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GUIDELINES FOR THE RATIONAL UTILIZATION OF
MARINE TURTLES IN THE PACIFIC ISLANDS

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SUMMARY

Marine turtles - particularly the Green sea turtle - constitute an asset of some importance in many of the Pacific Islands. The consensus of opinion is that the turtle populations are declining as catching and marketing efficiency is enhanced by modern developments. Increasing demands for turtle products (flesh, fat, eggs, oil, shell) in foreign markets indicates increasing pressure on world turtle populations and promises important economic opportunities in the Pacific Islands. The case is presented for urgent action to assess the present resources of marine turtles in the Pacific and to inaugurate studies related to sound management policies and the development of turtle industries in the Islands.

A distinction is drawn between simple, restrictive protection of turtle stocks and sound programmes of managed exploitation for the benefit of the island peoples. The latter course is recommended.

Appropriate operational steps are discussed, beginning with a fact-finding questionnaire which has already been circulated. The next step should be a survey by scientific personnel with the assignment of estimating the magnitudes of wild stocks and recommending policies and practices for different localities. Among other activities likely to be recommended at the local island level are hatcheries, "creel censuses", and tagging-release programmes.

It is recognized that Government agencies must be instrumental in establishing regulatory policies suitable to each island's circumstances, but it is recommended that this be done only after fairly careful study and definition of the problem in each place. Government will also have to assume the responsibility for encouraging cultural practices, developing marketing facilities, and local new markets.

The paper concludes with recommendations for action at the Third Technical Meeting on Fisheries.

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Importance of the Resource

Sea turtles have long been important to man as sources of food and shell, their relative importance in any one part of the world being proportional to their local abundance and their place in the local scheme of cultural and religious practices. The most important species and, usually the most abundant one, is the Green Sea turtle, exploited for its flesh, fat, and eggs. While the eggs of all species of marine turtles are edible and usually sought after as a highly nutritious protein food, the flesh and fat of species other than the Green Sea turtle are sometimes poisonous and there is much variation from place to place in the acceptability of the adults of these species as food. Unacceptability of adults as food does not, however, discourage widespread slaughter of nesting females for the eggs which it is hoped they will contain. The Hawksbill turtle produces the "Tortoiseshell" of commerce, and this species is much sought after, even if the animals are locally considered to be inedible. In some parts of the world all species of marine turtles are captured and killed for the rendering of oil which has either local or export markets.

In the Pacific Islands, the marine turtles are still important primarily in terms of local food consumption and shell for both local manufacturers and export. Fast approaching, however, is the time when foreign luxury markets will have an increasing influence in the Pacific Islands and will quite possibly raise the importance of this marine asset to a whole new order of magnitude. Among the products for which there is an increasing demand are turtle soup, turtle steak, turtle oil cosmetic preparations, turtle leather products, and tourist curios in the form of tortoiseshell products and whole, polished shells. The extraordinary importance of exportable cash products to most of the Pacific Island economies justifies careful attention to their marine turtle assets now.

There is good reason to believe that the marine turtle populations around most inhabited Pacific Islands are already a dwindling asset. The advent of the outboard motor alone has in some areas increased the efficiency of local turtle hunters so much that there are clear signs the local turtle stocks are being seriously depleted. Add to this the improving public transportation and distribution systems, refrigeration and food preservation technology, growing tourist trade, and all the other attributes of development which are taking place in the Pacific, and it is possible to foresee the actual or virtual extinction of marine turtle populations over vast areas in the fairly near future.

In terms of fundamental bio-energetics, sea turtles have particular promise as a protein resource because of their large unit size and their position close to the base of the food chain which begins with solar energy captured and utilized by green plants. The Green sea turtle is a true, grazing vegetarian in its natural state - a "cow" of the marine environment. The algal species which are its principal sustenance have little or no other utility in human terms. Marine turtles are susceptible now to management practices based on their tie to particular nesting beaches; the time may not be far off when it may be possible to convert them to true

cultural circumstances in "farms" where they are under control at all times. Their reproductive potential is relatively enormous to compensate for astronomical predation losses in the wild state, and successful hatchery methods have been devised and are operating in a number of places. The Green turtle in particular has much promise as a domestic animal.

The foregoing is an attempt to identify the marine turtle populations as a resource of importance and potential to the Pacific Islands, and one which can disappear if not managed properly in the near future. If this premise is accepted, consideration must be given to the questions: "What to do about it?" and "How?".

