



Research Section Newsletter Quarter 1



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1st Edition, 2021

Greetings all!

I hope you are all keeping safe as we continue to battle the global pandemic. The first quarter has been challenging for the Research team as we experience great delay in the implementation of various research projects. However, we managed to initiate several inhouse staff trainings, designing research protocols and research cruise preparation.

As usual, we remain focus and strive to achieve our objectives. We thank everyone for their continuous support.

Happy reading!!



Figure 1: Research presentations, trainings and cruise preparation undertaken by the Research team during the 1st Quarter of 2021.

Meet our intern Ms. Hansa Freminot, from Seychelles Maritime Academy (SMA)

“Hello, I am Hansa currently studying Fishing Technology at SMA.

I had the privilege to join the SFA Research team for my internship period since July 2020 till to date. It's quite a fruitful experience assisting the lab technicians and scientists on various research projects such as the Participatory Lobster Monitoring Programme (PLMP) in October 2020 and the Dropline Survey in March 2021 along with other lab research projects.

I have experienced working in remote locations - spending several nights at sea - and the flexible working environment of the department. I really enjoyed working with the L'Amitie crew as I expand my skills and knowledge on vessel manoeuvre (night navigation).

Although its been challenging at times. I believe, that as long as one remains focused, objectives are smoothly achieved. The SFA Research team has further reinforce my desire to pursue a career in the Fisheries sector.

Therefore, I wish to express my deep gratitude to everyone in the Research section and the L'Amitie crew for the great opportunity and contribution towards my career goals” - Hansa.



Figure 2: Hansa processing some gonads for histology (Chang-Time, N.2021).



Figure 3: Hansa at work during her internship with the Research section - SFA.

