

## GROUND IMPLEMENTATION OF THE MALAYSIAN STATE CONSERVATION STRATEGIES

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**ABSTRACT.** — The implementation of Malaysia’s system of State Conservation Strategies is described. Nine territories were covered during 12 years of work, with close collaboration between the respective State governments and a small team of conservation practitioners. The paper describes the working methods, results, a selection of field observations, and lessons learnt.

**KEY WORDS.** — State Conservation strategy, Malaysia, State Economic Development Corporation, State Economic Planning Unit

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### INTRODUCTION

Furtado et al. (2013) provide a detailed account of the background, principles and implementation of the Malaysian National Conservation Strategies at a State-by-State level. The activities extending over more than a decade were initiated by the bringing together of ideas from José I. R. Furtado, David R. Wells and the Earl of Cranbrook. The approach adopted was radically different from the national approach advocated by IUCN/UNEP/WWF (1980) at that time. In practice, however, since the Malaysian States each have legal and constitutional control over their natural resources, both a State approach (in Malaysia) and a national approach (in some other countries) are equivalent in strategising natural resource use at whichever level of government is the controlling agent.

In addition to the theoretical framework described by Furtado et al. (2013), field implementation and ground truthing are essential components of any conservation strategy. The purpose of this paper is to describe experiences related to implementation in the various Malaysian States.

### METHODS

**General approach.** — Nine States and the Federal Territory of Kuala Lumpur were individually treated. These were Negeri Sembilan, Melaka, Terengganu, Kedah, Perlis, Sarawak, Selangor, Federal Territory of Kuala Lumpur, Kelantan and

Sabah. They were followed by a National Conservation Strategy (EPU, 1993a, 1993b, 1993c, 1993d) that covered the entire land and sea area of the nation, including the four States (Johor, Pahang, Perak and Pulau Pinang) that had not otherwise been covered.

The first State to be covered, Negeri Sembilan, was chosen—perhaps even self-selected—by virtue of being a manageable size, with good access to Kuala Lumpur and good internal accessibility, and in which a range of personal contacts, such as the late Tan Sri Hamzah Sendut, already existed. It came to be a testing ground for methods. A two-person team drove to every accessible part of the State, becoming familiar with the landscape, transport system, and the distribution and condition of natural resources such as forests, water, farming and plantations, and human settlements and other land uses. They also looked into the conservation of species. A similar approach was adopted in the next four States, namely Melaka (Mah et al., 1983a), Terengganu (Mah et al., 1983b), Kedah (Chan et al., 1984), and Perlis (Mah et al., 1984).

Beginning in 1981, a key point that emerged was the degree of uncertainty about the availability of information on the quantity and condition of natural resources. A template was therefore designed to solicit information from the various branches of government. It became clear that data were scattered, sometimes incomplete, and sometimes lagging in time behind the actual situation. In addition, officers with many desk duties faced difficulty in retaining their familiarity with conditions on the ground. Out-of-date or inaccurate

information (not surprisingly, and not uniquely to Malaysia) must be a definite constraint to good and timely planning. This immediately led to some conclusions about ways of improving data collection and analysis.

In Negeri Sembilan and Melaka, the approach was to become acquainted with the State and its resources, write a report, provide recommendations, and deliver these to the government. In Terengganu the approach was a little more sophisticated: many development proposals and impact assessments were being carried out, and the team worked with the State Economic Planning Unit to review and analyse information, make sense of multiple recommendations, and assess their cumulative implications. The result was similar to an integrated development and conservation planning approach with the project team acting in the capacity of ecological analysts and advisors.

The late Tan Sri Khir Johari was instrumental in securing the participation of Kedah and Perlis. A similar modus operandi was continued in Kedah, a large State, and in Perlis whose small size and remoteness posed challenges. Again, driving a vehicle along all accessible routes was important in getting to know the area and its constraints. At the time Perlis lagged in economic development, and lacked ecotourism. One recommendation of the State Conservation Strategy was to consider development of ecotourism, including the use of limestone caves. Being in a different climatic zone with a marked dry season, water management was a special consideration, and good management of the catchment area for the shallow Timah Tasoh Dam was another theme.

