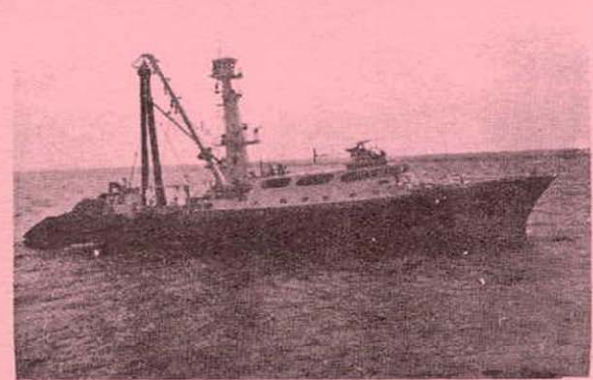
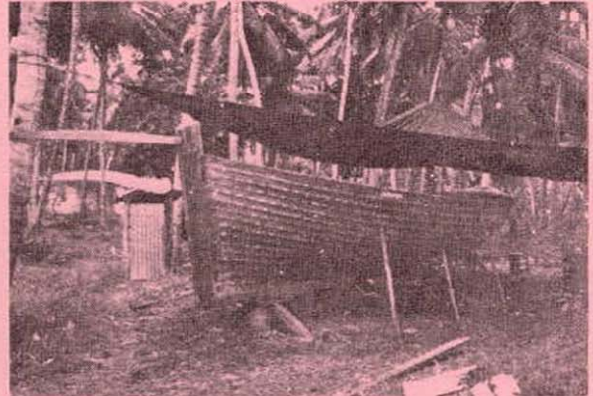




SEYCHELLES FISHING AUTHORITY

TECHNICAL REPORT

SPINY LOBSTER FISHERY AROUND THE MAHÉ PLATEAU NOVEMBER, 1995 - JANUARY, 1996



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SFA/R&D/040

**SPINY LOBSTER FISHERY AROUND THE MAHÉ
PLATEAU
NOVEMBER, 1995 - JANUARY, 1996**

**RESULTS AND ANALYSIS
PRESENTATION**

**G. DOMINGUE
(JULY 1996)**

ACKNOWLEDGMENTS

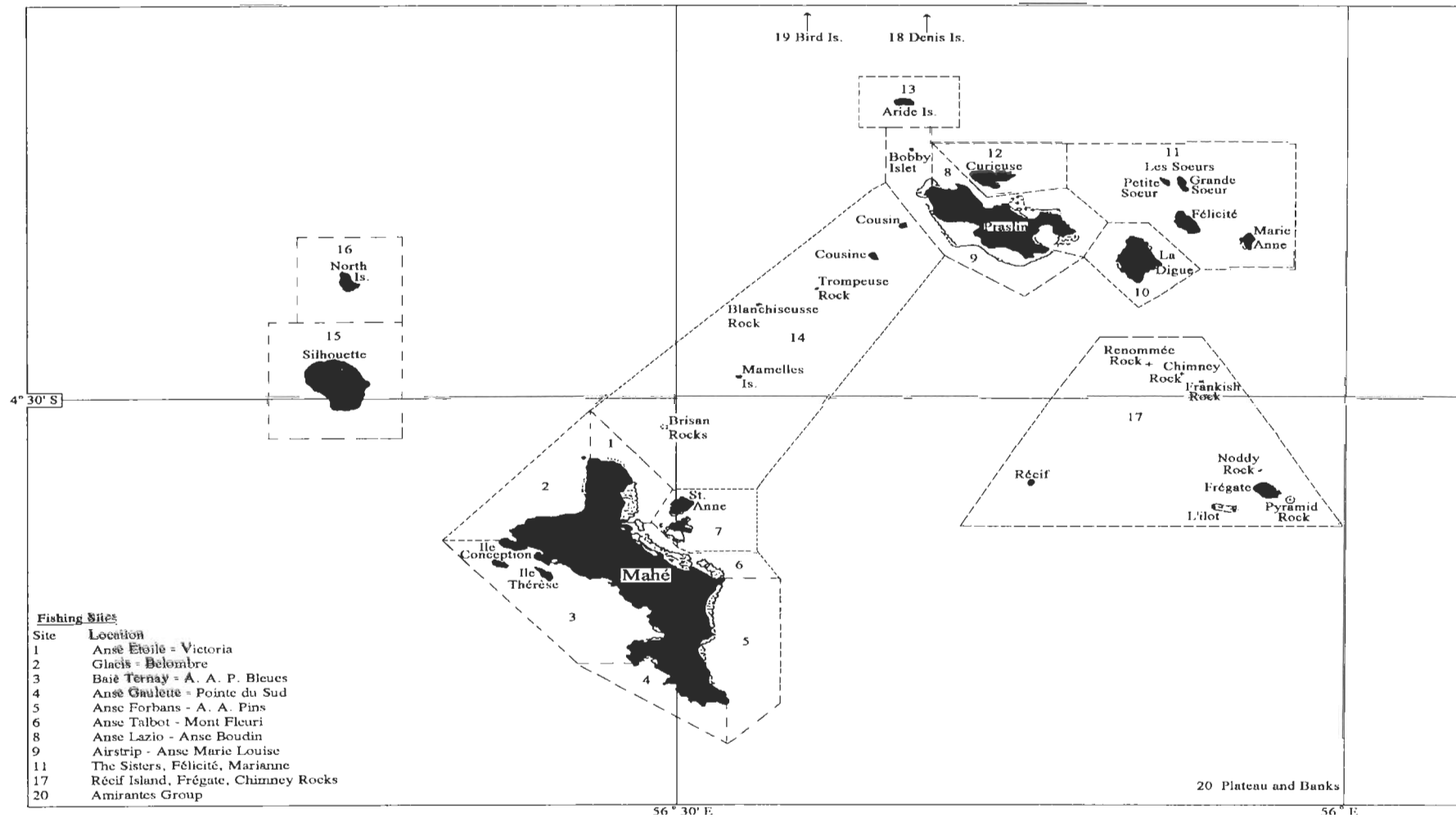
This evaluation report has been made possible thanks to the contribution made by:

