A Brief Report

on

Five Years of Data Collection for The Maputaland Marine Reserve Intertidal Utilisation Monitoring Programme.

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Introduction:

This project is now a joint venture of the KwaZulu Bureau of Natural Resources and the Natal Parks Board. It has been running for over five years and the initial aims have been fulfilled. The programme was devised to establish the extent and impact of the utilisation of intertidal organisms on the stocks of the organisms involved. Traditional utilisation levels were illegal under the present regulations and the aim was to establish if the offtake was compatible with the aims and policy of the Maputaland Marine Reserve.

Four years of data collection provided a large data base to describe the utilisation while the Oceanographic Research Institute carried out stock assessments on the principal organisms. The final report on the data collection and O.R.I. reports were discussed at a workshop in Durban and joint recommendations on the utilisation were submitted to the board of the N.P.B.

Early in 1993 the N.P.B. Board accepted the recommendations and required that, after certain conditions had been worked out, the utilisation be accommodated within the reserve Management Plan. They stipulated that N.P.B. would help finance the project and considered the ongoing monitoring an essential part of the management of the reserve.

This report serves to summarise, very briefly, the data collection to date and outlines the most obvious trends.

Materials and methods:

These have been described in the earlier reports.

Results:

Table 1 gives the annual totals for all the principal organisms plus the overall effort and catch per unit effort. Figure 1 shows the effort and C.P.U.E. on a yearly basis for the last five years while Figure 2 displays the biomass of the principal organisms and the overall totals.

It can be seen that the annual effort decreased markedly and progressively for the first three years. The totals over the last three years have been remarkably stable.

Table 1. Yearly Summaries of Total Offtakes.

		1988	1989	1990	1991	1992	
Mussels	Kg.	57358	28063	15984	20836	24177	
Red Bait	Kg.	36541	29485	20669	20958	30084	
Oysters	Kg.	1964	951	448	739	455	
Barnacles	Kg.	154	447	139	63	156	
Ghost Cra	No.	106558	145880	13967	9522	4590	
Rock Crab	No.	1040	1374	681	1105	1734	
Whelks	No.	6040	5765	3310	2583	2726	
Limpets	No.	24452	45002	22328	15035	18326	
Urchins	No.	1495	1535	1050	1008	1284	
Crayfish	No.	127	67	28	12	12	
Chitons	No.	706	1006	135	256	1980	
Cowries	No.	284	128	176	267	237	
Sea Cucum	No.	275	54	33	127	209	
Sealice	No.	30910	129796	7912	1109	2902	
Octopus	No.	13	12	3	9	14	
Shells	No.	719	1907	1589	935	110	
Effort		9155	6125	4374	4400	4589	
Total Kg.		96017	58946	37240	42596	54872	
C.P.U.E. Kg		10.49	9.62	8.51	9.76	11.96	9.76

* A "year" is from 1 Mar of a year to 28 or 29 Feb of the next.

Coastal Resource Utilisation.