As Cranbrook had a working relationship with the Sarawak State Government, he and M. Kavanagh were instrumental in facilitating the collaboration with Sarawak. The method was strikingly different. The State Planning Unit (SPU) and the conservation strategy team worked together to produce a joint report. One SPU officer, Jayl Langub, was assigned to the Sarawak Conservation Strategy Project. There was a good nucleus of people in Sarawak concurrently but independently working on relevant topics such as wildlife management, hunting, anthropology, and socio-economic development. From them, much relevant information could be obtained. The State legislature set up several Ad Hoc Committees to gather information, deliberate, and make recommendations to government. The project officer also spent a substantial amount of time working with officers from the Sarawak Government to come up with joint solutions to resource management problems based on local knowledge and ecological principles. Ecological principles were shared with many departments including SPU, Department of Agriculture, Public Works Department, Sarawak Forest Department, National Parks and Wildlife Office, Geological Survey Department, Department of Irrigation and Drainage, Sarawak Land Consolidation and Reclamation Authority (SALCRA), Sarawak Electricity Supply Company (SESCO), and others. Implementation was an integral part of the Sarawak Conservation Strategy project, concurrent with preparation of the strategy.

The more sophisticated and collaborative approach used by Sarawak was then adopted in Selangor and subsequent States, with some variations. The State Economic Planning Unit in Selangor had clear ideas on issues needing coverage: aquaculture (WWF-Malaysia, 1987e; Abdullah et al., 1988), small island development (WWF-Malaysia, 1987c, 1988), coastal management (WWF-Malaysia, 1987b; Kumari, 1989e), and relict forest patches (WWF-Malaysia, 1987a, 1987d; Ishak & Kumari, 1989a, 1989b, 1989c, 1989d; Kumari, 1989a, 1989b, 1989c, 1989d).

Overall, the types of information collected and analysed broadened in each state treated. Social and socio-economic aspects were increasingly prominent in the later State coverage. The conservation strategy for the Federal Territory of Kuala Lumpur (Kavanagh et al., 1988b) was of special interest in dealing with an urban environment, with a high density population dependent on natural resources (such as water) from areas beyond its own jurisdiction.

**Administrative execution of the project.** — The project commenced with two officers, L. Chan and Y. L. Mah, locally supervised by Wells and Furtado. When the project team had completed their preliminary data collection, fieldwork and analysis, Cranbrook reviewed and verified the data, identified key issues, and wrote or helped to write the report. This modus operandi was observed for the states of Negeri Sembilan, Melaka, Terengganu, Kedah and Perlis.

Although only one project officer worked on the Conservation Strategy for Sarawak, she was well supported by the numerous Sarawak government officers, ecologists, anthropologists, and social scientists. Kavanagh was the local supervisor while Cranbrook, as in the other conservation strategies, contributed significantly to the field verification, analysis and report writing.

Personal contacts were crucial for reaching initial consensus with the States on the value of a conservation strategy. Furtado, Wells, Cranbrook and various WWF (Malaysia) Trustees negotiated the initial discussions with Negeri Sembilan, Melaka, Terengganu, Kedah and Perlis while Cranbrook and Kavanagh secured Sarawak's participation and generous support of the project, including accommodation for the project officer and various transport logistics into the interior. When the conservation strategies of Selangor and Federal Territory of Kuala Lumpur were confirmed, Kavanagh took over the supervision of the project and K. Kumari joined the team. Subsequently, Ishak Ariffin strengthened the team capabilities on land use planning issues. J. Payne, Isabelle Louis, Noorainie Ariffin and Maria Fung carried out the Sabah Conservation Strategy with very strong support and collaboration from the Sabah Wildlife Department and the Sabah Ministry of Tourism and Environment.

**Modus operandi for developing a Conservation Strategy for a State.** — The first phase of work would be to visit the respective State Economic Development Corporation (SEDC), where it was possible to obtain information on current and possible proposed land use in the State. Forested

areas in the State could be identified from the maps of the state used by the SEDC. Potential conservation areas would be noted. Visits to the Forestry Department and the Department of Wildlife & National Parks would follow, to learn more about these areas and to find out what was of special interest to these departments in any of the forested areas. Other State Departments would be visited wherever necessary, their number and the depth of contact increasing as the conservation strategies proceeded. It should be noted that the State Departments and their officers were more than willing to help facilitate the work.

