

The Bangkok Forest Herbarium, Royal Botanic Gardens Kew and Trinity College Dublin plant collecting trips in Thailand 1995-2002

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ABSTRACT. Summary accounts are presented of four plant collecting trips jointly undertaken by staff and students of Bangkok Forest Herbarium, National Park, Wildlife and Plant Conservation Department Thailand, the Herbarium, Botany School, Trinity College Dublin and the Herbarium, Royal Botanic Gardens Kew in 1995, 1996, 1998 and 2002. The most commonly collected families on general collecting trips were, in decreasing order of frequency, Rubiaceae, Euphorbiaceae, Leguminosae, Moraceae, Vitaceae and Acanthaceae. A map shows that these collecting trips have covered a wide geographical range - especially so when added to data for trips undertaken in 1990 and 1993. However, there are still areas of Thailand that remain highly undercollected.

INTRODUCTION

This paper presents summary accounts of four plant collecting trips jointly undertaken by staff and students of the Bangkok Forest Herbarium, National Park, Wildlife and Plant Conservation Department Thailand, Herbarium, Royal Botanic Gardens Kew and the Herbarium, Botany School, Trinity College Dublin, and the in 1995, 1996, 1998 and 2002.

Summary itineraries of sites visited for each trip are given and a figure is presented which aggregates these data into map form. Site locations visited by BKF, TCD, K and KKU on trips conducted in 1990 and 1993 have been detailed in Simpson et al. (1995) and are, partly, complementary.

In the main, general collecting was carried out on the 1995 trip, and specialist collecting on all others. Special emphasis was placed on observing and collecting material of the Annonaceae, Araliaceae, Cyperaceae, Eriocaulaceae, Lamiaceae, Lentibulariaceae, Myrtaceae, Orobanchaceae, Polygalaceae and Santalaceae.

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Collections were made in sets of one to eight, where possible, the sets going to BKF, TCD, K, AAU and L respectively, the remaining material being kept for exchange purposes. Mostly, material was wet collected; dry collecting was only intermittently used: some material, mainly of the families listed above, was collected in silica gel for DNA analysis.

Naming of specimens is being carried out at K and TCD and by various other specialists. All data are incorporated into a specimen database which is held in K, KKU and TCD.

THE 1995 TRIP

The 1995 trip took place in August and September of that year. As it was a relatively short trip, a limited number of provinces was visited all, with a single exception, located in the Northern and South-Western floristic regions of Thailand (Table 1, Fig. 1).

Most of the work was carried out in National Parks, or near reservoirs where forest and other vegetation types remain relatively undisturbed. Some time was also spent collecting by roadsides and in rice paddies. Despite the relatively short period spent in the field a total of 708 numbers were collected (collecting numbers run from 1–702: the remaining six numbers are 203a, 204a, 259a, 260a, 411a & 416a).

Participants

The main participants were M.H.P. Jebb, J.A.N. Parnell and C.A. Pendry. The group was accompanied by R. Pooma in Chiang Mai, Phrae, Nan, Tak, Lamphun, Tak and Khampaeng Phet, and T. Boonthavikoon in Prachuap Khiri Khan & Kanchanaburi. Therefore, all numbers in Table 1 were collected in the series Parnell, Jebb & Pendry together with other workers as appropriate.

Collecting Itinerary

Details of the collecting itinerary are given in Table 1 and Fig. 1.

Table 1. Collecting itinerary for the 1995 BKF/TCD trip. All numbers were collected in the series Parnell, Jebb, Pendry et al.

