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An assessment of coral exploitation in Fiji

by

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Introduction

1. The exploitation of hermatypic (reef building) corals in Fiji has existed for quite sometime in coastal villages, for construction of sea-walls and fabrication of ornements by small-time curio vendors. Also, records from the Lands Department (Fiji Government) dating back to 1965 show the utilisation of coral boulders (F. Poritidae) in the construction of drains and soakage pits for septic tanks, as required by Suva City Council Regulations.

2. The first commercial exploitation of hermatypic corals for export began in 1985 and the first shipment was made in February the same year. This paper reviews the present exploitation practices of corals in Fiji, current yields and discusses the level of exploitation with respect to other factors.

Collection sites and methods

3. Present collection activity is confined to areas in Bau waters, on the East coast of Viti Levu, and recently, another site on Ovalau island (see Figure 1).

4. Collection is performed entirely by local fishermen, within their own fishing rights area, and coral is sold by the piece to the exporting company.

5. Collectors use snorkelling gear and a steel bar of approximately an inch in diameter and 2.5 feet in length, sharpened to chisel point at one end, to extract corals from the substrate. Each specimen is passed over to the boatman, who lays this out on the boat floor. Much caution is exercised to avoid damage to the specimen.

Packing

6. On reaching shore, collectors lay out the corals on bamboo racks or on plastic sheeting, on the ground, to dry for 1-2 days. They are then selected by species, measured, recorded and placed on the packing table for packing, using old newspaper for wrapping. These are then stacked in wooden crates specifically constructed for the export of corals. Measurements for these are 20" square by 29" tall such that 120 of these will fill up a 20' F.C.L. shipping container when stacked 10 rows of 4 across and 3 high.

