

THE ZOOLOGICAL REFERENCE COLLECTION. 1972-1989 REPORT

C. M. Yang

INTRODUCTION

The Zoological Reference Collection (ZRC) of the Department of Zoology, National University of Singapore, originated from the natural history collection of the former Raffles Museum (now the National Museum of Singapore). The collection was transferred to the university in 1972.

Between 1972 and 1987, the collection was transferred four times and housed temporarily in various premises. The history of the period was documented by Alfred (1988), Sharma (1988), Yang (1988) and briefly summarized in the editorial of this journal (1989, volume 37 (1&2): 1-2). During this period, the storage facilities were very poor. Because of high humidity and great fluctuations in temperature, the specimens were much at risk from moulds and pests. The staff members had to spend most of their time treating the specimens against infestations. There were also no proper areas for workers or scientists to work in those premises. Specimens had to be retrieved from piles of wooden boxes or crates stacked from floor to ceiling. It was a difficult task maintaining the collection especially during the shifts.

The collection has now been accommodated in its new facilities on the university campus. The premises were officially opened by the Senior Minister of State for Education, Dr. Tony Tan Keng Yam on 31 October 1988. Distinguished guests attending the ceremony included the Vice-Chancellor, Professor Lim Pin; as well as former directors of the Singapore Museum - Mr. Michael W. F. Tweedie and Mr. Eric Alfred. Mr. Tweedie, whose visit was sponsored by the British Council, presented two seminars for the occasion.

During the time of the Raffles Museum, annual reports were regularly issued (with the exception of the war years), with details of visitors, acquisitions (both library and specimens), finances, scientific work done, and occasionally, even catalogues. Since the transfer of the collections to the university, no such reports have been generally issued. The previous annual reports have not only proved useful to staff and scientists in tracing specimens and understanding their origins, they have also provided key information on the scientific work that had been done. The present report marks a return to a traditionally useful practice and is intended to fill the gap between 1972 and 1989. From 1990, similar reports (on a biennial basis) will be published in the Raffles Bulletin of Zoology.

Yang Chang Man - Zoological Reference Collection, Department of Zoology, National University of Singapore
Kent Ridge, Singapore 0511, Republic of Singapore.

FACILITIES

The new premises occupy the lower three floors of the building which also accommodate the Science Library. The collection is stored in 24 hours air-conditioning (22-24°C) with humidity controlled at $\pm 60\%$ r.h.

Dry collection: The bird and mammal reference skins and skulls are stored in a 230 sq. metre electrically operated mobile compactor system containing 228 units of air-tight steel cabinets (1.22 or 2.44 W x 0.60 D x 2.48 m H), with adjustable wooden trays (Pl. 1A, B). Collections of pinned insects, molluscs, corals and echninoderms are stored in wooden cabinets in two rooms (49 and 30 sq. metres). There are two show rooms (24 and 18 sq. metres) for visitors to view some of the mounted specimens from the former National Museum collection.

Wet collection: Spirit materials of fish, amphibians, reptiles, bats and invertebrates are stored on open shelves in a 220 sq. metre mechanically operated mobile compactor system with 534 units of steel shelving (0.91 W x 0.46 D x 2.48 m H), each with seven adjustable shelves (Pl. 1 C, D).

The space saving compactors provide more storage area for future expansions of the collection. It protects specimens from light, dust, mould and pests. Ample work space and benches are provided near the storage area for visiting researchers to examine the reference material. Other facilities in the premises include the following:

Research/Systematics Laboratory (54 sq. metres): equipped with general laboratory facilities for visitors. Researchers also have access to the facilities in the Department of Zoology proper.

Library (33 sq. metres): Contains a small collection of reference books, periodicals and about 3,000 articles concerning materials in the ZRC. The collection of about 10,000 zoology reference books and periodicals, as well as thousands of loose reprints, originally from the National Museum is also now housed at the Science and Zoology Libraries. These are also accessible to all visitors to the ZRC.

Cold-room (10 sq. metres).

Fumigation chamber (one cubic metre): With scrubber system for fumigating specimens as and when necessary.

Workshop and preparation room (30 sq. metres): With a fume cupboard for processing of specimens and handling of hazardous chemicals.

STAFF

The ZRC is under the administration of the Department of Zoology, but has six staff members curating the collection. These include a Scientific Officer, a Clerical Officer, two Laboratory Technicians, one Assistant Laboratory Technician and one Laboratory Attendant. Occasionally, several part time volunteer workers and research students help with the various staff duties.

THE COLLECTION

A total of about 126,000 reference specimens were transferred from the National Museum to the university in 1972. The collection represents not only specimens accumulated

over the whole history of Raffles Museum since 1840, but also includes collections received from other regional research institutions. It has incorporated the reference materials of the Zoology Department of the then University of Singapore (including the important freshwater fauna collections of D. S. Johnson, C. H. Fernando, Lanna Cheng and C. F. Lim; mammal collection of J. L. Harrison; fish collections of C. Lindsey and A. K. Tham, etc). However, in order to perform the key role of basic research and provide information on the fauna of the Southeast Asian region, the ZRC will need to expand further in the future. The number of specimens in the collection at present is about 173,000. The majority of the recent specimens have been acquired as a result of research carried out by staff and students of the department. These include about 20,000 specimens of coral and other invertebrates collected by L. M. Chou and the Reef Ecology Study Team, 1,500 mite specimens (including 76 paratypes) presented by M. Nadchatram, 4,000 crab specimens collected by Peter K. L. Ng and S. Harminto, 1,000 coral fishes collected by Samuel S. W. Tay, 2,000 molluscs collected by W. H. Ho and J. Sigurdsson, numerous corals by Esther G.L. Koh, coral commensals by Beverly P. L. Goh, crinoids by Grace S. Y. Lim, freshwater prawns by Samuel S. C. Chong, arthropods by D. H. Murphy and about 3,000 specimens of insects and other aquatic animals collected from the Rompin-Endau Expedition to Peninsular Malaysia in 1989. The ZRC also benefits from a large number of valuable donations from members of public, local and foreign institutes, as well as through exchanges.

The 173,000 specimens comprise at the moment of about 15,000 mammals, 31,000 birds, 7,000 reptiles and amphibians, 31,000 fishes, 21,000 molluscs, 26,000 crabs, 10,000 prawns, 15,000 insects and 17,000 other invertebrates that are representative of the animal fauna of this region. The collection is the largest and most comprehensive in the region. The materials of the collection are mainly used by overseas scholars as well as staff and postgraduate students of the department. It is also consulted by various government departments, schools and members of the public. Many specimens have been loaned to overseas institutions for research purposes.

Donations. - The ZRC records its appreciation to many institutions and individual persons who have donated specimens during the period. Many of these are new to the collection. Important donations include the 1012 fish specimens of South China Sea and Andaman Sea from the Singapore Marine Fisheries Research Department of the Southeast Asian Fisheries Development Centre (SEAFDEC), the 73 crinoid specimens of the Sindbad Voyage from the Western Australian Museum, as well as many type specimens from numerous taxonomists and museums.

A complete list of donations and specimens received through exchange would be too long for inclusion in this report. The list in Appendix I shows only selected donors to illustrate the variety of sources and materials. Specimens from the staff of the Department of Zoology have not been included.

The ZRC has also despatched the following specimens to overseas specialists either as gifts or for exchange:

TAXON	NO. OF SPEC.	SPECIALIST/COUNTRY
Insects	31	L. H. Hollett (Canada) & H. E. Bomans (France).
Crabs	310	D. P. Maitland, J. Lowry & P. Davie (Australia), G. Benott (Belgium), H.

		Griffith (Canada), J. S. H. Collins (England), D. Guinot (France), F. H. Rehmani (India), D. Wowor & S. Adisoemarto (Indonesia), S. Y. Hong (South Korea), L. B. Holthuis (The Netherlands), C. H. Wang (Taiwan), B. Chatananthawej & P. Naiyanetr (Thailand), R. Titgen & R. B. Manning (USA) & Z. Štević (Yugoslavia).
Frogs	1	R. F. Inger (USA).
Reptiles	72	P. E. Vanzolini (Brazil), van Wallach & H. K. Voris (USA).
Fishes	31	Crown Prince's Palace (Japan), J. Kamasuta (Thailand) & T. R. Roberts (USA).
Mammals	4	D. Kitchener (Australia).

Loans. - Numerous overseas zoologists and postgraduate students had requested for loans of specimens for their studies. A total of 84 loans constituting 2873 specimens were sent to 56 overseas specialists from 16 countries during the period:

TAXON	NO.LOT/NO.SPEC.	SPECIALIST/COUNTRY
Polychaetes	1 / 460	R. Hanley (Australia).
Spiders	5 / 253	W. C. Sedgwick, H. W. Levi, N. Platnick, J. A. Beatty & P. Sierwald (USA).
Insects	6 / 130	E. Heiss (Austria), M. E. Bomans, L. Deharveng (France), D. Kovac (W Germany), P. Kuijten (The Netherlands) & G. W. Wolfe (USA).
Barnacles	4 / 59	W.B. Jeffries (USA).
Crabs	25 / 1025	P. Davie, D. Maitland, D. J. G. Griffin (Australia), G. Pohle (Canada), P. Clark (England), D. Guinot, A. Crosnier (France), B. Galil (Israel), L. B. Holthuis (The Netherlands), Q. B. Kazmi (Pakistan), C. H. Wang (Taiwan), P. Naiyanetr (Thailand) & R. Titgen & J. Haig (USA).
Other Decapods	5 / 123	A. J. Bruce (Australia) & K. Baba (Japan).
Molluscs	1 / 334	J. E. Peak (England).
Fishes	13 / 164	M. Burrige & M. B. Smith (Canada), K. Meguro (Japan), M. Zakaria- Ismail (Malaysia), S. G. Poss, R. K. Johnson & T. R. Roberts (USA) & M. Kottelat (West Germany).
Amphibians	3 / 12	R. F. Inger & R. Nussbaum (USA).
Snakes	5 / 139	H. K. Voris, G. Pregill & van Wallach (USA).
Birds	10 / 64	G. M. Storr, B. Gillies, S. Parker (Australia), C. Violani (Italy), D. R. Wells (Malaysia), G. F. Mees & F. Rozendaal (The Netherlands).
Mammals	9 / 110	D. Kitchener (Australia), P. D. Jenkins (England), M. Aimi (Japan), G. W. H. Davison (Malaysia), W. Bergmans & P. J. H. van Bree (The Netherlands).
TOTAL	84 / 2873	

VISITORS

The former Raffles Museum collection has been studied by many zoologists all over the world. Most of them expressed concern that the collection might be disposed off or lost forever when it was moved out of the National Museum. Many zoologists visited the ZRC even though they were not actively involved in research on its material. These include The Earl of Cranbrook, M. W. F. Tweedie, Lady Dainton, C. H. Fernando, C.

Lindsey, David Challinor, Porter M. Kier, J. R. Horner, H. H. Genoways, D. A. Schlitter, B. Yaldwyn and many others.

Visiting scientists who made use of the collection during the period are listed in Appendix II. Some of them were repeat visitors.

RESEARCH AND PUBLICATIONS

The scientific officer and the supporting staff are primarily involved in curating and maintaining the collection as well as providing services for researchers and public visitors. The research conducted on ZRC materials is done mainly by overseas scientists, staff and postgraduate students of the Department of Zoology.

In the days of the Raffles Museum, collecting trips and expeditions were regularly conducted to Malaysia and neighbouring countries to obtain specimens and provide materials for study. In a significant return to an important tradition, staff members of ZRC participated in the Rompin-Endau Expedition, Pahang, Malaysia 1989 for 10 days in June and July. The expedition, organised by the Malayan Nature Society, was to provide information for the establishment of a National Park at Rompin-Endau. About 3,000 insects and other invertebrates, fishes and frogs were collected. Several papers describing these materials are due to be published in the Malayan Nature Journal.

New taxa deposited in the ZRC. - Other than the type specimens previously deposited in the National Museum, the following new species or subspecies (156 in all) have been deposited in the ZRC between 1972 and 1989.

Nematodes

Spironoura roberti Lowe, 1978. 1 Holotype, 9 Paratypes.

Spiders

Liphistius yangae Platnick & Sedgwick, 1984. 1 Holotype, Paratypes.

Mites

Neoschoengastia lacunosa Gater, 1932. 1 Paratype.

Schoengastia vieta Gater, 1932. 1 Paratype.

Siseca subrara Audy, 1950. 2 Paratypes.

Trombicula dimolinae Audy, 1952. 1 Paratype.

Gahrlepiea (Schongastiella) erula Traub & Evans, 1953. 1 Paratype.

Euschongastia asonluca Traub & Audy, 1954. 1 Paratype.

Leptotrombidium (Lorillatum) tuhanum Traub & Audy, 1954. 1 Paratype.

Trombicula (Leptotrombidium) pipellae Traub & Audy, 1954. 1 Paratype.

Trombicula (Leptotrombidium) baluensis Traub & Nadchatram, 1954. 1 Paratype.

