai coast and parallel to latitudes (Fig. 1). The transects were spaced 15 minutes of latitude apart and were designated by letters, from A in the north, near the Burmese border, to L in the south, near the Malaysian border. Along each transect five stations were fixed at approximate depths of 40, 60, 80, 100 and 200 m.

In the original scheme, stations were numbered continuously from transect A to L, starting with A-1 (40 m on the first transect) and ending at L-60 (200 m on the last transect) (see Aungtonya and Hylleberg 1998, fig. 1). However, the transects were later extended to depths of 900 m, which necessitated the renumbering of stations (see Aungtonya *et al.* 2000, fig. 1). The only reason for mentioning the original numbering scheme here is that the material treated in this volume was originally labelled in accordance with that scheme. It is inevitable that some material will be overlooked in relabelling and for this reason the list of stations presented here includes the names of stations according to both systems (Table 1).

In 1996 forty stations along nine of the twelve transects were sampled, with an additional three stations near Racha Noi Island (RN-1 to RN-3) and three stations near Racha Yai Island (RY-1 to RY-3). Due to unsuitable bottom conditions, some of the planned transect stations could not be



**Figure 1** BIOSHELF stations sampled during 1996–1997. Almost all the material described in this volume is from these stations. A–L = transect lines. Numbers indicate sampling points along transect lines. The designation of sampling stations is described in the text. A map that includes all BIOSHELF stations (1996–2000) may be found in Aungtonya *et al.* 2000.

sampled, but extra stations were added at a depth of approximately 20 m along transects E, I and K. In 1997, eight stations were sampled in Phangnga Bay (PB-1 to PB-8). Finally, in pre-paration for cruises in 1998–2000 that were to collect samples at depths greater than 200 m, two deep stations along transects H (originally designated U-4 and U-11) were visited in 1997, with an additional ten deep stations (U-1 to U-10). A small amount of the material from these twelve stations

was made available to the participants in the polychaete workshop and was at that time referred to as pre-BIODEEP material. For practical reasons BIODEEP never became an independent project, being incorporated within the existing BIOSHELF Project, but the term pre-BIODEEP probably occurs on some original labels.

All samples were collected by the R/V *Chakratong Tongyai*. Although as many as ten different types of gear have been used during the

BIOSHSELF Project, only five were used in 1996–97: an Olausen box corer, an Ockelmann epibenthic detritus sledge, a triangular dredge, a fishing trawl, and a Smith-McIntyre grab. The latter was used very little and triangular dredges usually do not yield much polychaete material. The trawl was used mainly to catch fish and is not included in Table 1. Thus, at least 95% of the material reported in this volume was collected by box corer or epibenthic sledge.

### **The workshop itself**

An important element of the BIOSHSELF Project was a commitment to involve taxonomic specialists from countries other than Thailand and Denmark, in the realization that this was the only way to study the collected material comprehensively. The main instrument of achieving this was through arranging international workshops on selected groups of marine animals at the PMBC. Given the relatively poor state of knowledge of the polychaete fauna of Thailand (see specific references of earlier work in the area in, *e.g.*, Hylleberg 2002, Aungtonya *et al.* 2002, and Aungtonya 2002, this volume) it was generally agreed that Polychaeta should be one of those groups.

In 1996 the second author was asked to organize a polychaete workshop at the PMBC in 1997. Funds were made available, sufficient to invite about ten specialists to participate in a workshop and cover all their expenses for travel, lodgings and meals. Ten specialists were approached and eight accepted the invitation.

Instead of organizing a workshop at which all participants were present at the same time, it was decided to invite the specialists to attend in three smaller groups. There were two reasons for this. First of all, the polychaete material that was to be studied had not yet been sorted to family; it was considered imperative that specialists would have a reasonable amount of material of their groups on which to begin their studies when they arrived at the workshop. There was concern that the initial sorting process would move too slowly to satisfy a large group of specialists. Secondly, by keeping the groups of invited specialists down to a maximum of three at any given time it was

possible to have everyone, including the organizer and his assistants, living under the same roof, one of the older, but roomy and charming guest-houses of the PMBC. Apart from the social advantages of living together, this kept the level of expenses down and allowed some indulgence in other areas, specifically meals and entertainment.