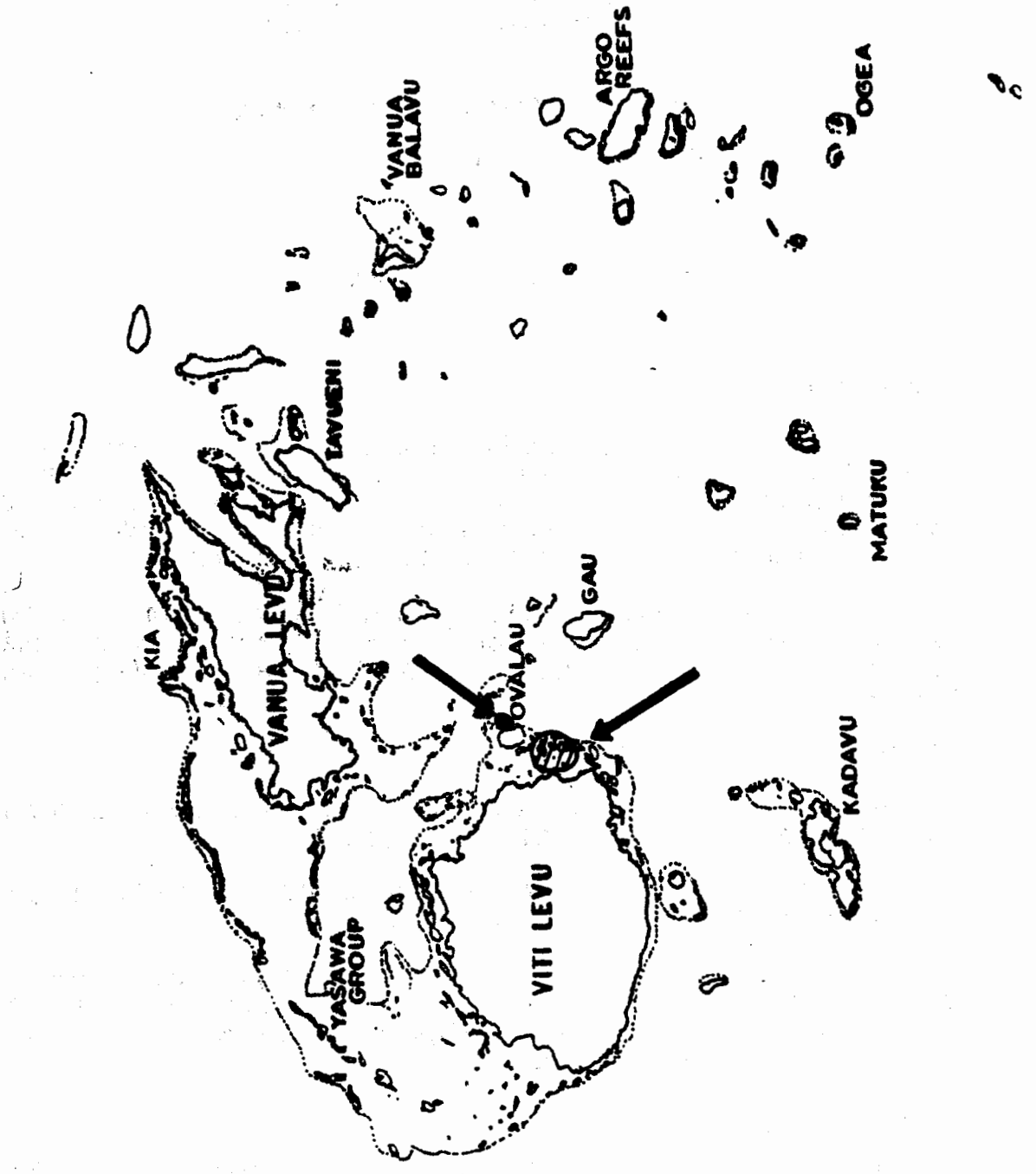


Figure 1: Coral collection areas in the Fiji group

Exports

Grades and prices

7. The grading unit used is inches across (diameter) and there is no difference in price for different species. Table 1 provides an example of typical composition by size of an export consignment.

Grades	Prices to collectors
5" -10"	15 cents/piece
10"-20"	20 cents/piece
20" and over	40 cents/piece

Table 1 : Typical size composition of coral harvested (from shipment made on the 31st May 1985)

Size	Quantity	Percentage
5" -7"	1900	28.6
7" -10"	2784	41.9
10"-15"	1715	25.8
15"-20"	211	3.1
20" and over	32	0.4

Export volume

8. Corals are exported by container, the numbers shipped since exploitation began are noted in Table 2.

Table 2 : Shipments made (containers)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
87	1	1	2	1	1	1	1	1	1	1	3	3	
86	1	1	1	1	1	-	2	-	2	1	1	2	
85	-	1	1	1	1	1	1	1	1	1	2	1	

Exploited taxa

9. According to the returns submitted by the exports, a total of 56 species (or species groups) of corals are exploited from eleven Scleractinia families and 3 non-Scleractinia family, as follows:

Scleractinia Families

Acroporidae	Merulinidae	Poritidae
Fungiidae	Mussidae	Faviidae
Agariciidae	Dendrophylliidae	Oculinidae
Pocilloporidae		Pectiniidae

Non-Scleractinia Families

Milleporidae	Stylasteridae	Tubiporidae

10. Table 3 lists exports of the various taxa by numbers for the years 1985-1988. Figure 2 depicts this graphically. The branching coral families are the most exploited whereas exports of the massive types are almost negligible. The free living varieties (Fungidae) are little exploited.

Management guidelines

11. There is currently no legislation restricting the harvesting of corals. A cautious attitude towards exploitation has been adopted in view of the Division's lack of local data on the resource. The introduction of a quota system will be investigated if exploitation shows sign of increasing. Zonation of harvesting areas has been recommended, with some, preferably most reef areas being protected from commercial collection.

12. Apart from the guidelines, recommendations based on our own surveys have been put forward to the collectors. Collectors have been advised to move operations to fringing reefs and inner lagoon reefs, rather than inshore reefs, as these nearshore reefs are affected by freshwater run-off and turbidity, and likely to be slow to regenerate.

Exploitation guidelines for ornamental coral

13. (Approved by Cabinet, August 1984)

1. Export permits to be required, and full listing of species exported to be supplied.
2. Management requirements for particular areas to be determined by consultation between the collector and the Fisheries Division.
3. Resource custodians to be involved to the maximum extent practicable in the harvest of corals.
4. Use of SCUBA gear for collection is prohibited

Discussion

Status of stocks

14. Attempts have been made in most countries to regulate ornamental coral harvests, in recognition of the increasing pressures to which coral reefs are subjected in many areas, and the complexity of the reef ecosystem of which they are an integral part.