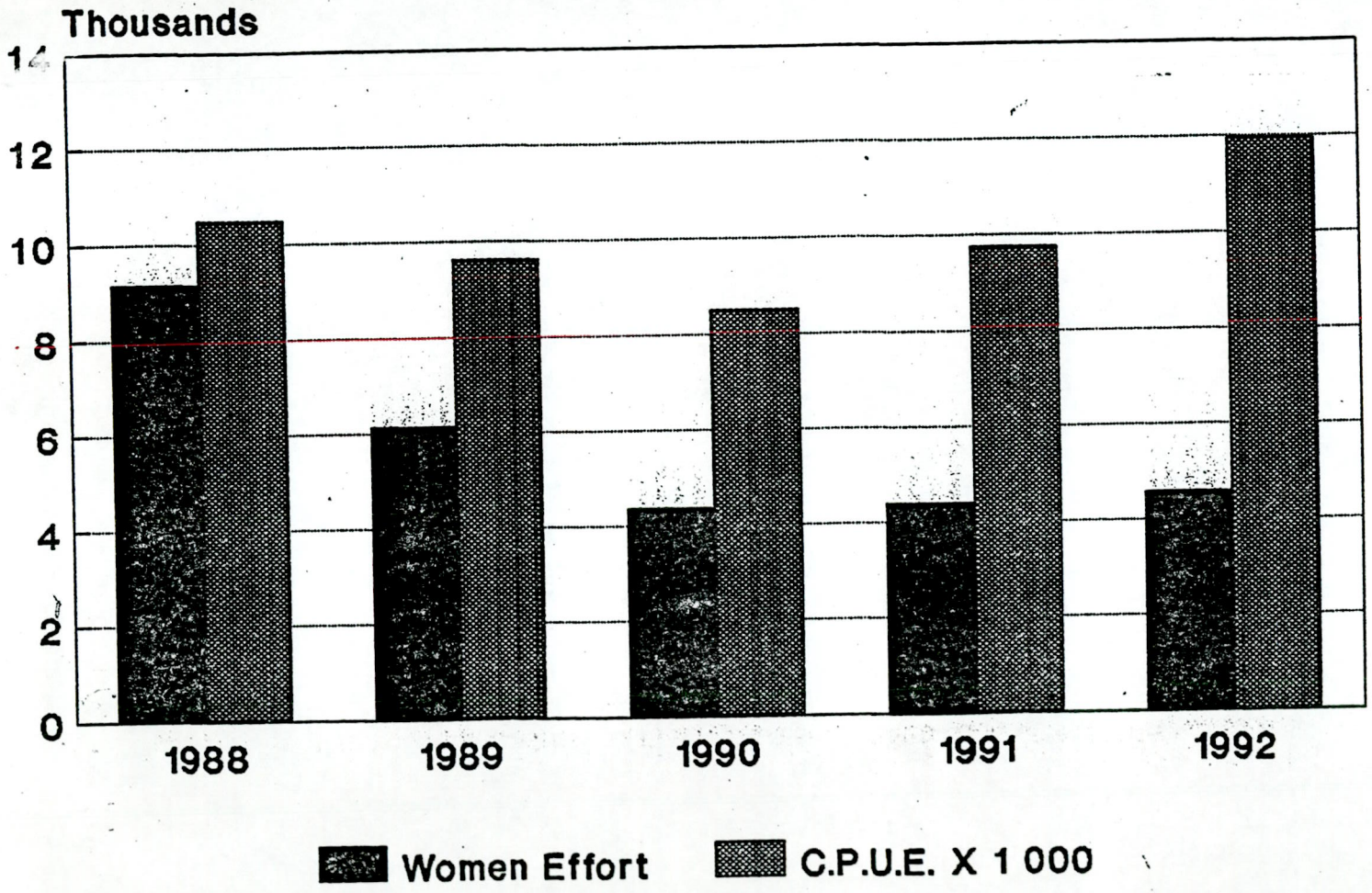
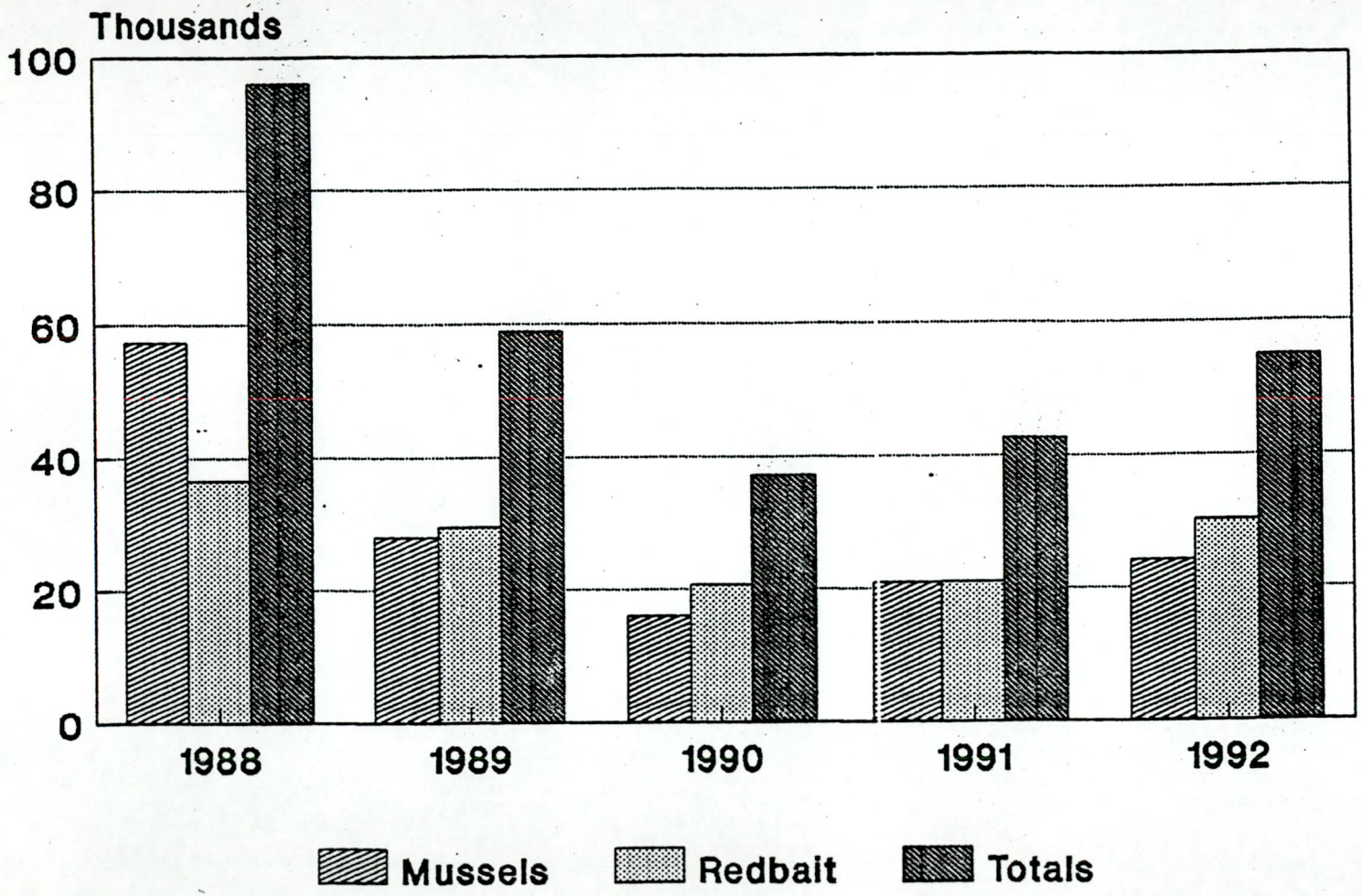