Gahrlepiea (Gahrlepiea) laciniata Traub & Morrow, 1955. 1 Paratype.

Gahrlepiea tuberculata Traub & Morrow, 1955. 1 Paratype.

Ptilonyssus pycnonoti malayi Fain, 1956. 1 Paratype.

Traubacarus browningi Audy & Nadchatram, 1957. 1 Paratype.

Traubacarus domrowi Audy & Nadchatram, 1957. 1 Paratype.

Traubacarus harrisoni Audy & Nadchatram, 1957. 1 Paratype.

Traubacarus intermedia Audy & Nadchatram, 1957. 1 Paratype.

Traubacarus jadini Audy & Nadchatram, 1957. 1 Paratype.

Traubacarus owenevansi Audy & Nadchatram, 1957. 1 Paratype.

Traubacarus varmai Audy & Nadchatram, 1957. 1 Paratype.

Traubacarus vercammeni Audy & Nadchatram, 1957. 1 Paratype.

Pseudoschongastia novita Audy & Womersley, 1957. 2 Paratypes.
Laurentella canus Domrow, 1962. 1 Paratype.
Trombicula koongi Domrow, 1962. 1 Paratype.
Ereynetoides malayi Fain & Nadchatram, 1962. 2 Paratypes.
Mesonyssoides malayi Fain & Nadchatram, 1962. 1 Paratype.
Sternostoma cooremani halcyoni Fain & Nadchatram, 1962. 1 Paratype.
Ascoschoengastia (Laurentella) calcar Nadchatram & Domrow, 1964. 2 Paratypes.
Ascoschaengastia (Laurentella) dentata Nadchatram & Domrow, 1964. 1 Paratype.
Ascoschoengastia (Laurentella) tafia Nadchatram & Domrow, 1964. 2 Paratypes.
Laurentella gressitti Nadchatram & Domrow, 1964. 1 Paratype.
Schoengastia psorakari Nadchatram & Gentry, 1964. 2 Paratypes.
Gahrlepiea (Walchia) longidentata Nadchatram & Traub, 1964. 1 Paratype.
Leptotrombidium (Lorillatum) kianjoei Nadchatram & Traub, 1964. 1 Paratype.
Leptotrombidium (Lorillatum) oreophilum Nadchatram & Traub, 1964. 1 Paratype.
Leptotrombidium (Leptotrombidium) striatum Nadchatram & Traub, 1964. 1 Paratype.
Trombicula (Sasatrombicula) keechongi Nadchatram & Mitchell, 1965. 1 Paratype.
Chiroptella (Chiroptella) nocticola Nadchatram, 1966. 2 Paratypes.
Leptotrombidium (Leptotrombidium) wallacei Mitchell & Nadchatram, 1966. 1 Paratype.
Leptotrombidium (Leptotrombidium) spillettii Mitchell & Nadchatram, 1966. 2 Paratypes.
Leptotrombidium (Leptotrombidium) parviscutum Mitchell & Nadchatram, 1966. 1 Paratype.
Schoengastia kanhaensis Mitchell & Nadchatram, 1966. 1 Paratype.
Leptotrombidium (Leptotrombidium) brinchangense Nadchatram & Upham, 1966. 3 Paratypes.
Neoschoengastia heynemani Nadchatram & Upham, 1966. 2 Paratypes.
Chatia (Shunsennia) nurahmadi Traub & Nadchatram, 1966. 1 Paratype.
Microtrombicula perissochaeta Traub & Nadchatram, 1966. 2 Paratypes.
Microtrombicula ventricosa Traub & Nadchatram, 1966. 2 Paratypes.
Neoschoengastia longipes Nadchatram, 1967. 2 Paratypes.
Neoschoengastia solitus Nadchatram, 1967. 2 Paratypes.
Leptotrombidium (Leptotrombidium) dihumale Traub & Nadchatram, 1967. 1 Paratype.
Leptotrombidium (Leptotrombidium) irregulare Traub & Nadchatram, 1967. 1 Paratype.
Leptotrombidium (Leptotrombidium) rupestre Traub & Nadchatram, 1967. 1 Paratype.
Leptotrombidium (Trombiculindus) gateri Traub & Nadchatram, 1967. 1 Paratype.
Leptotrombidium alopeciatum Traub & Nadchatram, 1967. 3 Paratypes.
Leptotrombidium (Leptotrombidium) phangi Upham & Nadchatram, 1968. 2 Paratypes.
Laelaps kimanis Domrow, 1976. 1 Paratype.
Nasaliages borneensis Fain & Nadchatram, 1980. 3 Paratypes.
Notoedres phangi Klompen, Lukoschus, Fain & Nadchatram, 1980. 1 Paratype.
Cheimelichus trochanteralis Fain, Lukoschus & Nadchatram, 1981. 2 Paratypes.
Micronychites spinifer Fain, Lukoschus & Nadchatram, 1981. 4 Paratypes.
Micronychitoides pilifer Fain, Lukoschus & Nadchatram, 1981. 1 Paratype.
Chirobia eonycteris Klompen, Lukoschus, Fain & Nadchatram, 1981. 2 Paratypes.
Alabidopus asiaticus Lukoschus, Scheperboek, Fain & Nadchatram, 1981. 1 Paratype.
Psorergates doriae Giesen, Lukoschus & Nadchatram, 1982. 1 Paratype.
Psorergates dremomydis Giesen, Lukoschus & Nadchatram, 1982. 1 Paratype.
Psorergatoides tadaridae Giesen, Lukoschus & Nadchatram, 1982. 2 Paratypes.
Schoengastia crossi Nadchatram & Wooster, 1985. 10 Paratypes.
Gahrlepiea micropotamogale Nadchatram & Puylaert, 1987. 1 Paratype.
Gahrlepiea lami Nadchatram, 1989. 7 Paratypes.
Gahrlepiea sumatrensis Nadchatram, 1989. 6 Paratypes.
Gahrlepiea chani Nadchatram, 1989. 1 Paratype.
Gahrlepiea parviseta Nadchatram, 1989. 1 Paratype.
Schoengastiella angusta Nadchatram & Fernandes, 1989. 4 Paratypes.
Schoengastiella goffi Nadchatram & Fernandes, 1989. 3 Paratypes.
Schoengastiella unisternala Nadchatram & Fernandes, 1989. 2 Paratypes.
Schoengastiella absonata Nadchatram & Fernandes, 1989. 3 Paratypes.
Schoengastiella murphyi Nadchatram & Fernandes, 1989. 5 Paratypes.

Insects

Anisops lansburyi Leong, 1963. 1 Holotype, 1 Paratype.
Micronecta johorensis Fernando, 1964. 1 Paratype.
Ventidius harrisoni Cheng, 1965. 9 Paratypes.

Ventidius hungerfordi Cheng, 1965. 3 Paratypes.
Ventidius pubescens Cheng, 1965. 22 Paratypes.
Ventidius pulai Cheng, 1965. 6 Paratypes.
Esakia fernandoi Cheng, 1966. 11 Paratypes.
Esakia johorensis Cheng, 1966. 16 Paratypes.
Esakia lundbladi Cheng, 1966. 2 Paratypes.
Micronecta malayana Leong, 1966. 5 Paratypes.
Aphelocheirus brevirostris Polhemus & Polhemus, 1988. 2 Paratypes.
Aphelocheirus femoratus Polhemus & Polhemus, 1988. 1 Paratype.
Aphelocheirus grik Polhemus & Polhemus, 1988. 4 Paratypes.
Aphelocheirus malayanus Polhemus & Polhemus, 1988. 2 Paratypes.
Hebrus mangrovensis Polhemus & Polhemus, 1989. 4 Paratypes.
Hebrus nereis Polhemus & Polhemus, 1989. 56 Paratypes.
Lautea murphyi Sawada, 1989. 2 Paratypes.

Crabs

Heteropanope karangi Serène, 1972. 2 Paratypes.
Chiromanthes maipoensis Soh, 1978. 1 Paratype.
Pseudosesarma patshuni Soh, 1978. 7 Paratypes.
Doclea canaliformis Ow-Yang, in Lovett, 1981. 1 Holotype, 7 Paratypes.
Doclea johnsoni Ow-Yang, in Lovett, 1981. 1 Holotype.
Pilumnus demani Ng & Tan, 1984. 1 Holotype.
Pilumnus parableekeri Ng & Tan, 1984. 1 Holotype, 4 Paratypes.
Pilumnus pileiferus Ng & Tan, 1984. 1 Holotype, 5 Paratypes.
Stoliczia (Johora) tiomanensis Ng & Tan, 1984. 1 Holotype, 3 Paratypes.
Stoliczia (Johora) punicea Ng, 1985. 1 Holotype, 3 Paratypes.
Stoliczia (Johora) tiomanensis counsilmani Ng, 1985. 1 Holotype, 5 Paratypes.
Parapanope serenei Guinot & Ng, 1985. 1 Paratype.
Parapanope singaporensis Ng & Guinot 1985. 1 Holotype, 1 Paratype.
Irmengardia johnsoni Ng & Yang, 1985. 1 Holotype, 15 Paratypes.
Potamiscus leoi Ng & Yang, 1985. 1 Holotype.
Balssiathelphusa cursor Ng, 1986. 2 Paratypes.
Geosesarma serenei Ng, 1986. 1 Holotype, 1 Paratype.
Geosesarma tiomanicum Ng, 1986. 1 Holotype, 1 Paratype.
Geosesarma sumatraensis Ng, 1986. 1 Holotype.
Geosesarma scandens Ng, 1986. 1 Holotype.
Geosesarma cataracta Ng, 1986. 1 Holotype, 12 Paratypes.
Geosesarma nemesis Ng, 1986. 1 Holotype, 6 Paratypes.
Geosesarma insulare Ng, 1986. 1 Holotype.
Johora johorensis intermedia Ng, 1986. 1 Holotype, 56 Paratypes.
Johora johorensis murphyi Ng, 1986. 1 Holotype, 9 Paratypes.
Johora singaporensis Ng, 1986. 1 Holotype, 21 Paratypes.
Parathelphusa sarawakensis Ng, 1986. 2 Paratypes.
Parathelphusa sabari Ng, 1986. 1 Paratype.
Perithelphusa lehi Ng, 1986. 1 Holotype, 10 Paratypes.
Phricotelphusa hockpingi Ng, 1986. 1 Holotype, 36 Paratypes.
Terrapotamon aipooae Ng, 1986. 1 Holotype, 3 Paratypes.
Geosesarma malayanum Ng & Lim, 1986. 1 Holotype, 29 Paratypes.
Heterothelphusa insolita Ng & Lim, 1986. 1 Holotype, 2 Paratypes.
Isolapotamon grusophallus Ng & Yang, 1986. 1 Holotype, 3 Paratypes.
Thelphusula rhadamanthysi Ng & Goh, 1987. 1 Holotype.
Parathelphusa valida Ng & Goh, 1987. 6 Paratypes.
Stoliczia bella Ng & Ng, 1987. 1 Holotype, 1 Paratype.
Phricotelphusa gracilipes Ng & Ng, 1987. 1 Holotype, 67 Paratypes.
Demania bangladeshensis Ng, Huda & Banu, 1987. 1 Holotype.
Elamenopsis mangalis Ng, 1988. 1 Paratype.
Stoliczia changmanae Ng, 1988. 1 Holotype, 15 Paratypes.
Johora grillator Ng, 1988. 1 Holotype.
Parathelphusa nagasaki Ng, 1988. 1 Holotype, 5 Paratypes.
Pilumnus murphyi Ng, 1988. 1 Holotype, 3 Paratypes.
Pilumnus serenei Ng, 1988. 1 Holotype, 9 Paratypes.

Sesarmoides novabritania Ng, 1988. 1 Holotype, 1 Paratype.
Geithusa pulcher Ng, 1989. 1 Holotype, 3 Paratypes.
Thelphusula dicerophilus Ng & Stuebing, 1989. 1 Holotype, 6 Paratypes.
Sundathelphusa aspera Ng & Stuebing, 1989. 1 Holotype.

Other Decapods

Polyonyx teleostophilus Johnson, 1958. 1 Holotype, 3 Paratypes.
Caridina excavatoides Johnson, 1961. 1 Holotype, 1 Paratype.
Caridina thambipillai Johnson, 1961. 1 Holotype, 7 Paratypes.
Petrolisthes kranjiensis Johnson, 1970. 15 Paratypes.
Porcellana (Pisidia) gordonii Johnson, 1970. 1 Holotype, 33 Paratypes.
Periclimenes johnsoni Bruce, 1987. 1 Holotype, 11 Paratypes.
Macrobrachium ahkowi Chong & Khoo, 1987. 5 Paratypes.
Macrobrachium gua Chong, 1989. 1 Holotype, 2 Paratypes.

Cirripeds

Octolasmis collare Jeffries, Voris & Yang, 1988. 3 Paratypes.

