

**KNOWLEDGE ATTITUDE & BEHAVIORS  
OF THE FISH STAKE-HOLDERS IN FISH  
CHAIN ON FISH**

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**KNOWLEDGE ATTITUDE & BEHAVIORS OF THE  
FISH STAKE-HOLDERS IN FISH CHAIN ON FISH**

By

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## Declaration

The work in this thesis was carried out under the supervision of Prof Atthur Bamunuarachchi and Dr. K.K.D.S. Ranawera (Food science and Technology Department, University of Sri Jayawardanapura) and report on a thesis has not been submitted to any university for another degree and has not been presented or accepted in any previous application for a degree.

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## Abstract

Fisheries are a key sector in Sri Lanka's national economy. Specially marine fisheries has significant role having 90 % contribution to the fish production. The actual fish production in 2004 was 253 190 MT. Deterioration of the quality of fish during catch, handling, transportation, loading, unloading, and marketing is over 40 % of the catch. This is related to lack of knowledge, behaviors and attitude of the fishermen, fish handlers, transporters and fish vendors. Therefore this study was carried out to knowledge, attitude and behaviors of stakeholders in the fish chain on fish. This study was conducted among the fishing community in Matara district.

The objectives of this study were to determine knowledge, attitude and behaviors of fish stakeholders on fish and how to implement the quality deterioration of fish. In this study random sampling method was used to select 90 fisher people in Matara district including fishermen, boat owners, crew members, fish transporters and fish vendors. The data were gathered by using interview schedule method, observation and group discussion.

The collected data used to explain the knowledge, attitude and behaviors of the fish stakeholders on fish. The result showed that 71% of participant in illiteracy and only 2 % have biological and technical knowledge about fishing and fish handling. Only 10% of participants know method of icing and ratio of icing. According to observation and discussion, root attitude and behaviors about fish handling and storage affect the quality deterioration of fish.

Implementation of adequate fisheries management process and awareness programme for fishing, fish handling and storage is timely need for change attitudinal and behavioral to ensure sustainable fisheries and continued livelihood for today's as well as tomorrow fishermen.

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## 1. INTRODUCTION

Sri Lanka is an island state in the Indian Ocean, south-east of the Indian sub-continent between latitudes 6-10° N longitudes 80-82° E. The island is approximately 66,000 km<sup>2</sup> with a 1340 km long coastline. Sri Lanka claims sovereign rights of 223,000 km<sup>2</sup> of Exclusive Economic Zone (EEZ) of the Indian Ocean.

In Sri Lanka fisheries play an important role for the economy by providing employment, food security and foreign exchange earnings. In 2004 the fisheries sector contributed nearly two percent to gross domestic product and employed over 300 000 persons directly and in related activities. The fishing industry became an important foreign exchange earner for the country. The marine fish production in Sri Lanka was estimated at 253, 190 MT in 2004, which is about 88% of the total fish production in the country.

Fish and fish products, being highly spoilable, deserve special care and attention being paid to them from the catching point to the frying-pan. The living habitats of fish are completely different from its post-harvest environments and its quality depends on many factors, such as intrinsic composition, degree of spoilage, damage, deterioration during harvesting, cleaning, washing, handling, preservation, processing, storage, transportation, distribution and marketing

Socio-cultural aspect of the fishing community is that, there is a greater ancestral relationship between fishing and fishers. Generational link (relationship of fishing as an occupation pass down from father to son) was reported to be 75% of 83,776 active fishers in 1996. There are three reasons for this high generational link. These are Low level of education, rare alternative employment opportunities and relatively higher

income with independence. As far as education level of fishers is concerned, 80% of the active fishers have attended only primary schools.

Active fishers use 31,663 boats and the diverse types of traditional and large scale fishing craft in 2004, owned and operated by private individuals. In coastal fishery use multi gear fishing gears as beach seine, hand line and gillnet targeting a large number of species and offshore fishing use large mesh drift gill net fishery and long line fishery. Most traditional fishermen landed their fish catch at the estimated 700 landing sites on beaches and estuaries and river mouths in Sri Lanka. Larger boats tied up at anchorages used small boats to land their catch. The multi day boats generally and some of the day boats used the 12 fishery harbours.

