

CORAL REEF LONGLINE - an Alternative Gear for Small-Scale Fishermen?



The complete coral reef longline gear: 110 hooks or 18 sets, and an insulated box for bait.

Marine fish landings in Indonesia increased from 836×10^3 t in 1972 to 1.49×10^6 t in 1982. Small-scale fisheries account for 55% of these catches and for 90% of all fishermen engaged in this fishery. Still unexploited resources are estimated in the range of an additional 3×10^6 t. Why is it then that the actual catches are so much lower than the potential estimate?

Amongst major reasons that can be identified are the following:

- Indonesian fisheries are still in expansion.
- Stocks are overestimated (estimates are too optimistic).
- Socioeconomic constraints (conservative habits, part-time fishermen,

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reluctance to stay longer at sea) prevent the switch to offshore fisheries.

Could a fourth reason be that the extensive/efficient small-scale fishery is at this stage already depleting the recruitment stock of the offshore potential?

Analyzing the structure of small-scale fisheries in West Sumatra waters, we find reasons indicating the need for diversification.

- Amongst them are:
- considerable decrease of landings during full moon;
 - increase in use of explosives;
 - almost complete lack of gear for so-called "bottom species";
 - exploitation of coral reefs with non-conventional fishing gear;
 - decrease in catch per unit of effort (in the case of some gears).

The present small-scale fishery shows a very nonselective performance, that is why I emphasized trials for a selective gear, which could exploit the anticipated stock. A coral reef longline was constructed with priority on low cost and fast handling, suitable for small boats. The best outcome was a unit consisting of an

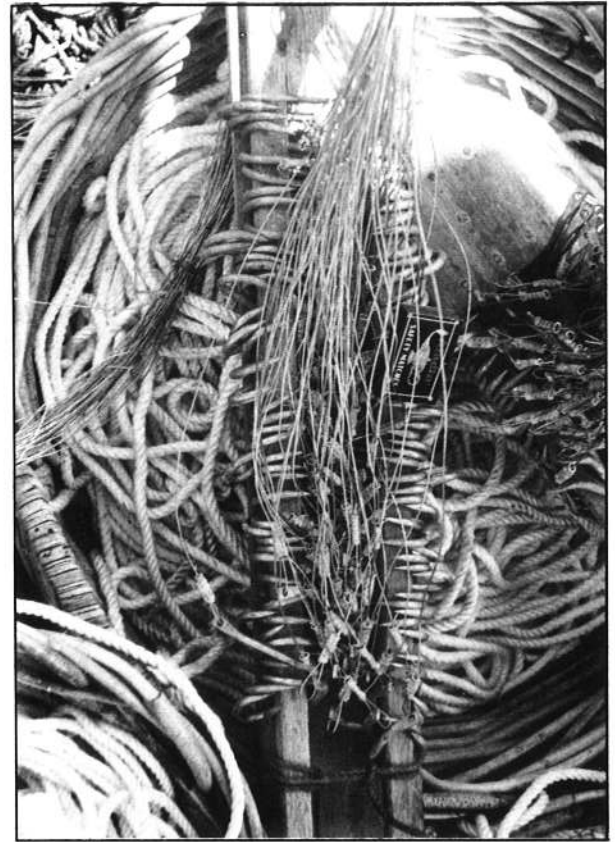
approximately 400-m line with 110 hooks, which can be baited and set in less than 1 hour and hauled in less than 2 hours. Once properly adjusted for a particular area, it can easily be operated twice during one night. For bait, the following were used: squid, mussels and mackerel. The predominant species caught were groupers (Serranidae), sweetlips (Haemulidae), snappers (Lutjanidae) and cobias (Rachycentridae). The best hook rate (3%) was achieved around dusk.

As the pure running costs of this gear are very low, a catch of one big grouper per night will already be profitable. The investment cost of Rp100,000 (US\$59) per unit is below the (expensive) cost of nets. The longline is a very suitable additional/alternative gear; it also hardly needs any space onboard. For details about technical setup, costs, setting and hauling procedures, etc., see the 1988 ADP-Fishery Section Report, "Commercial trials with a coral reef longline", by Kunzmann, available from the author.