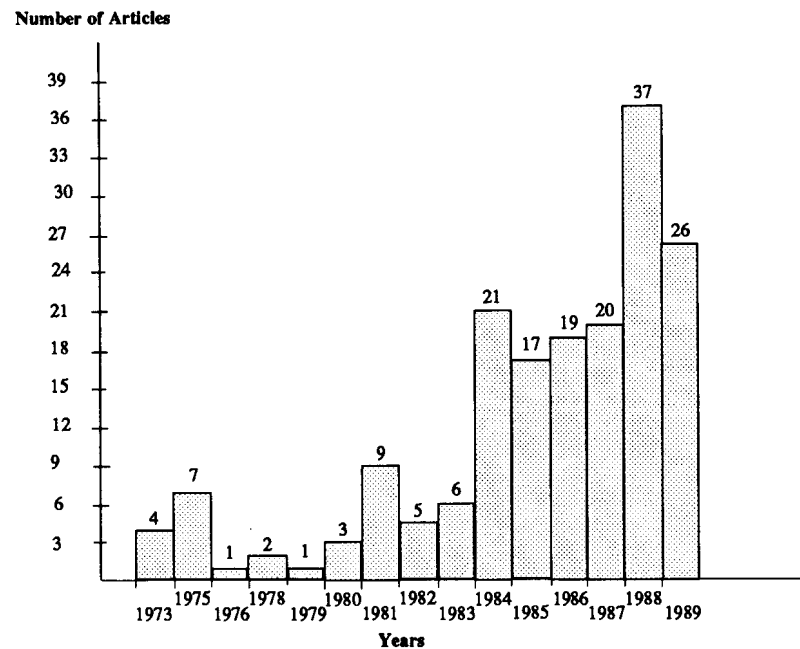
Molluscs

Arminia carneola Lim & Chou, 1970. 1 Holotype, 1 Paratype.
Dendrodoris kranjiensis Lim & Chou, 1970. 1 Holotype, 3 Paratypes.
Dendrodoris singaporensis Lim & Chou, 1970. 1 Holotype, 2 Paratypes.

Fish

Gymnocranius elongatus Senta, 1973. 1 Holotype, 4 Paratypes.

Publications. - A total of about 178 scientific publications concerning material in the ZRC have been produced between 1973 and 1989 (Appendix III). The number of articles increased gradually from 4 in 1973 to 26 in 1989:



The ZRC material was also examined by local and overseas graduate students for their research projects. These unpublished works include the following:

Australia

- Scott, G., 1982. *South-east Asian Macaques: A study of skin and skull variation*. M. A. Thesis, Australian National University, Canberra.
- Weitzel, V., 1983. *A Preliminary Analysis of the Dental and Cranial Morphology of Presbytis and Trachypithecus in Relation to Diet*. M. A. Thesis, Australian National University, Canberra.

Canada

- Griffith, H., 1985. *Taxonomy, Phylogenetics and Evolution of the genus Dissodactylus (Crustacea: Brachyura: Pinnotheridae)*. M. Sc. Thesis. University of Toronto, 166 pp.

Malaysia

- Zubaid, A. M., 1983. *Kajian taksonomi genus Hipposideros di Semenanjung Malaysia (Rhinolophidae: Chiroptera)*. Sarjana Sains, Universiti Kebangsaan Malaysia.

Singapore

- Poon, Kum Heng, 1976. *Some biological studies on the fiddler crabs, Uca (Decapoda, Brachyura, Ocypodidae) of Singapore, with special reference to Uca vocans (L. 1758)*. B. Sc. (Honours) Thesis, University of Singapore. 113 pp.
- Tay, Sam Wah, Samuel, 1978. *The biology and ecology of coral reef fishes at Pulau Salu, Singapore (including the systematics of the family Pomacentridae)*. M. Sc. Thesis, University of Singapore. 258 pp.
- Lowe, Constance Monica, 1979. *Parasites of the chelonians, Siebenrockiella crassicolis (Gray) and Cuora amboinensis (Daudin)*. B. Sc. (Honours) Thesis, University of Singapore. 69 pp.
- Lim, Siew Lee, Shirley, 1980. *Biology of the xanthid crab Pilumnus vespertilio (Fabricius) (Crustacea, Decapoda, Brachyura, Xanthidae) with emphasis on larval to post-larval development*. B. Sc. (Honours) Thesis, National University of Singapore. 162 pp.
- Ng, K. L., Peter, 1983. *Aspects of the systematics of the family Pilumnidae Samouelle 1819 (Crustacea, Decapoda, Brachyura) and a study on evolutionary trends within the superfamily Xanthoidea (sensu Guinot 1973)*. B. Sc. (Honours) Thesis, National University of Singapore. 251 pp.
- Chong, S. C. Samuel, 1985. *A Revision of some Malaysian species of the genus Macrobrachium Bate 1868 (Decapoda: Palaemonidae)*. B. Sc. (Honours) Thesis, National University of Singapore. 122 pp.
- Goh, Pi Lee, Beverly, 1987. *A study of the coral commensals of Singapore reefs*. B. Sc. (Honours) Thesis. National University of Singapore. 71 pp.
- Lim, Su Yeong, Grace, 1987. *Singapore reef echinoderms and their associates with emphasis on crinoids*. B. Sc. (Honours) Thesis. National University of Singapore. 55 pp.
- Ho, Wai Hoong, 1988. *The Family Littorinidae in Singapore*. B. Sc. (Honours) Thesis. National University of Singapore. 151 pp.
- Koh, G. L., Esther, 1988. *Systematics and ecology of Mushroom Corals (Scleractinia, Fungiidae) in Singapore reefs*. B. Sc. (Honours) Thesis. National University of Singapore. 113 pp.
- Harminto, Sundowo, 1988. *Systematics of the Family Ocypodidae Rafinesque, 1815, s. lat. (Crustacea, Decapoda, Brachyura) of Southeast Asia*. M. Sc. Thesis. National University of Singapore. 193 pp.
- Ng, K. L., Peter, 1989. *The Systematics of Sundanian Freshwater Crabs with comparative studies on selected characters (Crustacea: Brachyura)*. Ph. D. Thesis. National University of Singapore. Vols. I & II, pp. 1-542, 543-573.

United States of America

- Rainboth, W. J., 1981. *Systematics of the Asiatic barbans (Pisces, Cyprinidae)*. Ph. D. Thesis. University of Michigan, Ann Arbor. 253 pp.

- Karnasuta, J., 1982. *Revision of the Southeastern Asiatic cyprinid genus Osteochilus Günther*. Ph. D. Thesis. University of Alberta. 318 pp.
- Mudar, K. M., 1985. *A Morphometric Analysis of the five subspecies of Sus barbatus, the Bearded Pig*. M. Sc. Thesis, Michigan State University. 86 pp.

THE RAFFLES BULLETIN OF ZOOLOGY

The change of function of the National Museum of Singapore in 1970 also brought about the discontinuation its publication, THE BULLETIN OF THE NATIONAL MUSEUM (formerly THE BULLETIN OF THE RAFFLES MUSEUM) with the release of volume 35. The journal has now being revived under the name THE RAFFLES BULLETIN OF ZOOLOGY. It is published by the Department of Zoology, National University of Singapore. Volume 36 (Nos. 1 and 2) were published in 1988 and Volume 37 (Nos. 1 and 2) in 1989. The initial issues of the journal were partly sponsored by the Singapore Bukit Turf Club.

APPENDIX I: ACQUISITIONS OF SPECIMENS (by donations and exchange)

- | | |
|---|--|
| 10 November 1972, Lunds Univ.
Bool. Mus. (Sweden). | Donation of 6 birds (1 <i>Bombycilla garrulus</i> , 1 <i>Fringilla montifringilla</i> , 2 <i>Pyrrhula pyrrhula pyrrhula</i> , 1 <i>Turdus iliacus</i> & 1 <i>Turdus merula merula</i>). |
| 29 Oct. 1974, Bombay Nat. Hist. (India). | Exchange of birds (1 <i>Anas querquedula</i> , 1 <i>A. clypeata</i> , 1 <i>A. poecilorhyncha</i> , 2 <i>Coturnix coturnix</i> , 1 <i>C. coromandelica</i> , 1 <i>Columba livia</i> , 1 <i>Clamator jacobinus</i> , 1 <i>Capella minima</i> , 1 <i>Calidris minutus</i> , 1 <i>Egretta gularis</i> , 2 <i>Francolinus pictus</i> , 1 <i>Merops orientalis</i> , 1 <i>Numenius arquata</i> , 1 <i>Perdica asiatica</i> , 2 <i>P. argoondah</i> , 1 <i>Porphyrio porphyrio</i> , 1 <i>Sarkidiornis melanotos</i> & 1 <i>Vanellus indicus</i>). |
| 28 Feb. 1976, Dr. R. B. Grund (Australia). | Donation of 210 butterflies & skippers. |
| 9 May 1979, Dr. J. C. Miquel Rijksmus.
van Nat. Hist. (The Netherlands). | Donation of 8 Singapore prawns (2 <i>Exopalaemon stylifera</i> , 2 <i>Penaeus longistylus</i> , 2 <i>Parapenaeopsis coromandelica</i> , 2 <i>Trachypenaeus pescadoreensis</i>). |
| 14 Sept. 1979, Dr. G. G. Gorman
Gilliman Univ. (Philippines). | Donation of 4 Malaysian sea snakes (<i>Enhydryna schistosa</i>). |
| 27 Mar. 1980, Mus. De Zool.
Univ. Sao Paulo (Brazil). | Exchange of 10 geckos <i>Gonatodes humeralis</i> , 2 <i>Gymnodactylus g. geckoides</i> , 2 <i>Hemidactylus mabouia</i> , 1 <i>Phyllolopezus p. pollicaris</i> , 1 <i>Thecadactylus rapicauda</i> , 2 <i>Vanzoia klugei</i>). |
| 21 May 1982 & 15 May 1986
Mr. van Wallach, San Diego Statefrom
Univ. (USA). | Donation of 53 snakes from Zaire. |
| July 1983, Singapore Marine
Fisheries Research Dept., Southeast Asian
Fisheries Development Center (Singapore). | Donation of 1012 fishes from the South China Sea and Andaman Sea. |
| 1983-1988, Dr. H. K. Voris,
Field Mus. Nat. Hist. (USA) | Donation of 32 crabs, 14 fish, 4 bats (<i>Myotis hasselti hasselti</i>), 6 snakes (1 <i>Hydrophis brookei</i> , 2 <i>Laticauda colubrina</i> , 2 <i>Lapemis hardwickii</i> , 1 <i>Acrochordus granulosus</i>) and 1 beetle from Muar and Sabah. |
| 21 May 1984, Mr. H. Griffith
Univ. Toronto (Canada) | Donation of 81 starfish, 20 sea urchins and 190 crabs. |

- 4 July 1984, Mrs. Ong
(Singapore).
Donation of 1 mounted lizard (*Varanus salvator*) 6 ft. long.
- 26 Nov. 1984, Mr. B. Chatanantawej,
Phuket Marine Biol. Center
(Thailand).
Exchange of 20 marine crabs from Phuket (2 *Ceratoplox truncatifrons*, 2 *Heteroplox nitida*, 1 *Iphiculus spongiosus*, 3 *Mertonia lanka*, 3 *Typhlocarcinus villosus*, 2 *Typhlocarcinus rubicus*, 1 *Typhlocarcinops gallardoi*, 2 *Tetrias fisheri* & 4 *Xenophthalmodes dolichophallus*).
- 3 Dec. 1984, Prof. P. Naiyanter,
Chulalongkorn Univ.
(Thailand).
Exchange of 12 freshwater crabs & 2 *Squilla* from Thailand (2 *Somaniathelphusa germaini*, 2 *S. bangkokensis*, 2 *S. denchai*, 2 *S. nani*, 2 *S. fangensis*, 2 *Stoliczia abbotti* & 2 *Clorida thailandica*).
- 4 Jan. 1985, Mr. J. Dean
(Singapore).
Donation of 107 butterflies & 1 scorpion from Malaysia.
- 4 Jan. 1985, Mr. D. Maitland,
Univ. New South Wales
(Australia).
Donation of 7 gecarcinucid crabs (*Holthusiana transversa*).
- 25 Jan. 1985, Ms. Daisy Wowor &
Dr. S. Adisoemarto, Mus. Zool.
Bogor (Indonesia).
Exchange of 13 freshwater crabs from Indonesia (2 *Parathelphusa* (*Liotelphusa*) *beauforti*, 2 *Parathelphusa tridentata bogoriensis*, 2 *Parathelphusa tridentata tridentata*, 2 *Parathelphusa maculata*, 2 *Perbrinckia modesta*, 1 *Parathelphusa convexa* & 2 *Rouxana papuana*).
- 8 Feb. 1985, Dr. Wang Chia-Hsiang, Taiwan Mus. (Taiwan).
Exchange of 6 Potamid crabs (2 *Geothelphusa candidiensis*, 2 *G. chiui* & 2 *Candidiopotamon rathbuni*).
- 1985-1987, Ms. A. Hamidah
& Dr. Maryati Mohd.
Univ. Kebangsaan Malaysia
(Malaysia).
Donation of 1 millipede, 3 molluscs & 1 barnacle.
- 17 Feb. 1986, Ms. Lim
(Singapore).
Donation of 2 eagles, 2 birds, 1 *Felis*, 2 squirrels.
- 15 May 1986, Dr. D. Kitchener,
Western Australian Mus.
(Australia).
Exchange of 4 Australian bats (1 *Chalinolobus gouldii* & 3 *Taphozous georgianus*).
- 15 May 1986, Louisiana State
Univ. (USA).
Exchange of 2 lizards (1 *Iguana iguana*, 1 *Phrynosoma cornutum*), and 17 snakes (1 *Agkistrodon contortrix*, 1 *A. piscivorus*, 1 *Bitis nasicornis*, 1 *Crotalus atrox*, 1 *C. cerastes*, 1 *Coluber constrictor*, 1 *Diadophis punctatus*, 1 *Farancia abacura*, 1 *Lampropeltis getulus*, 1 *Masticophis flagellum*, 1 *Nerodia sipedon*, 1 *N. fasciata*, 1 *N. rhombifera*, 1 *Ophedrys aestivus*, 1 *Pituophis melanoleucus*, 1 *Rhinagrhami*, 1 *Rhinocheilus lecontei*).
- 23 Nov. 1986, Joo Chiat Police
Station (Singapore).
Donation of 1 marlin (*Makaira indica*). Wt. 245kg, TL 3.3m.
- 1986-1987, Dr. H. K. Voris,
& W. B. Jeffries, Field Mus.
Nat. Hist. & Dickinson
College (USA).
Donation of 342 crabs from Sabah.
- 8 July 1987, Mr. R. Wong,
Singapore Straits Times
(Singapore).
Donation of 2 eels (*Monopterus albus*).