Visits to government departments within the State were an opportunity to discuss existing planning documents such as the federal Five Year Plans, the Ten Year State Forest Management Plans, and district Structure Plans and Local Plans.

The next phase would involve groundwork – surveys to check out identified potential conservation areas, with an increasing focus on water, catchment areas, forest and soils as the State strategies proceeded. Sometimes, due to circumstances, this phase could be started before the completion of the first phase. The surveys were, amongst other purposes, to confirm the existence of forested areas, as this could not be guaranteed based on out-of-date sources. In addition, the forest types and condition of the respective areas were noted, together with any other features of interest. The presence of any mammal seen or heard would be noted.

An attempt was made to look at the general health of streams. Faunal samples were collected from streams in an attempt to relate species composition to ecological wellbeing of the stream, and hence of the forested area. The idea was to see if a certain combination of aquatic animal species could serve as an ecological indicator. The streams visited, all being considered headwaters, were quite varied in physical nature, from hill torrents to little more than a trickle over a rock with a little sand here and there. The latter would provide fewer ecological niches than the former. Even with a relative paucity of ecological niches in trickles over rock, it was possible to find species such as the red-tailed snakehead, *Ophicephalus gachua*, a species usually found in clear water streams.

The sample size was too small to be meaningful, but if sufficient streams of the various types be sampled, this may be a useful measure for the future.

Upon completion of data collection, the team would then prepare the Conservation Strategy Report for the particular State. This would highlight the proposed areas for conservation in the State and the reason(s) why the proposal should be given serious consideration. In the main, the prime argument would be that the forested areas are vital if the State is to continue to have sufficient water supply for human use—domestic, industrial and agricultural—throughout the year.

**Practicalities.** — At the fieldwork level, some of the practical difficulties during the first two states were identifying the relevant data, finding the sources of the data, validating the data, prioritising the issues, and meeting with the appropriate officers. It was particularly challenging as, in the 1980s, the concept of conservation of natural resources was new to many government officers, who associated WWF with the saving of pandas and cute fluffy animals. The notion of management and conserving natural resources, though deeply embedded in some agencies, was alien to others. One of the first things that Mah and Chan did in any State was to get a good road map from the Public Works Department (PWD). With a PWD map, we drove on every motorable road and in the case of the smaller states like Negeri Sembilan, Melaka and Perlis we also drove on non-motorable roads. From a logistic viewpoint, Chan found fieldwork in Sarawak challenging but very exciting and the modes of transport used were as diversified as the biodiversity of Sarawak. She drove alone from Kuching to Miri in a 4-wheel drive vehicle, much of the way on dirt tracks, chugged up the Rejang river as far as Belaga, travelled the Baram river on longboats, flew by helicopter into Penan territories, trekked through forests, and rode on *kuda-kuda* rail tracks into peat swamp forest concessions.

## RESULTS

In physical terms, the results of each State Conservation Strategy included a written report, shorter for the earlier States worked on, and longer and more complex for the later States. Each one included description, analysis and recommendations. Photographs provided additional physical documentation.

Sarawak was the first State in which implementation began even during the period of conservation strategy preparation. The Sarawak state legislature set up a series of *Ad Hoc* Committees, for example on wildlife, to collect and collate information as well as to develop policy positions. Chan returned to Sarawak several times on the funding of the Sarawak Government to provide biodiversity inputs into the amendment of the Natural Resources Ordinance 1949 (Cap. 84). A White Paper resulted, leading to amendments in Ordinances and other State-level legislation.

Each of the State conservation strategies made recommendations about strengthening government capacity related to the environment and natural resource management. A key theme was capacity building and the introduction of environmental officers into the State Economic Planning Units. Capacity was indeed increased in some States, most visibly in Perlis (where the State EPU and the Forestry Department forged a strong link), and in Sabah (where an Environmental Conservation Department was set up within the State government). Such steps were at the prerogative and initiative of the State, with the conservation strategy being but one of the processes and documents available to influence thinking.