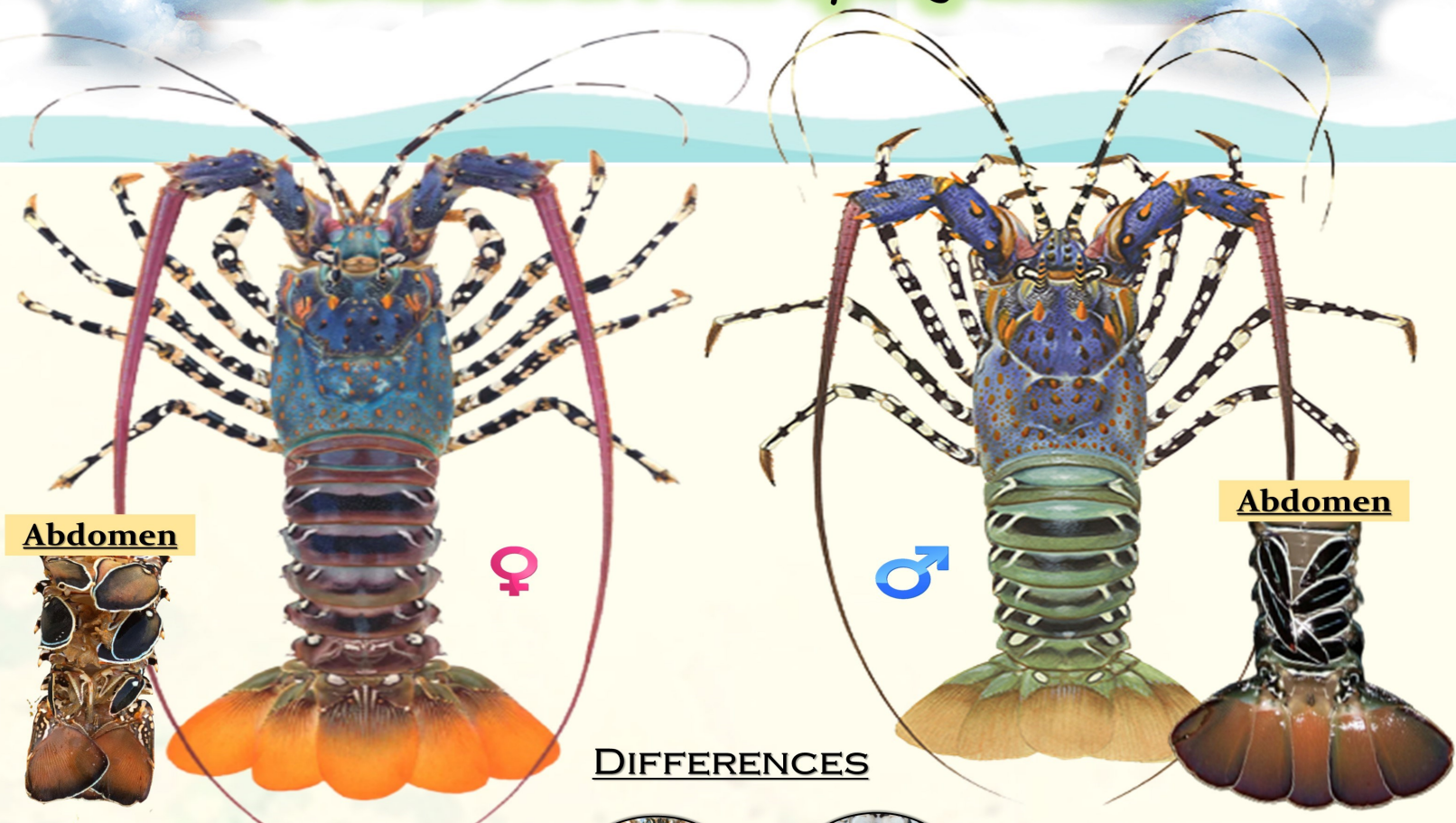
Lobster Fishing Season 2020 –2021

Following the official opening of the lobster fishing season 2020-2021 on the 21st December 2020, the research team has been very busy collecting biological data on lobster catch from licensed individuals around Mahé island. Due to covid pandemic sampling activities was restricted to Mahé ONLY. A more detailed summary will be provided in the next newsletter.



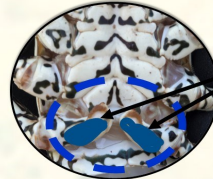
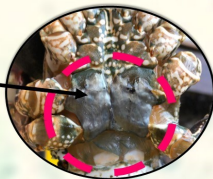
Figure 4: Sampling activity during the lobster fishing season 2020 - 2021.

How to distinguish Female and Male spiny lobster?



1) Tar spots - Sperm packet left by males located on its abdomen

Egg fertilisation



1) Gonopore - easily located on the abdomen

Sperm production

2) Fork-like claws - at the end of the 5th legs

Grooming & Scraping off eggs.



2) Pin-like - at the end of the 5th legs

Movement
 Reproduction

3) Wider Swimmeret (leaf like) - found on abdomen

Cover & supply oxygen to eggs
 Swimming

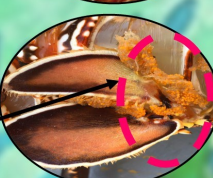
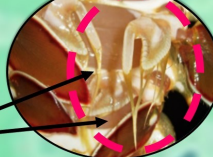


3) Narrow Swimmeret (leaf like) - found on abdomen

Swimming

4) Setae hair - thin hairs found on abdomen

Egg attachment area



4) Lack setae hair

NB: The body features shown on this poster are to illustrate the general differences between male and female lobsters and are not representative of a specific species. This also applies for the colour appearances displayed.

Eggs

The GERUNDIO Project

During September 2020, we commenced a collaborative project with CSIRO (Australia), IRD (France), WWF (Pakistan), MMRI (Maldives), ISSF (USA) and RCFMC-RITF (Indonesia) on tropical tunas and sharks of the Indian Ocean.

