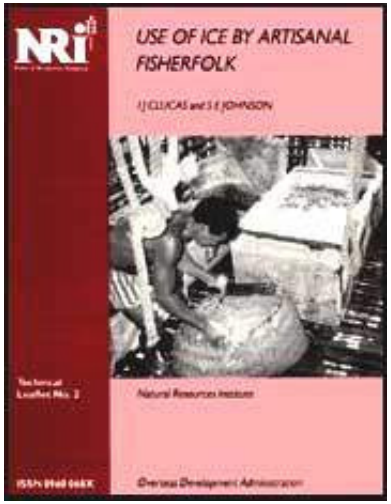
Home"" """"> ar.cn.de.en.es.fr.id.it.ph.po.ru.sw

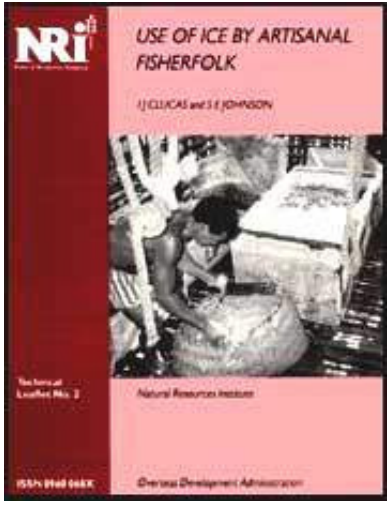


Use of Ice by Artisanal Fisherfolk (NRI, 1991, 8 p.)

Icing fish

- *(introduction...)*
- Methods of using ice
- How to use ice
- How much ice do I need?
- Ways to slow down the melting of ice
- What type of ice can I use?
- Conclusions
- Further reading

Home"" """"> ar.cn.de.en.es.fr.id.it.ph.po.ru.sw



Use of Ice by Artisanal Fisherfolk (NRI, 1991, 8 p.)

Icing fish

The use of ice to store fish immediately after they are caught can improve the quality of the catch and increase its value. During trials in India, the crew and owners of fishing boats earned about 20% more money when they used ice and insulated fish boxes because their fish was high quality and sold at better prices in local and urban markets.

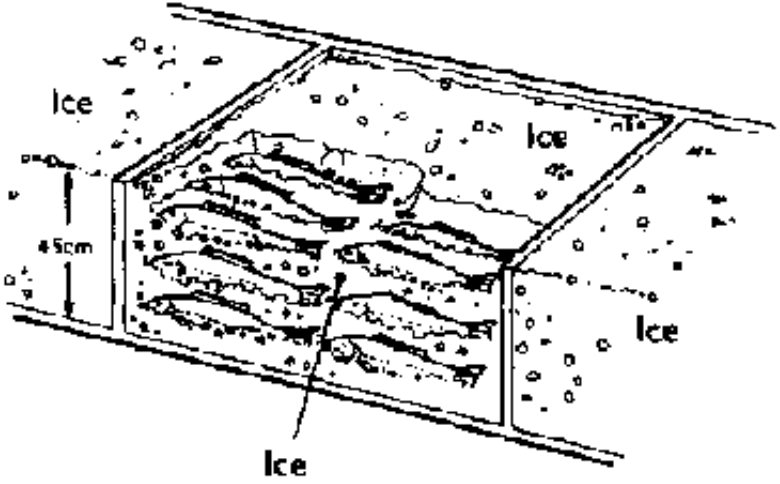
Ice is used to remove heat from the fish. Without ice, or another way of preserving the catch, fish will spoil and become inedible after 7-8 hours storage at tropical temperatures. However, icing fish ensures that top prices are received even after long fishing trips. Fatty fish keep for about one week and fish with little fat last for two weeks or longer if correctly iced. Fishing trips can be lengthened and fuel costs reduced, as less time is spent travelling between fishing grounds and markets. Fish can also be stored for a few days before selling to

overcome price reductions at market during glut landings.

Methods of using ice

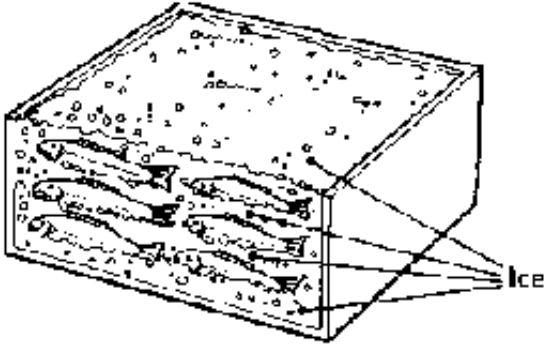
Two methods are used to store fish with ice.