28 Jan. 1988, Dr. Z. Števíć,
Ruder Univ. (Yugoslavia).

2 Mar. 1988, Mr. G. A. Zee,
Zee Trading Co. (Singapore).

25 Mar. 1988, Mr. P. Chan
(Singapore).

31 Mar. 1988, Mr. J. Tan
(Singapore).

31 Mar. 1988, Mr. Q. W. Tang,
Shanghai Mus. Nat. Hist. (China).

12 April 1988, Board of
Commissioners of Currency
(Singapore).

26 April 1988, Mrs. J. Tuen
(Singapore).

April-Oct. 1989,
Mr. S. L. Yang, Public Utilities
Board (Singapore).

4 May 1988, Dr. C. Hails,
Botanic Gardens (Singapore).

4 June 1988, Mr. S. Wee
(Singapore).

27 July-Dec. 1988, Mr. T. Yang
(Singapore).

28 July 1988, Mr. Lee
(Singapore).

2 Oct. 1988, Ms. P. Burgess &
Mr. R. Subharaj (Singapore).

10 Nov. 1988, Inst. Mar. Biol.,
USSR Acad. Sci. (USSR).

2 Dec. 1988, Dr. R. Ngim
(Singapore).

2 Dec. 1988, Mr. J. Fox (USA).

2 Dec. 1988, Mr. R. Hiscock
(Singapore).

22 Dec. 1988, Mr. H. W. Low
(Singapore).

Donation of 46 crabs (5 *Pilumnus hirtellus*, 5 *Pilumnus spinifer*, 4 *Carcinus aestuarii*, 5 *Liocarcinus arcuatus*, , 4 *Xantho poressa*, 1 *Pachygrapsus marmoratus*, 12 *Brachynotus sexdentatus*, 1 *Parthenope anguliform*, 6 *Eurynome aspera*, 1 *Macropodiarostrata*, 1 *Macropodia longiostris*, 1 *Liocarcinus depurator*, 3 *Upogebia pusilla*); 48 *anomurans* (6 *Clibanarius erythropus*, 20 *Pisidia longimana*, 5 *Pagurus prideaux*, 4 *Paguristes eremita* 9 *Porecellana platycheles*, 1 *Galathea squamifera*) & 6 prawns (*Sicyonia carinata*).

Donation of 1 shark jaw (*Isurus paucus*).

Donation of 1 *Dugong dugon*. Wt. 17kg, TL. 1.1m.

Donation of 1 Bird-of-Paradise,
1 *Callosciurus notatus*, 1 *Pteropus vampyrus*, 1 robber crab
& 2 linsangs.

Donation of 9 tiger claws.

Donation of 1 mounted snake (*Python reticulatus*).

Donation of 1 *Callosciurus notatus*.

Donation of 2 *Heterometrus longimanus*, 4 *Melanoides tuberculata*, 30 *Pomacea* sp. and 54 *Pseudodon vondembuschianus*.

Donation of 1 bat & 1 swiftlet.

Donation of 1 mounted *Panthera pardus*

Donation of 1 flying lemur (*Cynocephalus variegatus*). &
1 snake (*Typhlops*).

Donation of 1 spider (*Heteropoda venatoria*)

Donation of 1 snake (*Lycodon subcinctus*).

Donation of 20 specimens (1 *Culcita novaeguineae*, 1 *Linckia laevigata*, 5 *Chlamis rosealbus*, 2 *Psolus fabrieii* 2 *P. eximis*, 10 Paratypes of *Polydorella dawydovi*).

Donation of 1 starling, 1 hwamei, 1 kingfisher & 1 cobra.

Donation of 1 frog (*Microhyla heymonsi*).

Donation of 2 snakes (1 *Oligodon octolineatus*, 1 *Xenopeltis unicolor*).

Donation of 1 chilopoda (*Thereuopoda singaporiensis*).

1988-1989, Jurong Bird Park (Singapore).	Donation of 2 emu eggs, 2 cassowary eggs & 3 puffins.
1988-1989, Singapore Zoological Gardens (Singapore).	Donation of 1 bawean hog-deer, 1 leopard, 1 mandrill, 2 mousedeer, 1 Ugandan Kob.
1988-1989, Mr. Kelvin Lim (Singapore).	Donation of 14 amphibians, 44 reptiles, 18 freshwater fishes, 8 snails, 1 platyhelminth, 3 tiger beetles, 2 isopods & 2 millepedes.
1988-1989, Dr. P. Gopalakrishnakone, Anatomy Dept., NUS (Singapore).	Donation of 26 marine fishes, 2 starfish, 15 spiders, & 53 snakes.
1988-1989, Animal Holding Unit, NUS (Singapore).	Donation of 2 goat skulls & 1 snake (<i>Python reticulatus</i>).
1988-1989, Ms. W. H. Ho (Singapore).	Donation of 3 <i>Subulina octana</i> , 3 <i>Liardetia</i> sp., 1 <i>Semprula</i> sp., 16 <i>Achatina fulica</i> , 4 <i>Bradybaena similaris</i> , 6 <i>Quantula striata</i> , 11 <i>Gyraulus convexiusculus</i> , 7 <i>Lymnaea rubiginosa</i> , 2 <i>Indoplanorbis exustus</i> , 120 <i>Melanoides tuberculata</i> , 15 <i>Umboonium vestiarum</i> and 22 bottles of aquatic insects.
Jan.-June 1989, Mr. K. S. Lim (Singapore).	Donation of 1 white-vented myna & 1 black & white broad-bill (<i>Cymbirhynchus macrorhynchus malaccensis</i>).
3 Jan. 1989, Mr. D. T. L. Koh (Singapore).	Donation of 1 <i>Carcharhinus limbatus</i> .
3 Jan. 1989, Nanyang Primary School (Singapore).	Donation of 5 <i>Cerberus rynchops</i> , 1 <i>Chinemys reevesi</i> , 1 earthworm, 4 roundworms, 2 tapeworms, 1 seashell, & 3 sea anemones.
19 Jan. 1989, Dr. R. F. Inger Field Mus. Nat. Hist. (USA).	Donation of 1 toad (<i>Bufo juxtasper</i>).
20 March 1989, Mr. T. M. Chew (Singapore).	Donation of 1 whip scorpion (<i>Thelyphoneus sepiaris</i>).
2 April 1989, Mr. D. L. Thomas (Singapore).	Donation of 1 slaty-legged crake (<i>Rallina eurizonoides</i>).
2 April 1988, Mr. S. Chong (Singapore).	Donation of 9 cones.
6 April 1989, Ms. E. Low (Singapore).	Donation of 1 rail (<i>Rallus striatus</i>).
2 May 1989, Mr. K. Lim, Mr. R. Teo, Mr. Veera, Mr. J. Natham, Mr. C. Lee & Mr. E. W. Tan (Singapore).	Donation of 90 insects.
16 Sept. 1989, Mr. C. H. Tan (Singapore).	Donation of snails (4 <i>Pomacea</i> sp.).
29 Sept. 1989, Dr. C. S. Ng, Marine Fisheries Research Dept. (Singapore).	Donation of 119 fishes.

6 Oct. 1989, Mr. C. C. Chua
(Singapore).

31 Oct. 1989, Dr. H. C. Ho,
Philosophy Dept., NUS
(Singapore).

3 Nov. 1989, Dr. L. Smith,
Western Australian Mus.
(Australia).

8 Nov. 1989, Dr. S.S. Cragg,
Portsmouth Poly. (England).

21 Nov. 1989, Dr. J. Jeffery,
Univ. Kebang. Malaysia
(Malaysia).

30 Nov. 1989, Mrs. L. M. Marsh,
Western Australian Mus.
(Australia).

27 Dec. 1989, Mr. Patrick Low
(Singapore).

Dec. 1989, Mr. Kenneth Yong
(Singapore).

Dec. 1989, Mr. Danilo Balet
Univ. of Philippines
(Philippines).

Dec. 1989, Ms. Margie Hall
(Singapore)

Donation of insects (1 *Battacus scheideri*, 2 *Heteropteryx dilatata*, 1 *Fulgora pyrohyncha*, 1 *Pachyteria equestris*, 1 *Prosopocoilus cinnamomeus*, 1 *Clerota rigifica*, 1 *Megaloxantha purpurascens*, 1 *Rhombarrhina splendida*, 1 *Callopius castelnaudi*).

Donation of bird (1 *Halcyon pileata*).

Exchange of sea snakes (4 *Pelamis platura*).

Donation of 7 isopods, (*Limnoria cristata*), paratypes.

Donation of (1 *Macropisthodon flaviceps*, 1 *Chrysopelea paradisi*, 3 *Armillifer moniliformis*, 1 scorpion & 37 insects).

Donation of 73 crinoids of Sindbad Voyage (14 *Capillaster multiradiatus*, 2 *Comaster multifidus*, 1 *Comissia pectinifera*, 5 *Comanthus gislensii*, 2 *C. mirabilis*, 10 *C. parvicirrus*, 2 *C. wahlbergi*, 3 *Comanthina nobilis*, 3 *C. schlegeli*, 4 *Clarkcomanthus littoralis*, 16 *Oxycomanthus bennetti*, 2 *Lamprometra palmata*, 1 *Stephanometra indica*, 3 *Colobometra perspinosa*, 1 *Oligometra serripinna* & 4 *Tropometra carinata*).

Donation of 1 python skin.

Donation of 1 bird, 3 bat skulls, 19 spiders, 19 molluscs & 5 insects.

Donation of 20 Filipino crabs.

Donation of 1 snake (*Ahaetulla prasina*).

APPENDIX II: VISITING SCIENTISTS WHO USED THE COLLECTION

AUSTRALIA. - Lyn Beazley (University of Western Australia); John Benzie (University of Adelaide); M. D. Bruce (Sydney); J. E. Carey (Macquarie University); Peter J. F. Davie (Queensland Museum); Colin P. Groves, Lindsay Perry, George G. Scott, & Vernon Wetzell (Australian National University); Max King (Museum of Arts & Sciences of Northern Territory); Darrell Kitchener, Laurie A. Smith & B. R. Wilson (Western Australian Museum); David P. Maitland & Charles Pregenzer (University of New South Wales); Alan Newsome & C. Crossland (CSIRO Division of Wildlife Research); W. F. Ponder (Australian Museum); David G. Reid (James Cook University of North Queensland); Barry Russell (Northern Territory Museum); J. Stephanson (Murdoch University); Jerry van Tets (Commonwealth Scientific and Industrial Research Organisation); Mark Walker (La Trobe University); Ben Weston (Victoria) & D. J. Woodland (University of New England).

AUSTRIA. - E. Heiss & Gerhard Tarmann (Tiroler Landesmuseum Ferdinandeum).