The GERUNDIO project, “Development and Implementation of a sampling scheme to support the collection of biological samples and conduct analysis on these samples to provide improved estimates of age, growth and reproduction of tropical tunas (skipjack, yellowfin and bigeye), swordfish, and blue sharks for the Indian Ocean Tuna Commission (IOTC)”, is funded by the European Union and the IOTC.

- Aims to reduce the existing uncertainties in fish population dynamics models, by improving key biological parameters such as growth and reproduction of tropical tuna, swordfish and blue shark.
- Aims to develop extensive networks amongst partners and contributes towards the scientific capacity development of our research institution.

Sampling activities of the project involves the collection and analysis of gonads samples, collection of otoliths and fin spines from various sizes of the three common tuna species: Bigeye (BET), Yellowfin (YFT) and Skipjack (SKJ).



Figure 5: Research team processing gonads samples for further analysis. To determine the reproductive dynamics of the tuna species (Freminot, H. 2021).



Figure 6: The SFA Research & IRD team extracting otolith from the tuna head (Freminot, H. 2021).

Demersal & Semi-Industrial Daily Fish Sampling

Fish sampling activity during the pandemic remains challenging and the length frequency data collected from targeted (demersal and semi-industrial) species are limited.

A small number of semi-industrial species were sampled this quarter with a great proportion of Yellowfin (YFT) (Figure 10). A total of 80 fish species were sampled which includes Yellowfin (64), Big Eye tuna (4) and Swordfish (12) ranging from 40 - 140cm.

Similarly, we sampled a great number of Bourgeois (262) following Zob gri (35) and Vyey Makonde (22) at a total of 319 fish ranging from 30-90 cm (see Figure 8).



Figure 7: The Research team undertaking the fish sampling activity at Sea Harvest.

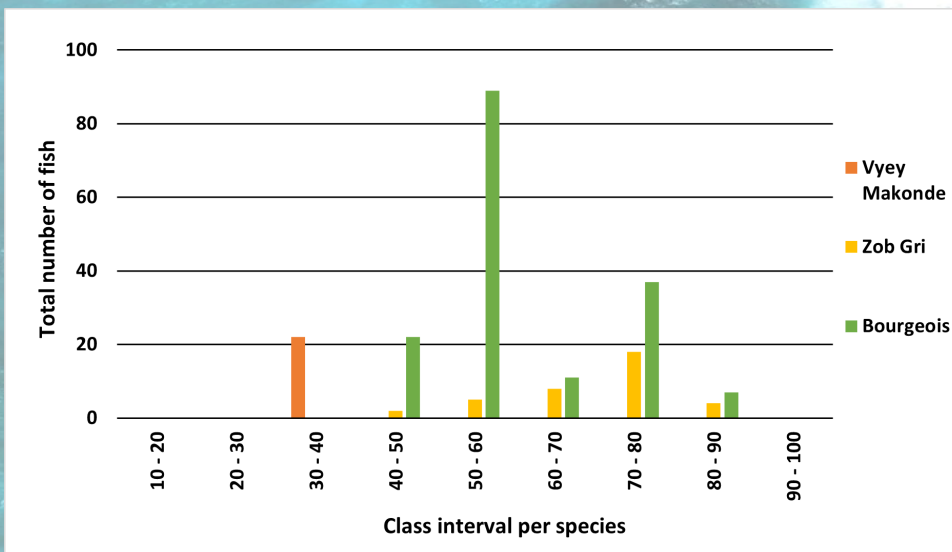


Figure 8: Total number of demersal fish species Bourgeois, Vyey Makonde and Zob gri sampled per size class during January - March 2021.