- All the technicians involved: R. Azemia, D. Julie, T. Morel, A. Dina, V. Lucas, G. Gerry and M. Albert.
-
- All the lobster fishermen who co-operated with the SFA by allowing their catch to be sampled and for filling in the required records which helps to monitor the catch and effort in the fishery.

TABLE OF CONTENTS

	Page Number
Acknowledgments	i
1. Abstract	1
1. Resumé	3
2. The Spiny Lobster Fishery	5
2.1 Historical Overview	5
2.2 The Mahé Plateau and Fishing Sites	6
2.3 The Fishing Activity	6
2.4 The Spiny Lobster Species	6
2.4.1 The Habitat	6
3. Sampling Methodology	7
4.0. Results and Analysis of the Fishing Activities	8
4.1. Lobster Catches by Island	8
4.2. Fishing Effort by Island	10
4.3. Analysis by Licence Number	12
4.4. Analysis by Month	14
4.5. Species Composition	15
4.6. Carapace Length Frequency Distribution for Sampled Catches	17
4.7. Mean Weight of Lobsters	21
4.8. Catch, Effort and CPUE	21
4.9. Mean Length Frequency Distribution by Species and Sex	25
5.0. Discussion	27
5.1.0. Receipt Book Data	27
5.1.1. Purchase Data	27
5.2. Analysis of the Fishery by Location	28
6.0. Conclusions	30
7.0. Recommendations	31
8.0. References	32
9.0. Annexes	

Map 1. The Fishing sites around the Mahé Plateau referred to in this report.



1. ABSTRACT

This report reviews the spiny lobster fishery on the Mahé Plateau during the 1995-1996 fishing season.

Following recommendation made after the 1994-1995 season the lobster fishing season was again re-opened for the fourth consecutive year. As in the 1994-1995 fishing season the 1995-1996 season was opened over a three months period. The monitoring programme set up in 1992 was continued to gather more information on the spiny lobster stock so as to improve the management of this resource around the Mahé Plateau.

A total of 26 applications were made for licenses to fish for lobster, however, only 23 applicants were granted licenses after paying the required license fee. 17 licenses were bought by fishermen from Mahé, 4 by fishermen from La Digue and 2 by fishermen on Praslin. In the previous fishing season (1994-1995) 33 licenses to fish for lobsters were purchased.

Snorkeling remained the dominant technique for catching lobsters. 21 fishermen used it as the sole method of fishing lobsters whilst two fishermen used a combination of both snorkeling and traps to catch lobsters.