The Thai–Danida Polychaete Workshop was held from June to August, 1997, and was divided into four periods of three weeks, one for the initial sorting of polychaetes to family and one for each of the groups of invited specialists. The initial sorting was carried out by three very capable assistants: Bjarne Bisballe, Torben Kristensen (both ZMUC) and Rune Frederiksen (Bioconsult, Århus, Denmark). They completed the initial sorting with incredible dedication and in the end they were so effective that the entire material was sorted and labelled within just over two weeks. So much for the organizer's concerns! A three-day vacation in the Khao-Sok rainforest, about 100 km from Phuket, was hastily arranged as a fitting reward.

The first group of specialists consisted of Mary E. Petersen (ZMUC), Elin Sigvaldadóttir (Natural History Museum of Sweden, Stockholm, now at the Icelandic Institute of Natural History, Reykjavík) and Robin S. Wilson (Museum of Victoria, Melbourne). Mary was asked to study cirratulids and chaetopterids, and furthermore took responsibility for the cossurids, apistobranchids, fauveliopsids and pholoids. Elin studied the spionids and Robin worked mainly on nereidids, although he also showed interest in the pilargids and syllids.

The second group was exclusively Norwegian: Torleif Holthe (Museum of Natural History and Archaeology, Trondheim) and Eivind Oug (Akvaplan NIVA, Grimstad, Norway). Torleif had been asked to study the pectinariids, ampharetids, terebellids and trichobranchids. Eivind worked primarily on lumbrinerids, but also studied the eunicids, onuphids, oeononids and dorvilleids.

The third group of specialists was not only exclusively American, it was entirely from Southern California, and consisted of Kirk Fitzhugh (Los Angeles County Museum), Karen D. Green (MEC Analytical Systems, Carlsbad) and Larry L. Lovell (Polytax, Vista, now at Scripps Institution

of Oceanography, La Jolla). Kirk worked on sabellariids, sabellids and serpulids, Karen studied capitellids and malidanids, and Larry worked on paraonids and nephtyids.

In addition to the invited specialists the organizer overextended himself, taking responsibility for scalibregmatids, opheliids, orbiniids, amphinomid, euprosinids, glycerids, goniadids, pisionids, phyllodocids, lacydoniids, trochochaetids, poecilochaetids and sternaspids. Furthermore, Torben Kristensen, having completed the initial sorting of the polychaetes, remained for the entire workshop as a Junior Scientific Advisor and carried out studies on the flabelligerids of the BIOSHELF Project.

Our hosts, Anuwat Nateewathana and Somchai Bussarawit of the PMBC, showed an active interest throughout the workshop, but all of the many attempts to actively involve Anuwat in the study of BIOSHELF magelonids stranded on the fact that he had recently been compelled to “switch alliances”: he was carrying out a Ph.D. project on the cephalopods of the Andaman Sea.

There was one further participant, who was present throughout the entire workshop. A young Thai student named Apisit Thipaksorn (nickname: Nat) was added to our group and he embraced the study of polychaete taxonomy, systematics and ecology with infectious enthusiasm. He clearly felt very privileged to have ten active teachers, but it is probably safe to say that everyone was only too pleased to help him. He repeatedly returned the favour by providing much needed help with practical matters, such as buying medicine and arranging transportation.

A very entertaining book could be written about the people and events of the workshop in 1997. This is not the appropriate place for such details, but some mention should be made of one shared activity. Participants were obviously bound together by a common interest in polychaetes, but each group was also brought closer together by taking their meals together, particularly dinner. Evening meals were taken at a variety of restaurants and were always enjoyable. Reactions to the local cuisine were very different, from Robin who sampled anything edible with undisguised

fervour, to Kirk who ordered burgers, fries and a coke whenever he could.

Measured in terms of participant satisfaction and the scientific results (this volume and the many papers to come) the International Thai–Danida Polychaete Workshop in 1997 was clearly a success.

#### **After the workshop**

During the final stages of the workshop Torben Kristensen began to seal several thousands of vials in plastic, so that the studied material could be forwarded to the various participants at their home institutions. This allowed the material to be studied in greater detail in order to provide a contribution to the present volume, which was already in the planning stages at that time.