Bulking is the layering of fish and ice, usually in a fish hold, though it can be done in a large, permanently fixed, insulated ice box.



FIGURE

Boxing is the layering of fish and ice in specially made boxes. These boxes can be removable for transport to market, or permanently fixed on board the boat.



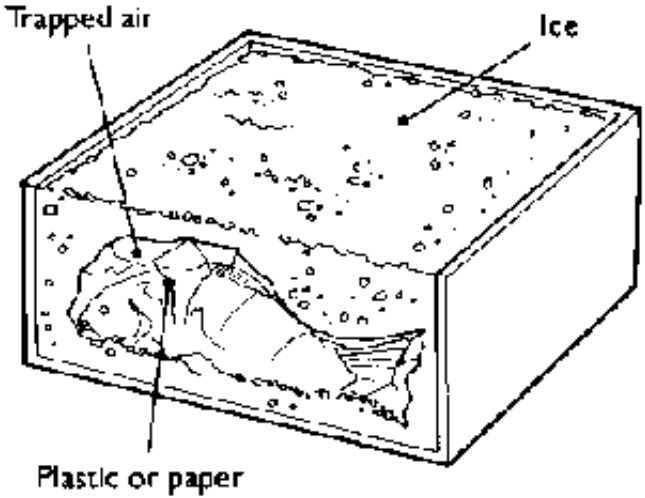
FIGURE

The method chosen depends on the size and type of boat. Boxing is recommended for all types of boats, as it produces the best quality fish. Insulation must be provided in either an insulated hold or insulated fish boxes. It is not necessary to use both together. Bulking is more common in boats which have a hold or permanent fish boxes. However, in open boats, fish and ice can be layered using the same technique as bulking.

How to use ice

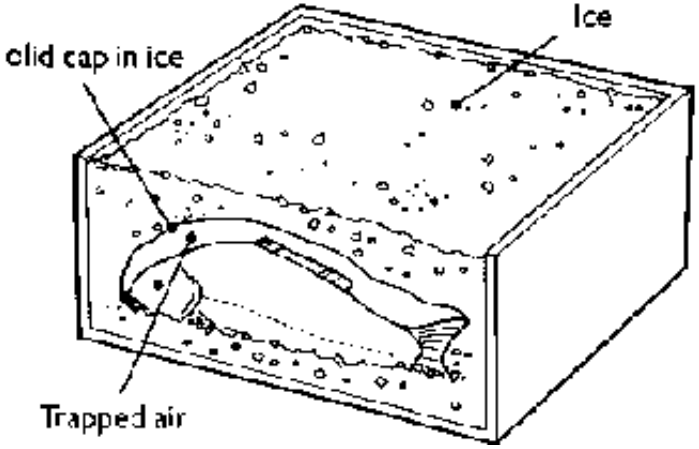
Ice and whole fish must be in close contact

Whole fish should not be wrapped in plastic or paper, as a layer of air is trapped between the fish and ice, which slows cooling. Also melting ice cannot wash the fish. However, prepare' fish, such as fillets, are leached when ice and flesh come into contact and wrapping is often necessary.



FIGURE

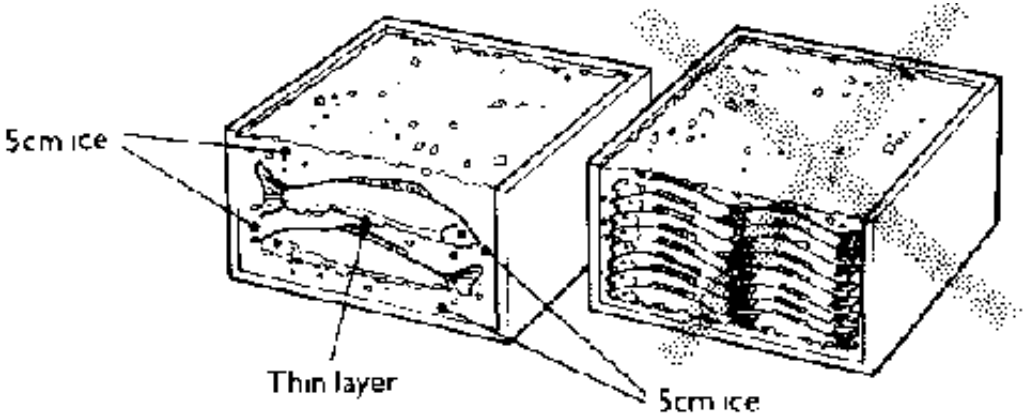
It may be necessary to repack ice around the fish after cooling. As the ice melts, air pockets form above the fish and this slows cooling.



