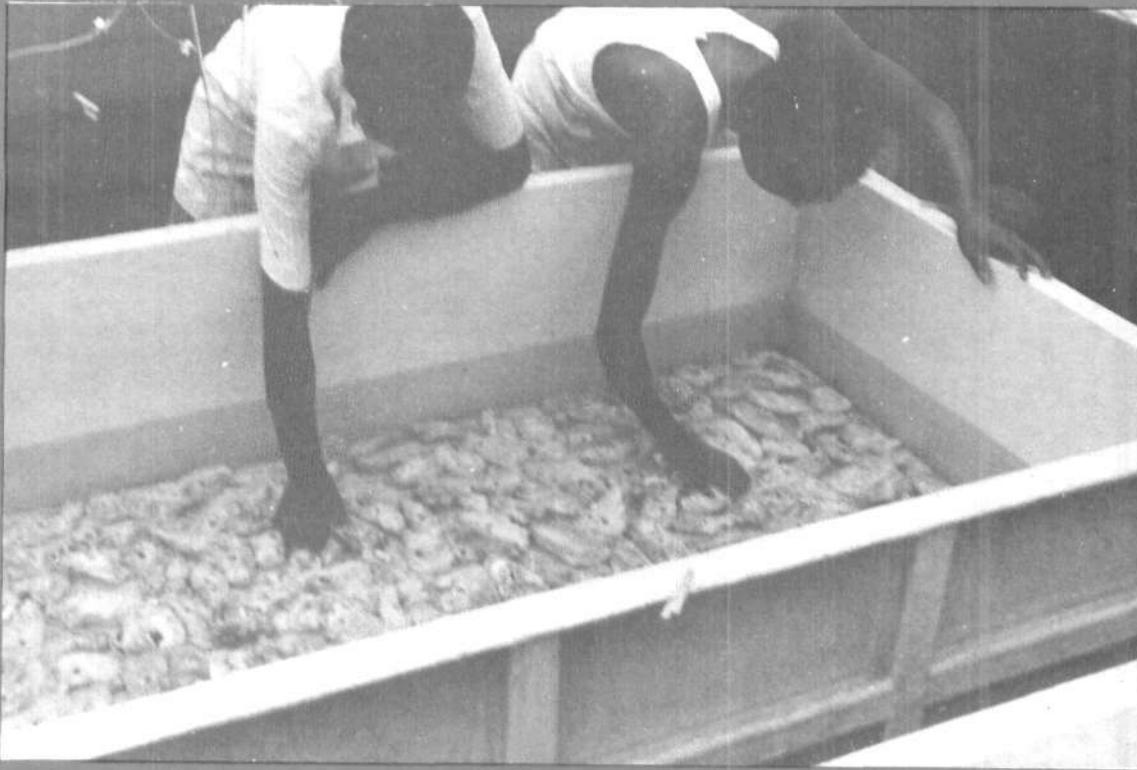




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RESEARCH AND DEVELOPMENT WORK CARRIED OUT ON EDIBLE OYSTERS IN GUJARAT

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Introduction

Gujarat has more than 1600 km of coastline and although the edible oysters occur all along the coast, they are mainly concentrated

in the Gulf of Kutch. The Molluscan Research Station was established in 1977 at Sikka near Jamnagar and since then the work on edible oyster, pearl oyster, windowpane oyster etc. received considerable attention.

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Regular exploitation of both live oyster and oyster shell was in vogue in certain areas of the Gulf of Kutch. The cement industry at Sikka obtained longterm lease for lifting the sand for the production of cement. While lifting the sand, the industry also removes live oysters and oyster shell. This practice has led to drastic decline in the oyster population. With a view to assess the edible oyster populations, surveys were conducted along the Gujarat coast, and the results together with information on the transport of oyster spat and experimental culture of the oyster, are given in this paper.

Edible oyster resources survey

Oyster resources survey was conducted by the transect method from Jakhau in the Gulf of Kutch to Umargaon in south Gujarat. *Crassostrea gryphoides* was dominant followed by *Saccostrea cucullata* and *C. rivularis*. However, the density of oyster population was very low with about one oyster/m² at all the places surveyed except at Sikka where a small oyster bed of 0.05 ha had a density of 142 oysters/m² (Table 1-3). The study shows that the natural populations of the oysters along the Gujarat coast occur in very low

