



Fresh Fish Handling Practices: From Harvest to Consumer

Meena Charandas Tembhurnre^{1*}, Aditya Kumar² and Shambhavi Geeta³

¹ICAR-Central Institute of Fisheries Education, Mumbai, Maharashtra (400 061), India

²College of Fisheries, Kishanganj, Bihar Animal Sciences University, Bihar (855 107), India

³ICAR-Central Institute of Fisheries Education, Mumbai, Maharashtra (400 061), India



Open Access

Corresponding Author

Meena Charandas Tembhurnre

✉: meenatembhurnre2019@gmail.com

Conflict of interests: The authors have declared that no conflict of interest exists.

How to cite this article?

Tembhurnre, M.C., Kumar, A., Geeta, S., 2026. Fresh Fish Handling Practices: From Harvest to Consumer. *Biotica Research Today* 8(7), 112-113.

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Abstract

Fish is one of the most perishable food items. Spoilage begins as soon as the fish leaves the water because of its high moisture content, soft tissues, enzymes which remain active after death and bacterial flora which are adapted to cold temperatures. Even a few hours of bad handling or wrong storage temperature can make a good catch unsafe for consumption. The review of fresh fish handling from harvest to consumption is based on guidance from the Food and Agriculture Organization. Using appropriate gear for catching, quick capture and gentle handling minimise stress, physical damage and contamination. Further maintaining good hygiene and an uninterrupted cold chain adds quality to the fish that reaches a consumer's plate.

Keywords: Chilling, Cold chain, Fresh fish handling, HACCP

Introduction

Fish is one of the most perishable food items. Immediately after capture, the flesh of the fish begins to break down by the action of enzymes (autolysis) and the action of bacteria on the skin, gills and gut (Huss, 1995). Due to its highly perishable nature, fish does not give a person much time to make mistakes. Spoilage can get accelerated if it is not handled or stored properly. Leaving it under the sun or storing it at the wrong temperature can turn a good catch into something unsafe to eat. This article explains how fish should be handled at every stage of its journey, from the moment of harvesting to the moment of landing on a consumer's plate. The aim is to explain why each step matters and what good practice actually looks like, taking guidance from the Food and Agriculture Organization (FAO, 2023).

Why Careful Handling Matters?

Fish spoils faster than most meats because it has soft tissues, its flesh contains enzymes that are active even after death and its natural bacterial flora is already adapted to cold, wet conditions (FAO, 2023). Rough handling makes this worse. It damages skin, exposing the flesh to spoilage bacteria, thus

speeding up the rate of decay. This is why fish handlers are taught a simple rule: "Fish should not be treated as cargo. They should be treated as food, from the moment they are caught". Hygiene should be maintained at every point of contact, including hands, decks, containers and market surfaces.

Harvesting Point Management

Good handling starts before the fish is taken out of the water. Rough capture increases the mortality of fish as well as the rate of spoilage (FAO, 2023). It is recommended to catch the fish quickly to minimise stress and physical damage to the fish. Immediately after landing or taking out of the pond, fish should be washed with clean water to remove mud, slime and other debris that may carry bacteria. If required, purging may also be done, where fish are held for a short period of time in clean water without feeding to reduce gut contents, before harvesting. In addition, care should be taken in the choice of nets, traps and other harvesting gear to prevent injury to the fish (FAO, 2023).

Chilling

The single most important practice is to rapidly cool the

Article History

RECEIVED on 25th June 2026

RECEIVED in revised form 03rd July 2026

ACCEPTED in final form 10th July 2026

fish after capture to a temperature close to 0 °C (32 °F). The most common method is pre-chilling, in which fish are packed with ice in roughly equal proportions so that small pieces of ice make good contact with the whole body. It slows bacterial growth, providing enough time to transport fish from the fishing ground to the market. In addition, fish should not be exposed to direct sunlight or drying wind, since both heat and moisture loss accelerate the spoilage rate. Another important point is to maintain the cold chain, *i.e.*, immediately cool the fish after catching and keep it cold. Food safety authorities are very strict about it because any break in refrigeration allows bacteria to grow rapidly. The 41 °F limit has been set as a standard for U.S. retail/food-service (Tempk, 2025). Similar strict limits are set by many national and regional systems, such as hygiene regulations in the European Union, where processors are expected to continuously monitor the temperature and record any deviation (Tempk, 2025). For some reduced oxygen packaged raw fish products, where *C. botulinum* and its toxin is a major hazard, refrigeration is the only barrier to prevent its proliferation. The FDA recommends time-temperature indicators on such products to prove that the cold chain was not broken at any point.

Processing and Hygiene Standards

At processing plants and fish markets, hygiene is guided by internationally recognised frameworks such as the Codex Alimentarius Code of Practice for Fish and Fishery Products, which lays out both general good-handling rules and the Hazard Analysis and Critical Control Points (HACCP) (FAO, 2023). HACCP asks handlers to identify the exact points in the process where contamination or temperature abuse is most likely to occur and to put monitoring, corrective action and record-keeping around those points. Facilities should be built and cleaned in such ways that contamination is prevented, for example with adequate drainage, back-flow prevention on water lines and protection against pests.

From Retailer to Consumer

The final and often weakest link in the chain is handling by the consumers. Food safety agencies recommend buying seafood last during a shopping trip, using a cooler bag for

transport and getting it into a refrigerator or onto ice within two hours of purchase, or within one hour if the temperature outside is 90 °F (32 °C) or higher. At home, fresh fish should be kept in the coldest part of the refrigerator, ideally checked with a thermometer to confirm it stays at 40 °F (4 °C) or below. Any refrigerated perishable food, including fish, that has been kept above 40°F for four hours or more in case of a power outage should be discarded. These steps may look small, but are as important as the previous steps taken during the cold chain.

Conclusion

Fresh fish handling is a continuous chain of temperature control and cleanliness, ignoring which can cause a huge loss, both in terms of money and health. Breakage in this chain at any point can undo the effort of all those involved in catching of fish to its consumption, like- a fisher who chills the catch perfectly but a truck's refrigeration fails, or careful processors who maintained the temperature and hygiene at every point until sale but the consumer ignores it, makes no sense of those preventive steps taken before. Understanding why each step exists and is important is the only way to keep fish safe and tasty and worth the effort it took to catch.

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