- BELGIUM.** - Michel Jangoux (Université Brussels) & C. Massin (Institut Royal des Sciences Naturelles de Belgique).
- CANADA.** - Hugh & May Griffith (University of Toronto); Derek Ellis (University of British Columbia) & P. J. B. Scott (McMaster University).
- CHINA.** - Ma Ji Fan (Shanghai Museum of Natural History).
- FEDERAL REPUBLIC OF GERMANY.** - Maurice Kottelat (Zoologische Staatssammlung, Munich); Klaus Harbeck (Universität Hamburg); D. Heidelberger (Museum of Natural History, Karlsruhe); K. P. Hoffman (Ruhr-Universität Bochum); Peters Wolfgang (Berlin) & Thomas Ulber, Elke Ulber, Christian Schafer & Wolfgang Crossmann (Herpetological Society of Berlin).
- FRANCE.** - Bertrand Richer de Forges (ORSTOM) & L. Deharveng (Université Paul Sabatier). Roland Eve & Naine Gvlove (Muséum National D'Histoire Naturelle).
- GHANA.** - Pushpa Sinnadural (University of Ghana).
- INDIA.** - V. Rama-Rao Kaza (Zoological Survey of India).
- INDONESIA.** - Rick Hodges (Bintang Diponggo Dukuh Kupang); Victor Mason (Denpasar, Bali); Arthur Mitchell (World Wildlife Fund); Kasim Moosa (National Institute of Oceanology); Kelth Snyder (Universitas Advent Bandung); S. Somadikarta (Universitas Indonesia); Nawangsar Sungiri (Bogor Agricultural University) & Daisy Wowor (Museum Zoologicum Bogoriense).
- ISRAEL.** - Naomi F. Goldsmith (Ben Gurion University of Negev); A. Ben-Tuvia & Daniel Golani (Hebrew University of Jerusalem).
- ITALY.** - Carlos J. Miquel (F.A.O. Marine Resources Service) & B. Paolo (CITES Science Committee).
- JAPAN.** - Mitsuru Aimi, Syunzo Kawamura & Matsumoto Shin (Kyoto University); Hiroshi Uwa (Shinshu University); Hideyuki Tanaka & Yuza Karashi (Tokyo); Junji Itoigawa (Nagoya University); H. Kawachi (Kitasato Institute); T. Kitao (Miyazaki University); Shoji Mishima & Yoshio Samai (Japan Snake Institute); Y. Okamura (Tokyo University); S. Sukigara (Japan Wildlife Research Center); Y. Takematsu, & Tomohide Yasunaga (Kyushu University); Karyu Tsuda (Niigata University); Takeharu J. Kosuge, T. Uehara & K. Yamagato (University of The Ryukyus) & Toru Yamanol (Yamagata University).
- KENYA.** - Jennifer Hoke (National Museum of Kenya).
- MACAU.** - E. H. R. Easton (University of East Asia).
- MALAYSIA.** - Hamidah Abdullah, Noraini Abdullah, Ueda Akira, Noor Rezan Hamzah, G. W. H. Davison, K. H. Han, Maryati D. Mohammed, Zubaid Akbar, Ruslan Md. Yusop & Raja Malik Reznan (Universiti Kebangsaan Malaysia); M. J. Broom, G. M. Lenton, David R. Wells, Yang Ghong Chong & Antony N. Start (Universiti Malaya); S.P. Gittins, Kam Suan Pheng, Hanapi Sulaiman, Khoo Khay Huat, Leong Yueh Kwong, Leong Tak Seng & Diane F. Malley (Universiti Sains Malaysia); Sue Harris (Damansara); Donald Lovett & Mohd. Shariff & A. K. M. Mohsin (Universiti Pertanian Malaysia); John Brian Payne (Ibu Pejabat Jabatan Mergasetua Bangunan MABA); Karen Philipps (World Wildlife Foundation); Kanna Selvaduray (Johore) & Elizabeth Wood & Tan Fui Lian (Kinabalu National Park Sabah).
- NEW ZEALAND.** - Elliot W. Dawson (New Zealand Oceanographic Institute); Peter Maddison (Department of Scientific and Industrial Research) & John & Barbara Yaldywn (National Museum of New Zealand).
- PANAMA.** - Martui Mogulhau (Smithsonian Tropical Research Institute).
- PAKISTAN.** - Nasima M. Tirmizi (University of Karachi).
- SPAIN.** - Mai Luz Fdez de Puellas (Institute of Oceanography) & Elvira Rodenas (Universidad de Alcala de Henores).
- SWITZERLAND.** - Brigitte Koepchen (Institute de Zoologie et d'Ecologie Animale), Bernd Hauser & Char-

les Lienhard (Muséum d'Histoire Naturelle, Geneva).

THAILAND. - Warren Y. Brockelman (Mahidol University); B. Chatananthawej, C. B. Frith, D. U. Frith & Jorgen Hylleberg (Phuket Marine Biological Center); Belinda Stewart-Cox (Conservation Division RFD); Jaranthada Karnasuta (National Inland Fisheries Institute) & Siritwat Wongsiri (Chulalongkorn University).

THE NETHERLANDS. - Cato ten Hallers (Wgnoordzee Foundation); L. B. Holthuis & M. S. Hoogmoed (Rijksmuseum van Natuurlijke Historie); P. J. H. van Bree & Arnold de Boer (Universiteit van Amsterdam).

UNITED KINGDOM. - D. M. Bryant (University of Stirling); C. B. Corbert (British Museum (Nat. Hist.)); Earl of Cranbrook (Glemham House, Saxmundham); Andrew Chamberlain (University of Liverpool); P. W. Gray & Simon Cragg (Portsmouth Polytechnic.); Frank Jarvis (Oldcave Farmhouse Kincard-eshire); J. Kathirithamby & Barbara Dainton (University of Oxford); Frank Lambert & M. Baxter (University of Aberdeen); Alastair A. Macdonald (University of Edinburgh); John & Frances Murphy (Hampron); James Hancock (Gerrards Cross); Elizabeth Platts (Queens University Belfast); John Payne (University of Cambridge); V. M. van der Lande (University of Nottingham); Stuart Stokes (London University); Geoffrey N. Swinney (Royal Scottish Museum) & Bernard Wood (University of London).

UNITED STATES OF AMERICA. - Walter Auffenberg (Florida State Museum); Sidney Camras (Chicago); C. A. Child, Robert P. Higgins & Edward O. Murdy (Smithsonian Institution); Jonathan Copeland (University of Wisconsin); Clifford Desch (University of Connecticut); Hugh Dingle (University of Iowa); John Fleagle, Walter Sedgwick & Anders Rhodon (Harvard University); Jack Fooden, Robert F. Inger, J. C. Murphy & Harold K. Voris (Field Museum of Natural History); J.H. Fox (University of Texas); George C. Gorman (University of California Los Angeles); J. R. Horner (Montana State University); Bruce C. Jayne & Karen Mudar (Michigan State University); William B. Jeffries (Dickinson College); Karl F. Koopman & Lester L. Short (American Museum of Natural History); Donna R. Leighton, Mark Leighton & Walter Rainboth (University of California); J. T. Marshall (U.S. Fish and Wildlife Service, National Museum of Natural History); Edward O. Moll (Eastern Illinois University); Laura L. Payne, Robert B. Payne, Michael L. Smith & Ronald P. Weidenbach & Carl Gans (University of Michigan); Richard H. Randall & Lucius Y. Eldridge (University of Guam); Frederick H. Sheldon & Jody Kennard (Western Foundation of Vertebrate); M. Sherwood (University of Hawaii); Richard Titgen (Bishop Museum) & Chris Wemren (National Zoology Park Conservation & Research Centre).

UNITED SOVIET SOCIALIST REPUBLICS (USSR). - V. Kalinin, V. Svetashev, L. Terentyev, G. Eyssev, M. Vysotsky, & Y. Yakovlev (USSR Academy of Sciences, Institute of Marine Biology).

YUGOSLAVIA. - Zdravko Štević (Ruder Boskovic Institute).

APPENDIX III: PUBLICATIONS CONCERNING MATERIAL IN THE ZOOLOGICAL REFERENCE COLLECTION (1973-1989).

1973

- Lim, C. F., 1973. The cyprinid fishes of the *Tor-Accrossocheilus* Complex and their distribution. *J. Singapore Natn. Acad. Sci.*, 3(1): 11-21.
- Medway, Lord, 1973. The taxonomic status of *Tylonycteris malayana* Chasen 1940 (Chiroptera). *J. Nat. Hist.*, London, 7: 125-131.
- Senta, T., 1973. A new sparoid fish, *Gymnocranius elongatus*, from the southern South China Sea. *Jap. J. Ichth.*, 20(3): 135-144.
- Serène, R., 1973. Notes on Indo-West Pacific species of *Macrophthalmus* (Crustacea, Brachyura). *Zool. Med.*, 46(8): 99-116.

1975

- Fooden, J., 1975. Taxonomy and Evolution of Liontail and Pigtail Macaques (Primates: Cercopithecidae). *Fieldiana Zoology*, 67: 1-169.

- Kundin, W. D., M. Nadchatram & A. Keong, 1975. Notes on the duration of attachment of certain Malaysian trombiculid mite larvae. *J. Med. Ent.*, Honolulu, 9(6): 558-559.
- Lim, C. F., 1975. *Guide to Malayan and Singapore Freshwater Fishes, Part One, The Cyprini*. Department of Zoology, National University of Singapore. No. 13, 86 pp. (Mimeographed).
- Senta, T., 1975. Redescription of Trichiurid Fish *Tentoriceps cristatus* and its occurrence in the South China Sea and the Straits of Malacca. *Jap. J. Ichth.*, 21(4): 175-182.
- Senta, T. & S. M. Tan, 1975. *Catalogue of the fishes from the South China Sea and Andaman Sea*. Marine Fisheries Research Department, Southeast Asian Fisheries Development Center, Singapore. 32 pp.
- Senta, T. & S. M. Tan, 1975. Species and size-composition of the Threadfin snappers in the South China Sea and the Andaman Sea. *Singapore J. Pri. Prod. Ind.*, 3(1): 1-11.
- Serène, R., 1975. Rediscovery of *Neosarmatium malabaricum* (Henderson, 1893) and *Chiromanthes drawinensis* Campbell, 1967. *Spoila Zeylanica*, 33(1&2): 3-16.

1976

- Fooden, J., 1976. Primates obtained in Peninsular Thailand June-July, 1973, with notes on the distribution of continental Southeast Asia Leaf-Monkeys (*Presbytis*). *Primates*, 17(1): 95-118.

1978

- Marshall, J. T., 1978. Systematics of smaller Asian night birds based on voice. *American Ornithologists' Union*, 25: 1-58.
- Soh, C. L., 1978. On a collection of sesarmine crabs (Decapoda, Brachyura, Grapsidae) from Hong Kong. *Mem. H.K. Nat. Hist. Soc.*, 13: 9-22.

1979

- Yang, C. M., 1979. *A List of Brachyura in the Zoological Reference Collection of the Department of Zoology*. National University of Singapore, Guide No. 14, 60 pp. (Mimeographed).

1980

- Fain, A. & M. Nadchatram. 1980. *Nasaliages borneensis* gen. n. sp. n. (Acari, Astigmata, Psoroptidae) parasitic on a Malaysian Colobine monkey. *Bull. Ann. Soc. R. Belg. Ent.*, 115(10-12): 305-310.
- Mees, G. F., 1980. The Sparrow-Hawks (*Accipiter*) of the Andaman Islands. *J. Bombay Nat. Hist. Soc.*, 77(3): 371-412.
- Seah R., 1980. Saved from the dustbin. *The Straits Times Annual* 1980, pp. 80-87.

1981

- Alfred, E. R., 1981. Fishes collected during the cruises of the Manihine in the South China Sea. *Brunei Mus. J.*, 4(4): 274-300.
- Fain, A., F. S. Lukoschus & M. Nadchatram, 1981. Malaysian parasite mites. 1. New Rosensteiniidae (Astigmata) from *Cheiromeles torquatus* Horsfield (Chiroptera) and from the associated *Arixenia* spp. (Dermaptera). *Acarologia*, 22(2): 187-198.
- Genoways, H. H. & D. A. Schlitter, 1981. Collections of recent mammals of the worlds, exclusive of Canada and the United States. *Ann. Carnegie Mus.*, 50(3): 47-80.
- Groves, C., 1981. Ancestors for the pigs: Taxonomy and Phylogeny of the genus *Sus*. *Tech. Bull. No. 3*, Australian National University, 99 pp.
- Lim, S. S. L. & L. W. H. Tan, 1981. Larval development of the hairy crab, *Pilumnus vespertilio* (Fabricius) (Brachyura, Xanthidae) in the laboratory and comparisons with larvae of *Pilumnus dasypodus* Kingsley and *Pilumnus sayi* Rathbun. *Crustaceana*, 41(1): 71-88.

- Lovett, D., 1981. *A guide to the shrimps, prawns, lobsters and crabs of Malaysia and Singapore*. Universiti Pertanian Malaysia. Publ. No. 2, 156 pp.
- Parker, S. A., 1981. Prolegomenon to further studies in *Chrysococcyx* 'Malayanus' group (Aves, Cuculidae). *Zool. Verh.*, 187: 3-56.
- Rookmaaker, L. C. & W. Bergmans, 1981. Taxonomy and Geography of *Rousettus amplexicaudatus* (Geoffroy, 1810) with comparative notes on sympatric congeners (Mammalia, Megachiroptera). *Beaufortia*, 3(1): 1-29.
- Serène, R., 1981. *Macrophthalmus* (*Macrophthalmus*) *kempi* sp. nov. (Crustacea, Decapoda, Brachyura). *Bull. Mus. Natn. Hist. Nat.*, Paris, 3(4): 1139-1142.

