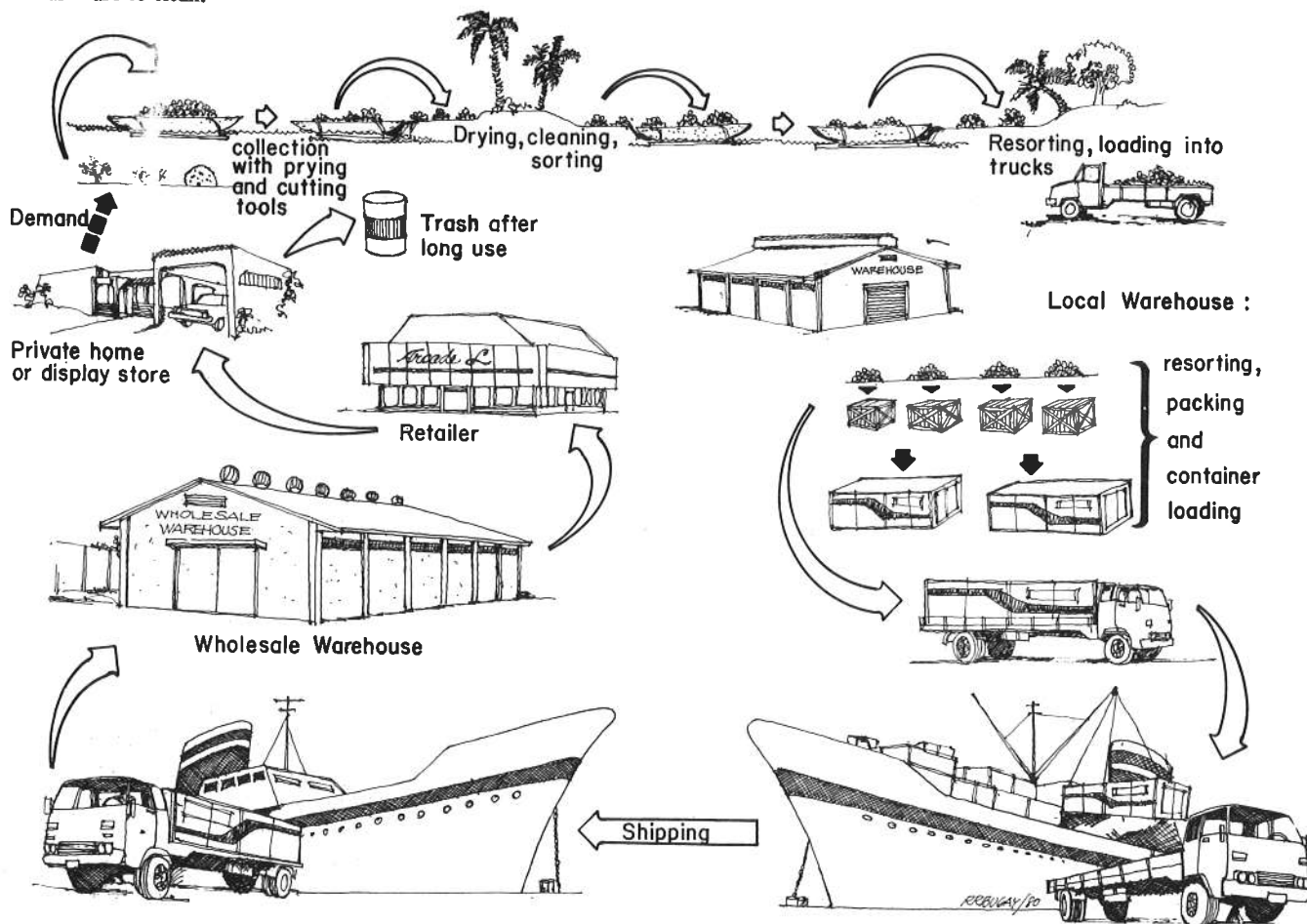


Fig. 1. Every piece of coral which reaches the consumer represents many others which were broken in transit. Often, no packing material is used until the coral is readied for overseas shipment. Once on display, the useful life of the coral is often limited by its tendency to attract dirt and dust in pores which are hard to clean.