FIGURE

Ice must be layered between and thoroughly mixed with the fish, with a thick layer (5 cm) around the sides, top

and bottom of the container. Ice cannot cool the fish properly if it is only put on the top, sides or bottom of the container.



FIGURE

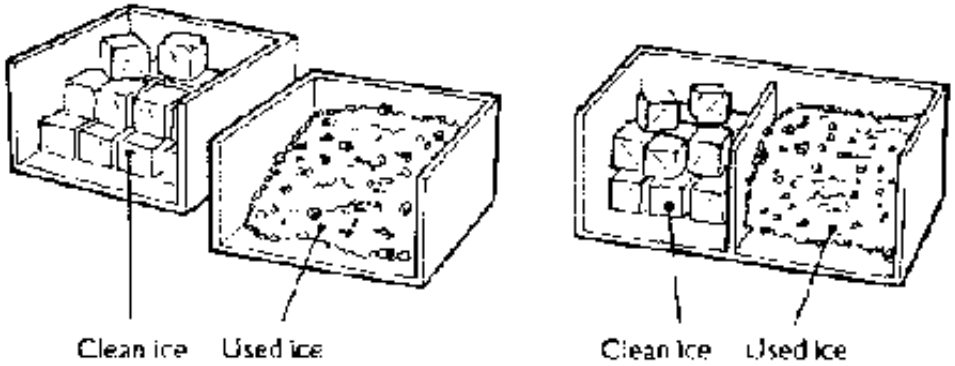
A lot of ice is needed to cool the fish immediately after capture, but once chilled the fish can be repacked for storage using less ice.

Everything must be kept clean

All equipment must be cleaned with detergent and disinfectant after each trip.

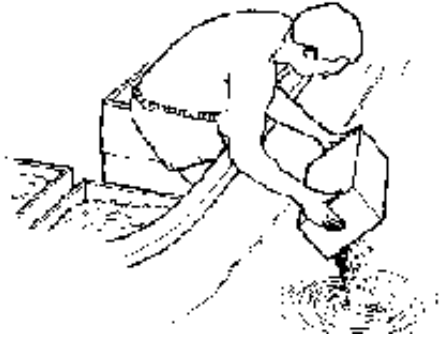
FIGURE

Clean ice must be kept separate from used ice and from the ice/fish mixture - clean divider boards can be used if there is not enough space for individual boxes.



FIGURE

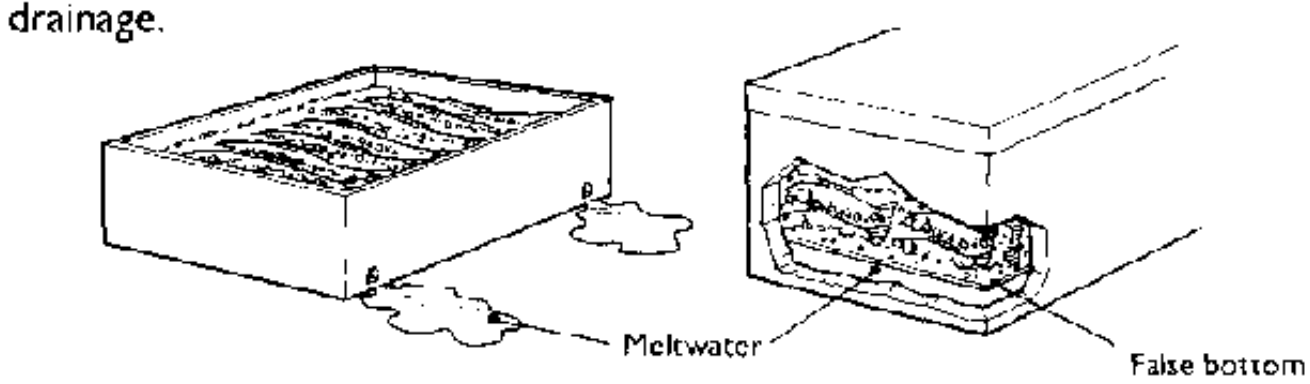
Any used ice left at the end of the trip must be thrown away as it will be dirty. Clean, unused ice may be kept.