A total of 2.4 tonnes of lobsters were estimated to have been landed over the three months open season compared to 4.1 tonnes (Bouille and Domingue, 1995) for the same period in the 1994-1995 season.

Mahé accounted for the largest share of the total catch with 1,620 kg (67.5%) followed by Praslin with 523 kg (21.8%) and La Digue with 145.8 kg (6.1%). The balance is made up of catch from other areas such as Silhouette, North Island and Frégate.

A catch of 700 kg was landed in November, 1,100 kg landed in December and 600 kg landed in January.

Altogether a total of 176 trips were undertaken, the equivalent of 454 man-trips, for the season; with 60 trips in November, 74 trips in December and 42 trips in January. The snorkeling and trap capture methods represented 98% and 2% of the catch respectively.

The catch per unit of effort (CPUE) for November through to January was:

- 11.7 kg/trip (November)
- 14.9 kg/trip (December)
- 14.3 kg/trip (January)

Three main species were targeted:

- Panulirus penicillatus* (Homard Grosse Tête)
- Panulirus longipes* (Homard Rouge)
- Panulirus versicolor* (Homard Vert)

The catch composition by fishing method was:

a) Snorkeling:

Homard Grosse Tête : 69%

Homard Rouge : 30%

Homard Vert : 1%

b) Trap:

Homard Grosse Tête : 5.5%

Homard Rouge : 84.3%

Homard Vert : 10.2%

1. RESUMÉ

Ce rapport passe en revue la pêche de langouste du plateau de Mahé pour la saison de pêche 1995-1996.

A la suite des recommandations formulées à l'issue de la saison 1994-1995, la pêche de langouste a été ré-ouverte pour la quatrième année consécutive. Tout comme pour l'année précédente, la saison a été limitée à une période de 3 mois. Le programme de suivi mis en place en 1992 a été reconduit afin de collecter un plus grand nombre d'informations sur le stock de langouste et d'assurer une meilleure gestion de cette ressource du plateau de Mahé.

Un total de 26 demandes a été recueilli pour l'obtention de licences ; cependant, seuls 23 postulants ont obtenu satisfaction après avoir payé les droits nécessaires.. 17 licences furent obtenues par des pêcheurs de Mahé, 4 par des pêcheurs de La Digue et 2 par des pêcheurs de Praslin. Durant la précédente saison (1994-1995), 33 licences avaient été accordées.

La plongée libre reste la méthode dominante pour la capture de langoustes. 21 pêcheurs l'ont utilisée comme technique unique alors que 2 pêcheurs l'ont employée complémentirement au déploiement de casiers.

On a pu estimer les débarquements à 2.4 tonnes au cours des 3 mois de pêche, comparativement aux 4.1 tonnes (Boullé et Domingue, 1995) de la saison précédente.

Mahé a rassemblé la majeure partie des prises totales avec 1620 kg (67.5%), suivie par Praslin avec 523 kg (21.8%) et La Digue avec 145.8 kg (6.1%), le restant étant constitué de prises en provenance d'autres secteurs comme Silhouette, l'île Nord et Frégate.

Les prises furent de 700 kg en novembre, 1100 kg en décembre et 600 kg en janvier.

Sur l'ensemble, un total de 176 sorties a été enregistré au cours de la saison, soit l'équivalent de 454 homme-sorties : 60 sorties en novembre, 74 en décembre et 42 en janvier. Les deux méthodes employées, plongée libre et casiers, représentent respectivement 98% et 2% des prises.

La prise par unité d'effort (PUE) de novembre à janvier s'établit comme suit :

- 11.7 kg/sortie (novembre)
- 14.9 kg/sortie (décembre)
- 14.3 kg/sortie (janvier)

Les 3 principales espèces cibles sont :

Panulirus penicillatus (Homard Grosse Tête)

Panulirus longipes (Homard Rouge)

Panulirus versicolor (Homard Vert)

La composition des prises par méthode de pêche est la suivante:

a) Plongée libre:

Homard Grosse Tête	: 69%
Homard Rouge	: 30%
Homard Vert	: 1%

b) Casiers:

Homard Grosse Tête	: 5.5%
Homard Rouge	: 84.3%
Homard Vert	: 10.2%

2. THE SPINY LOBSTER FISHERY

2.1 HISTORICAL OVERVIEW

There has always been a historical exploitation of spiny lobsters around the Seychelles islands since fishing began. In 1983 the fishery was closed due to fears of lobster over exploitation. Between this time and 1989, when the fishery was reopened for 5 months, the fishery was not researched or monitored.