Figure 1.

Coastal Resource Utilisation.



Data are in kilograms.

Figure 2.

The total mass of organism harvested declined alongwith the effort but increased in the last three years. This can be seen in the C.P.U.E. In Figure 1 this statistic has been multiplied by 1 000 to make it readily comparable with effort but the changes are clear. Whereas effort has declined since the beginning of the project the C.P.U.E. has not shown an overall decline.

Initially mussels were the most important organism collected, in terms of mass, but subsequently red bait has increased in importance. The availability of each organism fluctuates markedly from year to year (along the whole Natal coast) and to an extent the women collectors are opportunistic harvesters.

Figure 3 shows the monthly totals for the mass of mussels collected and no clear annual pattern is obvious except possibly a tendency for lower masses near the end of the year. Similar data, for red bait, are given in Figure 4 and these show clearly an annual cycle of abundance. August or September each year have the highest total by far and together accounted for over half each year's harvest. Most of this offtake was from close to Kosi Mouth and so much of the redbait collection is constricted in time and space. In a similar manner most of the mussels collected are from Black Rock and Dog Point, both at the south end of the study area.

Figure 5 shows monthly effort totals throughout the project and an overall mathematical trend has been superimposed. As was stated earlier the overall trend has been towards decreasing effort although recent data have been stable.

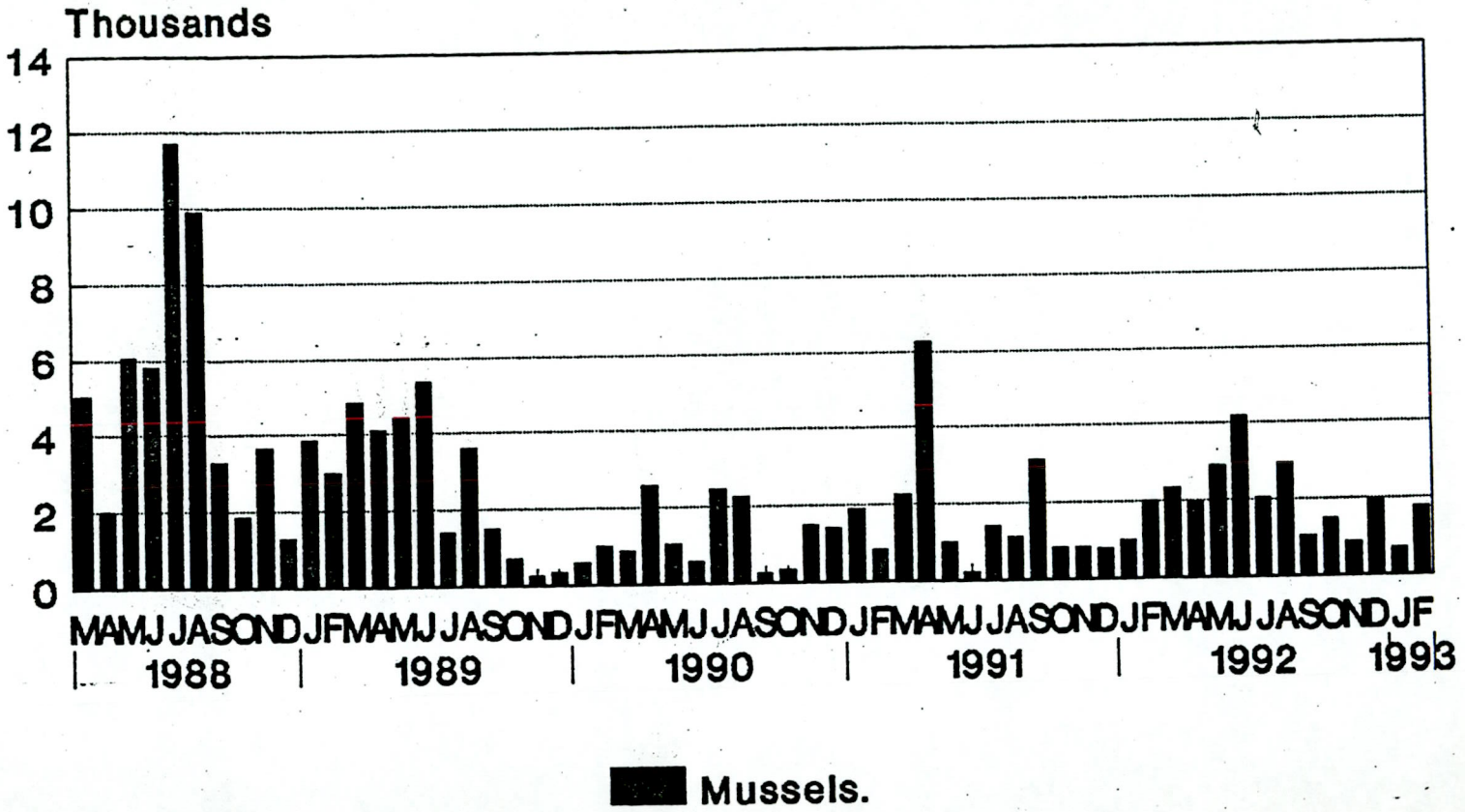
Figure 6. Displays the monthly overall "Catch per unit effort" which is the total mass collected each month divided by the number of women collecting. Once again a trend has been included and it is clear that there is no evidence of a decreasing C.P.U.E. which could indicate a declining stock or unsustainable utilisation.