Fish landed at fishery harbours, anchorages and fish landing sites is either transported to major urban centers such as Colombo, Kandy, Galle etc or sold locally. Fish retailing is done through larger urban fish markets, private sector owned fish stalls and fish retailing outlets or vendors using motorcycle and cycle. Fish transportation is done in insulated or non-insulated covered transport vehicles, packed in wooden or plastic boxes with ice.

Post harvest losses are major issues in offshore fisheries as well as coastal fishery. Over 40% of the catch is reported to be landed in poor quality. This is related to fishing method, storage on deck, improper handling, inadequate and low quality ice, untimely icing, improper loading and unloading practices and improper transport method. Inadequate infrastructure facilities as well as knowledge, attitude and behavior of the fishing community gradually affect poor quality fish. Inadequate fisheries management overrides many of the issues discussed above. All operations are carried out in such a way that minimizes the cost factor.

Contribution of the fish production to total food production is 2% but 70% of the Sri Lankan people animal protein requirement full fill by the fish foods. In 1996 per capita fish consumption in Sri Lanka is 13 kg and it come to 16 kg at 2000 but according to medical decision it should become 21kg per year. Therefore enhancing the production of fished, quality of fish and productivity of fishing community and fishing industry as well as improving the socio economic conditions of the fishing community are very important.

Matara district situated in coastal belt therefore fishing industry became an important livelihood in this district coastal community. According to Department of Fisheries data Matara district second only Jaffna district annual fish production in 2004.

### **1.1 Goals and Objectives of the study**

#### **Goal**

- ❖ To determine affecting of the knowledge and attitude of the fish stakeholders to quality deterioration of the fish.

#### **Objectives**

- ❖ To study factors affecting the quality deterioration of fish
- ❖ To study knowledge, attitude and the behaviors of the fish stakeholders
- ❖ To study quality deterioration of the fish during harvesting, handling, post harvesting, transporting and storage
- ❖ To study how to control the factors to minimize quality of fish
- ❖ To study how to improve the knowledge, attitude and the behaviors of the fish stakeholders

## **2. LITERATURE REVIEW**

### **2.1 Marine Fish**

Salt water fish separates them in to two groups depending on the depth of water in which they are found, which is correlated with great differences in the fish's fat content Pelagic fish and Demersal fish. (Potter & Hotchkiss, 1996)

#### **2.1.1 Pelagic fish**

Fish found in the middle and surface water layers of the sea are called pelagic fish include Herring, Mackerel, Salmon, Tuna, Sardines and Anchovies (Kelawalla, Balaya, Atawalla, Kopparawa, Bolla, Kumbalawa). This group includes many of the fatty fish which in some instances have muscle containing 20% fat reserve under skin. They have more red muscle and oily off white appearance flesh.

#### **2.1.2 Demersal fish**

Demersal fish is found at or near the bottom of the sea, ordinarily on the continental shelves and includes whiting, flat fish such as Carangid sp, Rays, Brains, Ocean perch, Shrimp, Oysters, Clams and Crab (Parawa, Galmalu, Kossa, Maduwa). Demersal fish usually have less than 5% fat and some times less than 1% fat in the muscle. In this fish fat deposited in liver and have white flesh. (Hall, 1990)

### **2.2 Composition and Nutrition**

The composition and nutritional properties of the edible muscle of fish of a given species are quite variable, depending on season of the year, degree of maturity, and other factors. The herring, for example, may vary in muscle fat from about 8% to 20% with changes in the season and available food supply. The composition of most fish falls in the ranges of about 18-35% total solids, 14-20% protein, 0.2-20% fat, and 1.0-1.8% ash. (Potter & Hotchkiss, 1996)