According to an agreement reached between the PMBC and the ZMUC, on completing their studies specialists were to return the bulk of the material to the PMBC for deposition in its Reference Collection (now the Biodiversity Research Department). In accordance with Thai law, this included the holotypes of any new species described from the material. The agreement also specified that when the amount of material allowed, specimens could also be deposited at the ZMUC, the home institution of the specialist, and in other collections of the specialist’s choice.

After the workshop a number of people who did not participate were invited to study specific groups of BIOSHELF polychaetes. Four of them have made contributions to this volume: Torkild Bakken (Museum of Natural History and Archaeology, Trondheim), Markus Böggemann (Senckenberg Institute, Frankfurt), Hannelore Paxton (Macquarie University, Sydney), and the first author of this paper.

A considerable number of further papers on the polychaetes of the BIOSHELF Project, possibly incorporating material collected during 1998–2000, will appear in the coming years. This includes papers by further specialists that have since been contacted, papers by participants on groups that are not treated in this volume, and follow-up papers on those groups that are included here.

**Acknowledgments**

We would like to express our appreciation to the Thai Department of Fisheries and to DANIDA for funding the BIOSHELF Project and the International Polychaete Workshop. The staff of the PMBC and the crew of the *Chakratong Tongyai* are thanked for providing the necessary framework and material for the workshop. Sincere thanks are extended to Mr. Praween Limpsaichol, the director of the PMBC, Mr. Somchai Bussarawit (PMBC) and Dr. Claus Nielsen (ZMUC) for their encouragement and the logistical assistance they

provided. We wish to thank Dr. Anuwat Nateewathana for his support of the BIOSHELF Project before he was transferred to the Museum and Aquarium Division of the Department of Fisheries, Bangkok. The tireless work of Bjarne Bisballe, Torben Kristensen (both ZMUC) and Rune Frederiksen (Bioconsult, Århus, Denmark) ensured that the workshop got off to a successful start. We thank Mr. Patairat Singdam (PMBC artist) for drawing the map of the study area. Finally, we wish to express our appreciation to all participants in the workshop.

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**Table 1** Detailed information on BIOSHELF stations sampled during 1996–1997. The original name of each station is indicated in parentheses when appropriate. Dates are given as day/month/year. Abbreviations used for gear: BC, Olavsen box corer; G, Smith-McIntyre grab; OS, Ockelmann epibenthic detritus sledge; TD, triangular dredge. ND = no data collected.

Station	Gear	Date	Position		Depth (m)	Type of sediment	Collector
			Lat.	Long.			
<b>A1</b>	BC	18/04/1996	009°30' N	097°57' E	43	sand with shell fragments	S. Bussarawit and C. Aungtonya
	OS	18/04/1996	009°30' N	097°58' E	42	sand with shell fragments	S. Bussarawit and C. Aungtonya
	TD	18/04/1996	009°32' N	097°58' E	40	ND	S. Bussarawit and C. Aungtonya
<b>A2</b>	BC	18/04/1996	009°30' N	097°51' E	61	sandy mud, fine sand and shell fragments	S. Bussarawit and C. Aungtonya
	OS	18/04/1996	009°32' N	097°50' E	66	sandy mud	S. Bussarawit and C. Aungtonya
	TD	18/04/1996	009°34' N	097°49' E	70	ND	S. Bussarawit and C. Aungtonya
<b>A3</b>	BC	19/04/1996	009°30' N	097°38' E	82	sandy mud	S. Bussarawit and C. Aungtonya
	OS	19/04/1996	009°30' N	097°38' E	83	sandy mud	S. Bussarawit and C. Aungtonya
	TD	19/04/1996	009°31' N	097°38' E	87	ND	S. Bussarawit and C. Aungtonya
<b>A4</b>	BC	19/04/1996	009°30' N	097°28' E	116	coarse sand	S. Bussarawit and C. Aungtonya
<b>A5</b>	BC	19/04/1996	009°29' N	097°22' E	204	rock	S. Bussarawit and C. Aungtonya
	TD	19/04/1996	009°28' N	097°22' E	196	ND	S. Bussarawit and C. Aungtonya
<b>C1 (= C11)</b>	BC	20/04/1996	009°00' N	098°03' E	40	muddy sand with shell fragments	S. Bussarawit and C. Aungtonya
	OS	20/04/1996	009°01' N	098°03' E	39	muddy sand	S. Bussarawit and C. Aungtonya
	TD	20/04/1996	009°02' N	098°03' E	39	ND	S. Bussarawit and C. Aungtonya
<b>C2 (= C12)</b>	BC	20/04/1996	009°00' N	097°53' E	65	muddy sand	S. Bussarawit and C. Aungtonya
	OS	20/04/1996	009°00' N	097°53' E	64	muddy sand	S. Bussarawit and C. Aungtonya
	TD	20/04/1996	009°02' N	097°53' E	64	ND	S. Bussarawit and C. Aungtonya
<b>C3 (= C13)</b>	BC	20/04/1996	009°00' N	097°43' E	79	sandy mud	S. Bussarawit and C. Aungtonya
	OS	20/04/1996	009°00' N	097°43' E	80	fine sand with shell fragments	S. Bussarawit and C. Aungtonya
<b>C4 (= C14)</b>	BC	21/04/1996	009°00' N	097°30' E	129	sandy mud	S. Bussarawit and C. Aungtonya
<b>C5 (= C15)</b>	BC	21/04/1996	009°00' N	097°26' E	200	sand with shell fragments	S. Bussarawit and C. Aungtonya
	TD	21/04/1996	009°01' N	097°27' E	191	ND	S. Bussarawit and C. Aungtonya