The decline in numbers of ghost crabs and sea lice, seen in table 1, are misleading in that in the first two years some night monitoring was carried out. Ghost crabs and sea lice are primarily collected after dark but night monitoring was not part of the routine monitoring programme. It is hoped that funds can be found this year to re-institute the night monitoring as it is an important aspect of the utilisation. It also affects important "indicator" species, currently being worked on by O.R.I. and involves animals which catch the public eye.

Certain species, such as crayfish and live cowries, are undercounts of the numbers collected. Every effort is made to monitor these but women secrete them on their person and detection, without causing a major scandal, is not easy.

Intertidal Resource Utilisation.

Monthly totals collected.

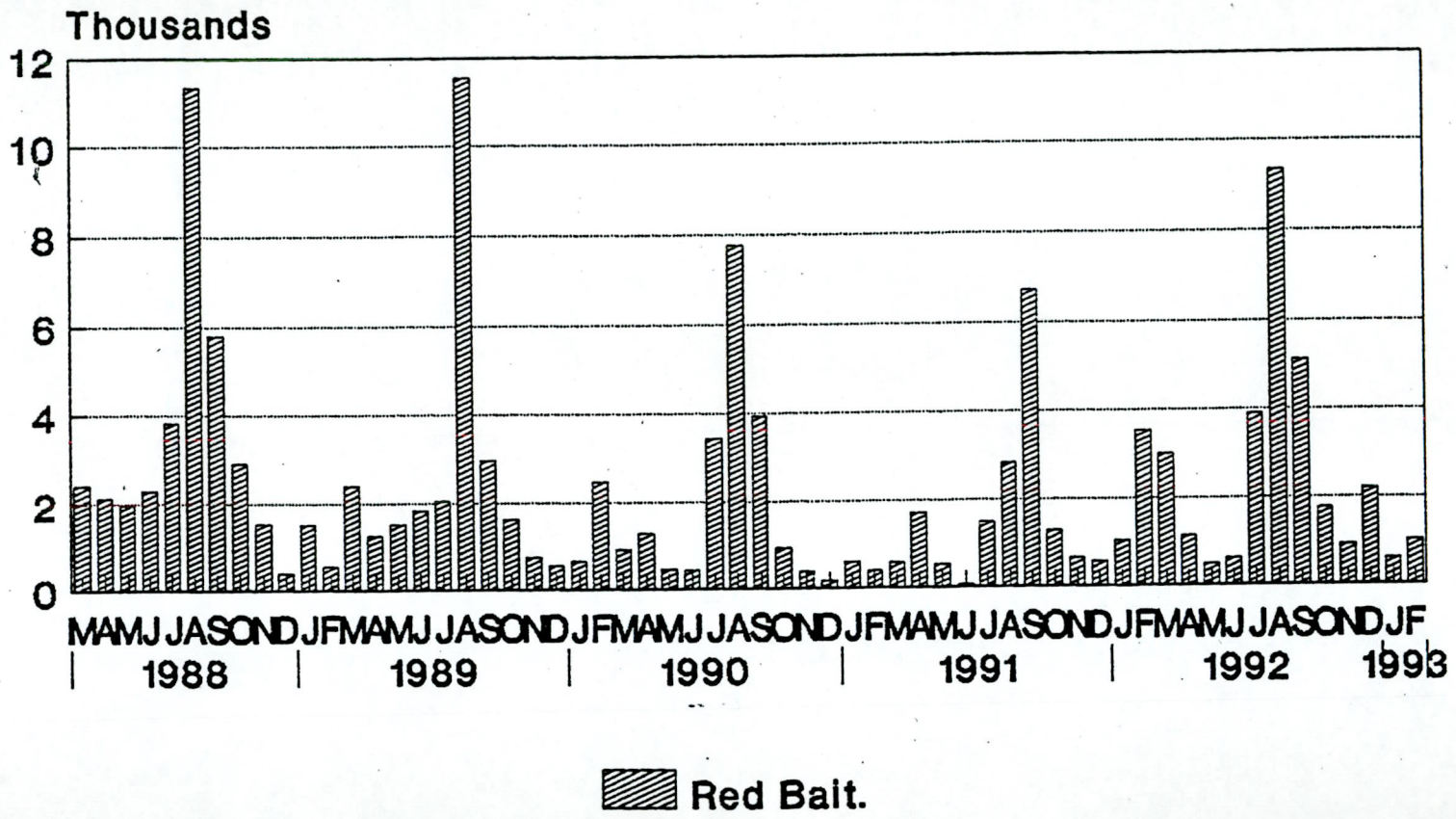


(Data are in kilograms, wet weight, unshelled.)

Figure 3.

Intertidal Resource Utilisation.

Monthly totals collected.



(Data are in kilograms, wet weight, unshelled.)

Figure 4.

Intertidal Resource Utilisation.

Monthly Effort.

