

FOCUS ON THE ENVIRONMENT

(Clippings from newspapers and journals)

A private- and novel- experiment in coast conservation

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On July 30 this year, at the request of a friend, I visited him in Uswetikeyawa to look at the measures he has taken to try and stop the erosion of the beach in front of his house.

I was so impressed by what I saw that I feel that what Mr. Gamini Wickramasinghe is trying to do there deserves to be widely known. Hence this short article on what I consider to be a worthwhile experiment in coast conservation.

The stretch of coast north of Colombo harbour, from the mouth of the Kelani Ganga to Uswetikeyawa and beyond, is under-going severe erosion at this time of the year. There is also a heavy load of sand movement in the nearshore region and the various movements of the sea are complex.

Houses that were once on the beach, 40 or 50 years ago, are now no more, and their remains can sometimes be seen in the sea! That the coastline was much further to the west at one time is evidenced by the presence of two beachrock reefs in the sea.

Beachrock is known by geologists to form along the shoreline as a result of calcium carbonate being deposited in the sand by fluctuating groundwater, as can be seen today on the coast in the Chilaw sand spit (Fig. 1A).

Hence, any beachrock reef far out to sea marks a former position of the shoreline - and a former sea-level as well. Two such reefs can be seen at Uswetikeyawa (Fig. 1B).

One of them is several hundred metres west of the shoreline, and is marked by a line-of breakers; the other is just west of the present shoreline, and it is now the breaking point of the waves during the south-west monsoon.

Apparently one can walk right up to this latter reef when the monsoon is over. It, too, marks an older but more recent shoreline.

Attempts to prevent coastal erosion along this stretch of the coast range from piling boulders and blocks on the shoreline itself to the building of groynes at right angles to the shore.

For example, groynes have been built in front of the Pegasus Reef Hotel and the result has not been encouraging; the beach has built up south of the more southerly groyne, but increased erosion has taken place between the two groynes (Fig. 1C).

Mr. Wickramasinghe has a different approach to the problem of coastal erosion. He does not believe that putting masses of rock blocks on the shoreline will solve the problem. On the contrary, he feels that this method causes destruction of the land in the interior by the quarrying of large masses of rock.

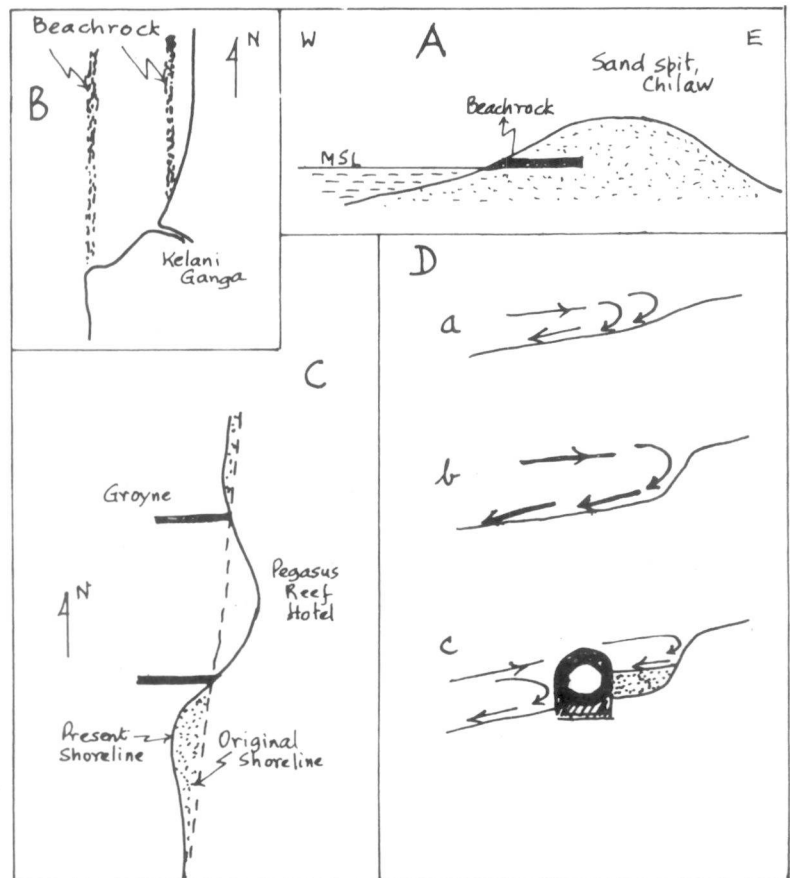


Fig. 1A. Diagrammatic section across the Chilaw sand spit to show the position of beachrock at the waterline.