Table 1 (continued).

Station	Gear	Date	Position		Depth (m)	Type of sediment	Collector
			Lat.	Long.			
<b>E 20 m</b>	BC	22/04/1996	008°30' N	098°12' E	21	muddy sand	S. Bussarawit and C. Aungtonya
	OS	22/04/1996	008°30' N	098°12' E	20	muddy sand	S. Bussarawit and C. Aungtonya
	TD	22/04/1996	008°29' N	098°12' E	20	ND	S. Bussarawit and C. Aungtonya
<b>E1 (= E21)</b>	BC	22/04/1996	008°30' N	098°06' E	42	muddy sand	S. Bussarawit and C. Aungtonya
	OS	22/04/1996	008°30' N	098°06' E	41	muddy sand	S. Bussarawit and C. Aungtonya
	TD	22/04/1996	008°30' N	098°06' E	38	ND	S. Bussarawit and C. Aungtonya
<b>E2 (= E22)</b>	BC	22/04/1996	008°30' N	098°00' E	63	muddy sand	S. Bussarawit and C. Aungtonya
	OS	22/04/1996	008°31' N	098°00' E	60	muddy sand	S. Bussarawit and C. Aungtonya
	TD	22/04/1996	008°30' N	098°00' E	60	ND	S. Bussarawit and C. Aungtonya
<b>E3 (= E23A)</b>	BC	22/04/1996	008°31' N	097°46' E	81	sandy mud	S. Bussarawit and C. Aungtonya
	OS	22/04/1996	008°30' N	097°46' E	81	sandy mud with shell fragments	S. Bussarawit and C. Aungtonya
	TD	22/04/1996	008°32' N	097°46' E	79	ND	S. Bussarawit and C. Aungtonya
<b>E4 (= E23)</b>	BC	21/04/1996	008°30' N	097°33' E	74	sand and gravel	S. Bussarawit and C. Aungtonya
	TD	21/04/1996	008°30' N	097°33' E	74	ND	S. Bussarawit and C. Aungtonya
<b>E5 (= E25)</b>	BC	21/04/1996	008°30' N	097°30' E	227	rock	S. Bussarawit and C. Aungtonya
<b>G1 (= G31)</b>	BC	24/04/1996	008°00' N	098°14' E	42	sandy mud	S. Bussarawit and C. Aungtonya
	OS	24/04/1996	008°00' N	098°14' E	43	sandy mud	S. Bussarawit and C. Aungtonya
	TD	24/04/1996	007°59' N	098°14' E	43	ND	S. Bussarawit and C. Aungtonya
<b>G2 (= G32)</b>	BC	23/04/1996	008°00' N	098°10' E	63	muddy sand	S. Bussarawit and C. Aungtonya
	OS	23/04/1996	008°00' N	098°10' E	63	muddy sand	S. Bussarawit and C. Aungtonya
	TD	23/04/1996	008°01' N	098°10' E	61	ND	S. Bussarawit and C. Aungtonya
<b>G3 (= G33)</b>	BC	23/04/1996	008°00' N	097°54' E	76	muddy sand	S. Bussarawit and C. Aungtonya
	OS	23/04/1996	008°00' N	097°54' E	77	muddy sand	S. Bussarawit and C. Aungtonya
<b>G5 (= G35)</b>	BC	23/04/1996	008°00' N	097°48' E	233	coarse sand and gravel	S. Bussarawit and C. Aungtonya
	TD	23/04/1996	008°00' N	097°48' E	220	ND	S. Bussarawit and C. Aungtonya



