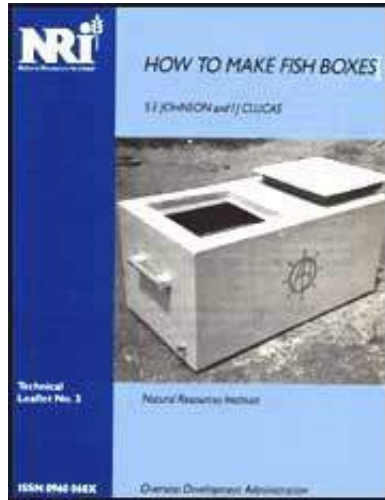


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➔  **How to Make Fish Boxes (NRI, 1991, 8 p.)**

 **(introduction...)**

 **Fish boxes**

 **(introduction...)**

 **The design of fish boxes**

 **How to make fish boxes**

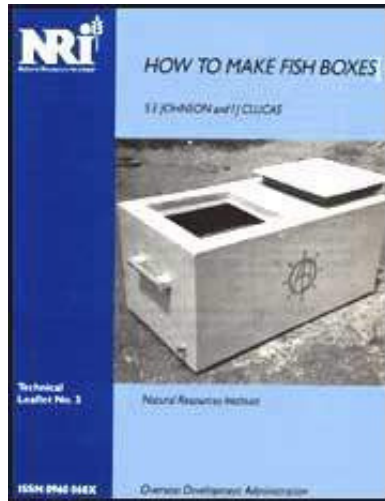
 **Conclusions**

 **Further reading**



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 **How to Make Fish Boxes (NRI, 1991, 8 p.)**



(introduction...) **Fish boxes**

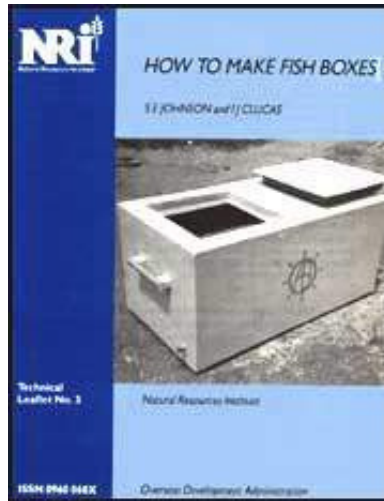
SE Johnson and IJ Clucas



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**How to Make Fish Boxes (NRI,
1991, 8 p.)**



Fish boxes



(introduction...)



The design of fish boxes



How to make fish boxes



Conclusions



Further reading

How to Make Fish Boxes (NRI, 1991, 8 p.)

Fish boxes

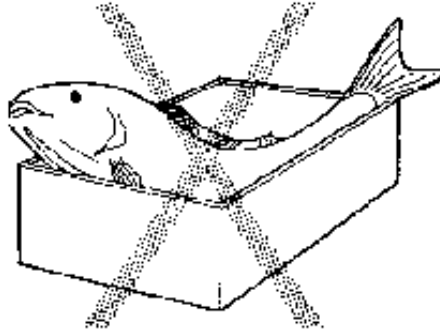
This booklet describes how insulated fish boxes can be easily constructed from cheap, locally available materials.

There are various methods of storing fish in containers, both at sea and on shore. However, fish are often damaged. Boxes protect the fish during transport and enable the fisherman or seller to ice the fish efficiently. This means that a good quality product arrives in the market. Fish boxes make handling easier and allow for sorting by size or species.

The design of fish boxes

Boxes must be a suitable size for the fish

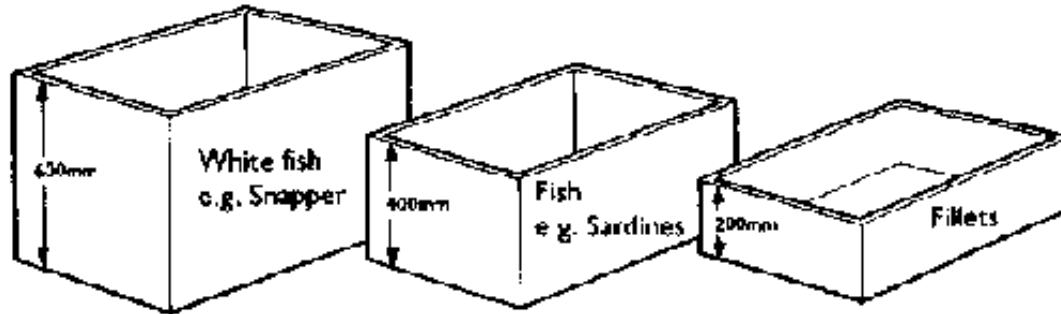
The fish must be able to fit into the box without bending or hanging over the sides. A range of box sizes may be needed.