Date	Province code and Province name	General locality	Collection numbers	Reference number shown on Figure 1
10–11 August	N2, Chiang Mai	Doi Suthep	1-8	1
12 August	N2, Chiang Mai	Doi Inthanon, Ang-ka nature trail	9-25	2
13 August	N2, Chiang Mai	Doi Chiang Dao, near temple	26-57	3
14 August	N2, Chiang Mai	Doi Suthep, Queen Sirikit Botanic Garden and surroundings	58-76	1
15 August	N5/8, Border of Phrae and Nan	Huai Rong Waterfall	77-88	4
16 August	N5, Nan	Doi Phu Kha National Park	89-158	5
17 August	N5, Nan	Doi Phu Kha National Park, ca. 26 km from Pua, just past park Head-quarters	159-186	5
17 August	N5, Nan	23 km from Pua by road to Doi Phu Kha	187-200	5
18 August	N5, Nan	48 km from Pua by road to Doi Phu Kha	201-203a	5
18 August	N5, Nan	45 km south of Nan on road to Phrae	204-205	5
18 August	N8, Phrae	56/57 km from Phrae on road to Lampang	206-225	6
19 August	N6, Lamphun	26 km from Thoen, on Lampang/Lumphun border	226-254	7
20 August	N10, Tak	29 km from Tak by road to Taksin Maharat National Park	255-260a	8
20 August	N10, Tak	26 km from Tak by road to Taksin Maharat National Park	261-274	8
20 August	N10, Tak	3 km past Lan Sang National Park Head-quarters turnoff	275-292	8
20 August	N10, Tak	2 km past Lan Sang National Park Head-quarters turnoff	293	8
20 August	N10, Tak	1 km past Lan Sang National Park Head-quarters turnoff	294	8
20 August	N13, Khamphaeng Phet	Khlong Lan National Park	295-300	9
21 August	N13, Khamphaeng Phet	Khlong Lan National Park, rack to east of waterfall	301-353	9
22 August	N13, Khamphaeng Phet	Mae Wong National Park, new Visitor Centre & surroundings	354-403	10
25 August	SW37, Prachuap Khiri Khan	Kaeng Krachan National Park, 19 km from park Headquarters on route 3432	404-430	11
26 August	SW37, Prachuap Khiri Khan	Kaeng Krachan National Park, Pha Thung Camp	431	11
26 August	SW37, Prachuap Khiri Khan	Kaeng Krachan National Park, track to Thothip Waterfall	432-470	11
27 August	SW37, Prachuap Khiri Khan	Kaeng Krachan National Park, ridge top to Mount Phanoen Thong	471-492	11
27 August	SW37, Prachuap Khiri Khan	Kaeng Krachan National Park, Visitor Centre	493	11

Table 1. (continued)

Date	Province code and Province name	General locality	Collection numbers	Reference number shown on Figure 1
28 August	SW37, Prachuap Khiri Khan	Kaeng Krachan National Park, 8 km past Khao Sam Yot Ranger Station	494-504	11
28 August	SW37, Prachuap Khiri Khan	Kaeng Krachan National Park, ca. 9 km past Khao Sam Yot Ranger Station	505-536	11
28 August	SW37, Prachuap Khiri Khan	Kaeng Krachan National Park, 15 km past Khao Sam Yot Ranger Station	537-533	11
28 August	SW37, Prachuap Khiri Khan	Kaeng Krachan National Park, 10 km past Khao Sam Yot Ranger Station	537-544	11
31 August	SW34, Kanchanaburi	Erawan National Park, Khao Mong Lai	545-581	12
31 August	SW34, Kanchanaburi	Erawan National Park, Lek Lai Cave	582-594	12
31 August	SW34, Kanchanaburi	Erawan National Park, Khao Mong Lai	595-641	12
1 September	SW34, Kanchanaburi	Erawan National Park, 1st-4th Waterfalls	642-665	12
2 September	SW34, Kanchanaburi	Erawan National Park, 6th-7th Waterfalls	666-690	12
2 September	SW34, Kanchanaburi	Sri Nakharin Dam	691-694	12
2 September	SW34, Kanchanaburi	Tha Thung Na Dam	695-700	12
2 September	SW34, Kanchanaburi	Erawan National Park Headquarters	701	12
5 September	C52, Samut Sakhon	Bangkok, Kasetsart University Campus	702	13

This trip yielded a number of new records - for example, the short trip to Tha Thung Na Dam, allowed M. Jebb to demonstrate his determination and interest in collecting floating aquatics and yielded *Potamogeton distinctus* A. Bennett, a species new to Thailand and not recorded in Haynes (2001) or Chai-anan (1985) although known from Vietnam (Hô, 1993).