Table 1 (continued).

Station	Gear	Date	Position		Depth (m)	Type of sediment	Collector
			Lat.	Long.			
<b>H1 (= H36)</b>	BC	09/05/1996	007°45' N	098°16' E	32	sandy mud	S. Bussarawit and C. Aungtonya
	OS	09/05/1996	007°45' N	098°16' E	31	mud	S. Bussarawit and C. Aungtonya
	TD	09/05/1996	007°44' N	098°17' E	32	ND	S. Bussarawit and C. Aungtonya
<b>H2 (= H37)</b>	BC	09/05/1996	007°45' N	098°15' E	59	soft mud	S. Bussarawit and C. Aungtonya
	OS	09/05/1996	007°45' N	098°15' E	56	soft mud	S. Bussarawit and C. Aungtonya
	TD	09/05/1996	007°44' N	098°16' E	60	ND	S. Bussarawit and C. Aungtonya
<b>H3 (= H38)</b>	BC	09/05/1996	007°45' N	097°58' E	70	coarse sand	S. Bussarawit and C. Aungtonya
	TD	09/05/1996	007°46' N	097°58' E	71	ND	S. Bussarawit and C. Aungtonya
<b>H4 (= H39)</b>	BC	09/05/1996	007°45' N	097°56' E	139	coarse sand with shell fragments	S. Bussarawit and C. Aungtonya
<b>H8 (= U11)</b>	G	10/04/1997	007°45' N	097°20' E	493	soft mud	S. Bussarawit
	OS	10/04/1997	007°45' N	097°20' E	493	sand	S. Bussarawit
	TD	10/04/1997	007°45' N	097°20' E	493	ND	S. Bussarawit
<b>H11 (= U4)</b>	G	16/04/1997	007°44' N	096°38' E	820	soft mud	S. Bussarawit
	OS	16/04/1997	007°44' N	096°38' E	822	soft mud	S. Bussarawit
<b>I 20 m</b>	BC	03/05/1996	007°30' N	099°01' E	21	mud	S. Bussarawit and C. Aungtonya
	OS	03/05/1996	007°30' N	099°01' E	21	mud	S. Bussarawit and C. Aungtonya
	TD	03/05/1996	007°30' N	099°01' E	21	ND	S. Bussarawit and C. Aungtonya
<b>I1 (= I41)</b>	BC	03/05/1996	007°30' N	098°57' E	38	mud	S. Bussarawit and C. Aungtonya
	OS	03/05/1996	007°30' N	098°57' E	38	mud	S. Bussarawit and C. Aungtonya
	TD	03/05/1996	007°29' N	098°56' E	40	ND	S. Bussarawit and C. Aungtonya
<b>I2 (= I42)</b>	BC	01/05/1996	007°30' N	098°30' E	59	sandy mud	S. Bussarawit and C. Aungtonya
	BC	03/05/1996	007°30' N	098°29' E	59	sandy mud	S. Bussarawit and C. Aungtonya
	OS	03/05/1996	007°30' N	098°29' E	60	sandy mud	S. Bussarawit and C. Aungtonya
	TD	01/05/1996	007°30' N	098°31' E	59	ND	S. Bussarawit and C. Aungtonya
<b>I3 (= I43)</b>	BC	02/05/1996	007°30' N	098°10' E	79	sand with shell fragments	S. Bussarawit and C. Aungtonya
	G	15/11/1999	007°30' N	098°15' E	66	sand	C. Aungtonya and V. Vongpanich
	TD	02/05/1996	007°30' N	098°10' E	78	ND	S. Bussarawit and C. Aungtonya



Table 1 (continued).

