

SUMMARY OF SESSIONS

FRIDAY—NOVEMBER 18.

Chairman—ROBERT H. WILLIAMS, Assistant Director, Marine Laboratory, University of Miami, Coral Gables, Florida.

**Recommendations for the Protection and Rational
Exploitation of the Sea Turtles**

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A DISCUSSION on the above subject was scheduled at the request of the Caribbean Commission and of certain West Indian governments. Unfortunately there were in attendance only a small number of fishery scientists or administrators well acquainted with the problem.

Questions raised during the discussion included problems common to all fisheries in the region. It was clear that more careful and detailed collection of statistics is necessary in order to give an accurate evaluation of trends within the industry and of the condition of the turtle populations themselves. The limited statistics available suggest that the condition of the population varies considerably from place to place. In some places the average size of the turtles caught indicates no serious overfishing, whereas in a few localities the dwindling size suggests that the adult population is being depleted.

More often it appears that, although there has been no serious drop in average size, there has nevertheless occurred a decided drop in numbers. In the absence of catch-per-unit-effort data this is difficult to estimate accurately. The reduction in numbers is sufficiently obvious, however, to suggest that the breeding potential has dropped in many areas which were previously more productive but which have not suffered a marked decrease in average size. The causes of this appear to lie in interference with the nesting female, the eggs, or the newly hatched turtles. The interference may be by direct capture of turtles at this period of the life history or it may be the result of the invasion of the breeding beaches by the activities of mankind which tend to prevent their use by nesting turtles.

It was concluded, therefore, that regulation of the industry should aim at rigid prohibition of taking eggs or of catching turtles upon the beaches at any time of the year.

Next in order of importance from a conservation viewpoint is the enforcement of a size limit. Since it is effective both in maintaining the breeding potential and also in preventing overfishing, the minimum size regulation is a valuable safeguard. A size of at least 75 lbs. for the Green Turtle and 25 lbs. for the Hawksbill Turtle is recommended as the minimum size limit. Further investigation is needed to determine the size at which sexual maturity is attained and this will modify ideas as to the desirable size limits.

Protection of turtles during the breeding season is not, in itself, of any direct

value in conservation. Its value lies in giving female turtles extra protection during a vulnerable period of their lives. It is far more important, however, to safeguard the eggs and to prevent damage to the hatchlings leaving the beaches. To the extent that a closed season cuts down the catch to a desirable optimum it is useful. It would be economically sounder and better conservation practice to allow capture of suitably sized adults at the time and place when they are most easily captured, while protecting the stocks by setting a maximum catch limit in each locality, and while protecting recruitment by rigid enforcement of the egg-taking prohibition.

Interference with the breeding potential by egg taking and capture of nesting females is probably the most serious cause of decline in production. It is equally probable that increasing the breeding potential by care of the breeding females and hatchlings would lead to an increase in production. The amount of increased production would not necessarily justify these measures economically, and any proposal for turtle cultivation or farming should be carefully investigated from the viewpoint of financial cost compared with the probable increased production.

The problem of whether to raise adults in captivity for breeding purposes or to concentrate upon care of the offspring from natural nesting is a purely local one which should be decided by a competent local fisheries officer, in consultation with experienced fishery biologists. It is also advisable to set up a central experimental scale turtle farm and hatchery in the most suitable locality in order that information from this may be distributed to the separate areas interested. This is preferable to the setting up of a Caribbean-wide project.

In setting up regulations for closed seasons and minimum size it is important to have accurate scientific data regarding growth rate, age of maturity and duration of breeding season. This and equally desirable information regarding suitable sites for breeding or cultivation should be sought by the local fishery officers where they exist. Information, now lacking in many places, as to the average weight, numbers produced and similar statistics, is very valuable in judging the trend of the industry, the possibility of over-fishing and the presence and extent of a decline. Every effort should be made to collect such data and to make it available at least in mimeographed form.

As an aid to enforcement it is highly desirable that regulations throughout the Caribbean be as uniform as possible.

The enforcement of regulations and the collection of information is greatly aided by educational activities which enlist the interest, understanding and sympathy of the fishermen. A brief, well illustrated and simply worded pamphlet, distributed through local officials, school teachers, Justices of the Peace, and constables, could bring about a considerable change in the attitude of the fishermen and go far towards enlisting their support in protection of the industry as well as their aid in collecting information.

Those engaged in the marketing of turtles point out that, except in the case of purely local sales, there is increasing difficulty in selling turtle meat. Modern distributing systems rely very much upon large volume sales, particularly in canned goods, and cannot handle effectively the comparatively small volume of turtle meat available. The relative decline of small volume luxury trades has actually diminished demand for turtles to the extent that in the Cayman Islands it is claimed that a greater volume of turtle meat can now be produced than the demand calls for.

From an economic viewpoint it would seem more desirable to encourage domestic consumption and inter-island trade rather than attempt to revive a

luxury or semi-luxury trade with the United States or Great Britain, particularly in view of the present considerable imports of protein food into the Caribbean area. Where the demand exists, however, its satisfaction provides undeniable dollar credits. It would also seem advisable to encourage in every way possible the domestic manufacture of costume jewelry and ornaments and the decoration of toilet accessories with turtle-shell, rather than shipping the raw shell; thus retaining a larger share of the revenue for the country of origin. This should appeal to foreign importers because of the lower cost of handicraft labor.

Potentialities of the Caribbean Fisheries and Recommendations for their Realization

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THE FISHERIES RESOURCES of the Caribbean region are capable of being exploited to a greater extent. Larger landings can be made by opening new grounds, making a greater range of species available to the consumer, and taking better advantage of seasonal abundances of certain migratory species.

For the island areas of the Caribbean, such as the West Indies, where local fish production is below the level of demand, the problem of increasing the supply falls into two parts, those of production and distribution. In the Central American states, the problem of absorbing larger catches involves the creation of a demand for fish. Attention is focused on the problems of production and distribution in the areas which are in need of increased landings.

In areas where the level of production is too low to satisfy consumer demand, certain methods may be applied to increase production. The most practical way is the moderate improvement of existing fishing gear and methods, together with the gradual introduction of motors for the present fishing craft. The introduction of complex mechanized gear from other regions is not practical in most cases, but the use of simple inexpensive gears from other regions should increase production in many instances. Examples of such gears are the unjang,* used in conjunction with a seine, the tuck seine, trammel nets, lampara nets, various trolling lures, and long lines.

Before new fishing methods can be introduced and present gear improved, arrangements will have to be made to instruct the fishermen in the use of such gear. It is suggested that local fishermen should be employed by the governments as fishery officers to teach their fellows in the use of these improved methods. In each region there are fishermen whose level of industry and intelligence is sufficiently high that they would be suitable as instructors.

It is particularly desirable that local men with an intimate knowledge of the language and customs be employed for instruction work, rather than outside "experts" whose influence is transient. It is considered that the success of such a scheme of education depends largely on what might be termed "follow-up." Many schemes for increasing fisheries production in the Caribbean region have started with promise but have ultimately failed because native fishermen have

*An anchored clump of coconut leaves marked by a float, which serves to attract fish.