PHILIPPINE CORAL EXPORTS: The Coral Drain

JOHN W. MCMANUS¹

The slow growth
of corals puts
their harvest in
the same league
as timber logging.

THE PHILIPPINES is blessed with some of the richest and most diverse coral reefs in the world. Unfortunately, these reefs are among the most heavily abused, in terms of coral harvest. Despite a nationwide ban on coral gathering, the Philippines appears to be supplying much of the coral sold by retailers throughout the world.

Besides being a vital link in the fisheries productivity of the country,²

the aesthetic aspects of the coral reefs have made them a unique source of income from tourism. On a typical reef, the intricate colonies of coral animals can be bright yellow, pink, blue, or practically any other color imaginable. Some of this coloration is due to the presence of zooxanthellae, the algal endosymbionts of reef-building corals, which serve as an important source of primary production. Filamentous algae in the coral skeleton and pigments in the tissues of the coral also contribute to the myriad of colors found in living colonies.

Corals are relatively slow growing throughout the world and the Philippines is no exception. In order to

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²See article by Murdy and Ferraris, p. 21.

approximate the age of some marketable coral colonies, figures are presented for two commonly exported coral genera. *Platygyra* is one of several genera sold as "Brain Coral." This represents a slow growing massive form. The genus *Acropora* includes some branching species sold as "Lace Coral." Not all of the species included in the mean growth rate figure would be sold under this trade name. However, the generic level figure allows us to roughly approximate how much time is required for a relatively fast growing branched coral to reach marketable size.

The growth rates in Table 1 represent the mean changes in diameter on two horizontal planes over a one-year period, based on photographs taken of coral colonies in the field. Because this was a field study, the corals were subject to factors, such as predation, which can cause large variations in growth rates from place to place.

As shown in Table 1, a single piece of coral may take anywhere from 2 to 20 yr (or more) to reach commercial size. This range of time puts coral harvest in a league with logging operations on land. Unlike replanted trees, however, the gross financial return to exporters of US\$0.02-\$0.50 for most corals may not make them worth the wait. This, plus uncertainties about settling and recolonization factors, make the idea of coral harvest management very unlikely at present.

The majority of corals exported from the Philippines are hermatypic or reef-forming corals. These are generally dried and cleaned, leaving a stiff but

often fragile white or grey skeleton which is used primarily to decorate table tops, fish tanks, and collectors' shelves. Blue corals (*Heliopora coerulea*), organpipe corals (*Tubipora musica*) and fire corals (*Millepora* sp.) are not true (scleractinian) corals but are similarly exploited. The black corals (*Antipathes* sp.), used in jewelry, and gorgonians, such as decorative sea fans, are also exported, but apparently in amounts small enough to present less of an environmental problem.

In the first 7 mo of 1977, just prior to a presidential decree banning coral gathering, over \$2 million worth of coral was exported from the Philippines. Given the price range quoted above, we can see that the number of corals exported during this period ran into many millions. After the ban went into effect, the coral warehouse owners were allowed to export existing stocks. A series of enforcement problems have since allowed many dealers to replenish their stocks and so maintain a large volume of export.

Each piece of coral purchased by a foreign consumer represents many pieces which were damaged and discarded along the route to the retailer. Many corals are about as fragile as fine china and only corals which show no appreciable damage are allowed to reach the foreign retailers. As Figure 1 illustrates, there are many points during the stacking, sorting, and transporting stages at which the corals are subject to breakage.

Coral is gathered by divers, using prying and cutting instruments which can cause much breakage at the reef

site. The coral pieces are piled into bancas (outrigger boats), to be shipped to a beach. Here the corals are cleaned, dried, and sorted by type. Later the corals are loaded back into the bancas and shipped to another beach, where a second sorting process takes place. The corals are stacked into trucks (often with no protection), to be driven along country roads to a warehouse. The best of the corals are wrapped in paper and packed for container shipping. The containers are loaded onto cargo ships for transport to a receiving port.

When they reach the importing country, the corals are shipped through one or more warehouses to such retail outlets as tourist shops and aquarium stores. Many of the remaining corals end up as display racks for jewelry and similar items. Others are bought by aquarists for decorating fish tanks. Many souvenir hunters buy them, without realizing they have been imported. (For instance, table *Acropora*, found only in the Indo-Pacific, is said to be a popular item in Florida shell stores.) In most cases, the corals become dirty or broken within a year and must be replaced. Now the demand is reinitiated and the destructive cycle starts again.

