



A COURSE BOOK IN FISHING GEAR TECHNOLOGY FOR NAMIBIAN STUDENTS

Tobias Ndeshipanda Nambala

Namibian Maritime and Fisheries Institute

Namibia

tnambala@yahoo.com

Supervisors: Lárus Pálmason, Sudurnes College

laruspa@isl.is

Gudbjorg Palsdottir, Teachers college

gudbjorg@khi.is

ABSTRACT

This work deals with the development of a student handbook for teaching Namibian students in fishing gear technology. It will be used as the main teaching material for the course, thereby used by both the instructor as a teaching material for the subject (fishing gear technology and seamanship) and students attending this course.

This book is written as per the syllabus in teaching fishing technology at the institute – Namibian Maritime and Fisheries Institute (NAMFI).

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1 INTRODUCTION

Namibia is situated on the south western coast of Africa, bordering the South Atlantic Ocean between Angola and South Africa. Namibia's geographical position is 22° 00' S, 17° 00' E; with a total land area of about 825,418 sq km. Namibia's coastline stretches about 800 nm (about 1500 km). The sea fishery products play a very important role in the Namibian economy. According to the MFMR (2001) fishing contributes about 7.9% (1998) to the Namibian GDP. It is the country's long-term strategic objective to oversee that the exploitation of fisheries resources benefits all Namibians, by involving them in the fisheries.

The Namibian fishing industry is still dominated by foreigner employees, on positions of responsibility. Mostly Namibians are employed as ordinary crews, only few officers are given the opportunity to take responsibilities in their day-to-day job. Namibians do not have a fishing tradition, generally because, the vast majority of the population lives inland (in places far from the coast).

Namibia has only two commercial harbours, Walvis Bay, situated on the western part of the country and Luderitz, situated on the southern part of the country. Walvis Bay is the main harbour.

The Namibian shelf area from the shore to 200 m depth is approximately 110 000 km², and the shelf area from the shore to 1000 m is approximately 230 000 km². The bottom then slopes fairly steeply down to several thousand metres. The widest shelf is off the Cape Cross and Walvis Bay area and off the Orange River in the south. Nearly all the fishery occurs in the shelf area.

Namibian waters are exceptionally productive, principally because of the up-welling of nutrients resulting from the Benguela current which flows northwards along the coast. Relatively few species make up the bulk of the total fish biomass by far: clupeid, pilchard and anchovy represent the pelagic inshore fish; horse mackerel (maasbanker), with smaller and varying amounts of chub mackerel represent the pelagic offshore fish; Hake, often termed demersal, inhabits the whole water column (offshore and inshore) with its main distribution, it extend into shallow waters inhabited mainly by the juvenile part of the population.

There are a number of less abundant fish, in particular, snook, kingklip, sole, monkfish, squid, deep sea crabs, and rock lobster, which are also important to the Namibian fisheries. Seals and sea birds are abundant in the inshore areas especially along the southern part of the coast.



Figure 1 Map of Namibia

Figure 1 Map of Namibia. The Namib Desert runs along the entire coast. There are only two commercial harbours in Namibia.

2 FISHING TECHNOLOGY

Fishing technology represents a generalization of practical experience accumulated by many generations of fishermen all over the world. Fishing technology stand for the integration of available fishing gears, vessels, knowledge of fishing grounds and knowledge about the behaviour of the fish targeted.

Fishing gear technology is an integral part of fishery science. Biologists as well as fishing gear technologists are interested in the influence of the fishing gear to the living marine; managers calculate the relationship between the cost of the fishing equipment and their operation and the earnings accruing from the fishing.

Administrators and personnel that are engaged in the fishing industry realise the need to have the knowledge of the fishing gear and all associated actions in order for them to keep up with this demanding industry. These are some of the reasons why there are abundant literatures about the fishing gear and the need for more workshops and training sessions in fishing gear technology.

Fishing technology as a scientific discipline that was found and developed by Russian and Japanese scientists in the 20th century, *Carrothers and Fridman (1986)* contributed to a better understanding of the fishing and related processes on the interaction between fish, fishing gear and the fishing vessel.

Namibia's fishing fleet can be divided into two categories, thus, medium sized vessels that are usually used in long line fishing and monk fishing. The other half is of large vessels that are operating in deep sea fishing, for pelagic and demersal fishing. Fishing technology in Namibia is still at the point of developing, because most Namibians have not gone to school and study how to deal with fishing gears and how to improve the current fishing system as to increase the fish catch ability. However, with the current development in the Namibian fishery in particular the introduced system of training Namibians for their own fishery will help the current situation. *MFMR, Namibia (1991)*.