A total of 636 collections from this trip have so far been assigned to a family (Table 2). A comparison of these data with similar data for the 570 collections so far allocated to families from the 1993 trip (Simpson et al., 1995) is shown in Table 2. From this table it is apparent that the presence of a family specialist on the collecting team (indicated by * in Table 2) markedly, and not unsurprisingly, increased the numbers of collections of that particular family made on that trip; similarly, it is likely that the collection rate for families specially targeted by a family non-specialist (indicated by § in Table 2) shows a marked increase. Allowing for these effects indicates that the six most frequently collected families, and hence those most frequently encountered, were, in descending order, Rubiaceae, Euphorbiaceae, Leguminosae, Moraceae, Vitaceae and, perhaps rather surprisingly, Acanthaceae.

Table 2. The top 20 families collected in 1995 ranked as a percentage of the total collections made in that year. Figures for the 1993 (Simpson et al., 1995) trip are appended for comparison. * indicates specialist present for that family on the trip; § indicates that special notice was taken of this group by a non-specialist on the trip.

1993		1995	
Family	% of the total collections	Family	% of the total collections
Cyperaceae*	14.9	Rubiaceae	8.3
Ferns§	7.9	Euphorbiaceae	6.7
Rubiaceae	7.5	Cyperaceae§	5.7
Euphorbiaceae	6.5	Ferns§	5.3
Moraceae	3.9	Araliaceae*	4.6
Leguminosae	3.9	Leguminosae	4.3
Acanthaceae	3.9	Moraceae	3.3
Myrtaceae*	3.3	Vitaceae	3.1
Compositae	3.0	Acanthaceae	3.0
Poaceae	3.0	Verbenaceae	2.7
Apocynaceae*	2.5	Cucurbitaceae	2.2
Eriocaulaceae§	1.8	Araceae	2.0
Araceae	1.6	Apocynaceae	1.9
Araliaceae	1.6	Asclepiadaceae	1.9
Melastomataceae	1.4	Polygalaceae*	1.9
Zingiberaceae	1.3	Lamiaceae	1.8
Commelinaceae	1.2	Tiliaceae	1.8
Zingiberaceae	1.2	Annonaceae	1.6
Annonaceae	1.2	Urticaeae	1.4
Anacardiaceae*	1.0	Zingiberaceae	1.4

THE 1996 TRIP

The 1996 trip took place between the 12–28 September. All collections, with a single exception, were made in the Northern floristic region. Particular emphasis was placed on visiting previously unvisited localities and locating localities for future visits and collecting Apocynaceae, Araceae, Cyperaceae and Myrtaceae.

Most of the localities visited were again in National Parks together with areas around reservoirs, in paddy-fields and by drainage ditches. Of the 144 numbers, 104 were collected under the numbering series adopted for the 1990 & 1993 trips (Simpson et al., 1995). The remainder were collected under P.C. Boyce's own numbering series. Fifty-six percent of the numbers were either Araceae or Cyperaceae.

Participants

The participants were P.C. Boyce, J.A.N. Parnell, R. Pooma, D.A. Simpson, S. Suddee and P. Wilkin.

Collecting itinerary

Details of the collecting itinerary are given in Table 3 and Fig. 1.

Table 3. Collecting itinerary for 1996 BKF/K/TCD trip. All numbers in bold were collected in the series continuing from the 1990 and 1993 trips (Simpson et al., 1995).