1982

- Chou, L. M. & C. M. Yang, 1982. Amphibians in the Zoological Collection, National University of Singapore. *Herp. Rev.*, 13(1): 9.
- Giesen, K. M. T., F. S. Lukoschus & M. Nadchatram, 1982. Three new itch mites of the family Psorergatidae (Acari, Prostigmata) from Malaysian small mammals. *Malay. Nat. J.*, 35(4): 315-328.
- Jeffries, W. B., H. K. Voris & C. M. Yang, 1982. Diversity and distribution of the pendunculate barnacle *Ocotlasmus* in the seas adjacent to Singapore. *J. Crust. Biol.*, 2(4): 562-569.
- Mees, G. F., 1982. Birds from the lowlands of Southern New Guinea (Merauke and Koembe). *Zool. Verh.*, 191, 188 pp.
- Tan, S. M., T. Senta, R. P. Lim & H. H. Hooi, 1982. *A colour guide to the fishes of the South China Sea and the Andaman Sea*. Primary Production Department and Marine Fisheries Research Department, Singapore. 45 pp.

1983

- Fain, A. & M. Nadchatram, 1983. *Colobathriglyphus malayensis* gen. n., sp. n. (Acari, Acaridae) from a mattress in Malaysia. *Bull. Ann. Soc. R. Belge. Ent.*, 119: 91-93.
- Levi, H. W., 1983. The Orb-Weaver genera *Ariope*, *Gea* and *Neogea* from the Western Pacific region (Araneae: Araneidae, Argiopinae). *Bull. Mus. Comp. Zool.*, Harvard, 150(5): 247-338.
- Mohsin, M. A. K. & M. A. Ambak, 1983. *Freshwater Fishes of Peninsular Malaysia*. Penerbit Universiti Pertanian Malaysia. 284 pp.
- Nadchatram, M., 1983. Redescription of *Kymocia brasiliensis* (Fonseca) (Acari, Trombiculidae). *J. Med. Entomol.*, Honolulu, 20(2): 174-176.
- Nadchatram, M., 1983. Sampling chigger mites (Trombiculidae). In: *Pest & Vector Management in Tropics*. Ed. A. Youdeowei & M. W. Service. Longmans, London. pp. 117-121.
- Tanskul, P. L. & M. Nadchatram, 1983. Notes on the genus *Miyatrombicula* (Acari: Prostigmata: Trombiculidae) with description of new species from Thailand. *J. Med. Entomol.*, Honolulu, 20: 597-600.

1984

- Anonymous, 1984. The Zoological Reference Collection. In: *Singapore, 1984*. The Information Division, Ministry of Culture, Singapore. p. 39. (Reported annually subsequently).
- Anonymous, 1984. Singapore's Zoological Collection. *Malay. Nat.*, 37(4): 3-4.
- Chou, L. M. & C. M. Lowe, 1984. *Spironoura roberti* sp. n. (Nematoda: Kanthaniidae) from the Malayan Box-Tortoise (*Cuora amboinensis*). *Malay. Nat. J.*, 36: 67-72.
- Davison, G. W. H., 1984. New records of Peninsular Malaysia and Thai shrews. *Malay. Nat. J.*, 36: 211-215.
- Desch, C. E., F. S. Lukoschus & M. Nadchatram, 1984. A new demodicid (Acari: Demodicidae) from the meibomian glands of Southeast Asian rats. *Trop. Biomed.*, 1: 55-62.

- Fain, A., M. Nadchatram & F. S. Lukoschus, 1984. Fur mites of the family Myobiidae (Acari: Prostigmata) parasitic on bats in Peninsula Malaysia. *Malay. Nat. J.*, 37(3): 175-183.
- Ho, T. M. & M. Nadchatram, 1984. Life-cycle and longevity of *Dermatophagoides pteronyssinus* (Acari, Astigmata, Pyroglyphidae) in a tropical laboratory. *Trop. Biomed.*, 1: 159-162.
- Ho, T. M. & M. Nadchatram, 1984. Distribution of house dust mites in a new settlement scheme in Jengka, Pahang, Malaysia. *Trop. Biomed.*, 1: 49-53.
- Jeffries, W. B., H. K. Voris & C. M. Yang, 1984. Diversity and distribution of the pedunculate barnacle *Octolasmis* Gray, 1825, epizoic on the syllarid lobster, *Thenus orientalis* (Lund, 1793). *Crustaceana*, 46(3): 300-308.
- Klompen, J. S. H., F. S. Lukoschus, M. Nadchatram & A. Fain, 1984. A new species of *Teinocoptes* (Acari, Astigmata, Teinocoptidae), with a key to Malaysian species. *Trop. Biomed.*, 1: 63-68.
- Kottelat, M., 1984. Revision of the Indonesian and Malaysian Loaches of the Subfamily Noemacheilinae. *Jap. J. Ichth.*, 31(3): 225-260.
- Lim, S. L., P. K. L. Ng & L. W. H. Tan, 1984. The larval development of *Heteropanope glabra* Stimpson, 1858 (Decapoda, Xanthidae) in the laboratory. *Crustaceana*, 47(1): 1-16.
- Lukoschus, F. S., L. J. A. M. Mertens, W. B. Nutting & M. Nadchatram, 1984. *Demodex intermedius* sp. nov. (Acaria, Prostigmata) the meibomian glands of the tree-shrew, *Tupaia glis*. *Malay. Nat. J.*, 36: 233-245.
- Matsumoto, S. & A. Bakar, 1984. Investigation of three primate collections in Southeast Asia. *Kyoto University of Primate Research Institute*, 3: 77-84.
- Nadchatram, M., 1984. The natural history of the genus *Leptotrombidium* (Acari: Trombiculidae) with reference to scrub typhus. Ed. Griffiths & Bowman - *Acarology* 6. Vol. 2. Ellis Horwood Ltd, England. pp. 1107-1113.
- Ng, P. K. L. & L. W. H. Tan, 1984. A new freshwater crab, *Stoliczia (Johora) tiomanensis* n. sp. (Decapoda: Brachyura: Potamidae) from Pulau Tioman, Peninsular Malaysia. *Malay. Nat. J.*, 37: 167-174.
- Ng, P. K. L. & L. W. H. Tan, 1984. The 'Shell-Peeling' structure of the box crab *Calappa philargius* (L.) and other crabs in relation to mollusc shell architecture. *J. Singapore Natn. Acad. Sci.*, 13: 196-199.
- Ng, P. K. L. & L. W. H. Tan, 1984. Range extension of *Pilumnus ohshimai* Takeda & Miyake, 1970, with a note on the male of the species (Decapoda, Brachyura). *Crustaceana*, 47: 214-216.
- Ng, P. K. L. & L. W. H. Tan, 1984. The Indo-Pacific Pilumnidae I. Description of four new species of the genus *Pilumnus* Leach, 1815, and definition of a new genus, *Bathypilumnus*. *J. Singapore Natn. Acad. Sci.*, 13: 1-4.
- Platnick, N. I. & W. C. Sedgwick, 1984. A revision of the spider genus *Liphistius* (Araneae, Mesothelae). *Amer. Mus. Novi.*, No. 2781, pp. 1-31.
- Serène, R., 1984. Crustacés Dècapodes Brachyours de L'Océan Indien occidental et la Mer Rouge: Xanthoidea: Xanthidae et Trapeziidae. Addendum: Carpilidae et Menippidae by Alain Crosnier. *Faune Tropicale*, 24, 349 pp.

1985

- Fooden, J., Q. Q. Quan, Z. G. Wang & Y. X. Wang, 1985. The stump-tail macaques of China. *Amer. J. Primat.*, 8: 11-30.
- Garth, J. S. & P. K. L. Ng, 1985. Notes on the genus *Demania* Laurie, 1906 (Crustacea, Decapoda, Brachyura, Xanthidae). *Indo-Malay. Zool.*, 2: 293-308.
- Guinot, D., 1985. Révision du genre *Parapanope* De Man, 1895, (Crustacea Decapoda Brachyura), avec description de trois espèces nouvelles. *Bull. Mus. Natn. Hist. Nat., Paris*, 4(7) (A3): 677-707.
- Ho, T. M. & M. Nadchatram, 1985. Life cycle and longevity of *Dermatophagoides pteronyssinus* (Trouessart) (Acarina: Astigmata: Pyroglyphidae) in a tropical laboratory. *Trop. Biomed.*, 1(2): 159-162.

- Ho, T. M. & M. Nadchatram, 1985. Distribution of *Dermatophagoides pteronyssinus* (Astigmata, Pyroglyphidae) in Cameron Highlands, Malaysia. *Trop. Biomed.*, 2: 54-58.
- Ho, T. M. & M. Nadchatram & S. Ismail, 1985. Ectoparasites of rodents and bats from Taman Negara, Malaysia. *Trop. Biomed.*, 2: 193-195.
- Jeffries, W. B., H. K. Voris & C. M. Yang, 1985. Growth of *Octolasmis cor* (Aurivillius 1892) on the gills of *Scylla serrata* (Forskål, 1775). *Biol. Bull.*, 169(1): 291-296.
- Klompen, J. S. H., F. S. Lukoschus & M. Nadchatram, 1985. Description of a new Malaysian bat parasite, with keys to species of *Chirobia* and to the genera of *Teinococtidae* (Acari: Astigmata). *Trop. Biomed.*, 2: 63-69.
- Largen, M. J., 1985. Taxonomically and historically significant specimens of mammals in the Merseyside County Museum, Liverpool. *J. Mammal.*, 66(2): 412-418.
- Lim, B. L., 1985. Geographic areas of Southeast Asia poorly represented in mammal research collections. *Acta Zool. Fennica*, 170: 53-54.
- Nadchatram M. & M. T. Wooster, 1985. *Schoengastia crossi*, a new species of scrub-itch chigger from the Philippines (Acari, Prostigmata). *Trop. Biomed.*, 2: 59-62.
- Ng, P. K. L., 1985. On a new species of pilumnid crab, *Rhizopa yangae* sp. nov. from Singapore with notes, on the genus *Rhizopa* Stimpson 1858 (Decapoda: Brachyura: Pilumnidae). *J. Nat. Hist.*, 19: 627-633.
- Ng, P. K. L., 1985. Freshwater Decapod Crustaceans from Pulau Tioman, West Malaysia. *Zool. Med.*, 59(14): 149-162.
- Ng, P. K. L. & L. W. H. Tan, 1985. 'Right-Handedness' in heterochelous calappoid and xanthoid crabs - suggestion for a functional advantage. *Crustaceana*, 49: 98-100.
- Ng, P. K. L. & C. M. Yang, 1985. On three new species of freshwater crabs (Crustacea, Decapoda, Brachyura) from Singapore and Peninsular Malaysia. *Malay. Nat. J.*, 39: 57-73.
- Sheldon, F. H., 1985. The taxonomy and biogeography of the thick-billed flowerpecker complex in Borneo. *The Auk*, 102(3): 606-612.
- Yang, C. M. & L. M. Chou, 1985. The mammal collection of the Zoological Reference Collection, National University of Singapore. *Acta Zool. Fennica*, 170: 55-56.

1986

- Desch, C. E., M. Nadchatram, W. B. Nutting & F. S. Lukoschus, 1986. Two new species of *Demodex* (Acari: Demodicidae) from the meibomian glands of the tropical old world bat, *Eonycteris spelaea*. *Int. J. Acarol.*, 12: 13-25.
- Galil, B., 1986. *Quadrella* (Brachyura: Xanthoidea: Trapeziidae) - Review and Revision. *J. Crust. Biol.*, 6(2): 275-293.
- Lim, S. S. L., P. K. L. Ng & L. W. H. Tan, 1986. The complete larval development of *Pilumnopus eucratoides* Stimpson, 1858 (Decapoda, Brachyura, Pilumnidae) in the laboratory. *Crustaceana*, 50(3): 265-277.
- Lucas, P. W., R. T. Corlett & D. A. Luke, 1986. Sexual dimorphism of tooth size in Anthropoids. *Human Evol.*, 1(1): 23-29.
- Lucas, P. W., R. T. Corlett & D. A. Luke, 1986. Postcanine tooth size and diet in anthropoid primates. *Zeit. Morphol. Anthropol.*, 76(3): 253-276.
- Marshall, J. & J. Sugardjito, 1986. Gibbon Systematics. *Comp. Primate Biol.*, 1: 137-185.
- Mees, G. F., 1986. A list of the birds recorded from Bangka Island, Indonesia. *Zool. Verh.*, No. 232, 176 pp.
- Ng, P. K. L., 1986. *Phricotelphusa hockpingi* sp. nov., a new Gecarcinucid freshwater crab from Perak, West Malaysia (Decapoda, Brachyura). *Crustaceana*, 51(3): 270-276.
- Ng, P. K. L., 1986. *Balassiatelphusa cursor* sp. nov., a new species of freshwater crab from East Kalimantan (Decapoda : Parathelphusidae). *Treubia*, 29(3): 207-213.