TABLE 1. Results of edible oyster survey along the Gujarat coast during 1988-89

Sl. No.	Location	Extent of area surveyed (ha)	Edible oyster species	Type of substratum	Estimated oyster population in numbers
1	Jodiya	6.90	<i>C. gryphoides</i>	Muddy, sandy & scattered stones	150
2	Balachadi	G-1 100.00	<i>C. gryphoides</i>	Rocky & muddy	60
	"	G-2 150.00	" "	" "	60
	"	G-3 300.00	" "	" "	67
3	Namathi creek	0.47	" "	Muddy & scattered stones	1,100
4	Shirval	900.00	" "	Sandy, rocky and muddy	14
5	Sarmat Marudi creek	140.00	" "	Rocky & muddy	700
6	Sikka	0.05	<i>S. cucullata</i>	" "	66,456
7	Gagawa	1.17	<i>C. gryphoides</i> <i>C. rivularis</i>	Rocky, muddy & sandy	200
8	Singach	1.89	<i>C. gryphoides</i>	" "	100
9	Salaya (Khanara creek)	1.20	" "	Rocky & sandy	50
10	Poshitra Lakhu point	0.40	" "	" "	40
11	Arambhada	0.50	" "	Muddy & scattered stones	80
12	Dwarka (Gomti Ghat)	0.39	<i>C. gryphoides</i>	Muddy & scattered stones	100
13	Harshad Medha creek	41.55	" "	Rocky & muddy	90,000
14	Navibandar	22.50	" "	" "	75,000
15	Meghal	50.00	" "	Muddy & scattered stones	2,000
16	Velan — Madhavadi	0.02	" "	" "	30
17	Samadhiyani (Victor Khadi)	3.50	" "	" "	3,500
18	Datardi	1.00	" "	" "	6,000

TABLE 2. Results of edible oyster survey along the Gujarat coast during 1989-90

Sl. No.	Location	Extent of area surveyed (ha)	Edible oyster species	Type of substratum	Estimated oyster population in numbers
1	Modhava	5.0	<i>C. gryphoides</i>	Rocky & muddy	1,500
2	Zarpara	0.9	" "	"	1800
3	Dndeli	100.0	" "	"	14
4	Aghore	2.5	" "	"	10
5	Halal - Fansa	10.0	" "	"	500
6	kathwada	7.5	" "	"	10,000
7	Umargoan (Nargol)	10.0	" "	"	10,000

TABLE 3. Results of edible oyster survey along the Gujarat coast during 1991-92

Sl. No.	Location	Extent of area surveyed (ha)	Edible oyster species	Type of substratum	Estimated oyster population in numbers
1	Dwaraka (Gomti Ghat)	0.39	<i>C. gryphoides</i>	Rocky & muddy	100
2	Singadh	1.89	" "	"	100
3	Khalwada	7.50	" "	"	7500

densities and a fishery cannot be developed based on the harvest of these populations.

Experimental culture of *C. gryphoides*

Oyster spat of 5-10 mm length were reared in box-type cages of size 45 x 45 x 5 cm covered with nylon net. These cages were suspended from a floating bamboo raft and periodically cleaned to remove foulers and predators. The growth is fast during the first seven months. During the monsoon season growth is accelerated (about 25% more) when compared to other seasons. In the first year the average growth is 1-2 cm. Maturity is attained during the third year at an average size of 5 cm. Peak spawning occurs during June-August, followed by a secondary peak during November-December. The shell weight to meat weight ratio is 10:1.

Transportation of *C. madrasensis* from Tuticorin to Sikka

Since *C. madrasensis* grows faster and attains larger asymptotic size when compared to the locally available *C. gryphoides*, consignments of the spat of the former species were transported from the Tuticorin Hatchery of CMFRI to Sikka. The spat were brought by road from Tuticorin to

Trivandrum, airlifted to Jamnagar and then transported by road to Sikka. Total transit time was 48 hours and the tin containers holding the oyster spat were opened only on reaching the destination.

In 1988 a total of 32,000 oyster spat were transported and the mortality was heavy at 85%. In 1990 various size groups of oysters (10 - 70 mm) were packed separately and transported. The spat measuring 10 - 20 mm gave good survival of 85% and the mortality was high in the larger oyster groups. During 1991 a total of 4,000 spat of about 10 mm length were transported and a high survival of 90% was obtained.

Growth of *C. madrasensis* in Gujarat waters

The transported spat were grown in cages laid in the intertidal region and have shown an average growth of 2.9 cm and 30 g in one year. It is concluded that *C. madrasensis* has interacted favourably with the prevailing environmental conditions in the Gujarat waters. Large-scale transplantation of *C. madrasensis* into Gujarat waters is suggested as it has greater economic value when compared to the three resident oyster species.