Date	Province code and Province name	General locality	Collection numbers	Reference number shown on Fig. 1
12 September	PEN63, Phuket	Khao Phra Thaeo Wildlife Sanctuary	Boyce 1109	14
18 September	N12, Phitsanulok	Ban Keng Thung	Boyce 1110 1665-1669	15
19 September	N12, Phitsanulok	Namtok Chat Trakan National Park	Boyce 1111-1115 1670-1690	16
20 September	N12, Phitsanulok	Kuai Deua	1691-1699	17
20 September	N12, Phitsanulok	Phu Soi Dao National Park	Boyce 1116-1118 1700-1703	18
20 September	N9, Uttaradit	Sirikit Dam	Boyce 1119 1704-1707	19
21 September	N9, Uttaradit	Nam Pat	Boyce 1120-1121 1708-1712	19
21 September	N9, Uttaradit	Wiang Sa	Boyce 1120-1121 1713-1715	20
22 September	N5, Nan	Doi Phu Kha	Boyce 1122-1127 1716-1728	21
23 September	N5, Nan	Doi Phu Kha	Boyce 1128-1132 1729-1742	21
24 September	N4, Phayao	Phayao	1743-1745	22
24 September	N4, Phayao	Chan	1746-1751	22
24 September	N4, Phayao	Chiang Muan	1752	22
24 September	N2, Chiang Mai	Tha Wang Pa	1753-1755	23
25 September	N2, Chiang Mai	Mae Rim	Boyce 1132 1756-1761	23
27 September	N2, Chiang Mai	Doi Suthep / Doi Pui	Boyce 1133-1140 1762-1768	23
28 September	N7 Lampang	Wang Nua	Boyce 1141-1145	24
28 September	N2, Chiang Mai	Doi Inthanon	Boyce 1146-1148	25

THE 1998 TRIP

The 1998 trip took place between 29 September-9 November with collections being concentrated in the northern, North-Eastern and Eastern floristic regions.

Most of the localities visited were again in National parks or Wildlife Sanctuaries. A total of 383 numbers was collected, all under individual numbering series.

Participants

The trip members were V. Chamchumroon, T. Jonganurak, A. Muasya, J.A.N. Parnell A. Paton, S. Suddee and P. Wilkin. Collections were made under four numbering systems: those of Suddee, Paton, Jonganurak & Chamchumroon; Muasya (for whom collection numbers are also cited in Table 4); Wilkin; Parnell. The Muasya and Parnell collections have been incorporated into the numbering series used on the 1990, 1993 and 1996 trips.

Collecting itinerary

Details of the collecting itinerary are given in Table 4 and Fig. 1.

Table 4. Collecting itinerary for 1998 BKF/K/TCD trip.

Date	Province code and Province name	General locality	Collection numbers	Reference number shown on Fig. 1
29 September -3 October	SW37, Kanchanaburi	Thung Yai Naresuan Wildlife Sanctuary	Suddee, Paton, Jonganurak & Chamchumroon 853-905	26
7-9 October	NE16, Phetchabun	Saraburi & Nam Nao National Park	Suddee, Paton, Jonganurak & Chamchumroon 906-929 Muasya 1270-1287 (T1-T18) Wilkin T950-T956	27
9-12 October	E27, Chaiyaphum	Phu Khiao Wildlife Sanctuary	Suddee, Paton, Jonganurak & Chamchumroon 930-956 Muasya 1289-1310 (T20-41) Wilkin T957-T970	28
12 October	NE18, Nong Bua Lum Phu	Nong Bua Lum Phu	Suddee, Paton, Jonganurak & Chamchumroon 957-965 Muasya 1311-1321 (T42-52) Wilkin T974-T975 plus T971-T974 ca. 60 km from Chumphae	29
13–15 October	NE20, Nong Khai	Phu Wua National Park	Suddee, Paton, Jonganurak & Chamchumroon 966-986 Muasya 1322-1373 (T53-103) Wilkin T976-T990	30
15 October	NE 22, Nakhon Phanom	Thau Than	Muasya 1374-1373 (T104)	31
15 October	NE 23, Mukdahan	Mukdahan Town	Muasya 1375-1376 (T105-T106)	32
17 October	NE23, Mukdahan	Mukdahan National Park	Suddee, Paton, Jonganurak & Chamchumroon 987-993 Muasya 1377-1394 (T107-T124) Wilkin 991-998	32

