

Manatees of Guiana

HAVING recently returned from a conservation survey of manatees in British Guiana, we now put forward our views about the present status of these animals and their suggested deliberate use for the clearance of woods from artificial waters. More detailed information will be published elsewhere.

American manatees still live, but in small numbers, in many places around the Gulf of Mexico and the Caribbean Sea. The sub-species on the coasts of Central and South America is *Trichechus manatus manatus*, while *T. manatus latirostris* is found on the Florida peninsula. Both sub-species occur in the coastal rivers and in the sea and both grow to a length of about 10–11 ft. and a weight of about 1,000 lb.

In British Guiana the manatees live primarily in the rivers of the coastal plain. Nowhere can they be said to be abundant: nor should they be described as rare, though they are certainly less frequently seen than formerly, suggesting greater scarcity. The increasing use of powered boats, including dug-out canoes with outboard engines, is probably scaring the animals away from many reaches of the rivers and so restricting their distribution. Also they are far from being immune from casual slaughter for food despite the protective legislation so wisely introduced in 1961. But they have not, in recent times, been deliberately hunted to an important degree, though at earlier dates it seems that they suffered an active fishery.

Venezuela probably also contains a considerable stock of these manatees, but information from here and from countries farther west is inadequate. Surinam has fewer than British Guiana and farther east the coastal plain disappears and there are no suitable rivers. In the Amazon Basin the formerly large stock of *Trichechus inunguis* seems to be sadly depleted following regular hunting for meat and hides which probably still continues. This is a smaller animal which seems to be restricted to fresh water.

Little information about the life-history of *T. manatus manatus* is yet available and it is now difficult to obtain without unsuitable and deliberate killing. It seems that the animals are slow breeders: young are very rarely seen. Evidence from captivity suggests longevity. In habits manatees are shy and unobtrusive, unable to leave the water and only appear at the surface to breathe, feed or occasionally lie at rest. They feed entirely on vegetable matter, which may be rooted on the bottom, floating on the surface or growing on the banks close above the water. They are largely unselective in their feeding and will eat any plants which are soft enough to be torn off by the muscular lips. Manatees tend to be gregarious.

In 1960 Mr. W. H. L. Allsopp, British Guiana fisheries research officer, directed attention to the fact that in certain circumstances manatees could be used for keeping water channels clear of both floating and standing vegetation¹. This revival of interest in these animals received world-wide publicity, for it coincided with the problem of excessive wood growth in the new Lake Kariba. There grew up much exaggerated views on the useful potentialities of manatees as weed clearers if translocated to distant lands. However, for large areas of water the numbers needed to have any significant effect would seem to make the idea quite unrealistic. The picture began to be restored to its proper perspective by the publication of a paper by the Fisheries Division of the U.N. Food and Agriculture Organization in 1961².

Yet under particular conditions in British Guiana the local manatees are beginning to prove themselves efficient in weed clearance. They are being so used by the Department of Drainage and Irrigation on an experimental basis; and following a programme initiated by Mr. Allsopp, some seventy individuals have been caught since 1959 and introduced into channels varying in width from about 6 ft. to 60 ft. Reports on their performance are encouraging, and catching on a small scale continues. Further, in the Georgetown Waterworks two large ponds, about 150 and 250 yards by 15 yards, have been kept completely clear since 1950 by three manatees. However, the number of waters where these animals can be used efficiently is very limited, for they are easily disturbed by traffic and vulnerable to illicit human attack in restricted areas. The need to use the water channels for transporting cane makes it impracticable to use manatees in the sugar plantations.

Though potentially economic in a limited number of water ways, this use of manatees is at present all too expensive from the point of view of the stock. Despite improvements in technique, the losses in catching and transport are high. But even more important is the fact that there has been no breeding (apart from occasional births in the Georgetown Botanical Gardens some decades ago). Until this serious deficiency can be overcome, and manatees can be induced to breed regularly in a state of semi-domestication, the large-scale use of these animals for weed clearance cannot be sensibly recommended. Although the British Guiana stock may be able to survive under present pressures, it certainly could not stand the removal of large numbers of expendable individuals.

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¹ Allsopp, W. H. L., *Nature*, **188**, 762 (1960).

² F.A.O. *Fish. Biol. Tech. Paper* No. 13 (Sept. 1961).

Effect of Skeletal Muscle Homogenates on the Differentiation of the Chick Chorio-Allantoic Membrane

THE hyperplastic and metaplastic effects of muscle homogenates and muscle extracts on the chorio-allantoic membrane of the chick have recently been the objects of a number of investigations¹⁻⁴. Van Haefton contends that cell-free muscle homogenates pipetted on to the chorio-allantoic membrane can induce the development of non-striated 'myocytes' within the mesoderm of the membrane³. Ebert¹ has also reported the induction of occasionally striated 'muscle' cells following the introduction of ribonucleic acid extracted simultaneously from chicken cardiac muscle and Rous sarcoma virus. Ebert recognizes the possibility that van Haefton has observed the proliferation of cells remaining in the 'cell-free' homogenate rather than a response of the membrane itself². Wilt and Stolz⁴ have recently repeated the experiments of van Haefton with similar results. They conclude that the non-striated, oriented, elongated cells found within the chorio-allantoic membrane mesenchyme are of host rather than graft origin, thereby representing a genuine response of the chorio-allantoic membrane to components of the muscle homogenate. They further conclude that