The training is offered by the Namibian Maritime and Fisheries Institute (NAMFI). NAMFI is established under the board of trustees, by the Ministry of Fisheries and Marine Resources, in 1997. The institute gives training to fisherman, fisheries inspectors and fisheries observers. The courses offered by the institute are Navigation courses (Deck officers), Engineering, Safety courses and short courses to the fisheries observers and inspectors. Tailor-made courses in fishing technology are one of the courses offered to fisheries inspectors and observers.

3 AIMS AND OBJECTIVES

The writing of this book is meant to satisfy the requirements of the Namibian Maritime and Fisheries Institute (NAMFI). NAMFI is the only institute in Namibia that gives training to all seafarers in Namibia. The institute train officers for the fishing industry in Namibia. Fishing technology is offered to students enrolled on the main course, "Deck officers".

3.1 The writing of this book aimed at the following

1. Improving materials that are currently used in teaching fishing technology at NAMFI. The current materials used in the subject lacks more emphasis on the fishing gear, thus this work is just focused on the fishing gear and technological aspects in seamanship.
2. Developing teaching materials that are designed as per the syllabus available in teaching fishing technology. These teaching materials are produced in line with the syllabus, a case different to the current materials, currently used at the institute.
3. Developing teaching materials that suit the Namibian fishing situation as of today. In this book, attention is only given to fishing methods that are practised in Namibia. All effort was exercised to ensure that all aspect contained in this book are in the interest of the Namibian fishery and Namibian students, because the targeted population is Namibian.

The writing of this book also aimed at giving the author increased in-depth knowledge and technical know-how in fishing gear technology, because the methodologies applied to produce this book are based on research, and seeking of information from different sources. For this reasons, in addition to his experience, the author will gain more knowledge of the content in the book, so that he can be able to teach students about the content of the book.

This work will be delivered to the class in a form of lessons; thus, a syllabus and a lesson plan will be used in this case. By using a teaching guide that will be prepared by the instructor and approved by the head of the department, it will be easy to use this book and make individual lessons, which can be written on PowerPoint slides. In addition, some topics are more practical than theory, thus practical lessons will be planned.

4 METHODOLOGIES USED TO WRITE THIS BOOK

This book is written on a research basis. Literature study at the library at the Marine research Institute in Reykjavik has contributed positively to the development of this book. The literature consulted for this work range from technical textbooks by FAO and Fishing News books to pamphlets and product catalogues of various fishing and marine companies.

Some information is extracted from different governmental organisations, which have similar fisheries as the Namibia. After completion of the course at NAMFI students will be employed in the industry, some students end up in foreign ships, thus if they can

connect their own fishing methods with other methods that are of the similar type, then this will help them, to work with no difficulties.

The book is written in close collaboration with two supervisors. A fishing technologist and subject specialist helped in all technical layout and hierarchy of organising a course in fishing gear technology. In addition, he helped with the correctness and technical proofreading of the work; most information is received from the technical supervisor.

The second supervisor is an expert on designing teaching books and study materials at a level of higher education. All the academic writing skills and thorough comprehensiveness is done with her involvement. These two supervisors were advising the author to produce this book.

In addition to this the author of this book used his own experience, in the subject. The study on the operation of the purse seine gear was also conducted on a two-day trip at sea, aboard a purse seiner “Sulan” on the east of Iceland “Neskaupstadir”. This also helped in the writing about purse seiners.

5 TARGET GROUP

The book is targeted to teach students, who are enrolled on the course “Class five deck officers”. Class five is the level of skipper 1 as per STCW 95-F of the International Maritime Organisation. During this course, in addition to subjects in the navigation related field, students are also given fishing technology as a subject. However, the book has covered topics in a way that it can also be used for the class six levels and or the cadet’s preparatory course.

6 THE CONTENT OF THE BOOK

The content of this book is comprised of topics that best explain the Namibian fishing industry. This book is having three chapters and an appendix, thus:

Content:

CHAPTER 1- MATERIALS AND ACCESSORIES

- Fibre materials
- Twines
- Ropes

- Chains and links
- Netting
- Summary
- Student's task

CHAPTER TWO- FISHING VESSELS AND FISHING METHODS

- Types of Namibian fishing vessels
- Fishing methods in Namibia
- Efficiency of a fishing gear
- Selectivity of a fishing gear
- Summary
- Proposed reading
- Student's task

CHAPTER THREE- FISHING GEAR CALCULATIONS

- Mending (webbing) of fishing nets
- Fishing gear calculations
- Fishing gear operations
- Summary
- Student's tasks

SUMMARY

APPENDIX

- Measurements and terminologies

LIST OF REFERENCES

FURTHER READING

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