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CORALS AND THEIR VALUES

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Corals are environmental ornaments when they develop into colonies, reefs or ledges. A coral is a lime-secreting marine polyp, mainly living in colonies in inter-tropical seas. Since corals can only grow in clear, well oxygenated water, with plentiful supplies of microscopic life as food, they are restricted to undisturbed marine environment. They cannot live in fresh, brackish or running water. The temperature of water should be above 20^0C (68^0F), therefore, growth of corals is widespread in tropical seas between the latitudes of 30^0N and 30^0S. They grow, however, in the coastal water at a depth not exceeding 45-55m (20-30 fathoms).

Corals grow into elongated or circular-shaped colonies upon submarine basements. Consequent growth of corals one upon another forms a reef. A reef is composed of coral limestone, the accumulated skeletons of coral polyp colonies. The three main types of reefs are (a) fringing reef, (b) barrier reef and (c) atoll. Fringing reef is defined as an uneven platform of coral, fringing and attached to the coast, with a shallow narrow lagoon between it and the mainland, or with no lagoon at all, and with its seaward edge sloping steeply into deep water (Figure 1). Barrier reef is a coral reef parallel to the coast but separated by a lagoon of considerable depth and width. Atoll can be explained as a circular elliptic or horse-shoe shaped reef enclosing a lagoon. The first two types of coral reefs are abundant around the island of Sri Lanka. The well-developed coral reefs can be observed along the SW coast which stretches from Colombo to Tangalle. Scattered coral reefs are found along the Kalkuda and several other coastal tracts of NE Sri Lanka (Figure 2).

Origin of Coral Reefs of Sri Lanka

Even though the living coral reefs are abundant in submarine areas, some dead reefs can be observed along the coastal hinterland of the SW coast. These corals are buried by a 2-6 m thick soil layer in the Akurala-Midigama coastal tract. Field observations carried out by the author unravel that the buried corals are of two types: 1) accumulated debris washed off onto former shore zones by storm surge: and 2) reefs developed into successive levels when the sea level of Sri Lanka rose upto +5 m during the period between 4000 and 6000 years before the present (Weerakkody, 1988). When the present coastal land areas were submerged by the high sea level throughout a long period of time, the coral reefs began to grow along the SW coast. They emerged afterward due to the subsequent fall of sea level. The oldest coral reefs of Sri Lanka are from the SW coast and their age is marked as around 6000 years before the present. The Hikkaduwa living reef exhibits successive levels of growth from east to west. The author argues that the successive levels indicate a marine regression which occurred 4000 years before the present (Weerakkody, 1990).

Uses and Exploitation of Coral Reefs

The coral reefs of Sri Lanka, as elswehere in the world are attractive ecosystems which are utilized for promoting tourism, fishing, scientific education, etc. of a nation. Unfortunately, they are used in Sri Lanka under destructive economic practices. The corals commonly known as limestone (hunugala) are used as raw material for fertiliser and ceremic industry and as a construction material. Sources of lime in Sri Lanka are threefold; a) the Miocene limestone mined from the northwest area and Jaffna peninsula, b) the crystalline limestone derived from quarries of the Central Highlands, and c) corals mined and collected from SW and NE Sri Lanka (for details, see Cooray, 1984). About 50% of the total production of limestone comes from corals mined in the southwestern part of the island. Coral mining activities of this part can be divided into three categories, namely:

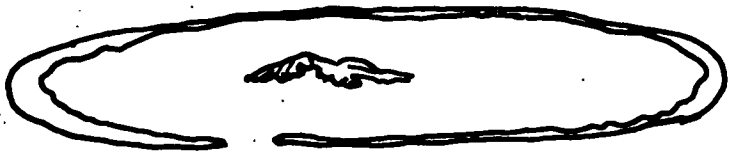
1) gathering corals by breaching living reefs situated along the present onshore area,

2) collecting debris washed off onto the shore,

3) mining buried coral reefs which are preserved in the coastal hinterland.

The corals produced by the breaching of living reefs is a major environmental problem of Sri lanka. This malpractice causes several disturbunces and geomorphological imbalances of the coast. Destruction of living reefs degrades marine habitats which are characterized by breeding grounds of fish and many other marine organisms. On the other hand, reefs act as shields against the sea waves beating towards the beach. Therefore, they protect the coast against high impact of wave energy. Breaching of reefs enhances coastal erosion.