Station	Gear	Date	Position		Depth (m)	Type of sediment	Collector
			Lat.	Long.			
<b>J1 (= J46)</b>	BC	04/05/1996	007°15' N	099°03' E	43	sandy mud with shell fragments	S. Bussarawit and C. Aungtonya
	OS	04/05/1996	007°16' N	099°03' E	42	sandy mud with shell fragments	S. Bussarawit and C. Aungtonya
	TD	04/05/1996	007°15' N	099°03' E	42	ND	S. Bussarawit and C. Aungtonya
<b>J2 (= J47)</b>	BC	04/05/1996	007°15' N	098°50' E	62	soft mud	S. Bussarawit and C. Aungtonya
	OS	04/05/1996	007°15' N	098°51' E	61	soft mud	S. Bussarawit and C. Aungtonya
	TD	04/05/1996	007°15' N	098°51' E	62	ND	S. Bussarawit and C. Aungtonya
<b>J3 (= J48)</b>	BC	04/05/1996	007°15' N	098°34' E	79	muddy sand	S. Bussarawit and C. Aungtonya
	OS	04/05/1996	007°15' N	098°36' E	79	muddy sand	S. Bussarawit and C. Aungtonya
	TD	04/05/1996	007°15' N	098°35' E	79	ND	S. Bussarawit and C. Aungtonya
<b>K 20 m</b>	BC	06/05/1996	007°00' N	099°24' E	21	mud with shell fragments	S. Bussarawit and C. Aungtonya
	OS	06/05/1996	007°00' N	099°24' E	22	mud with shell fragments	S. Bussarawit and C. Aungtonya
	TD	06/05/1996	007°00' N	099°24' E	20	ND	S. Bussarawit and C. Aungtonya
<b>K1 (= K51)</b>	BC	06/05/1996	007°00' N	099°16' E	43	soft mud	S. Bussarawit and C. Aungtonya
	OS	06/05/1996	007°00' N	099°15' E	45	soft mud	S. Bussarawit and C. Aungtonya
	TD	06/05/1996	007°00' N	099°16' E	44	ND	S. Bussarawit and C. Aungtonya
<b>K2 (= K52)</b>	BC	06/05/1996	007°00' N	098°59' E	63	soft mud	S. Bussarawit and C. Aungtonya
	OS	06/05/1996	007°00' N	099°00' E	60	soft mud	S. Bussarawit and C. Aungtonya
	TD	06/05/1996	007°00' N	098°59' E	64	ND	S. Bussarawit and C. Aungtonya
<b>K3 (= K53)</b>	BC	05/05/1996	007°00' N	098°41' E	83	sandy mud	S. Bussarawit and C. Aungtonya
	OS	05/05/1996	006°59' N	098°42' E	82	sandy mud	S. Bussarawit and C. Aungtonya
	TD	05/05/1996	007°00' N	098°42' E	83	ND	S. Bussarawit and C. Aungtonya
<b>K4 (= K54)</b>	BC	07/05/1996	007°00' N	098°21' E	105	sand with shell fragments	S. Bussarawit and C. Aungtonya
<b>K5 (= K55)</b>	BC	07/05/1996	007°00' N	098°12' E	220	gravel	S. Bussarawit and C. Aungtonya
<b>L1 (= L56)</b>	BC	06/05/1996	006°45' N	099°21' E	38	sandy mud with shell fragments	S. Bussarawit and C. Aungtonya
	OS	06/05/1996	006°46' N	099°21' E	38	sandy mud with shell fragments	S. Bussarawit and C. Aungtonya
	TD	06/05/1996	006°45' N	099°21' E	38	ND	S. Bussarawit and C. Aungtonya

Table 1 (continued).