In 1989 the spiny lobster fishery was opened from September to May 1990. During this time 34 licenses were issued: 24 on Mahé, 7 on La Digue and 3 on Praslin. The total catch for the open period was estimated at 10 tonnes (Bautil, 1992).

After this open season it was decided to close the fishery until such time as a resource assessment had been carried out on the stocks.

In September-October 1991 a survey of the lobster stocks of the Mahé Plateau was initiated. The survey estimated a standing biomass of 1.17 tonnes for Mahé and 3.5 tonnes for the entire Mahé Plateau (including Praslin, La Digue and Silhouette). The virgin biomass was estimated using the maximum catch observed per unit area and a Maximum Sustainable Yield (MSY) of 4.7 tonnes was calculated for Mahé and of 15.5 tonnes for the whole plateau (Bautil, 1992).

During the survey 66.1% of the lobsters were less than 75 mm cephalothoracic length or berried. It recommended that the maximum catch per year should be 1.6 tonnes for Mahé and 5.3 tonnes for the whole plateau.

Following the survey, the fishery was opened for a two month period in November and December 1992. A monitoring programme was set up (Mees, 1992) to determine the total catch of lobsters during the fishing season and to gather further biological information on the lobster stock of the Mahé Plateau. No limit was placed on the number of licensed fishing units although recommendations were made to limit the unit entries to twenty. Fishing regulations included a ban on the retention of spiny lobsters of less than 75 mm cephalothoracic length and a ban on retaining berried females.

During this first season 38 licenses were issued; 26 on Mahé, 7 on La Digue and 5 on Praslin. The monitoring programme estimated a total landing of 4.9 tonnes for the whole plateau of which 2.8 tonnes was caught from Mahé (Jacques, 1992).

There were 8 license holders who did not return any catch information, 7 of them from Mahé.

In November and December 1993 the fishery was reopened but with fewer licenses to reduce the fishing effort, especially on Mahé. In total 28 licences were issued for this period, 16 on Mahé and 6 each on Praslin and La Digue. A total of 4.1 tonnes of spiny lobster was estimated to have been landed (Jacques, 1994).

The spiny lobster fishing season was again opened in November 1994, however, due to bad weather restricting fishing activity the season was extended to include the month of January, 1995 (Boulle and Domingue, 1995).

The lobster fishing season was re-opened for the fourth consecutive year in November 1995. By default, due to an amendment in the law governing the lobster fishery, the open season is for a period of three months. This report presents the results from monitoring the open fishery season.

2.2. THE MAHÉ PLATEAU AND FISHING SITES

The lobster monitoring programme set up in 1992 and consequently applied every time that the lobster season is opened, covers only the Mahé Plateau.

This plateau has an approximate surface area of 36,000 km² and is composed of 32 granitic islands and 2 coralline islands. It has an average depth of 50 metres and is surrounded by a discontinuous coralline barrier and shallow waters. This barrier rises to a depth of 6-20 metres below sea level.

2.3. THE FISHING ACTIVITY

The lobster fishery in the Seychelles is an artisanal activity carried out mostly by skin divers (snorkeling) operating at night with underwater flashlights. The fishermen use small fibreglass boats of 5.5 metres with an engine capacity of approximately 25 H.P. Some fishing is also done by walking over shallow reefs at night. Fishing usually starts between 6 p.m. to 9 p.m. and ends at the earliest any time during the night to first light (around 6 a.m.). The average fishing trip consists of 2 men fishing for approximately 4.5 hours.

Lobsters are also fished with traps, however, the contribution of the lobsters caught by traps to the total catch is very small. In the 1994/95 fishing season 8% of the lobsters caught came from traps whilst for the 1995/96 fishing season traps contributed only 2% towards the total catch. Traps are set late in the afternoon and hauled early in the morning; on average the traps are soaked for 14 hours at an average depth of 25-30 metres.

2.4. THE SPINY LOBSTER SPECIES

The spiny lobster species fished in the Seychelles waters are from the family *Palinuridae* and belong to the genus *Panulirus*.