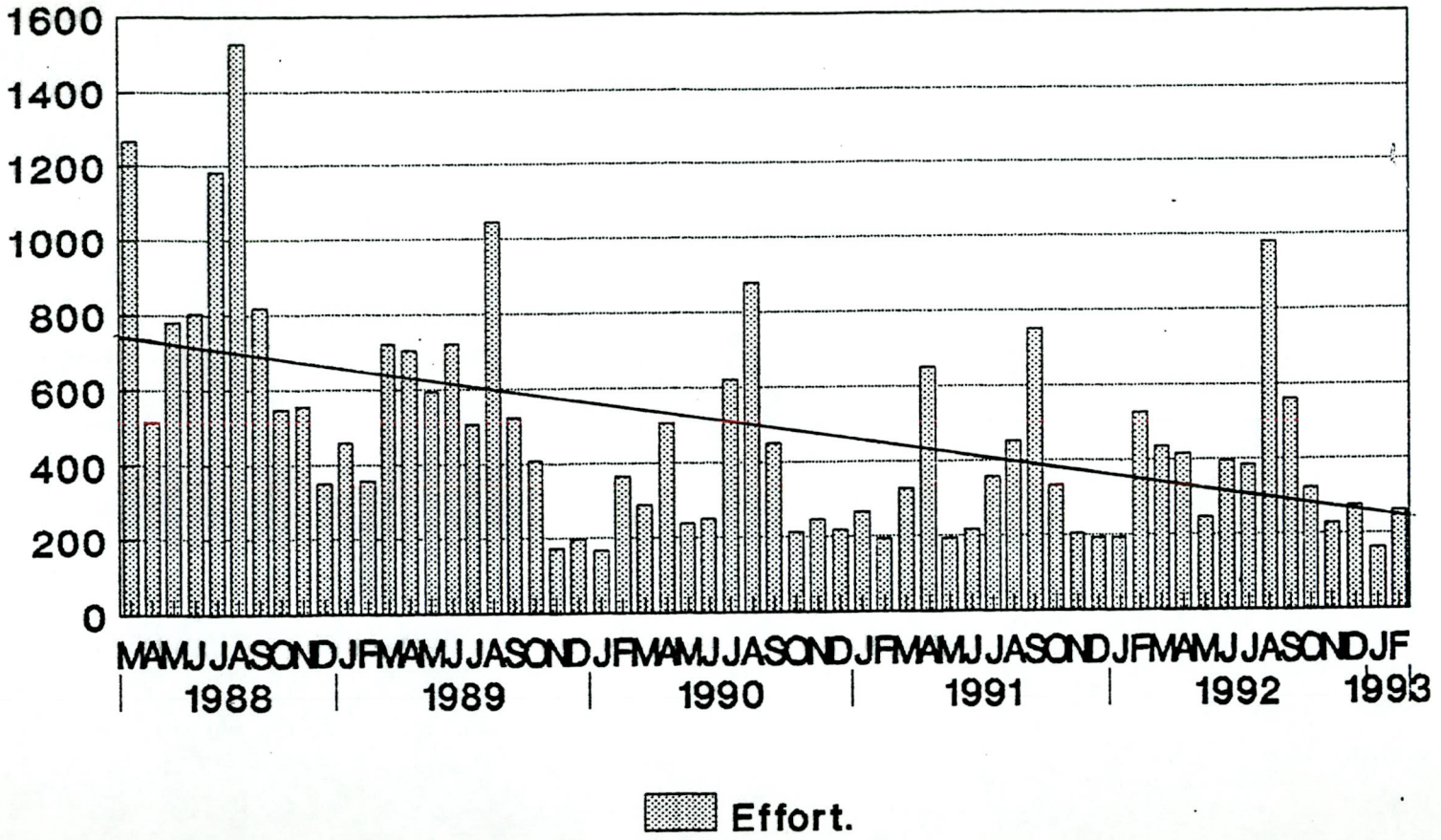


Figure 5.

(Data are in "women days")

Intertidal