The major countries to which Philippine coral was exported in 1976 are listed in Table 2. It is interesting to note that some of these countries have coral reefs of their own, yet they still find it economical to import Philippine corals. That year, 67% of the volume of coral exports was to the United States. It is suspected that a large portion of the remaining exported coral was sold

Table 1. Coral growth rates and prices. Calculations here are for growth in two directions and apply only to colonies for which sales are based on colony width. When the height of certain coral colonies is used, growth in only one direction should be considered, i.e., one-half the change in diameter. This would lead to much higher age estimates.

Common name	Usual genus	No. of colonies measured	Mean diameter growth rate cm/yr	Sizes being sold (cm)	Approximate range for the ages of these coral colonies in years, (assuming linear growth)	Price quoted to importers (US\$/piece)
Brain Coral	<i>Platygyra</i>	13	1.3	13-18	10-14	0.15
				18-25	14-20	0.25
Lace Coral	<i>Acropora</i>	13	4.6	8-13	2-3	0.07
				13-18	3-4	0.12
				18-25	4-6	0.25

in other countries to tourists, many of them from the United States. Based on the sales of previous years, as well as on many informal reports I have received, it is likely the US still dominates the coral market.

Last August, the Coral Reef Committee of the 1979 Pacific Science Congress proposed that a worldwide ban be imposed on coral trade. Other workers have expressed hope that the US may take a major step, by banning the importation of illegally gathered corals. Apparently in anticipation of such a move, Gulf Coast distributors are said to be stocking up two to three years supply of corals. It is possible that this increased activity, should an effective ban not be imposed soon, could lead to a broadening of the existing market. This in turn could create new economic

pressures which might help perpetuate the market. Therefore, in order to remove the human predator from Philippine corals, tighter export laws locally and new import laws internationally must be enacted.

Further reading

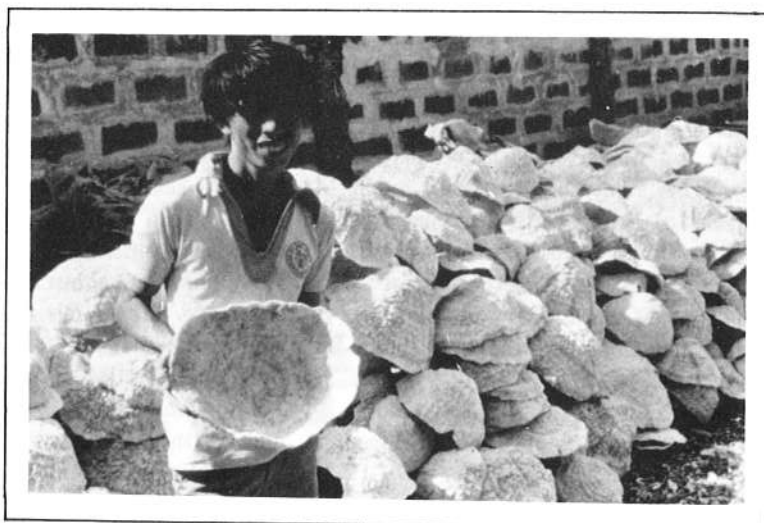
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Table 2. Exports of Philippine corals (Port of Zamboanga, 1976).*

Country	Volume (m ³)	% of Total
U.S.A.	1,234,350	67.45
Japan	168,439	9.20
Italy	116,109	6.34
Germany	92,672	5.06
United Kingdom	71,032	3.88
Holland	59,460	3.25
Spain	30,207	1.65
Greece	15,915	.87
Australia	13,470	.74
Belgium	9,485	.52
France	6,380	.35
Mexico	4,080	.22
Canada	3,060	.17
Netherlands	2,730	.15
Switzerland	2,700	.15
Total	1,830,089	100%

*Last year for which complete figures are available from the Bureau of Customs, Port of Zamboanga.



Top photo: Corals being packed for export from Cebu. Middle photo: Deep bowl coral (*Halomitra philippinensis*) at a coral warehouse in Cebu Province. Right: Container van waiting to be loaded. Giant clam shells (*Tridacna* sp.) and discarded corals in the foreground.