Four species are known to occur in Seychelles:

Panulirus penicillatus (Grosse Tête),

P. longipes (Homard Rouge),

P. versicolor (Homard Vert) and

P. ornatus (Porcellene).

2.4.1. HABITAT

Intes *et al* (1980) conducted a lobster survey by scuba diving on the Mahé Plateau during 1979. They reported that all species were found in zones with much swell and/or strong currents. Two species lived only on coral substrate:

- *P. ornatus*: very rare

- *P. versicolor*: areas favoured by this species were not abundant. It was found in shallow sheltered coral heads. Its habitat was scattered so that the species is not easily exploitable but can be caught during the day.

Two species had a preference for granitic substrate though they were also found on coral substrate:

- *P. penicillatus* and *P. longipes*:

They are caught mostly around granitic islands and islets between 1 and 15 metres. The best sites are below granitic cliffs where rock scree form good shelters.

- *P. penicillatus* can be found in shallow water of reefs buffeted by waves.
- *P. longipes* was also found in reefs but in deeper areas where the slope is more abrupt.

3. SAMPLING METHODOLOGY

The same monitoring programme that was set up for the 1992 was used during the 1995/1996 survey, but slight changes were made to the sampling procedure so as to make it a more economical exercise without losing out on essential data.

Data were collected from licensed fishermen operating around Mahé, Praslin and La Digue using two sources:

- a) SFA technicians sampled the landed catch directly to estimate mean catches per unit of effort and to collect length frequency, biometric and effort data. Interviews were conducted to evaluate the total effort.
- b) Receipt books completed by licensed fishermen with sales of lobsters were collected at the end of the fishing season to derive the total sales.

Data analysis from sources (a) and (b) above provide an estimation of the total landed catch and deductions can be made relating to the number of misreportings.

The data was analysed by fishing method, month, fishing sites, bottom substrate type (Rock or Coral) and species.

The total was estimated by multiplying the mean catch rate per site by the effort at that site. At sites where less than 25% of the total effort was sampled a raised total catch was calculated based on the mean values for all sites. The total catch was calculated from the summed catch of each site.

Due to the lack of co-operation from most catering establishments in the past, it was decided not to gather data from these institutions for the 1995/1996 lobster fishing season.

4. RESULTS AND ANALYSIS OF THE FISHING ACTIVITIES

4.1. LOBSTER CATCHES BY ISLAND

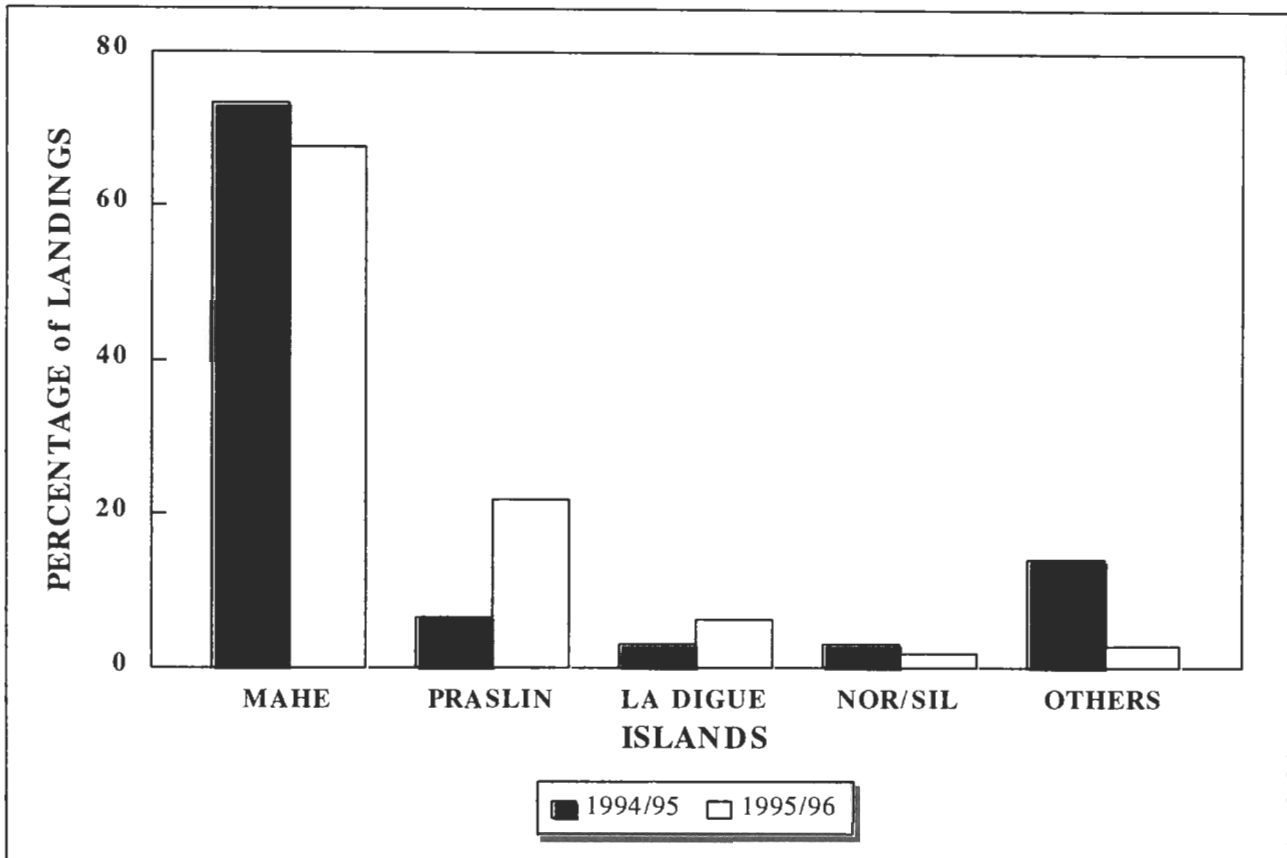
TABLE 1. Estimated species catch landed by island for the 1995/1996 fishing season (November, December and January)

