



SPC/Inshore Fish. Res./BP 57
11 March 1988

ORIGINAL : ENGLISH

SOUTH PACIFIC COMMISSION

WORKSHOP ON PACIFIC INSHORE FISHERY RESOURCES

(Noumea, New Caledonia, 14-25 March 1988)

GIANT CLAM OCEAN NURSERY AND RESEEDING PROJECTS

by

C.M. Price

Marine Resources Management Division
Yap, Federated States of Micronesia

INTRODUCTION

The giant clam (Family Tridacnidae) is known to have once flourished in the Indo-West Pacific. Unwritten documentation causes skepticism but large shells found at dredge sites give evidence of their existence in Yap. The decline of stocks are perceived to be due to illegal harvesting and environmental degradation. Some local species can still be found in Yap: T. maxima, T. squamosa, T. crocea and Hippopus Hippopus. Yap State is in the process of preserving the populations of giant clams by reintroducing large numbers of clams in three separate phases over a period of 5 years and monitoring their growth, survival, and reproduction.

The purpose of Phase I is to reintroduce the clams to Yap proper by seeding the reefs with clam broodstock. Phase II has the purpose of ocean nursery growout in Yap and then planting in the outer islands. Phase III is in response to the success of the first two sets and plans to increase the number of broodstock in Yap and on the outer islands. The Micronesian Mariculture Demonstration Center has been very successful in spawning and rearing tridacnid clams. Yap has been fortunate to receive many clams with 100 percent survival.

METHODS

Phase I. One thousand 15 month old juvenile Tridacna derasa were purchased and shipped from MMDC in Palau in January 1984. The clams were placed in 5-10 foot depth water on the central west end of Yap proper in an area with little wind and wave activity. It was necessary to follow the methodology suggested by MMDC in deploying fiberglass predator exclusion trays with plastic mesh for growout. After 12 months in cage culture, the

clams were distributed to 31 sites around Yap Proper. Periodic count and measurement surveys were completed using SCUBA and plastic rulers. Local counterparts were asked to check the clams regularly and report mortalities and problems.

Phase II clams involved the addition of 1000 clams in December 1985. These clams were reared and monitored in Yap proper in predator exclusion trays. After 9-12 months in Yap, a total of 658 clams were transported to the outer islands of Yap via the fieldtrip ship, Microspirit. The clams were placed in large fiberglass boxes filled with seawater and flushed twice daily. Each inhabited outer island received 30 clams on the inshore lagoon. Local counterparts were asked to monitor the clams safety and survival.

Phase III clams entailed the purchase and shipment of 6000 clams from December 1986 to January 1987. All 6000 clams were placed in an ocean nursery in Rumung until July. Rumung was selected based on excellent growth and survival results of the Phase I clams in that area. Phase III clams received daily monitoring for seven months. A series of two local counterparts from each municipality were hired each month for 12 months to be trained in clam survey procedures. In June the clams were removed from growout trays, counted, measured, and distributed to all villages which claim ownership to reef.

RESULTS

Results of Phase I clams are based on periodic count and measurement samples. In April and September 1986, all clams were counted and measured. The status report of 1986 documents survival and growth of these clams. After 33 months of ocean nursery in shallow lagoons, the growth rate was found to be comparable to Palau. Survival was 59.1 percent and the average growth rate was 5 centimeters per year. In March and September 1987, two more count and measurement surveys were conducted using plastic calipers. The mean mortality was down significantly from 5.8 percent from 1984 to 1986 to 1.7 percent in 1987. Growth rate had decreased during 1987. The semi-annual increase of mean size in April to September 1986 was 10.7 percent, September 1986 to April 1987 was 14.8 percent and April to September 1987 was 2.4 percent.

Phase II Clams earmarked for the outer islands resulted in less than 1 percent mortality in transport. Regular checking indicates good survival on the reef and needed support from the local islanders. Nine atolls and two high islands were seeded. Each island in an atoll received about 30 clams between September and December 1986. Count and measurement surveys will be conducted in mid 1988.

Phase III clams resulted in 96.2 percent survival after six months of ocean nursery in Yap proper. The growth rate of these eight set of clams ranged from 2.3 to 8.1 averaging 5.7 millimeters per month. Predatory snails were collected, preserved and sent to Mr. Tom Watson at MMDC for identification and trends. Fifty three Villages in Yap proper received lots of 50 clams. The extra clams were successfully transported to the outer islands in early 1988.

DISCUSSION

Phase I clam surveys show that 15 month old Tridacna derasa can be successfully reared for 60 months in a shallow lagoon nursery in Yap proper. High mortalities in the early months indicate a need for close monitoring in the first six months. Distribution of clams gave a clear picture of suitable sites for future nurseries. Survival and growth were results of methods adopted by MMDC in Palau. The 1987 surveys indicate a lower growth rate may be due to the clams entering their reproductive stages expected between 4 and 5 years old. The energy may have been put into gonad production. To-date, no indications of sexual maturity on Phase I clams have been observed.

Phase II clams have been successfully reared on Yap proper and transported to the outer islands. Survival and growth in Yap was fair but to-date there has been no count and measurement surveys completed. Mid 1988 will be the first attempt at comparative growth and survival monitoring. These clams are to be used as broodstock for long anticipated natural reseeding.

Phase III Clams experienced excellent survival due to daily attention. Redistributing the clams to increase the number in Yap proper and outer islands is in hope of stimulating reproduction and favoring fertilization. Extensively trained local counterparts have given Marine Resources a greater labor pool and heightened awareness of the clams in Yap.

Future clam projects include: the manipulation of Hatchery feasibility funds to support a Phase IV set of clams, an extensive maturation and fertilization study on T. derasa, public programs for maintaining the lagoon environment and controlled harvesting. If you have any comments, questions, or suggestions please feel free to ask myself, Charmaine Price or Jerry Fogolimul.

REFERENCES

- MMRD (1987a) Marine Resources Management Division: 1987 Annual Report. Yap State Department of Resources and Development. Federated States of Micronesia. 51pp.
- MMRD (1987b) Marine Resources Management Division: 1987 Reintroduction of tridacnid clams to Yap State. A status report. Yap State Department of Resources and Development. Federated States of Micronesia. 28pp.
- PRICE, C.M. and J.O. FAGOLIMUL (1986) Reintroduction of tridacnid clams to Yap State: Status Report. Yap State Department of Resources and Development. Federated States of Micronesia. 17pp.
- ROSEWATER, J. (1965) The family Tridacnidae in the Indo-Pacific. Indo-Pacific Molluscs, vol. 1, No 6. Division of Molluscs, United States National Museum, Washington DC. p 347-395.