In later States, there was a trend to write up (or even to commission from experts) sub-studies that contributed to the State strategy, for example on Timah-Tasoh Dam in Perlis (Mah et al., 1984; Kumari & Ariffin, 1988), aquaculture in Selangor (Abdullah et al., 1988; WWF-Malaysia, 1989b), avian habitat enhancement in Kuala Lumpur (Hails et al., 1990), and limestone (Davison & Kiew, 1990) and forestry in Kelantan (Kumari & Kavanagh, 1990). In Sabah, there were periodic meetings of all District Officers, and a work-group on minerals and mining policy. These were ways of kick-starting implementation on particular topics that had clear economic implications.

The first report for Negeri Sembilan (Chan et al., 1982) comprised 50 pages of text, supplemented with 6 maps, 6 figures, and 11 tables. Terengganu's report (Mah et al., 1983b) increased in content to 86 pages plus 6 maps, 1 figure and 13 tables. The Sarawak Conservation Strategy report (Chan et al., 1985) made a quantum leap to 210 pages. The subsequent reports increased in breadth and detail the issues that were covered, the Selangor (Kavanagh et al., 1988a), Kelantan (WWF-Malaysia, 1989a, 1991) and Sabah (WWF-Malaysia, 1992) Conservation Strategies each extending to two volumes.

In the field we had many opportunities to gain practical experience and to witness incidents that would otherwise have been impossible.

**Shadowed by a tiger.** — In the State of Terengganu, during a visit to the Forestry Department, we learned that there was a small area with a unique, almost pure stand of a particular tree species not found elsewhere in the Peninsula, but relatively commonly in East Malaysia. This large and valuable timber tree, damar minyak (*Agathis borneensis*), characteristically occurs at montane elevations in Malaysia but exists at a lowland habitat near Kampung Buluh in Besut. We were shown the exact location on a map in the Forestry Department, and decided to visit this unique site to check it out. The following day, we drove to the location, passing a few villages on the way, parked the car at the end of a laterite track, and had to proceed on foot. The initial path was over bare laterite in a cleared area, after which we entered the forest. We trekked on and found the unique stand of *Agathis borneensis*, and after some time we trekked back to the car. When we reached the cleared area, we noticed animal tracks overlapping our footprints in the soft laterite. To Mah they looked like cat tracks, possibly of a medium sized cat. They clearly indicated that the cat had come across our tracks and followed us into the forest. We thought no more of this at the time, as Mah had in the past, in other forests, had tapir following him for a considerable distance in the forest, the tapir tracks being visible over his in soft ground.

We visited the Department of Wildlife & National Parks the next day. In the course of our discussions with the officers, we learned that there was a tiger problem in one of the villages—the tiger had killed a few cattle from a particular village. So we asked the location of this incident and we were led to a map, and the officer pointed out the village in

question. We looked at each other—the cat that had tracked us was very likely the problem tiger!

**Colugo and Marten.** — Walking through a forested valley in the State of Perlis, following a water supply pipeline, we were accosted by loud screeching from the forest canopy. The source of the commotion was soon located with the help of a pair of binoculars. High up on the vertical trunk of a tree was a colugo (*Cynocephalus variegatus*), face down, screeching at a yellow-throated marten (*Martes flavigula*) that was climbing up the trunk towards it. Amidst this noise, we and Cranbrook were seriously debating the philosophy and ethics of whether to intervene with nature or to let nature run its course. In the meantime, the pair moved away from view and the noise stopped, putting an end to our ethical dilemma. Presumably, the colugo got away.

**Unintended foray into foreign territory.** — While surveying northern Perlis, we were in a newly planted oil palm estate. We could see forest cover in the distance, beyond the plantation. When we reached the edge of the planting, we saw what looked like an electrified elephant fence—just posts holding up two horizontally strung wires with a lot of space in between the wires—separating the oil palm from the forest. The forest looked inviting, so we carefully traversed the wires, taking care not to touch them. The forest was refreshingly cool compared to the hot newly planted oil palm area we had just left. We followed a trail and soon came across a small stream. We noted otter tracks by the stream bank, and saw active and colourful fish in the clear water of the shaded stream. Bird calls could be heard around us. Wow! What a find—a nice patch of forest with varied fauna. We retraced our steps. It was a little difficult to pinpoint the location on a map as we had been off-road for some time in the plantation and using a compass gave us only a rough indication.