FRINGIN REEF



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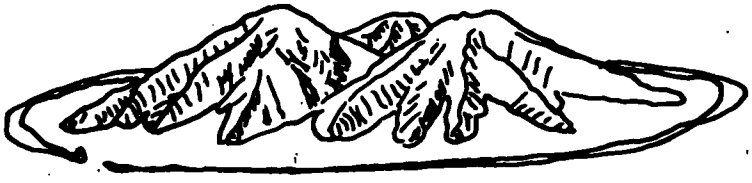

BARRIER REEF

Figure 1: Three categories of coral reefs. See for details, Lobeck (1967)

The mining activities concentrated upon buried coral reefs along the hinterland create some environmental problems such as land pollution, soil degradation, health hazards, etc. Mined holes are not filled again by man or nature. Therefore, they remain as stagnant bodies of brackish water and help in breeding activities of mosquitoes. Several deaths caused by drowning in these water bodies have been reported during the past decades. Other damage to the environment induced by mining activities is the loading of subsoil onto the topsoil. The subsoil spread upon the surface of the ground cannot be used for agriculture because the subsoil lack humus and nutrients which are utilized by plants. However, more than 25,000 people earn their living from mining activities. They produce some 9000-11,000 tones of corals annually.

The quantity of corals produced by the above mentioned three categories of coral miners is shown in Table 1.

Table 1: Annual Production of Corals along the Coastal Zone

Type of activity	Amount in tons	Percentage
Mining buried coral reefs	10,400	57.58
Collecting debris on the shore	5377	29.78
Breaching living reefs	2282	12.62