Resource Utilisation.

Catch per unit effort.

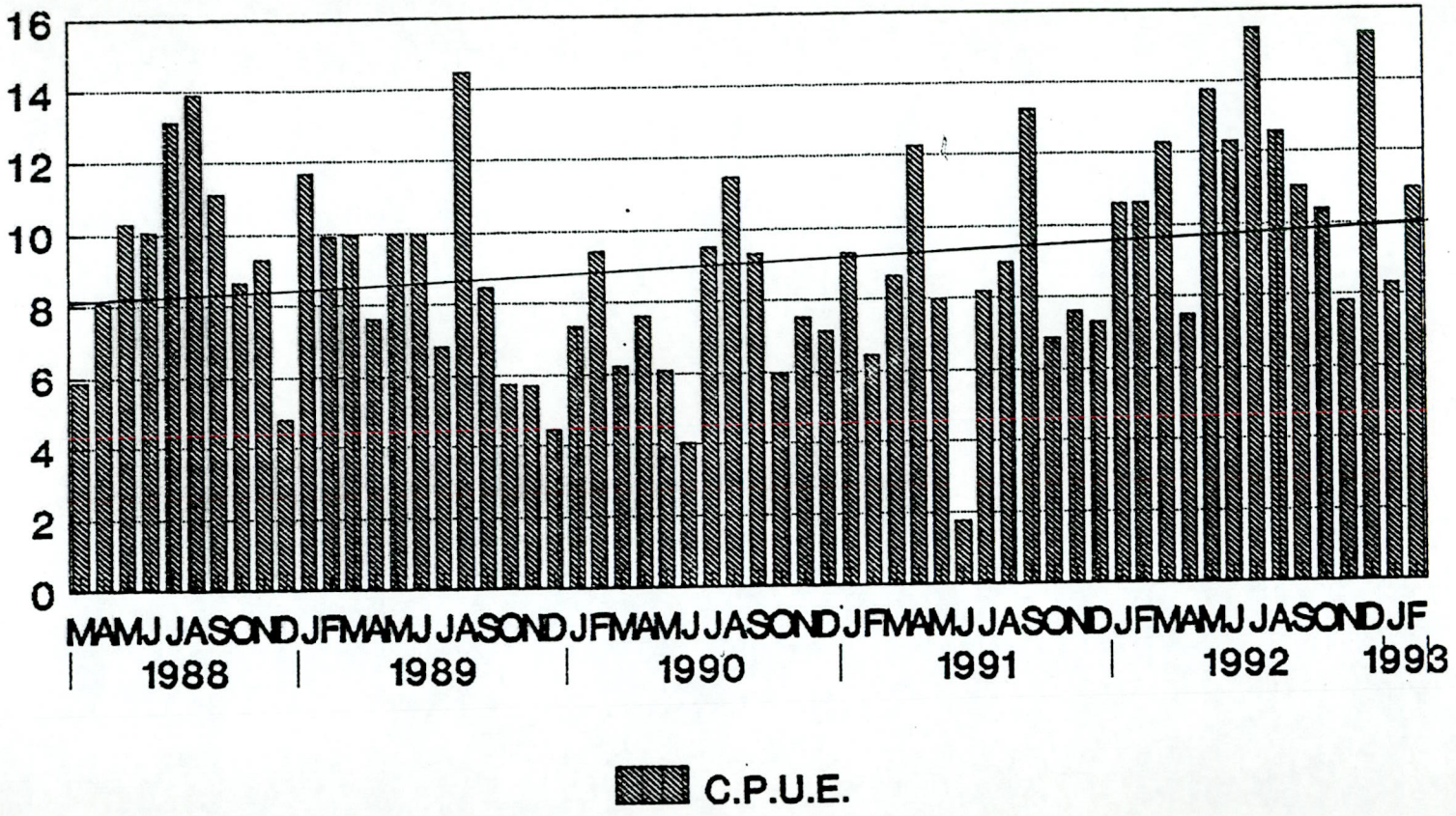


Figure 6.