LOCATION	METHOD	GT (kg)	HR (kg)	HV (kg)	P (kg)	TOTAL (kg)	% OF TOTAL
MAHÉ	SNOR	1111.51	455.01	6.70	1.65	1574.87	67.5
	TRAP	2.80	42.85	0.00	0.00	45.65	
	TOTAL	1114.31	497.86	6.70	1.65	1620.52	
PRASLIN	SNOR	341.80	181.27	0.13	0.00	523.20	21.8
	TRAP	0.00	0.00	0.00	0.00	0.00	
	TOTAL	341.80	181.27	0.13	0.00	523.20	
LA DIGUE THE SISTERS FELICITE	SNOR	97.97	47.43	0.40	0.00	145.80	6.1
	TRAP	0.00	0.00	0.00	0.00	0.00	
	TOTAL	97.97	47.43	0.40	0.00	145.80	
NORTH ISLAND SILHOUETTE	SNOR	30.51	13.46	0.13	0.00	44.10	1.8
	TRAP	0.00	0.00	0.00	0.00	0.00	
	TOTAL	30.51	13.46	0.13	0.00	44.10	
OTHER LOCATION	SNOR	39.99	27.01	0.00	0.00	67.00	2.8
	TRAP	0.00	0.00	0.00	0.00	0.00	
	TOTAL	39.99	27.01	0.00	0.00	67.00	
ALL LOCATION	SNOR	1621.78	724.18	7.36	1.65	2354.97	100.0
	TRAP	2.80	42.85	0.00	0.00	45.65	
	TOTAL	1624.58	767.03	7.36	1.65	2400.62	

Gt: Grosse Tête HR: Homard Rouge HV: Homard Vert P: Porcellene

An estimated 1620.5 kg of lobsters were landed on Mahé, representing 67.5% of the total catch (Table 1). Praslin had the second highest catch with 523.2 kg (21.8%) and the islands of La Digue, The Sisters, Felicite and Marianne together had landings of 145.8 kg (6.1%). The catch from other locations (including North Island and Silhouette) was 111 kg, representing 4.6% of the total catch. No fishing was recorded from the Amirantes for the 1995/1996 fishing season.

FIGURE 1. The percentage of landings by island for the 1994/95 and 1995/96 lobster fishing season.



During the 1995/96 lobster fishing season, only 67.5% of the total catch came from Mahé; this representing a decrease of almost 6% of the catch of the 1994/95 season. However, the catch coming from Praslin represented 21.8% of the total catch; an increase of just over 15% from that of the previous season. 6.1% of the total catch was landed on La Digue; this representing an increase of almost 3% of the 1994/95 catch landed on that island. Catches from other locations, including the catch from North Island and Silhouette, had decreased substantially. During the 1994/95 season catches from these strata accounted for just over 17% of the total catch, however, for the 1995/96 season they accounted for a mere 3%.