Station	Gear	Date	Position		Depth (m)	Type of sediment	Collector
			Lat.	Long.			
<b>L2 (= L57)</b>	BC	05/05/1996	006°46' N	099°04' E	59	soft mud	S. Bussarawit and C. Aungtonya
	OS	05/05/1996	006°44' N	099°05' E	56	soft mud	S. Bussarawit and C. Aungtonya
	TD	05/05/1996	006°45' N	099°04' E	59	ND	S. Bussarawit and C. Aungtonya
<b>L3 (= L58)</b>	BC	05/05/1996	006°45' N	098°45' E	83	sandy mud with shell fragments	S. Bussarawit and C. Aungtonya
	OS	05/05/1996	006°46' N	098°45' E	83	sandy mud with shell fragments	S. Bussarawit and C. Aungtonya
	TD	05/05/1996	006°45' N	098°45' E	83	ND	S. Bussarawit and C. Aungtonya
<b>RN1</b>	BC	08/05/1996	007°30' N	098°22' E	63	sandy mud	S. Bussarawit and C. Aungtonya
	OS	08/05/1996	007°30' N	098°22' E	64	sandy mud	S. Bussarawit and C. Aungtonya
	TD	08/05/1996	007°30' N	098°22' E	63	ND	S. Bussarawit and C. Aungtonya
<b>RN2</b>	BC	08/05/1996	007°26' N	098°19' E	75	sand with shell fragments	S. Bussarawit and C. Aungtonya
	OS	08/05/1996	007°26' N	098°18' E	75	sand with shell fragments	S. Bussarawit and C. Aungtonya
	TD	08/05/1996	007°26' N	098°18' E	74	ND	S. Bussarawit and C. Aungtonya
<b>RN3</b>	BC	08/05/1996	007°30' N	098°17' E	72	muddy sand	S. Bussarawit and C. Aungtonya
	OS	08/05/1996	007°30' N	098°17' E	72	muddy sand	S. Bussarawit and C. Aungtonya
	TD	08/05/1996	007°30' N	098°18' E	70	ND	S. Bussarawit and C. Aungtonya
<b>RY1</b>	BC	08/05/1996	007°36' N	098°19' E	55	sand with shell fragments	S. Bussarawit and C. Aungtonya
	OS	08/05/1996	007°37' N	098°20' E	55	sand with shell fragments	S. Bussarawit and C. Aungtonya
	TD	08/05/1996	007°36' N	098°19' E	55	ND	S. Bussarawit and C. Aungtonya
<b>RY2</b>	BC	08/05/1996	007°39' N	098°23' E	45	sand with shell fragments	S. Bussarawit and C. Aungtonya
	OS	08/05/1996	007°40' N	098°24' E	44	sand with shell fragments	S. Bussarawit and C. Aungtonya
	TD	08/05/1996	007°39' N	098°24' E	43	ND	S. Bussarawit and C. Aungtonya
<b>RY3</b>	BC	08/05/1996	007°36' N	098°25' E	49	muddy sand	S. Bussarawit and C. Aungtonya
	OS	08/05/1996	007°36' N	098°25' E	50	muddy sand	S. Bussarawit and C. Aungtonya
	TD	08/05/1996	007°35' N	098°26' E	52	ND	S. Bussarawit and C. Aungtonya
<b>PB1</b>	BC	23/04/1997	008°00' N	098°29' E	19	sand with shell fragments	S. Bussarawit
	OS	23/04/1997	008°00' N	098°29' E	17	sand with shell fragments	S. Bussarawit
	TD	23/04/1997	007°59' N	098°29' E	14	ND	S. Bussarawit

Table 1 (continued).