Table 4 (continued)

Date	Province code and Province name	General locality	Collection numbers	Reference number shown on Fig. 1
18 October	SW 33, Amnat Charon	Amnat Charoen	Suddee, Paton, Jonganurak & Chamchumroon 994-995 Muasya 1395-1397 (T125-T127)	33
18 October	E35, Ubon Ratchathani	Khemmarat	Muasya 1398-1399 (T128-T129) Wilkin 999-1002	34
18 October	E35, Ubon Ratchathani	Pho Sai	Suddee, Paton, Jonganurak & Chamchumroon 996-998 Muasya 1400-1408b (T130-T137b) Wilkin 1003	35
19 October	E32, Yasothon	Phu Sa Dok Bua National Park	Suddee, Paton, Jonganurak & Chamchumroon 999-1003 Muasya 1409-1410 (T138-T139) Wilkin 1004-1008	36
20-22 October	NE21, Sakon Nakhon	Phu Phan National Park	Suddee, Paton, Jonganurak & Chamchumroon 1004-1035 Muasya 141-1441 (T140-T170) Wilkin 1009-1016 Parnell 1-11	37
25-27 October	NE17, Loei	Phu Luang Wildlife Sanctuary	Suddee, Paton, Jonganurak & Chamchumroon 1036-1049 Muasya 1442-1466 (T17-T195) Wilkin 1017-1030 Parnell 12-28	38
28-31 October	N12, Phitsanulok	Phu Soi Dao	Suddee, Paton, Jonganurak & Chamchumroon 1050-1072 Muasya 1467-1484 (T196-T 213) Wilkin 1032-1051 Parnell 29-52	39
30 October	N7, Lampang	Wang Sa	Muasya 1485-1486 (T214-T 215)	40
31 October-2 November	N5, Nan	Doi Phu Kha	Suddee, Paton 1073-1095 Wilkin 1052-1066	41
3-8 November	N10, Tak	Mae Sot & Umpang	Suddee, Paton 1096-1134 Wilkin 1069-1093 (also went S from Umpang to Thung Yai Naresuan W.S.)	42
9 November	N13, Kamphaeng Phet	Khlong Lan National Park	Suddee, Paton 1135-1138 Wilkin 1094-1096	43

THE 2002 TRIP

The 2002 trip took place between 21 January–17 February with collections largely being made in Peninsular Thailand as well as in Khon Kaen, Kanchanaburi and Tak provinces.

Most of the localities visited were in National Parks or Wildlife Sanctuaries. A total of 348 numbers were collected, continuing the numbering series from the 1990, 1993, 1996 and 1998 trips.

Participants

The trip participants were J.A.N. Parnell, D.A. Simpson and B. De Wilde who were joined by P. Chantaranothai, M. Norsangsri, K. Phulphong and T. Thitimetharoch (for collections in Khon Kaen), K. Chayamarit (for collections in Kanchanaburi and the Peninsula), R. Pooma (for collections in the Peninsula) & S. Suddee (for collections in the Peninsula and Tak).

Collecting Itinerary

Details of the collecting itinerary are given in Table 5 and Fig. 1.

Table 5. Collecting itinerary for 2002 BKF/K/TCD trip.