We reported this to the project team, and on the next trip we were joined by two senior members to look at this wonderful piece of forest. Soon after we had turned into the oil palm estate, we noticed a police field force jeep following our car. We carried on, and when we stopped near the fence the jeep also stopped and the police got down to find out what we were doing there. We told them we were on a conservation project and we were checking out forested areas in the state, and the forest ahead of us looked like a good patch of forest to survey. They then informed us that beyond the fence was Thai territory and that there had been cases where terrorists had kidnapped Malaysian contractors working near the border for ransom. It was a good thing we did not mention that we had been across the fence on an earlier occasion! If only we had hand held GPS units back then.

**Marching prawns and fishes out of water!** — It was in Perlis that we saw firsthand how determined freshwater prawns can be in moving upstream. The sugar cane fields were irrigated from many small dammed streams within the fields, each dam having a vertical wooden structure with an adjustable spill-over to control the depth of the water. Looking through the wooden slats of one, we could see a very thin

layer of algae or moss over which a minute amount of water was trickling down the wall. The height from the top of the spillway to the stream level below was about three metres. Amazingly, across the wet surface, crawling vertically up with practically the whole body exposed to air was a mass of freshwater prawns. Painstakingly each prawn moved up step by step. Individuals would lose their grip and fall off on the way up—few would make it to about 0.5 m from the top. In the 15 minutes or so that we watched them, not a single prawn made it to the top. Falling off did not deter them as they immediately started climbing again. What a display of a strong biological drive!

In a muddy stream nearby, a young striated snakehead (*Ophicephalus striatus*) swam so that the front third or half of its body was out of the water, at the edge of one of the shallow pools. Then it turned on its side, appeared to pick up something from the mud with its mouth, righted itself and slid backwards into the water. With binoculars, the details became clear. The snakehead was stalking freshwater prawns in the shallow pools. The prawns would move away from the fish towards shallower water, and when the water became too shallow they leapt back, landing on the exposed mud beyond the water line. The snakehead then easily pushed its head out of the water, rolled sideways to pick up the stranded prawn, and then retreated back to the water to swallow its meal. This was an easy way to make a meal out of a prey that can normally leap out of range, giving meaning to the saying “out of the frying pan into the fire”.

**The burning sugar fields of Perlis.** — While out in the sugar cane fields of Perlis, it happened that some acreage was being burned prior to harvesting. We took the opportunity to see what was happening in front of the advancing fire front. We checked the map and drove to a point well in front of the fire, where we were downwind and could see the flames and smoke advancing. The main beneficiaries of the burning appeared to be the birds which took the opportunity to feast on the insects flushed out and up by the flames. All this feeding was going on quite close to the advancing front of the flames. We drove off before the flames got too close.

**Amazing Penans.** — Lena visited the hunter-gathering Penans, living around the Baram headwaters. As the Penans live in the forest they were very aware of their vulnerability to the natural forces, as trees could fall on them, rivers could overflow overnight, and lightning could strike anytime. To survive in this harsh environment, their sense of communal bonding had evolved to be extremely strong as reflected by their philosophy, practice and relationship with nature. They communicated directly and openly with their female god, Bungan. To the Penans, natural resources did not belong to them but they were the stewards, hence, they must look after them.

They interacted very intimately with the forest and knew it extremely well. The elders gave very detailed instructions to the younger members on how to navigate through the forest. It was amazing to see how these young lads could follow the instructions without having travelled through

those dense forested paths before, as if they had GPS in their DNA. The Penans could tell how many people had moved along a path, and how much earlier, by the tell-tale marks that the previous travellers had made. Their acutely sensitive sight and hearing saved Lena's life when they were moving through a logging concession. One of the Penan pulled her aside just in time to miss a falling tree.

This experience along with the several visits to the longhouses of Ibans, Bidayuh, Kenyah, Kenyan, Kelabit, Melanau, etc., widened the scope of the state conservation strategies to include for the first time socio-anthropological considerations.

## LEARNING POINTS

All the initial team members began their careers as biologists (though from diverse fields ranging from parasitology to primatology), but later members included expertise in town and regional planning, law, and administration. Hence the technical recommendations broadened from a focus on biodiversity aspects to include mining, agriculture, water management, and manpower planning (Davison, 1993), and the dimensions of the reports grew in breadth and depth as the experience of the team accumulated with each state strategy.