(Data are in kilograms per person per day.)

Discussion:

The pronounced decline in effort of the first three years has not continued. Effort has stabilised recently in spite of the worsening local economy plus large numbers of Mozambican refugees. If these factors improve it seems likely that effort may start to drop again. There appears to be an overall trend away from traditional foods towards shop bought goods throughout KwaZulu.

The order of magnitude of the offtakes of most of the species concerned cannot impact seriously on stocks unless it is concentrated in small areas and on organisms limited to them. This aspect (for example a chiton at Black Rock) is receiving attention this year.

Overall no new trend, thought to be significant, has been detected in the fifth year of this programme.

Concluding remarks:

The project has run fairly smoothly again this year and has been used as an example, to the local community, of how research and "conservation" can work for their benefit.

It is ideally suited as a joint K.B.N.R./N.P.B. project as it concerns exclusively KwaZulu citizens and animals under the jurisdiction of N.P.B. In some ways it closely parallels the Turtle Survey which is also a joint project but in that instance the N.P.B. carry out the supervision and administration.

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Intertidal Resource Utilisation.

Monthly effort.

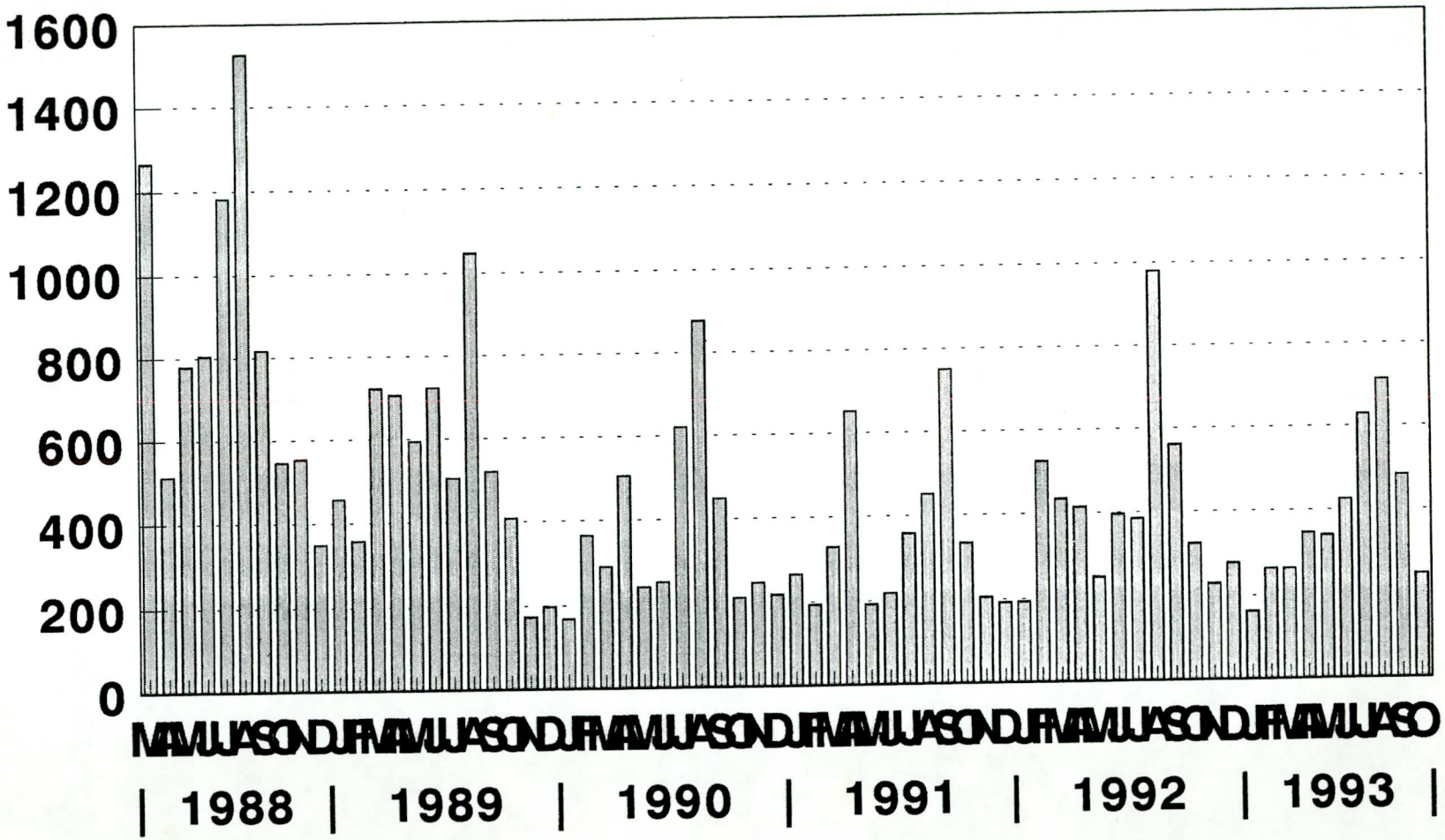
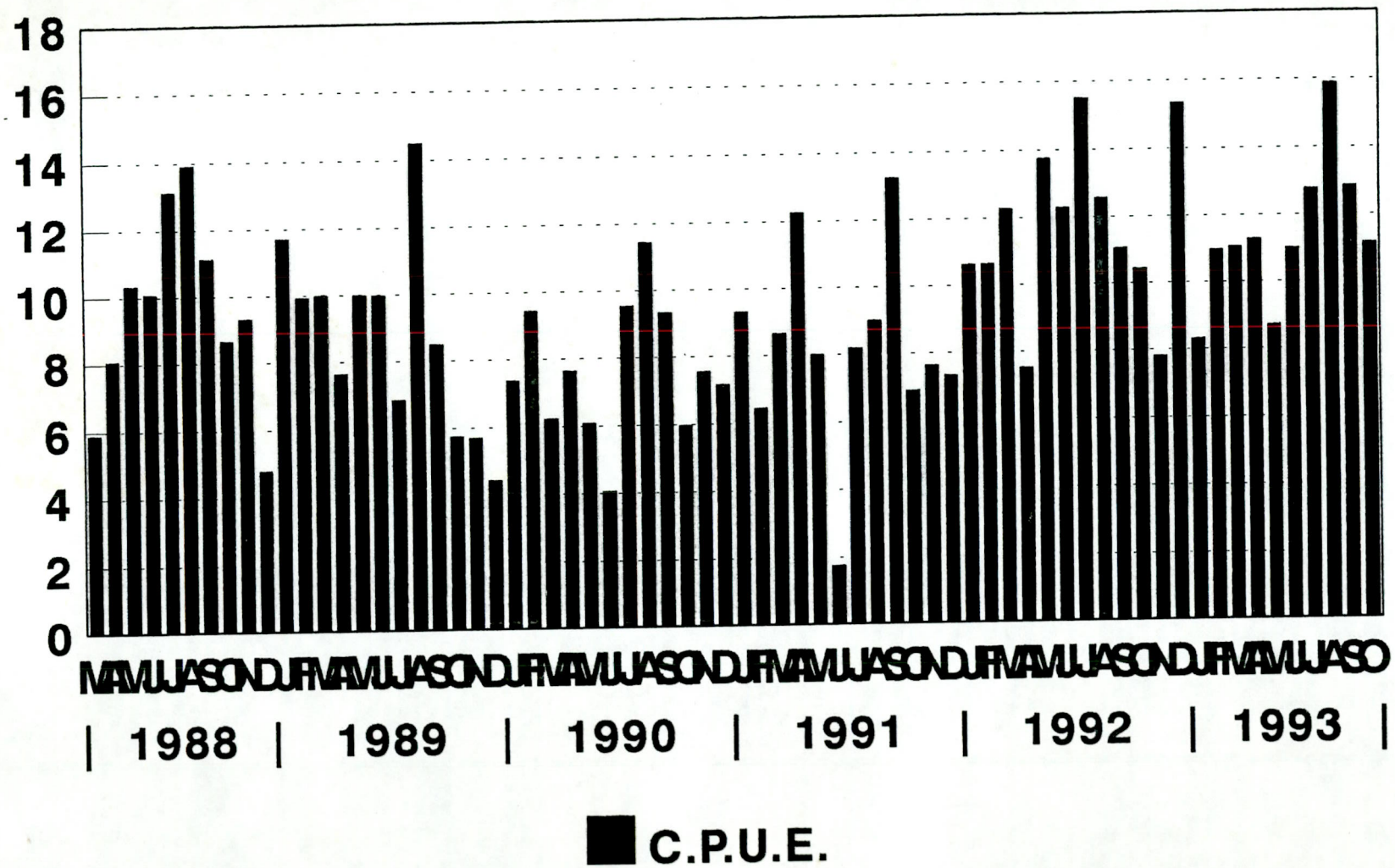


Figure 3a.

(Data in "woman days/Month.)

Intertidal Resource Utilisation.

Catch per unit effort.



(Data are in kilograms per person per day.)

Figure 3a.