FIGURE

There must be drainage for melting ice

Meltwater carries blood, slime and bacteria. It must be able to drain awe, from the bottom of the box or container without coming into contact with the fish. This can be done by installing a false bottom in the boat or box; in its simplest form this can be several planks at the bottom of the boat to raise the fish. Fish boxes should have holes in the sides to allow

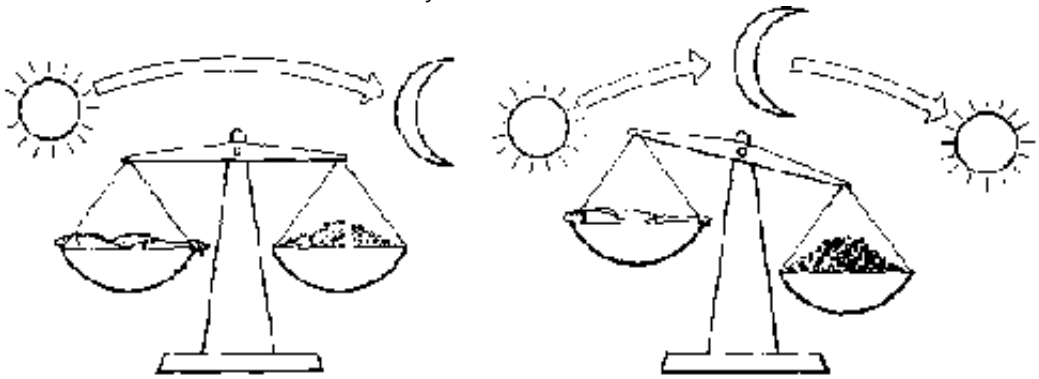


FIGURE

How much ice do I need?

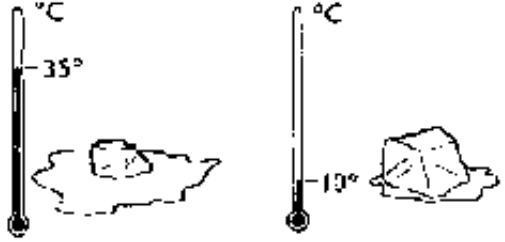
The amount of ice needed will vary depending on conditions.

For overnight fishing trips, the same weight of ice as the expected weight of the catch is usually enough. For longer trips more ice than fish is needed.



FIGURE

If the hold or boxes are insulated, or there is shade, less ice is needed.



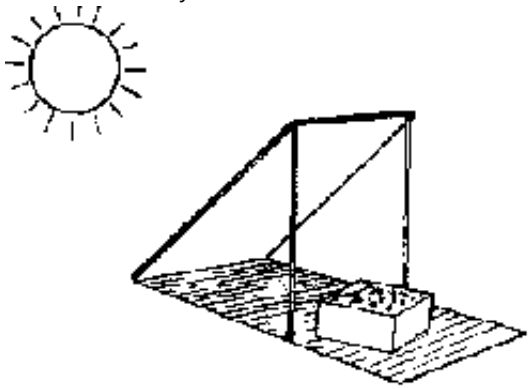
FIGURE

If the temperature is high, ice melts faster and therefore more is needed.

If there is still ice surrounding the fish when it is landed, then enough ice has been used. If there is no ice left, then more needs to be taken on the next trip.

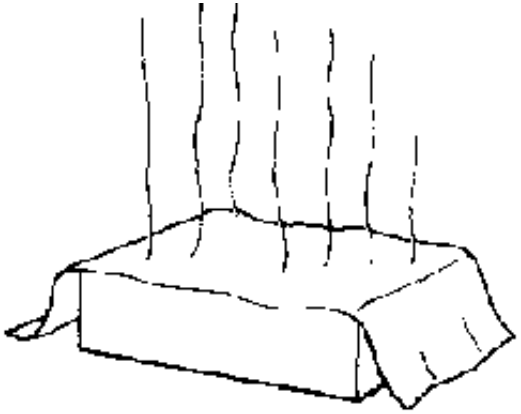
Ways to slow down the melting of ice

Shading can reduce the rate that ice melts, by protecting it from direct sunlight.