The modus operandi evolved through three phases. In the early phase a report was presented to a State Government for their follow-up implementation, as in the case of Negeri Sembilan and Melaka. In the second phase the project team advised a State Government on development issues during the project, followed by the presentation of a report to the State Government for their follow-up implementation, as applied in Terengganu. In the third phase, the implementation of the recommendations and capacity-building commenced during the project and a report marked the end of the fieldwork and collation of recommendations. Sarawak and the subsequent states were treated in this manner. Sarawak, however, went far beyond the State conservation strategy in preparing its own Wildlife Survey, in setting up a system of Wildlife Rangers, in controlling hunting, and establishing a State-wide system of protected areas covering all or virtually all natural ecosystems.

IUCN/UNEP/WWF (1980) formulated the World Conservation Strategy with the intention of encouraging nations to prepare national conservation strategies as part of a global effort. Malaysia chose a different modus operandi based on the rationale that natural resources management was under the jurisdiction of the state government, and hence, state conservation strategies were the most appropriate and potentially most effective approach. IUCN initially did not support the state-by-state methodology adopted by Malaysia; by 1983 Malaysia was the only one of 31 nations taking a sub-national approach (IUCN, 1983, 1984). Robert Prescott-Allen, a lead author of the World Conservation Strategy and later of *Caring for the Earth* (IUCN/UNEP/WWF, 1991), came to Malaysia for a field visit. In recognition of the usefulness and validity of state conservation strategies for nations with states and provinces, he subsequently invited

Chan and Kumari to present their experiences at the IUCN Conference on Environment and Development held in Ottawa in 1986. Throughout this period, Furtado was able to represent the Malaysian point of view as reflected in the conservation strategy documents (IUCN, 1984; IUCN/UNEP/WWF, 1991).

In 1992, the Earth Summit on Sustainable Development held in Rio de Janeiro saw the birth of three environmental conventions, i.e., United Nations Convention on Biological Diversity (UNCBD), United Nations Framework Convention on Climate Change (UNFCCC) and United Nations Convention to Combat Desertification (UNCCD).

For the CBD, the issues of a) implementation; b) national versus subnational and local authorities; and c) monitoring and evaluating success have surfaced repeatedly. The CBD has struggled with the implementation of its three objectives since it came into force in December 1993, until 2002 when the Conference of the Parties to the CBD decided at its 6<sup>th</sup> Meeting at The Hague to set specific targets, i.e., the 2010 biodiversity targets. This was followed by the formulation of the Aichi targets at the 10<sup>th</sup> Meeting of the Conference of the Parties (COP) to the CBD at Nagoya in 2010. The lessons learnt from doing the Malaysian conservation strategies, like setting of specific recommendations and deliverables, have been equally applicable to CBD where specific 2010 targets and Aichi targets have been formulated.

In 2008 at the 9<sup>th</sup> Meeting of the COP to the CBD, the offer by Singapore to develop a self-assessment tool for cities to evaluate their biodiversity conservation efforts initiated novel approaches to measuring performance. It created an avenue for the greater participation of subnational governments, in particular of cities, and promised a practical tool for tracking and measuring biodiversity efforts. The evaluation tool is known as the City Biodiversity Index or Singapore Index on Cities' Biodiversity (SI). Similarly, many of the lessons learnt from the preparation of the Malaysian state conservation strategies could be usefully applied to the implementation of the National Strategy and Action Plans (NBSAP) called for by the CBD. NBSAP could be scaled down to sub-national and city levels to implement biodiversity conservation more readily. Implementation of the state conservation strategies' recommendations could have benefited from an index to track performance, but both the State Conservation Strategies and the Cities Biodiversity Index point the way to accumulating sub-national efforts in order to help achieve national delivery of conservation.

## CONCLUSIONS

It is heartening that the lessons learnt from the State-by-state conservation strategies in Malaysia are still relevant 32 years after they commenced in 1981. Experience indicated that the State as the legally and administratively responsible body was the most appropriate level for the implementation of biodiversity conservation. This was an example of "mainstreaming biodiversity" in the early days!

The value of the state conservation strategy reports became still more apparent when several academics requested the Library of Congress to acquire the Sarawak Conservation Strategy report and other state conservation strategy reports in the early 1990s.

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