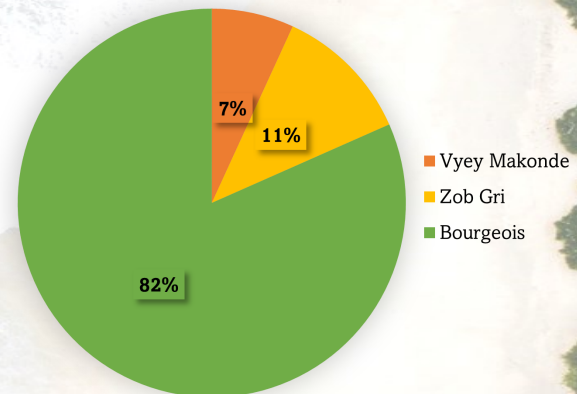


Figure 9: Total percentage of tuna species of Bourgeois, Vyey Makonde & Zob gri sampled during January - March 2021.

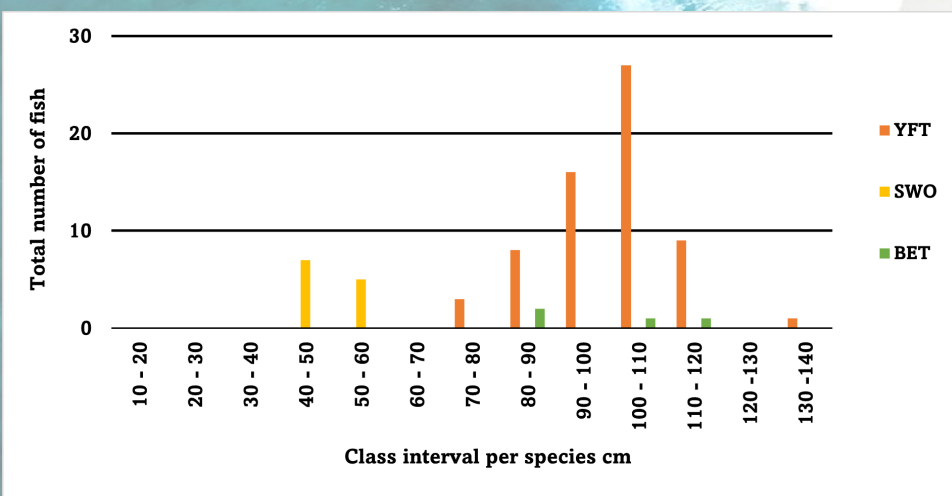


Figure 10: Total number of semi-industrial fish species (Swordfish, Yellowfin & Bigeye tuna) sampled per size class during January - March 2021.

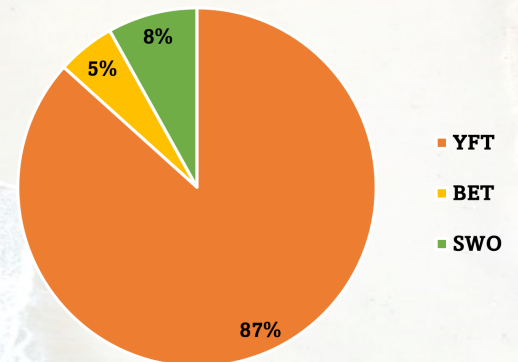


Figure 11: Total percentage of tuna species of Yellowfin (YFT), Bigeye (BET) and Skip Jack (SKJ) sampled during January - March 2021.

‘Monitoring and assessing the Seychelles spanner crab fishery’.

In Seychelles, the spanner crab *Ranina ranina* or ‘Krab ziraf’ has been commercially exploited since 1986 (Moussac, 1988). Currently, the spanner crab fishery and stock status remain unassessed from the last research programme conducted in 1995 (Boullé, 1995). Therefore, data on their biology, size structures, catch or effort are limited. With increasing interest in this species, it is crucial to gather enough scientific data to inform about the stock status.



Figure 12: *Ranina ranina* or Spanner/red frog crab also known as Krab Ziraf.



Figure 13: Dorsal view of a female spanner crab body plan. Source: Google Image, 2021.