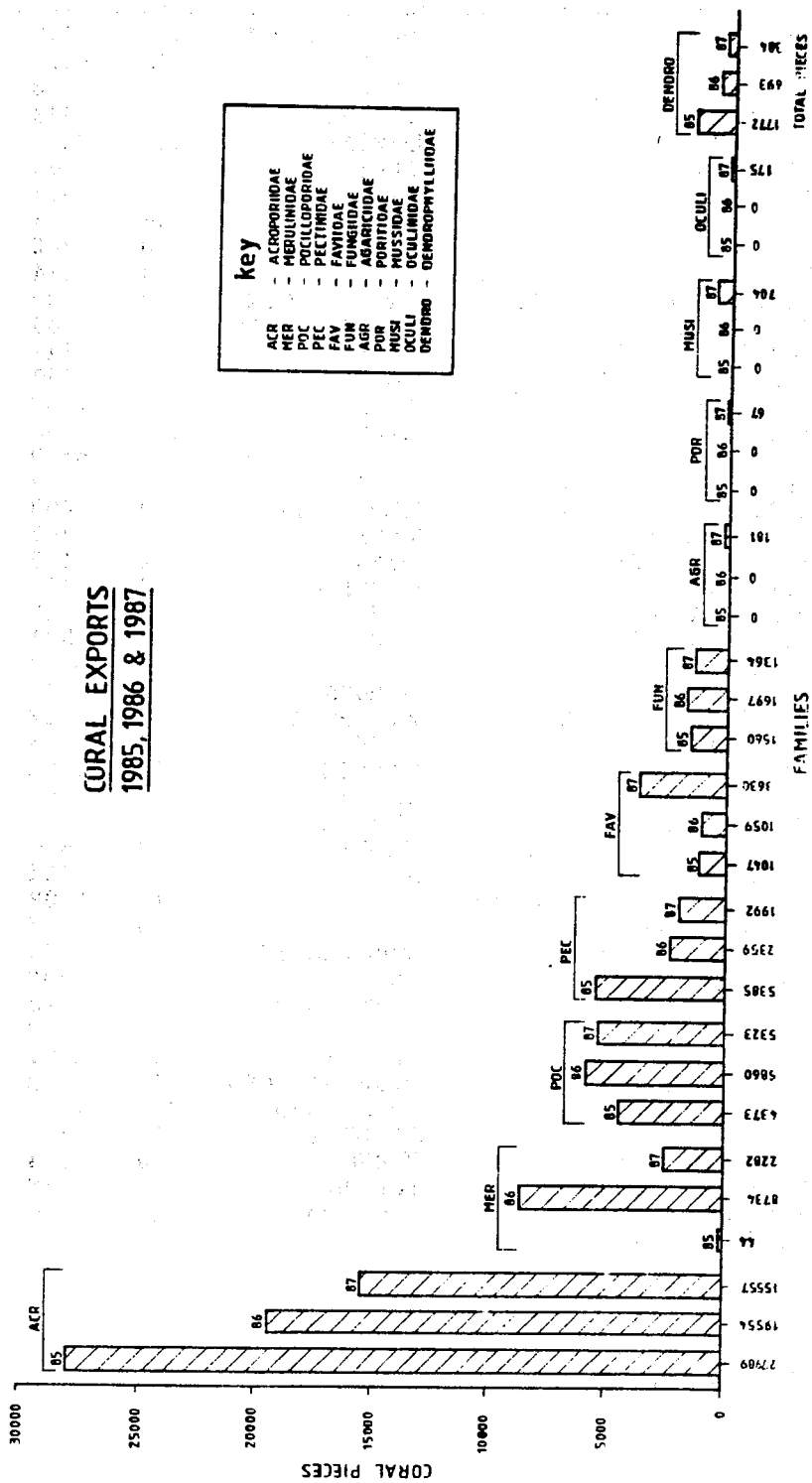
15. Nevertheless, they are renewable resource which Fiji possesses in abundance and, provided appropriate management measures are enforced, have considerable harvest potential. More information however is needed on the distribution and abundance of commercial species in Fiji and rates of regeneration.