4.2. FISHING EFFORT BY ISLAND

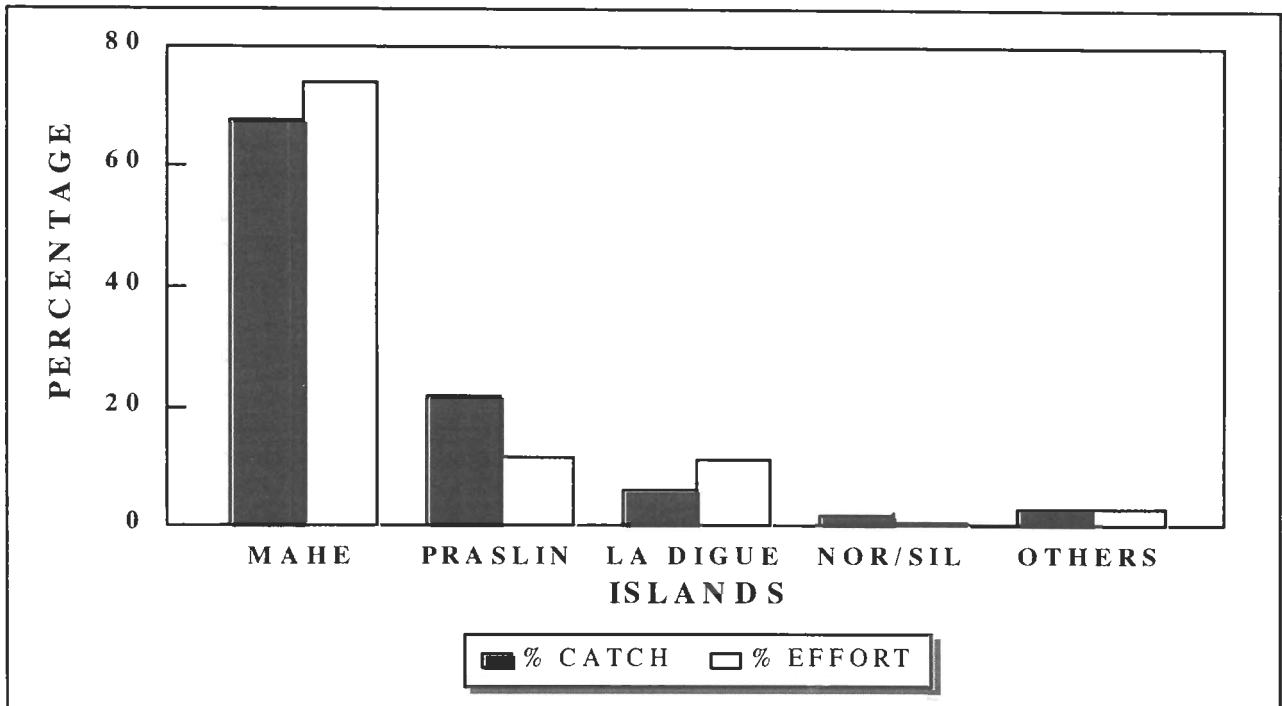
Table 2. The fishing effort for the 1995/96 lobster fishing season (November-January)

LOCATION	Number of trips	% Total Trips	Number of men	% Men	Men/Trip	Effort Man/Hours	% Total Effort
MAHÉ	122	69.3	312	68.7	2.6	1682	73.9
PRASLIN	34	19.3	78	17.2	2.3	266	11.7
LA DIGUE THE SISTERS FELICITE	15	8.5	49	10.8	3.3	253	11.1
NORTH ISLAND SILHOUETTE	2	1.1	4	0.9	2.0	12	0.5
OTHER LOCATIONS	3	1.7	11	2.4	3.7	64	2.8
ALL LOCATIONS	176	100.0	454	100.0	2.6	2277	100.0

As in the past most fishing effort was on Mahé (Table 2); a total of 122 trips, representing 312 man-trips, were recorded. The Praslin Group (34 trips or 78 man-trips) was the second highest. The La Digue Group was the only strata where there was an increase in effort over the previous season (15 trips or 49 man-trips for the 1995/96 season compared to 7 trips or 24 man-trips in the 1994/95 season). For all strata there has been an overall decrease of approximately 24% in both trips and man-trips.