Date	Province code and Province name	General locality	Collection numbers	Reference number shown on Fig. 1
22–24 January	NE26, Khon Kaen	Waeng	1769	44
26 January	C54, Samut Songkhram	Bangkok to Samut Songkhram road	1772, 1776–1778	45
26 January	C54, Samut Songkhram	Khlong Trang	1773–1775	46
26 January	SW39, Phetchaburi	Phetchaburi to Hat Chao Sam Ran road	1779–1786	47
26 January	SW39, Phetchaburi	Hat Chao Sam Ran to Cha Am road	1787–1793	48
26 January	SW39, Phetchaburi	Cha Am, RFD Forest Training Centre	1794, 1799, 1800	49
26 January	SW40, Prachuap Khiri Khan	Khao Sam Roi Yot National Park.	1795–1798	50
27 January	SW40, Prachuap Khiri Khan	Huai Yang National Park	1801–1816	51
27 January	PEN63, Chumphon	Kapoe Waterfall	1817–1827	52
27 January	PEN63, Chumphon	Tha Sae	1828–1830	53
27 January	PEN64, Ranong	Kra Buri, Chumphon to Ranong road	1831–1839	54
28 January	PEN64, Ranong	Ngao National Park	1840–1868	55
28 January	PEN64, Ranong	Laem Son National Park	1869–1870	56
28 January	PEN64, Ranong	Road to Laem Son National Park from National Route 4	1871–1878	57
28 January	PEN64, Ranong	401 Takuapa-Surat Thani road, near junction with National Route 4	1879–1881	58
29 January	PEN65, Surat Thani	Khao Sok National Park, Chiao Lan Reservoir	1882–1918	59

Table 5. (continued)

Date	Province code and Province name	General locality	Collection numbers	Reference number shown on Fig. 1
30 January	PEN65, Surat Thani	Route 401, Surat Thani-Takuapa road, km 50 from Surat Thani	1919	60
30 January	PEN65, Surat Thani	Khirirat, Khao Lang Tao	1920–1926	61
30 January	PEN65, Surat Thani	Route 415 between Road 401 and Road 4	1927–1933	62
30 January	PEN65, Surat Thani	Krabi, Wat Tiger Cave	1934–1937	63
30- 31 January	PEN71, Trang	Route 4 E of Krabi	1938–1970, 2116	64
31 January	PEN73, Songkhla	Yan Ta Khao, Thung Khai Botanic Garden	1971–1979	65
31 January	PEN73, Songkhla	Route 43 Hat Yai–Chana Chik, section of road running along coast	1980	66
31 January	PEN74, Pattani	Yaring	1981–1988	67
1 February 2002	PEN76, Narathiwat	Ban Khok Kraduk Mu, Khlong Nam Bang, Chaloeerm Phra Kiat Wildlife Sanctuary	1989–2007	68
1 February	PEN76, Narathiwat	Hala Bala Wildlife Sanctuary	2008–2014	69
2 February	PEN65, Surat Thani	Nong Thung Thong Wildlife Sanctuary	2015–2021	70
6 February	SW37, Kanchanaburi	Kanchanaburi	2022	71
6 February	SW37, Kanchanaburi	Route 323 Sai Yok to Thong Pha Phum	2023–2024	72
6 February	SW37, Kanchanaburi	Sai Yok National Park, trail around Park HQ	2025–2028	73
7 February	SW37, Kanchanaburi	Kraeng Krawia National Park	2029–2045, 2052	74
7 February	SW37, Kanchanaburi	Road 323, Thong Pha Phum to Sangkhla Buri	2046–2051	75
9 February	N10, Tak	Start of reservoir	2053–2069	76
10 February	N10, Tak	Taksin Maharat National Park	2070–2077	77
10 February	N10, Tak	Mae Sot, Thararat Waterfall	2078–2085	77
10 February	N10, Tak	Mae Sot, Pha Charoen Waterfall	2086–2098, 2117	78
11 February	N10, Tak	Road 1206 Ban Huai Mai Paen to Phop Phra, Ban Wa Li	2099–2103	79
11 February	N10, Tak	Road 105, Mae Sot to Mae Sariang	2104–2110	80
11 February	N10, Tak	Mae U Su Cave	2111	81
12 February	N10, Tak	Mae Sot, Friendship Bridge, border market	2112–2115	82
		Lan Sang National Park		

DISCUSSION

The collecting trips detailed in the present work and in Simpson et al. (1995) have resulted in a considerable extension of collecting activity in Thailand, an increase in the number of collections available for study from Thailand, collections of many species new to Thailand and to science and of one genus new to science (Simpson et al., 2005). The trips so far undertaken have been scattered over most areas of the country and have taken in all floristic regions. Nevertheless, as Parnell et al. (2003) show, Thailand is a still highly undercollected and much more general collecting needs to be undertaken to enhance the collecting densities for the country.