- Ng, P. K. L., 1986. *Perithelphusa lehi* sp. nov., a new species of highland freshwater crab from Sarawak, Borneo (Crustacea, Decapoda, Brachyura, Parathelphusidae). *Sarawak Mus. J.*, 36(57): 291-295.
- Ng, P. K. L., 1986. Preliminary description of 17 new freshwater crabs of the genera *Geosesarma*, *Parathelphusa*, *Johora* and *Stoliczia* (Crustacea, Decapoda, Brachyura) from South East Asia. *J. Singapore Natn. Acad. Sci.*, 15: 36-44.
- Ng, P. K. L., 1986. *Terrapotamon* gen. nov., a new genus of freshwater crabs from Malaysia and Thailand, with description of a new species, *Terrapotamon aipooae* sp. nov. (Crustacea: Decapoda: Brachyura: Potamidae). *J. Nat. Hist.*, 20: 445-451.
- Ng, P. K. L. & R. P. Lim, 1986. Description of a new genus and species of lowland freshwater crab from Peninsular Malaysia (Crustacea, Decapoda, Brachyura, Parathelphusidae). *Indo-Malay. Zool.*, 3: 97-103.
- Ng, P. K. L. & L. W. H. Tan, 1986. The leaf-carrying behaviour of *Neodorippe* (*Neodorippe*) *callida* (Fabricius, 1798), with a note on carrying behaviour of dorippid crabs (Crustacea, Decapoda, Brachyura). *J. Singapore Natn. Acad. Sci.*, 15: 45-47.
- Ng, P. K. L., & G. Rodriguez, 1986. New records of *Mimilambrus wileyi* Williams, 1979 (Crustacea: Decapoda: Brachyura), with notes on the systematics of the Mimilambridae Williams, 1979, and Parthenopidae Macleay, 1838, sensu Guniot, 1978. *Proc. Biol. Soc. Wash.*, 99(1): 88-99.
- Ng, P. K. L. & C. M. Yang, 1986. A new freshwater crab of the genus *Isolapotamon* Bott, 1968 (Decapoda, Brachyura, Potamidae) from Sarawak, Borneo. *Indo-Malay. Zool.*, 3: 15-18.
- Reid, D. G., 1986. The littorinid molluscs of mangrove forest in the Indo-Pacific region. The genus *Littoraria*. *Brit. Mus. (Nat. Hist.)*, 228 pp.
- Tan, L. W. H., S. S. L. Lim & P. K. L. Ng, 1986. Larval development of the dromiid crab *Cryptodromia pileifera* Alcock, 1899 (Decapoda: Dromiidae) in the laboratory. *J. Crust. Biol.*, 6(1): 111-118.
- Wagner, H. P., 1986. A revision of the genus *Doclea* Leach, 1815 (Crustacea, Brachyura, Majidae). *Bull. Mus. Natn. Hist. Nat., Paris*, 4(4): 893-953.

1987

- Brown, W. A., M. L. Goff & M. Nadchatram, 1987. The bat-infesting genus *Rudnicula* (Acari: Trombiculidae), with description of a new species from the Philippine Islands and a key to the species. *J. Med. Entomol.*, 25(1): 17-19.
- Bruce, A. J., 1987. *Periclimenes johnsoni* sp. nov., a new species of shrimp from Singapore (Crustacea: Decapoda: Palaemonidae). *Indo-Malay. Zool.*, 4: 113-126.
- Chong, S. S. C. & H. W. Khoo, 1987. *Macrobrachium malayanum* (Roux, 1934) stat. nov. (Decapoda, Palaemonidae) as a synonym of *M. geron* Holthuis, 1950, with notes on its distribution. *J. Nat. Hist.*, 21: 903-913.
- Chong, S. S. C. & H. W. Khoo, 1987. A new species of freshwater prawn, *Macrobrachium johnsoni* spec. nov. (Decapoda: Caridea: Palaemonidae) from Peninsular Malaysia, and a description of its first zoea. *Zool. Med.*, 61(25): 359-370.
- Chong, S. S. C. & H. W. Khoo, 1987. *Macrobrachium ahkowi* nom. nov., a replacement name for *Macrobrachium johnsoni* Chong & Khoo, 1987, preoccupied by *Macrobrachium johnsoni* Ravindranath, 1979 (Decapoda: Caridea: Palaemonidae). *Zool. Med.*, 61(37): 561-562.
- Chong, S. S. C., H. W. Khoo & P. K. L. Ng, 1987. Presence of the Japanese freshwater prawn *Macrobrachium nipponense* (De Haan, 1849) (Decapoda: Caridea: Palaemonidae) in Singapore. *Zool. Med.*, 61(22): 313-317.
- Fooden, J., 1987. Type locality of *Hylobates concolor leucogenys*. *Amer. J. Primatol.*, 12: 107-110.
- Griffith, H., 1987. Phylogenetic relationships and evolution in the genus *Dissodactylus* Smith, 1870 (Crustacea: Brachyura: Pinnotheridae). *Can. J. Zool.*, 65: 2292-2310.
- Hails, C. & F. Jarvis, 1987. *Birds of Singapore*. Times Edition, Singapore. 168 pp.
- Nadchatram, M., 1987. A new and unusual species of *Gahrlipeia* (Acari, Trombiculidae) from African insectivores. *Rev. Zool. Afr.*, 101: 469-472.

- Ng, P. K. L., 1987. A Revision of the Malayan Freshwater Crabs of the genus *Johora* Bott, 1966 stat. nov. (Decapoda: Brachyura: Potamidae). *Malay. Nat. J.*, 41: 13-44.
- Ng, P. K. L., 1987. Freshwater crabs of the genus *Isolapotamon* Bott, 1968 from Sarawak, Borneo (Crustacea, Decapoda, Brachyura, Potamidae). *Sarawak Mus. J.*, 37(58): 139-153.
- Ng, P. K. L., 1987. The Indo-Pacific Pilumnidae II. A revision of the genus *Rhizopa* Stimpson, 1858, and the status of Rhizopinae Stimpson, 1858 (Crustacea, Decapoda, Brachyura). *Indo-Malay. Zool.*, 4: 69-111.
- Ng, P. K. L., 1987. The Indo-Pacific Pilumnidae III. A new record of the luteophilous crab, *Rhizopa gracilipes* Stimpson 1858 (Crustacea Decapoda, Brachyura) from Singapore. *J. Singapore Natn. Acad. Sci.*, 16: 1-3.
- Ng, P. K. L. & R. Goh, 1987. Cavemicolous freshwater crabs (Crustacea, Decapoda, Brachyura) from Sabah, Borneo. *Stygologia*, 3(4): 313-330.
- Ng, P. K. L. & L. B. Holthuis, 1987. Case 2611. *Cryptocoeloma* Miers, 1884 (Crustacea, Decapoda): Proposed designation of *Cryptocoeloma haswelli* Rathbun, 1923, as type species. *Bull. Zool. Nomen.* 44(4): 240-241.
- Ng, P. K. L. & R. P. Lim, 1987. The taxonomy and biology of the nepenthophilous freshwater sesarmine crab, *Geosesarma malayanum* Ng and Lim, 1986 (Crustacea, Decapoda, Brachyura, Grapsidae) from Peninsular Malaysia. *Malay. Nat. J.*, 41: 393-402.
- Ng, P. K. L., N. Huda & Q. Banu, 1987. Description of a new species of *Demania* Laurie, 1906 (Crustacea, Decapoda, Brachyura, Xanthidae) from the Bay of Bengal, Indian Ocean. *J. Nat. Hist.*, 21: 987-993.
- Ng, P. K. L. & H. P. Ng, 1987. The freshwater crabs of Pulau Langkawi, Peninsular Malaysia. *Malay. J. Sci.*, 9: 1-15.
- Sheldon, F. H., 1987. Habitat preferences of the Hook-Billed Bulbul *Setornis criniger* and the white-throated Babbler *Malacopteron albobulare* in Borneo. *Forktail*, 3: 17-25.

1988

- Anonymous, 1988. A national heritage for posterity and science. *Campus News*. National University of Singapore. No. 74, pp. 2-3.
- Aimi, M. & H. Inagaki, 1988. Grooved lower incisors in flying lemurs. *J. Mammalogy*, 69(1): 138-140.
- Alfred, E. R., 1988. The Zoological Collections of the National Museum 1957-1974. In: *Our Heritage. Zoological Reference Collection*. Official Opening Souvenir Brochure, 31 October 1988. pp. 5-6.
- Chong, S. S. C. & H. W. Khoo, 1988. The identity of *Macrobrachium lanchesteri* (De Man, 1911) (Decapoda, Palaemonidae) from Peninsular Malaysia and Singapore, and a description of its zoea. *Crustaceana*, 54(2): 196-206.
- Chou, L. M., P. Gopalakrishnakone, L. Tan, C. M. Yang, J. How & C. S. Ng, 1988. *Venomous fishes*. Venom and Toxin Research Group, National University of Singapore, Publication No. 6 (Poster).
- Fooden, J., 1988. Taxonomy and evolution of the *Sinica* group of Macaques: 6. Interspecific comparisons and synthesis. *Fieldiana Zool.*, 45: 1-44.
- Galil, B., 1988. A revision of the genus *Glabropilumnus* (Crustacea, Decapoda, Brachyura). *Bull. Natn. Sci. Mus.*, Tokyo, 14(2): 67-90.
- Gopalakrishnakone, P., H. W. Khoo, S. K. Chew, J. How & C. S. Ng, 1988. *Poisonous Fishes*. Venom and Toxin Research Group, National University, Publication No. 5 (Poster).
- Guinot, D. & P. K. L. Ng, 1988. Observations nouvelles sur *Parapanope singaporensis* Ng et Guinot, 1985, synonyme de *P. euagora* De Man, 1895 (Crustacea Decapoda Brachyura). *Bull. Mus. Natn. Hist. Nat.*, Paris, (4)9(A3): 669-675.
- Ho, H. C., 1988. The Dugong in Singapore waters. *Malay. Nat.*, 42(1): 22-25
- Jeffries, W. B., H. K. Voris & C. M. Yang, 1988. *Octolasmis collare*, a new species of pedunculate barnacle from the seas adjacent to Singapore. *Indo-Malay. Zool.*, 5(8): 111-116.
- Lam, T. J., 1988. Foreword. In: *Our Heritage. Zoological Reference Collection*. Official Opening Souvenir Brochure, 31 October 1988, p. 1.