The relationship between catch and effort by island is shown in Figure 2.

FIGURE 2. The percentage of the total seasonal catch and the percentage of the total seasonal effort for each island group.



For Mahé, there was a decrease of 1,411.28 kg (almost 50%) in the total catch and a decrease of 41 trips (approximately 25%) compared to the 1994/95 season. The catch from Praslin had increased by 257.8 kg (51%) whilst the effort had also decreased by 15 trips (30%) compared to the 1994/95 season. In the La Digue Group, the catch had increased marginally by 12.1 kg (9%) whilst the effort had more than doubled; 15 trips in the 1995/96 fishing season compared to the 1994/95 fishing season. From the “Other Locations” both the catch and the effort had decreased; effort went down by 5 trips (55%) and catch had gone down by 207 kg (65%) compared to the previous season. For all strata there has been an overall decrease of 54 trips (24%) in the effort and 1,740.28 kg (42%) in the catch.

4.3. ANALYSIS BY LICENCE NUMBER

Table 3. Reported sales by licensed fishing unit.

LICENCE NUMBER	No. OF RECEIPTS	GROSSE TETE		HOMARD ROUGE		HOMARD VERT		PORCELENE		TOTAL	TOTAL
		NUMBER	WEIGHT	NUMBER	WEIGHT	NUMBER	WEIGHT	NUMBER	WEIGHT	NUMBER	WEIGHT
1	35	263	176.20	359	174.50	0	0.00	1	0.00	623	350.70
6	2	40	58.10	30	21.20	0	0.00	0	0.00	70	79.30
7	9	11	1.00	163	34.00	4	0.00	0	0.00	178	35.00
8	4	36	53.00	22	28.80	0	0.00	0	0.00	58	81.80
9	9	176	287.00	237	310.00	11	18.00	0	0.00	424	615.00
13	22	569	602.50	197	117.40	0	0.00	0	0.00	766	719.90
14	7	4	161.80	0	54.50	0	1.60	0	0.00	4	217.90
15	1	5	0.00	2	0.00	0	0.00	0	0.00	7	0.00
16	21	47	18.00	224	4.00	0	0.00	0	0.00	271	22.00
18	1	4	0.00	20	0.00	0	0.00	0	0.00	24	0.00
19	3	21	0.00	15	0.00	0	0.00	0	0.00	36	0.00
20	1	0	0.00	3	0.00	0	0.00	0	0.00	3	0.00
21	27	157	0.00	623	48.00	0	0.00	0	0.00	780	48.00
23	4	84	0.00	30	0.00	0	0.00	0	0.00	114	0.00
24	4	6	1.00	1	6.60	0	0.00	0	0.00	7	7.60
TOTAL	150	1423	1358.60	1926	799.00	15	19.60	1	0.00	3365	2177.20

Only those fishermen who returned their receipt book to the SFA are considered in the above tables. Over 2,200 kg of lobsters were sold during the three months fishing season, according to the receipt book data (Table 3). The actual weights of the lobsters sold could be as much as 1.5 times the recorded figure since a lot of the fishermen gave the numbers of lobsters sold and not the weight. If we take, for example, fisherman licence number 21 could have sold as much as three quarters of a tonne of lobsters judging by the number of lobsters he has sold. However, based on the data available for the 1995/96 season, fisherman licence number 13 and 9 reported the highest sales, 719.90 kg and 615 kg respectively. It is worth to note that both fishermen licence number 9 and 14 reported sales of 350.70 kg and 217.90 kg, respectively. The rest of the fishermen reported sales of less than 100 kg.

The highest estimated catch was 219.07 kg caught by fisherman licence number 1. Compared to the previous season not one fishermen had all their trips sampled. The highest sampling rate is attributed to fishermen licence number 6 and 15, where 50% of their trips were sampled. The total calculated catch by licence holders was 488.33 kg. Compared to the estimated total landings of spiny lobsters (2.4 tonnes) the data gathered by the SFA technicians upon interviewing the fishermen, those recorded by the fishermen on their calendars and those provided in the receipt books of the fishermen suggest that there was gross misreporting by the fishermen.