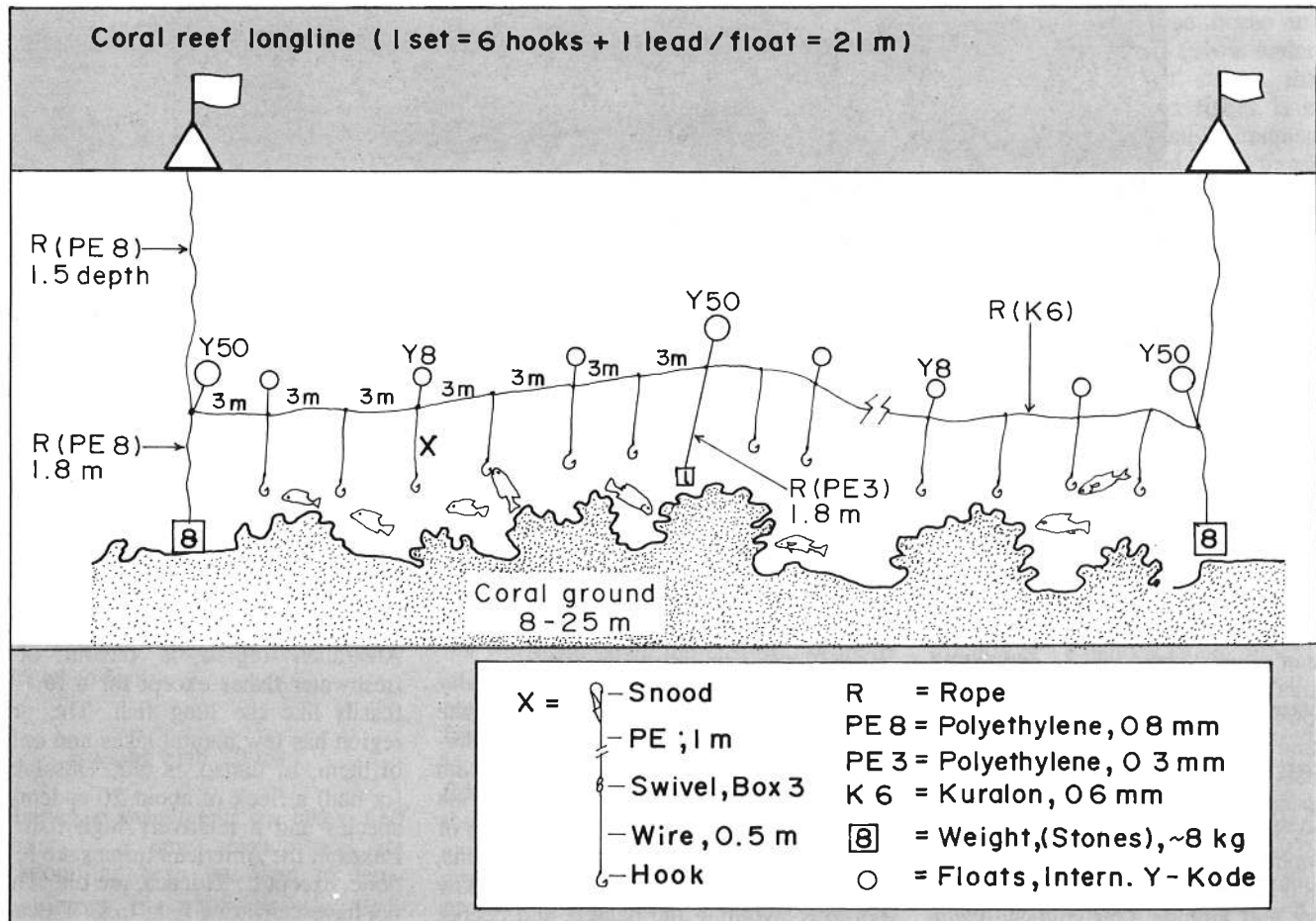
However, the exploitation of the highly complex multispecies coral reef fish

associations is rather delicate, particularly in terms of influence on recruitment. There is a risk that fishes are caught well before maturity. Using different kinds of baits and different hook sizes and operating in different depths, the coral reef longline can be adjusted to select mainly mature fishes, but proper identification of species is a must in order to determine size at maturity.

The coral reef longline is a reasonably good alternative gear for fishermen to use to improve income, especially during full-moon periods. Besides, it will hopefully contribute to a decrease in the use on explosives over reefs. ●



A close-up of the hooks.



Design and components of the tested reef longline.