Source: Economic Review

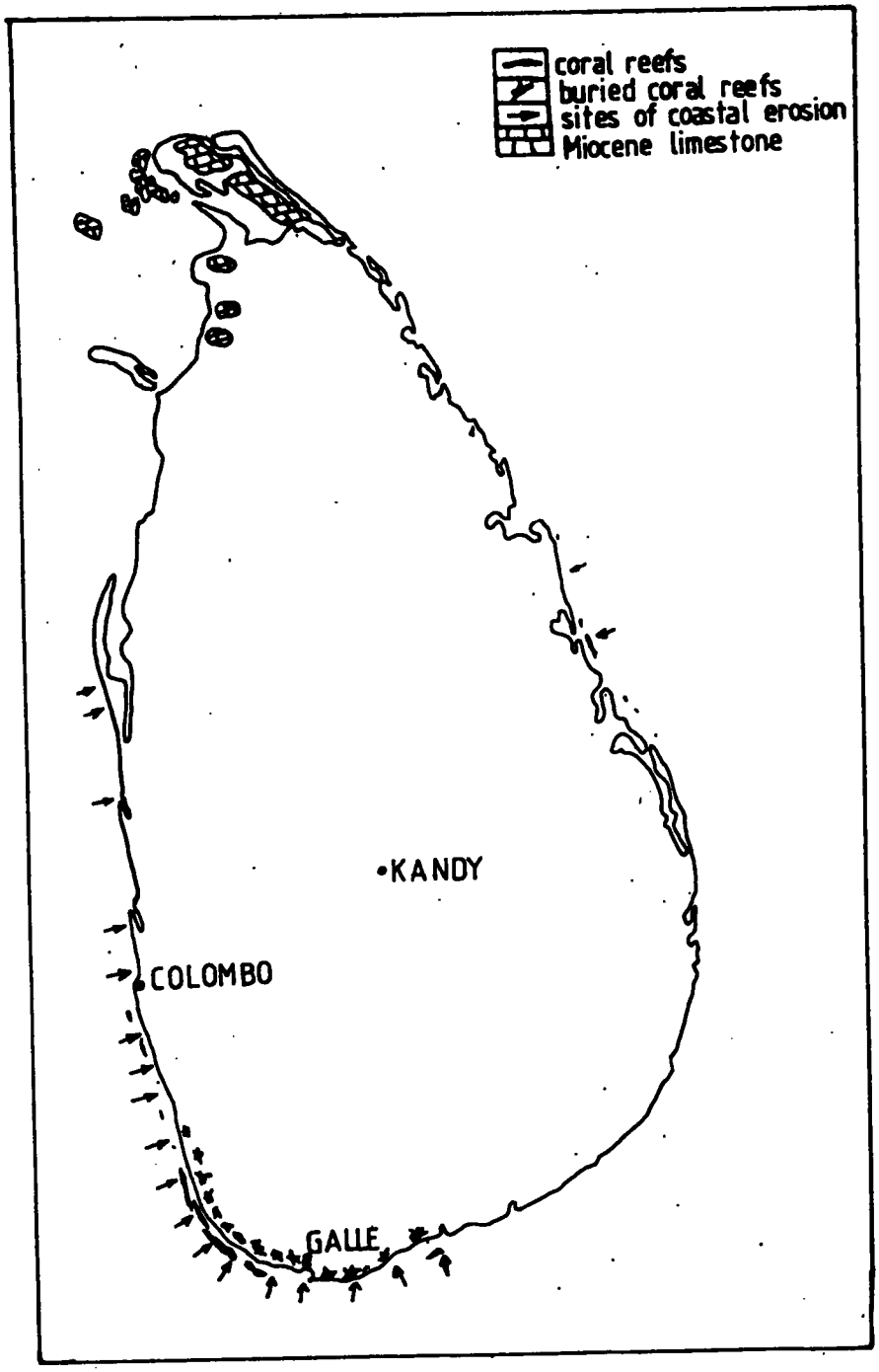

Figure 2: Distribution of coral reefs and Miocene limestone of Sri Lanka. Note the sites of coastal erosion along the SW coast.

Corals should be baked in a kiln to produce quicklime. Accordingly, baking of corals is a part and parcel of the industrial process. More than 300 kilns are situated in the area between Ambalangoda and Matara. Since a load of coral is baked for several days, thick smoke can be observed throughout the year specially along the Galle-Ambalangoda road.

The price of a lorry of quicklime at Midigama is about Rs.3000/= while at Akurala it increases upto Rs.3500/= to 4000/=. However, most kiln owners complain that their profit is marginal due to the interference of middlemen. Labourers and other workers complain that they are underpaid and exploited. They receive daily wages depending on their sex and experience. Table 2 shows the daily average wages at Akurala mine fields.

Table 2 : Daily Wages of Labourers at Akurala Mine Fields

Type of labourer	Average wage in Rs.
Skilled labourer	112.50
Unskilled labourer	
Male	70.00
Female	50.00
Child	32.00
Water pump operater	117.00

The average income of a mine owner depends on the content of corals in his mine. However, no one can assure how much can be produced by a mine. The risk is so great in the Midigama area since every land subject to mining does not essentially contain corals. Information given by mine owners unravel that their profits do not exceed Rs.10,000/=. However, the profit depends on the size of mine and other factors such as condition of drainage, thickness of the upper layer of soil, quality and quantity of corals contained in the mine, etc. It is difficult to get information on the real incomes of mine and the kiln owners.

The low wages and low profits suggest that the mining of corals is not a profitable economic activity. Comparision between low income and low profit, and environmental damages induced by mining suggests that this malpractice should be stopped and the work force engaged in it should be re-employed in other profitable sectors of the economy.

References

Cooray, P.G. (1984) - An Introduction to Geology of Sri Lanka (Ceylon). Second Revised Edition, National Museums of Sri Lanka Colombo.

Economic Review - An special issue on Coastal Erosion Hazard. Peoples Bank. Colombo.

Weerakkody, U. (1988) - Mid-Holocene Sea Level Changes in Sri Lanka. Journal of the National Science Council of Sri Lanka, Vol.16, No.1. pp. 23-37.

Weerakkody, U. (1990) - Geomorphological Evolution of the Southern Coast of Sri Lanka; Coastal Evolution Since the Mid-Holocene Period and Historical Coastline Changes. A report submitted to Natural Resources, Energy & Science Authority of Sri Lanka (NARESA), 302 p. Colombo.

Lobeck, A.K. (1967) - Geomorphology. MaGraw-Hill Book Company, NY.

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