Our data indicate that on general collecting trips Rubiaceae, Euphorbiaceae, Leguminosae, Moraceae, Vitaceae and Acanthaceae are the commonest families encountered and may, therefore be the commonest families over the range of habitats sampled. The first three families are notoriously taxonomically difficult and species rich. Currently, BKF heads intensive efforts to complete accounts of these families for the Flora of Thailand which, given our findings on their commonness, will be of exceptional use in the field.

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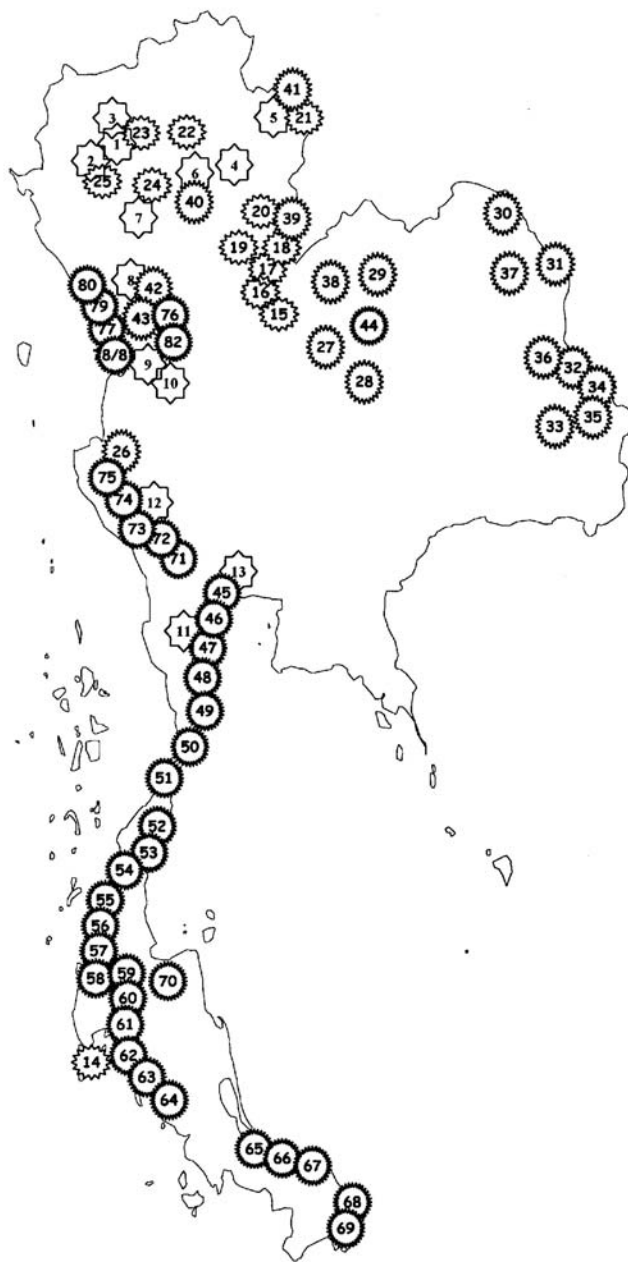


Figure 1. Map of collecting localities for 1995, 1996, 1998 & 2002 BKF/TCD/K. Numbers refer to Tables 1, 3-5. ☆ = collecting localities for the 1995 trip; ⊙ = collecting localities for the 1996 trip; ● = collecting localities for the 1998 trip; ● = collecting localities for the 2002 trip.