FIGURE

Evaporation of the water cools the fish. If a wet material, such as gunny sack, is placed over the fish it will cool slightly when no ice is available. The effect is improved if the surrounding air is moving.

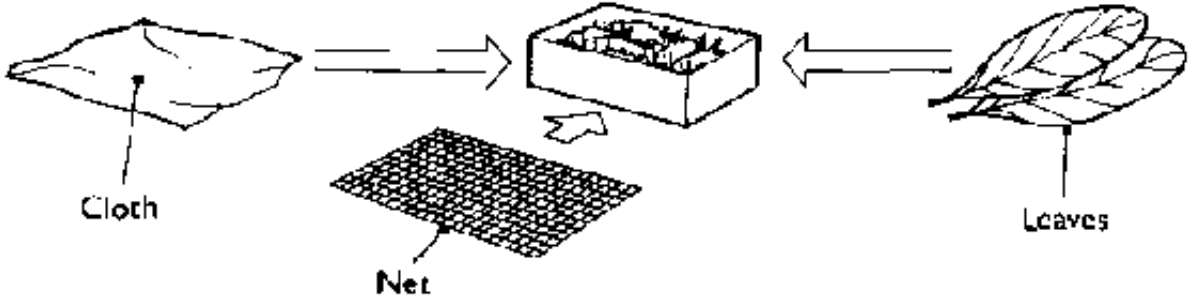


FIGURE

FIGURE

Preventing the movement of air by keeping hold hatches closed and lids on fish boxes means that cold air remains around the fish and ice, and is not replaced by warm air.

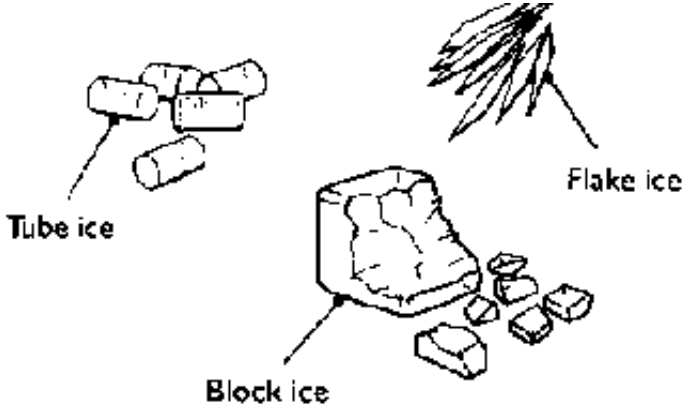
Insulation is used to keep warm air out and cold air in. It can take a variety of forms, many of which are expensive. The simplest method is to cover iced fish with clean material, for example, cloth, net or leaves, to prevent air movement through the fish and ice mixture.



FIGURE

What type of ice can I use?

There are various forms of ice crushed, block, broken tube, flake and others. It is best to use crushed ice with pieces of different sizes to allow rapid chilling at first and then continued cooling, though none of the pieces should be larger than 6 cm.



FIGURE

Ice should be made from clean water. The pieces must

not have sharp edges as they may damage the fish. Though it is usually more convenient to take broken ice to sea, block ice melts more slowly and so it may be more economical to take blocks and thoroughly crush them while at sea.

Conclusions

The correct use of ice is an easy, efficient and cheap means of keeping fish fresh for limited periods of time. Good quality fresh fish sells at good prices in both the 'inland city' and local markets, and increases the income for boat owner, crew and traders. However ice must be used immediately after the fish is caught. Once quality is lost it cannot be regained.

Further reading

Clucas, I.J. (Compiler) (1981) Fish handling, preservation and processing in the tropics. Part 1. TDRI Report No. G144.

Codex Alimentarius Commission (1976) Recommended International Code of Practice for Fresh Fish. CAC/RCP9-1976. Rome: CAC.

Eddie, G.C. (1983) Support and development for the retail trade in perishable fishery products. FAO Fisheries Technical Paper No. 235.

Myers, M. (1981) Planning and engineering data. 1. Fresh fish handling. FAO Fisheries Circular No. 735.

Waterman, J.J. (1964) Bulking, shelfing or boxing? Torry Advisory Nores No. I S.

Waterman, J.J. (1965) What kind of ice is best? Torry

Advisory Nores No. 21.

For further information contact
Fisheries Section
Natural Resources Institute
Central Avenue
Chatham Maritime
Kent ME4 4TB
United Kingdom
Tel: 0634 880088