- Lim, G. S. Y. & L. M. Chou, 1988. The echinoderm fauna of sediment stressed reefs in Singapore. *Proc. 6th Intern. Coral Reef Symp.*, Australia, 2: 245-250.
- Lim, G. S. Y. & P. K. L. Ng, 1988. The first zoeal stage of *Harrovia albolineata* Adams and White, 1848 (Crustacea: Brachyura: Pilumnidae), with a note on eumedonine systematics. *J. Nat. Hist.*, 22(1): 217-223.
- Lim, K. K. P., 1988. The rediscovery of the banded wolf-snake in Singapore. *The Pangolin*, 1(3): 63-64.
- Lim, F. L. K. & K. K. P. Lim, 1988. A possible addition to the checklist of Singapore snakes: the Striped Keelback (*Xenochrophis vittatus*). *The Pangolin*, 1(4): 85-87.
- Ng, P. K. L., 1988. *Elamenopsis mangalis* sp. nov., a new species of mangrove-dwelling hymenosomatid crab from Singapore (Crustacea, Decapoda, Brachyura). *Crustaceana*, 55(3): 274-278.
- Ng, P. K. L., 1988. A new sesamine crab of the genus *Sesarmoides* Serène and Goh, 1970 (Crustacea Decapoda, Brachyura, Grapsidae) from Arawe Island, New Britain, Solomon Sea, with notes on the genus. *Micronesica*, 21(1&2): 181-187.
- Ng, P. K. L., 1988. The Indo-Pacific Pilumnidae V. Three new species of *Pilumnus* Leach, 1815 (Crustacea: Decapoda: Brachyura) from Singapore, Vietnam and Japan. *Indo-Malay. Zool.*, 5(2): 295-306.
- Ng, P. K. L., 1988. *The Freshwater Crabs of Peninsular Malaysia and Singapore*. Department of Zoology, National University of Singapore, Shinglee Press., 156 pp.
- Ng, P. K. L., L. M. Chou & C. M. Yang, 1988. Caecilians in Singapore! *The Pangolin*, 1(2): 36-37.
- Ng, P. K. L. & L. W. H. Tan, 1988. The identities of *Heteropilumnus subinteger* (Lanchester, 1900) and *Heteropilumnus hirsutior* (Lanchester, 1900) stat. nov., with description of a new species, *Heteropilumnus holthuisi* sp. nov. (Decapoda, Brachyura, Pilumnidae). *Crustaceana*, 54(1): 13-24.
- Ng, P. K. L., L. W. H. Tan, C. S. Ng & P. Gopalakrishnakone, 1988. *Poisonous Crabs*. Venom and Toxin Research Group, National University of Singapore, Publication No. 7 (Poster).
- Polhemus, D. A. & J. T. Polhemus, 1988. The Aphelocheirinae of Tropical Asia (Heteroptera: Naucoridae). *Raffles Bull. Zool.*, 36(2): 167-300.
- Sharma, R. E., 1988. The Zoological Reference Collection, the interim years 1972-1980. In: *Our Heritage. Zoological Reference Collection*. Official Opening Souvenir Brochure, 31 October 1988. pp. 10-11.
- Števcíć, Z., P. Castro & R. H. Gore, 1988. Re-establishment of the Family Eumedonidae Dana, 1853 (Crustacea: Brachyura). *J. Nat. Hist.*, London, 22: 1301-1324.
- Števcíć, Z. & P. K. L. Ng, 1988. The systematic position of the genus *Dentoxanthus* Stephenson, 1945 (Crustacea, Decapoda, Brachyura, Pilumnidae). *Steenstrupia*, 14(1): 1-5.
- Subharaj, R. 1988. The Singapore Banded Leaf-Monkey. *The Pangolin*, 1(2): 38-39.
- Tan, L. W. H., 1988. In Transit. National Museum. Science Centre. National University. Stop! In: *Our Heritage. Zoological Reference Collection*. Official Opening Souvenir Brochure, 31 October 1988, p. 7.
- Tan, L. W. H. & P. K. L. Ng, 1988. *A Guide to Seashore Life*. Singapore Science Centre, Singapore, 160 pp.
- Tweedie, M. W. F., 1988. Zoology in the Raffles Museum, 1932-1957. In: *Our Heritage. Zoological Reference Collection*. Official Opening Souvenir Brochure, 31 October 1988, pp. 2-4.
- Wallach, V., 1988. Status and redescription of the genus *Padangia* Werner, with comparative visceral data on *Collorhabdium* Smedley and other genera (Serpentes: Colubridae). *Amphibia - Reptilia*, 9: 61-67.
- Weitzel, V., C. M. Yang & C. P. Groves, 1988. A catalogue of Primates in the Singapore Zoological Reference Collection Department of Zoology, National University of Singapore (Formerly the Zoological Collection of the Raffles Museum). *Raffles Bull. Zool.*, 36(1): 1-166.
- Wells, D. R. & C. M. Frances, 1988. Crab-eating Mongoose *Herpestes urva*, a mammal new to Peninsular Malaysia. *Malay. Nat. J.*, 42: 37-41.
- Yang, C. M., 1988. The reunion of the Zoological Reference Collection. In: *Our Heritage. Zoological Reference Collection*. Official Opening Souvenir Brochure, 31 October 1988, p. 12.
- Yang, C. M. & H. K. Lua, 1988. A report of a banded leaf-monkey found dying near the Bukit Timah Nature Reserve. *The Pangolin*, 1(1): 23.

Yang, C. M. & H. K. Lua, 1988. Maintenance problems in old, historically significant collections of mammals: Zoological Reference Collection of the National University of Singapore. *Proc. Workshop. Managment Mammal Collection of Tropical Environment*, Calcutta, 1984.

1989

- Castro, P., 1989. Range extensions and new host records of eumedonid crabs of the genus *Harrovia* Adams & White, 1848 (Decapoda, Brachyura, Eumedonidae). *Crustaceana*, 57(1): 97-100.
- Giesen, K. M. T., W. B. Nutting & M. Nadchatram, 1989. A new mite species of the genus *Psorergates* Tyrell (Acari: Prostigmata: Psorergatidae) parasitic on the tree-shrew *Tupaia glis*, with notes on pathology. *Raffles Bull. Zool.*, 37(1&2): 132-141.
- Goh, B. P. L., L. M. Chou & P. K. L. Ng, 1989. Anomuran and brachyuran crab symbionts of Singapore hard corals of the families Acroporidae, Agaraciidae and Pocilloporidae. *Indo-Malay. Zool.*, 6(1): 25-44.
- Jeffries, W. B., H. K. Voris & C. M. Yang, 1989. Observations on the incidence of the pedunculate barnacle, *Octolasmis warwickii* (Gray, 1825) on Horseshoe crabs (Xiphosura) in the seas adjacent to Singapore. *Raffles Bull. Zool.*, 37(1&2): 58-62.
- Jeffries, W. B., H. K. Voris & C. M. Yang, 1989. A new mechanism of host colonization: Pedunculate barnacles of the genus *Octolasmis* on the mangrove crab *Scylla serrata*. *Ophelia*, 31(1): 51-58.
- Koh, E. G. L. & L. M. Chou, 1989. *The Mushroom Corals of Singapore*. Department of Zoology, National University of Singapore. 45 pp.
- Lee, K. M., W. W. Wirth & K. L. Chan, 1989. A new species of *Dasyhelea* midge reared from drains in Singapore (Diptera: Ceratopogonidae). *Proc. Entomol. Soc. Wash.*, 91(3): 452-457.
- Lim, K. K. P., 1989. First record of the swamp-forest frog *Rana paramacrodon paramacrodon* Inger, 1966 (Amphibia: Anura: Ranidae) from Singapore, with notes on its taxonomy, ecology and biology. *Raffles Bull. Zool.*, 37(1&2): 51-57.
- Lim, K. K. P., 1989. The Rompin-Endau Expedition, 1989: In search of fishes and frogs. *The Pangolin*, 2(3): 50-59.
- Murphy, D. H., 1989. Three new species of nymphuline moths (Lepidoptera: Pyralidae) from Singapore mangroves provisionally attributed to *Eristena* Warren. *Raffles Bull. Zool.*, 37(1&2): 142-159.
- Nadchatram, M., 1989. Descriptions of five new species of *Gahrliepia oudemans* (Acari: Prostigmata: Trombiculidae) from North Sumatra, Indonesia. *Raffles Bull. Zool.*, 37(1&2): 3-15.
- Nadchatram, M. & S. Fernandes, 1989. The genus *Schoengastiella* Hirst (Acari: Prostigmata: Trombiculidae), with descriptions of five new species from Nepal. *Raffles Bull. Zool.*, 37(1&2): 16-30.
- Ng, P. K. L., 1989. The Indo-Pacific Pilumnidae IV. On *Cryptocoeloma haswelli* Rathbun, 1923 (Decapoda, Brachyura). *Crustaceana*, 56(1): 49-57.
- Ng, P. K. L., 1989. The identity of the cavernicolous freshwater crab *Potamon (Thelphusa) bidiense* Lanchester, 1900 (Crustacea: Decapoda: Brachyura: Gecarcinucidae) from Sarawak, Borneo, with description of a new genus. *Raffles Bull. Zool.*, 37(1&2): 63-72.
- Ng, P. K. L., 1989. *Geühusa pulcher*, new genus and species (Crustacea: Decapoda: Brachyura: Parathelphusidae) from Pulau Redang, Trengganu, Peninsular Malaysia. *Raffles Bull. Zool.*, 37(1&2): 31-36.
- Ng, P. K. L., 1989. *Terrathelphusa*, a new genus of semiterrestrial freshwater crabs from Borneo and Java (Crustacea: Decapoda: Brachyura: Sundathelphusidae). *Raffles Bull. Zool.*, 37(1&2): 116-131.
- Ng, P. K. L. & K. K. P. Lim, 1989. Rediscovery of the Dwarf Snakehead, *Channa gachua* (Hamilton, 1822) (Channidae) in Singapore. *Raffles Bull. Zool.*, 37(1&2): 172-174.
- Ng, P. K. L. & R. P. Lim, 1989. Contributions to the freshwater crab fauna of Pulau Tioman, Peninsular Malaysia (Crustacea: Decapoda: Brachyura). *J. Singapore Natn. Acad. Sci.*, 17: 28-32.
- Ng, P. K. L. & C. M. Yang, 1989. On some species of *Demani* Laurie, 1906 (Crustacea: Decapoda: Brachyura: Xanthidae) from Malaysia, Singapore and the Philippines, with a key for the genus. *Raffles Bull. Zool.*, 37(1&2): 37-50.

- Ng, P. K. L. & C. M. Yang, 1989. On Michael Willmer Forbes Tweedie. *Raffles Bull. Zool.*, 37(1&2): 160-167.
- Ng, P. K. L. & R. Stuebing, 1989. Description of a new species of montane freshwater crab of the genus *Sundathelphusa* Bott, 1969 (Crustacea: Brachyura: Decapoda: Brachyura: Gecarcinucoidea) from Borneo. *Malay. Nat. J.*, 43(1): 13-19.
- Ng, P. K. L. & R. Stuebing, 1989. *Thelphusula dicerophilus* sp. nov., a new species of freshwater crab (Crustacea: Decapoda: Brachyura: Gecarcinucidae) found in mud wallows of the Sumatran Rhinoceros from Sabah, Borneo. *Indo-Malay. Zool.*, 6(1): 45-51.
- Polhemus, J. T. & D. A. Polhemus, 1989. A new Mesoveliid genus and two new species of *Hebrus* (Heteroptera: Mesoveliidae, Hebridae) from intertidal habitats in Southeast Asian mangrove swamps. *Raffles Bull. Zool.*, 37(1&2): 73-82.
- Sawada, K., 1989. On a new genus and species of Aleocharinae (Coleoptera: Staphylinidae) from mangrove forests in Singapore. *Raffles Bull. Zool.*, 37(1&2): 83-86.
- Tarburton, M. K., 1989. Subspeciation in the Red-Tailed Tropic Birds. *Notornis*, 36: 39-49.
- Wells, D. R., 1989. Notes on the distribution and taxonomy of Peninsular Malaysian Mongooses (*Herpestes*). *Nat. Hist. Bull. Siam. Soc.*, 37(1): 87-97.

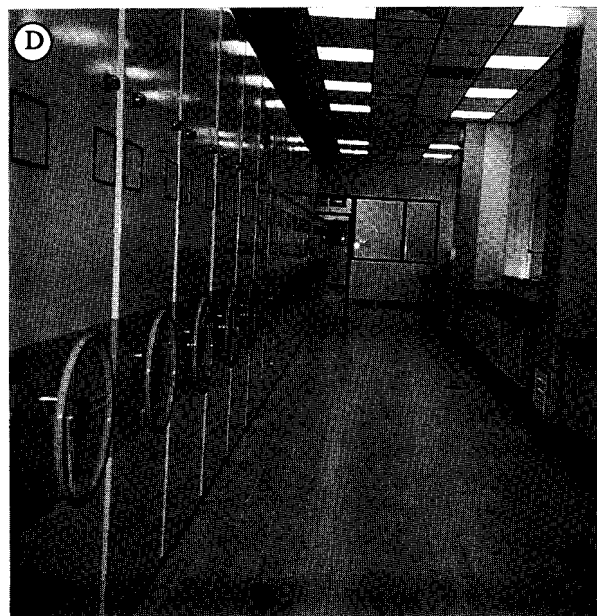
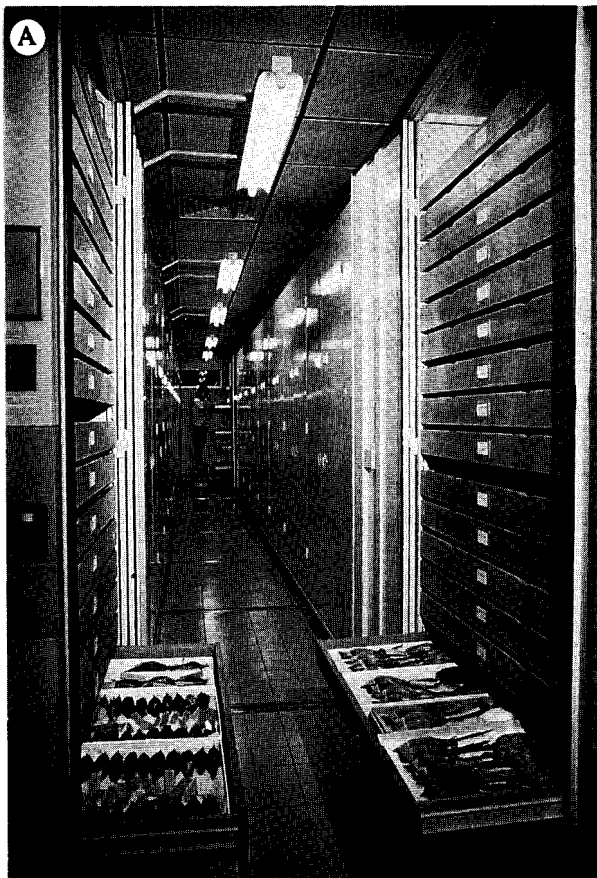


Plate I: Space-saving storage compactor systems in the Zoological Reference Collection. A & B, air-tight cabinets with adjustable trays for reference skins and skulls; C & D, open shelves for spirit collection. (Photographs A, B & C by H.K. Yip)