Table 3 : Number of coral pieces exported, by taxa.
(The 1988 figures include exports to the end of February only)

FIJI CORAL EXPORTS 1985-1987

CORAL EXPORT SUMMARY (no.of pieces)		1988	1987	1986	1985
ACROPORA ARCUATA	SMALL BRANCH	455	7640	6038	2921
ACROPORA ECHINATA	PINETREE	783	1128	608	0
ACROPORA HUMILIS	FINGER	219	2008	682	5425
ACROPORA NOBILIS	STAGHORN	482	3882	1909	2189
ACROPORA PALIFERA	CATSPAW	632	2236	1715	457
ACROPORA PROSTRATA	TABLE	0	1606	6030	9546
ACROPORA SUBGLABRA	TREE	0	876	2561	7449
ACROPORA VAUGHANI	TABLE	294	2404	11	2
AGARICIA TENUFLORA	MUSHROOM?	0	342	0	0
DENDROPHYLLA MICRANTHUS	OCTOPUS	0	244	0	0
ECHINOPORA LAMELLOSA	LETTUCE/ROSE	28	32	173	285
EUPHYLLIA DIVISA	DIVIDED BRAIN		40	32	15
FUNGIA CONCINNE	MUSHROOM	235	742	1320	1344
GALAXEA FASCICULARIS	TOOTH	0	350	0	0
GONASTREA SPP	BRAIN	0	1838	856	762
HERPOLITHA SPP	SLIPPER	459	1288	374	216
LEPTORIA PHRYGIA	CLOSED BRAIN	194	5510	30	0
LEPTOSERIS FRAGILIS	GLASS	9	20	0	0
LOBOPHYLLA CORYMBOSA	OPEN BRAIN	0	1408	0	0
MENDUSA KOREI	KOREI	3	380	0	0
MENDUSA LAKERI	LAKERI	132	126	0	0
MERULINA AMPLIATA	MERULINA	536	4448	8648	44
MERULINA SPP	STAR	1	116	86	0
MILLEPORA DICHOTOMA	FIRE	93	594	0	0
MILLEPORA SPP	FIRE	0	3100	1118	930
MONTIPORA SPP	BERMUDA	0	94	0	0
MONTIPORA STRIATA	MONTIPORA	0	512	0	0
PACHESERIS RUGOSA	RUGOSA	98	304	0	0
PAVONIA FRONDIFERA	LETTUCE	13	1262	0	0
PAVONIA LATA	CACTUS	110	840	0	0
PETCINIA LACTUCA	LETTUCE	0	504	0	0
PETCINIA SPP	CLUSTER	19	3480	2359	5385
PORITES SPP	PORITES	0	134	0	0
pocellopora damicornis		375	1192	705	134
POCELLOPORA VERRUCOSA		0	48	0	0
POCILLOPORA EYODUXI	CAULIFLOWER	0	1230	213	0
SANDLOTHIA SPP	CUP	0	682	3	0
SERIATOPORA HYSTRIX	BIRDS NEST	189	5620	2281	1896
STYLASTER SPP		0	68	0	0
STYLOPHORA PISTILLATA	ELKHORN	237	2194	2461	2464
STYLOPHORA SPP	BLACK ELKHORN	54	362	0	0
TUBIPORA MUSICA	PIPE ORGAN	676	1002	641	1772
TURBINARIA MOLLIS	ROSE/CUP	22	140	52	0
TURBINARIA SPP	FROND	69	384	0	48
ZOOPILUS ECHINATUS	BIG CUP	0	16	0	0
FAN CORAL	fan coral	19	36	0	0
MISCELLANEOUS/SPECIALS		0	0	370	596

Figure 2 : Coral exports from Fiji by number and family for the years 1985-1987.



Status of trade

16. Only one company, Seeking Trading Co. is involved in the export trade, and the utilisation of Porites for local construction and by small-time curio vendors is limited at present.

Conclusion

Corals are fundamental to the reef ecosystem. The effects of harvesting even on a small scale commercial level is not fully understood. Certainly more research work has to be done. It is the firm belief of the Fisheries Division that the Fiji situation should continue to be monitored closely, and a great deal can be learned by the experiences of other countries in the region regarding the biology and exploitation of this sensitive resource.