Operational Guidelines

First, an attempt must be made to define the scope and nature of the problem. A questionnaire directed toward this end has been drafted by the author and is now being circulated to appropriate agencies and persons in the Pacific. Following analysis of the responses to the questionnaire, a follow-up survey should be carried out by appropriately-trained scientific personnel, who should then be called upon to suggest management policies and plans - both a general policy for the major area and specific plans for particular islands. The specific plans should be integrated as intelligently as possible into the cultural milieu of the particular areas which they are intended to cover (i.e., "suwon e wel" rights in Yap, tribal ownership principles in the Marshalls chief's confiscation rights in Ponape, published statutes in Palau and Truk, etc.). The scientist's draft plans should be presented to local administrators and enforcement officers for careful study, and considerable effort should be made to effect the best possible compromise between ideals, practical limitations, and requirements for socio-psychological acceptability. It is of the utmost importance that any plans put into effect be not only enforceable and modifiable with experience, but be understandable and capable of eliciting the emotional support of the local citizenry.

In the opinion of the writer, it is important from the very beginning to be wary of sentimentalism and over-simplified "protectionist" approach to the problem of marine turtle conservation in the Pacific Islands. The problem is to integrate human and animal ecologies into an optimal working system which assumes from the start an exploitation - but a continuing, self-perpetuating exploitation - of the turtles by the humans. The answer to the problem is simple in assent: Treat the turtle industry as any good businessman treats his business. Extract profits by harvesting, but don't milk off as profit the small part necessary to keep the business going. Give continuing attention to maximum utilization of all portions of the turtle harvested. Plan on continuing investment, both initial risk investment and regular reinvestment. Allow for research and development studies directed toward growth goals, improvement of efficiency in operations, and determination of the ultimate potential of the business.

The first concrete local action likely to be recommended in most instances is the establishment of appropriate hatcheries for turtle eggs. Designs and operational methods have been worked out, and modification to local circumstances should present no major problems. Capital costs per hatchery could be very small (on the order of U.S.\$100 per year); costs of appropriate hatching eggs and caretaker labour (approximately 3 man-months per year) would vary from place to place.

A second action likely to be strongly recommended is the best practical approach which can be made to a "creel census" in each area. This would give essential information on the age and sex structure of the

local populations and should be preliminary to any regulations on the "take" of turtles, either in terms of size or according to season.

Tagging-release programmes will be strongly indicated in many cases; such operations are more practicable in some areas than in others. There is no other way available to determine the geographic scope of the problem in any one area, and such activity brings a wealth of other information of direct applicability to management practices.

It would be useful and wise to consider restrictive regulations only after several years of preliminary fact-finding. During this time, much can be done to elicit public support and interest in intelligent management of the marine turtle resource; after appropriate educational extension work, restrictive legislation may come as a response to public demand from the very fisherman who would otherwise feel most oppressed by the new rules.

Government bodies can do a good deal to assist in finding and developing new markets for turtle products and sometimes a smaller "take" from the wild populations can be made into a larger gross product in terms of cash. Government would probably have to take the lead with most of the necessary fact-finding work and with any pilot programmes in turtle culture. The author has no personal familiarity with exact circumstances in the Pacific Islands, but would venture the guess that actual culture pond work on captive young turtles might turn rather quickly into a paying business.

In the long run, major culture projects should be kept in mind. There is general agreement in many circles that it is now, or will soon be, feasible to enter operations in turtle farming which will be a counterpart of the beef industry on land. The Pacific Islands are thought by some to be the optimum sites for commencement of such an industry.

Recommendations for Action by SPC

It is recommended that the Third Technical Meeting on Fisheries adopt a resolution recognizing the present importance and future potential of marine turtle fisheries in the Pacific Islands, the danger of depletion of wild turtle stocks, and the need for early action to determine the nature and scope of the problem and appropriate corrective measures.

It is hoped that the Meeting may recommend to the Commission the planning and financing of appropriate surveys and studies directed toward determination of the present status of the marine turtle populations in the Pacific and their good management as a replenishing resource. Further, it is hoped that approaches may be made at official levels to appropriate Governments and International Agencies for financial support to undertake exploratory programmes in turtle culture and wild crop management, turtle product development, and market exploration.

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