Consequently, there is a need to implement a biological monitoring programme with the aim of improving our understanding of this fishery through collecting fishery dependent and biological data to assess abundance, biomass, size structure, catch and effort. The objectives of this study are to i) Collect size and sex composition of spanner crab catch and ii) Catch per unit effort (CPUE). The outcome is to assist in formulating a management plan to ensure sustainable management for the spanner crab fishery (i.e. through size limits, berried female release etc.).

us to gain vital information such as; i) What knowledge do these fishermen already possess on the species (e.g. sex identification, spawning times etc.), ii) When/where/how do they fish this species and iii) Do they believe that management procedures should be implemented.

A co-management approach has been adopted whereby a series of interviews was initiated with known Krab ziraf fishermen early this year. These interviews will allow

Spanner Crab Questionnaire 2021

Seychelles spanner crab *Ranina ranina* (known locally as ‘Krab ziraf’) has been commercially exploited since 1986 (Moussac, 1988). Currently, the spanner crab fishery and stock status remain unassessed from the last research programme conducted in 1995 (Boullé, 1995). Therefore, data on their biology, size structures, catch or effort are limited. With increasing interest in this species, it is crucial to gather enough scientific data to inform about the stock status. This questionnaire has been designed as part of the biological monitoring programme with the aim of improving our understanding of this species and its fishery. The objectives of this study are to collect fishery dependent and biological data to assess abundance, biomass, size structure, catch and effort. The generated scientific evidence/data will be provided to fisheries managers with the purpose to assist in formulating a management plan/harvest strategy.

All information collected during this survey will be purely for research purposes and will be kept confidential.

Date: _____

Name: _____ Contact details: _____

License Number: _____ Interviewer (s): _____

Pre-harvest

1. How many years have you been fishing for spanner crabs?

2. On what basis do you operate in this fishery? (Insert a Tick)

Part time Full time

3. What is the size/type of the fishing vessel used during harvesting?

4. When do you operate? (Insert a Tick)

Operation	Yes	No	Seasonality	Marked Seasonal	Wrecker	Order
Fish all year?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Which calendar month?

5. Cost per fishing trip (Insert cost estimation)

Items	Ice	Bait fuel	Bait	Food	Transport	Fishing Gear/vessels	Miscellaneous
Value (SCR)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

6. i) What gear(s) do you use? (Insert a Tick)

Trap Other

Net ii) Provide fishing gear description: _____

Both

7. What type of fishing gear do you use for the North West Monsoon and South East trade winds? (Insert a Tick)

	Trap	Net	Both
N.W.M (Northwest Monsoon)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S.E (Southeast Monsoon)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. i) What type of bait do you normally use in traps/nets?

ii) Do the spanner crabs show preference towards a certain type of bait. (Insert a Tick)

Yes No iii) If Yes, which bait?

Harvest

9. How many crew members are there onboard the vessel during a fishing trip?

10. On average how many days is one trip?

11. When do you conduct fishing? (Insert a Tick)

Daytime Nighttime Both

12. Fishing site (Insert a Tick)

Site location	Yes	No	Sometimes	Comments
Do they have a specific fishing site?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do you need to search long hours?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do you move between sites in one trip?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do you use any technology to locate fishing grounds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
What depth range do you usually set the traps/nets for spanner crab?	<input type="text"/>			
What kind of habitats do you presume spanner crabs prefer?	<input type="text"/>			
Are spanner crabs found everywhere on the lake plains or only some parts of it?	<input type="text"/>			

Show at least 3 fishing locations for spanner crabs. Using the grid Map (page 7, Insert a Tick in fishing post)

Figure 14: Spanner crab questionnaire used to interview known spanner crab fishermen. (Gabriel,K, 2021)



Section Updates

- Dr Ameer Ebrahim assigned as Head of Research Section (Interim).

Upcoming trips:

- BRUV (Baited remote underwater video) Survey on Mahé plateau.
- Dropline Survey Cruise on the drop-off of the Mahé plateau.