1B. Diagrammatic sketch showing positions of the two beachrock reefs north of Colombo.

1C. Sketch plan showing changes in the shoreline opposite Pegasus Reef

Hotel after construction of the groynes.

1D. Diagrams to show the effect of placing a rubber tyre barrier on the shore.

a - original shape of shore.
b - shoreline after intensive erosion during south-west monsoon.
c - build-up of beach behind barrier.

Furthermore, he thinks that instead of the negative approach of preventing erosion, which may, in fact, be an impossibility, one should have the positive approach of encouraging beach growth.

The method he has adopted for this approach was suggested in an article that he read, about the use of old tyres to encourage reefal growth and, as a result, the increase of the fish population in the artificial reef so created.

Mr. Wickramasinghe has adapted the methods described in the article to his own purpose and has placed on the beach a barrier to the under-tow that takes away the eroded sand from the beach (Fig. 1D and Fig. 4).

The barrier used by him consists of several old tyres mounted in parallel in a wooden box frame which is then filled with cement (Fig. 2).

The upper parts of the tyres are split lengthwise into two sections (Fig. 3) in order to reduce, somewhat, the undertow drag, and reinforced with iron rods.

These tyre structures are placed in line along the beach in front of his house a metre or so away from the shoreline (Fig. 4).

When the waves break on the shore and destroy the shoreline, the sand carried away by the undertow accumulates behind the barrier and is prevented from being taken away to the sea bed.

The success of the method so far, after a few months of being installed, can be seen clearly; where previously there was a sand cliff a metre or so high (Fig. 5), now there is hardly any sand cliff. The space between the barrier and the cliff has been filled in with sand (Fig. 4). Mr. Wickramasinghe hopes in future: (a) to place more structures close to the breachrock reef in varying positions, and (b) to place other barriers in relation to the present one.

He hopes that these will encourage reefal growth and so encourage the fish and oyster populations to move into the artificial reef.

What is most strange is that immediately after my visit to Mr Wickramasinghe, I saw an article in Newsweek of 27-7-92 in which the identical model of a barrier to prevent the eroded sand from being carried away by the undertow is described and pictured (Fig. 1D).

And still more strange, a night or two later, the TV news showed the Coast Conservation Department (CCD) attempting to do the same thing by placing large, plastic bags filled with sand on the beach to form a similar sort of barrier. My reactions to what I saw on the screen were that: (i) the bags would soon be covered by sand, unless the barriers were high enough, (ii) the bags would probably perish soon through the action of sea and air, and (iii) once again sand was being removed from the shore to fill the bags.

One important advantage of Mr. Wickramasinghe's method is that he is recycling used tyres, of which there must be thousands in the country today. What a good environmental conservation method this is, and one for which the Tyre Corporation should be most grateful, if it succeeds and if it is widely adopted.

Apparently, Mr. Wickramasinghe suggested his method to the powers that be, but his idea was poo-hooed as being impractical. That seems to be a great pity. Here is a private individual attempting and experimenting with a novel method of coastal conservation not tried before, and entirely at his own expense.

One would have thought that the CCD would at least be interested enough to monitor Mr. Wickramasinghe's experiment to see whether or not it

works and at what cost.

That they have not bothered to do so is, perhaps, a sad commentary on the attitudes of the professionals of this country to the amateurs. Mr. Wickramasinghe is a computer buff, not an engineer, and perhaps that explains it!

Fortunately, one or two friends to whom I mentioned the experiment were kind enough to offer to assist Mr. Wickramasinghe in whatever ways they could. That, indeed, is an encouraging sign for him, and one that will urge him to go on with his experiments and to monitor the results.

We must all look forward to knowing more about the experiment and the results in the future; and we wish Mr. Wickramasinghe every success in his efforts!

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Tyre barrier mounted on the shore behind which eroded sand has accumulated.



Mounted tyres slit vertically. (Daily News - 5.9.92)