Station	Gear	Date	Position		Depth (m)	Type of sediment	Collector
			Lat.	Long.			
<b>PB2</b>	BC	22/04/1997	008°00' N	098°39' E	17	sand with shell fragments	S. Bussarawit
	OS	22/04/1997	007°59' N	098°39' E	20	sand with shell fragments	S. Bussarawit
	TD	22/04/1997	008°00' N	098°38' E	15	ND	S. Bussarawit
<b>PB3</b>	BC	23/04/1997	007°51' N	098°32' E	22	sand with shell fragments	S. Bussarawit
	OS	23/04/1997	007°51' N	098°31' E	20	sand with shell fragments	S. Bussarawit
	TD	23/04/1997	007°52' N	098°31' E	22	ND	S. Bussarawit
<b>PB4</b>	BC	22/04/1997	007°52' N	098°41' E	32	sand with shell fragments	S. Bussarawit
	OS	22/04/1997	007°52' N	098°41' E	31	sand with shell fragments	S. Bussarawit
	TD	22/04/1997	007°52' N	098°41' E	33	ND	S. Bussarawit
<b>PB5</b>	BC	22/04/1997	007°52' N	098°48' E	21	sand with shell fragments	S. Bussarawit
	OS	22/04/1997	007°52' N	098°48' E	21	sand with shell fragments	S. Bussarawit
<b>PB6</b>	BC	22/04/1997	007°45' N	098°32' E	30	sand with shell fragments	S. Bussarawit
	OS	22/04/1997	007°45' N	098°32' E	30	sand with shell fragments	S. Bussarawit
	TD	22/04/1997	007°46' N	098°31' E	27	ND	S. Bussarawit
<b>PB7</b>	BC	22/04/1997	007°45' N	098°41' E	29	sand with shell fragments	S. Bussarawit
	OS	22/04/1997	007°45' N	098°41' E	32	sand with shell fragments	S. Bussarawit
	TD	22/04/1997	007°45' N	098°40' E	30	ND	S. Bussarawit
<b>PB8</b>	BC	22/04/1997	007°45' N	098°52' E	19	sand with shell fragments	S. Bussarawit
	OS	22/04/1997	007°45' N	098°51' E	19	sand with shell fragments	S. Bussarawit
	TD	22/04/1997	007°44' N	098°51' E	22	ND	S. Bussarawit
<b>U1</b>	G	19/04/1997	006°49' N	097°45' E	400	sandy mud	S. Bussarawit
	OS	19/04/1997	006°46' N	097°44' E	416	sandy mud	S. Bussarawit
	TD	19/04/1997	006°48' N	097°45' E	402	ND	S. Bussarawit
<b>U2</b>	G	18/04/1997	007°03' N	097°32' E	476	sandy mud	S. Bussarawit
	TD	18/04/1997	007°04' N	097°31' E	476	ND	S. Bussarawit
<b>U3</b>	G	17/04/1997	006°55' N	097°22' E	669	soft mud	S. Bussarawit
	TD	17/04/1997	006°57' N	097°22' E	651	ND	S. Bussarawit

Table 1 (continued).

Station	Gear	Date	Position		Depth (m)	Type of sediment	Collector
			Lat.	Long.			
<b>U4 (= U5)</b>	G	15/04/1997	007°02' N	097°08' E	989	soft mud	S. Bussarawit
<b>U5 (= U6)</b>	G	15/04/1997	006°56' N	097°03' E	1020	soft mud	S. Bussarawit
<b>U6 (= U7)</b>	BC	09/04/1997	007°21' N	097°51' E	324	rock	S. Bussarawit
	G	09/04/1997	007°21' N	097°50' E	324	rock	S. Bussarawit
	TD	09/04/1997	007°21' N	097°51' E	324	ND	S. Bussarawit
<b>U7 (= U8)</b>	G	13/04/1997	007°19' N	096°59' E	929	soft mud	S. Bussarawit
	TD	13/04/1997	007°16' N	096°59' E	935	ND	S. Bussarawit
<b>U8 (= U9)</b>	G	11/04/1997	007°56' N	096°48' E	640	soft mud	S. Bussarawit
	TD	11/04/1997	007°55' N	096°47' E	643	ND	S. Bussarawit
<b>U9 (= U10)</b>	G	14/04/1997	007°00' N	096°51' E	1020	soft mud	S. Bussarawit
	OS	14/04/1997	007°00' N	096°51' E	1020	soft mud	S. Bussarawit
	TD	14/04/1997	006°59' N	096°54' E	1020	ND	S. Bussarawit
<b>U10 (= U12)</b>	BC	12/04/1997	007°25' N	096°15' E	880	soft mud	S. Bussarawit
	G	12/04/1997	007°25' N	096°15' E	879	soft mud	S. Bussarawit
	TD	12/04/1997	007°25' N	096°18' E	878	ND	S. Bussarawit