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Discovery of a Large Population of Dugongs off Brisbane, Australia*

The Dugong (*Dugong dugon*: Sirenia) is considered to be vulnerable to extinction, uncontrolled exploitation having seriously depleted its populations throughout most of its range of distribution along the tropical and subtropical coasts of the Indian and western Pacific Oceans (Anon., 1976). In Australian waters Dugongs have been the object of commercial fisheries in the past (Cilento & Lack, 1959), they are still captured for food by indigenous people (Heinsohn *et al.*, 1977). Aerial surveys begun in northern Australia in 1974 have shown, however, that large aggregations of Dugongs still occur in remote areas (Heinsohn *et al.*, 1976b), and herds of up to 600 have been seen along the isolated east coast of Cape York (Heinsohn *et al.*, in press).

It has been suggested that in Moreton Bay (the southern limit of the Dugong's normal range in eastern Australia), Dugong numbers have been depleted for many years (Cilento, 1932; Cilento & Lack, 1959). This depletion has been attributed to extensive exploitation in the past (Cilento & Lack, 1959) and the proximity to the large city and metropolitan area of Brisbane (total population almost 1 million). Although it was thought that there were only a few Dugongs remaining in Moreton Bay, it was also suggested that numbers were increasing again (Bertram & Bertram, 1973).

We now report the presence of a resident population of at least 300 Dugongs in Moreton Bay, observed on 12 monthly aerial surveys of the region in 1976 and 1977. It is uncertain whether this large population has been overlooked, or whether there has been a substantial recovery in recent years. Many large animals are seen, and the number of calves (at least 10% of one group of 154 animals in May 1977) suggests that the population may be relatively stable or even increasing.

Dugongs mainly occur in the eastern part of the Bay, approximately 30 km from the city of Brisbane, in shallow waters where seagrasses are abundant (Fig. 1). One Dugong was seen feeding within 3.5 km of a heavily urbanized and industrialized area of the west shore of Moreton Bay, and others have been seen in the centre of the Bay off the mouth of the Brisbane River. The following six seagrass species

are present in the Bay: *Zostera capricorni*, *Halodule uninervis*, *Halophila ovalis*, *Halophila spinulosa*, *Cymodocea serrulata*, and *Syringodium isoetifolium* (Young & Kirkman, 1975). All of these except *Syringodium* are known to be eaten by Dugongs in Queensland waters (Heinsohn & Birch, 1972), and it is likely that *Syringodium* is eaten as well.

At present, the principal areas where Dugongs are seen are free from intensive small-boat traffic and from the types of commercial net-fishing which pose major threats to this species in other parts of the world (Bertram & Bertram, 1973; Heinsohn *et al.*, 1976a). By happy coincidence one grazing area of major importance occurs within a fisheries habitat reserve (Anon., 1977).

However, Dugongs do move *en masse* between regions, and they have been observed crossing an important boat channel, South Passage, in moving from one grazing area to another. Many boats of small and medium size use

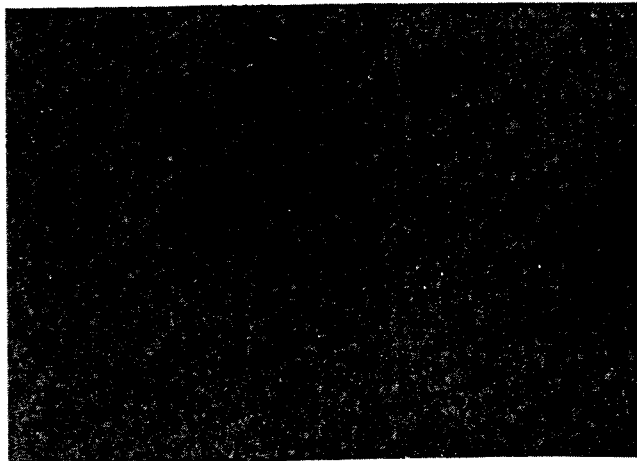


FIG. 1. 28 Dugongs of a group of 118 in Moreton Bay, photographed during an aerial survey on 2 August 1976. At least 7% of the whole group were calves.

South Passage, and we have had verbal reports of Dugongs being killed by boats in the region. During surveys we have seen quite large boats pass within 1 km of an aggregation of 170 dugongs. In Florida, U.S.A., another species of sea cow, the Caribbean Manatee (*Trichechus manatus*), which lives in proximity to human populations, is killed in large numbers by boats and barges (Campbell & Powell, 1976).

Although Dugongs are thought to be vulnerable to extinction and have become nearly extinct in many areas (Bertram & Bertram, 1973), it is clear that populations can survive, and possibly even recover, close to densely populated and industrial areas—provided direct and incidental exploitation is prevented and essential seagrass areas remain undisturbed.

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One Europe—One Environment: A Manifesto

The European Environmental Bureau (EEB), which brings together many of the major voluntary environmental bodies from the nine Member States of the European Economic Community (EEC), is already educating the candidates for the direct elections to the European Parliament. 'One Europe—One Environment' is not the manifesto of some new political party but is designed to influence existing parties. Versions now exist in all Community languages.

The manifesto is more than a catalogue of practical measures. It achieves coherence by making explicit the links between environmental policy and many other policy areas, and it starts with a call to rethink the concept of economic growth. As far as the European Community is concerned, this process began in 1972 with the declaration that 'economic expansion is not an end in itself'. But the EEB wants the process formalized by an amendment to Article 2 of the Treaty of Rome. What is required is that 'Europe should invent a new industrialism—a mature pattern of growth—that will enable its own great population, and those of other regions, to live more fully, yet press more lightly on the planet.' 'Mature growth' it appears is a more subtle concept than 'no-growth'.

In a 'mature economy', two corporate objectives should be added to the conventional objectives of profitability, full employment, maintenance of essential goods and services, and export earnings. These two are: resource thrift and the concept of sustainability. The Manifesto goes on to propose certain measures to do this and asserts that these could help to increase employment. The Manifesto, indeed,

sees no conflict between environmentally acceptable policies and full employment. The Common Agricultural Policy needs reform, however, because it is not part of the policy to optimize the use of indigenous resources. We must be prepared to pay for long-term stability and a number of unquantifiable benefits such as landscape protection.

On energy the Manifesto says 'we must distinguish need from demand, and curb needless demand.' Emphasis 'should be placed on heat, the form of energy most required, instead of on electricity. Economies of scale need to be re-examined. The Euratom Treaty, which calls for 'the speedy establishment and growth of nuclear industries', must be amended.

The Manifesto continues with sections on transport, land-use planning, the cultural heritage, conservation of the natural environment, pollution, health, and decision-making. It concludes by addressing some practical suggestions to the European Parliament itself, when once it has been elected—such as the establishment of a Parliamentary Committee exclusively concerned with environmental measures.

Copies of the six-pages-long Manifesto are obtainable from the EEB's Secretary-General, Hubert David, 31 Vautierstraat, 1040 Brussels, Belgium.

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