Figure

Type of fish will effect the depth of the box

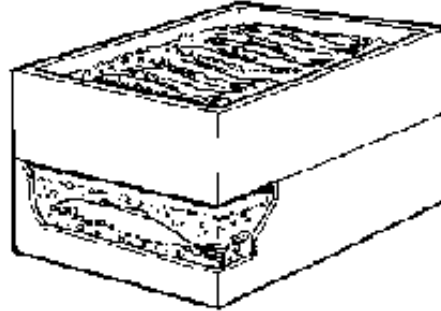
The recommended maximum depth for a box for white fish is 600 mm, for fatty fish 400 mm and for fillets 200 mm.



Figure

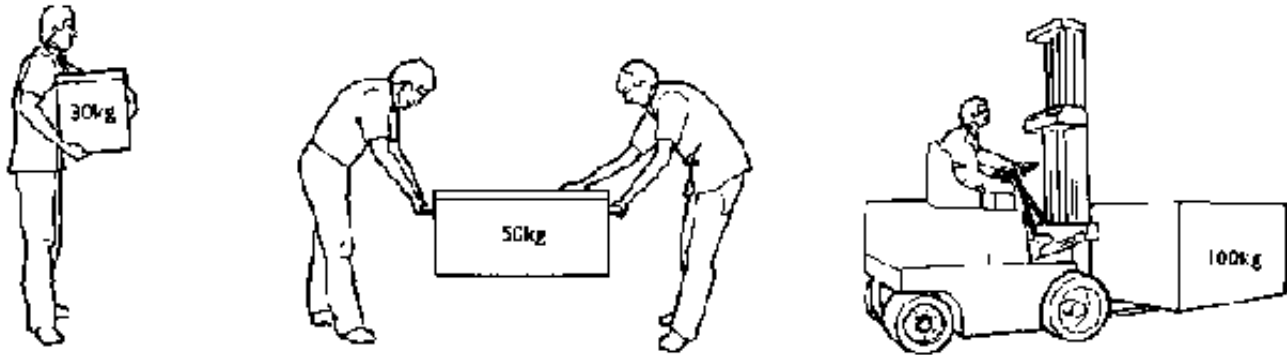
Boxes should be easily sleeked

When securely stacked the weight of the upper box should be supported by the box underneath and not by the fish inside it.



Figure

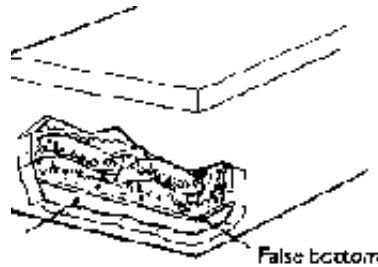
Boxes should be small enough to be easily lifted when full. If the box is used for transport, it should be lifted easily by one person (up to 30 kg) or two people (up to 50 kg), or be designed to be lifted by machinery.



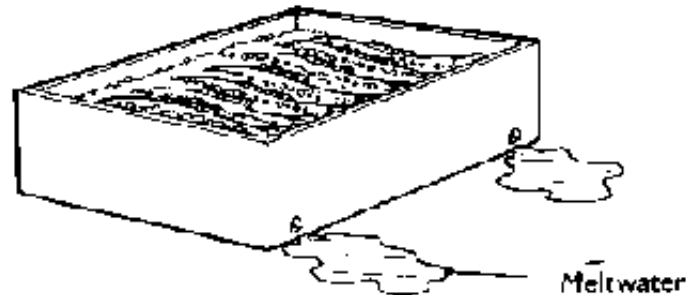
Figure

They should be easy to clean Boxes must have a surface which does not hold dirt and should be easy to clean with detergent and disinfectant. The material should be waterproof and should not absorb smells.

There should be drainage for meltwater Holes in the sides should allow drainage of meltwater away from the boxes stacked underneath. A false bottom to raise the fish above the collected water can also be used.



Figure



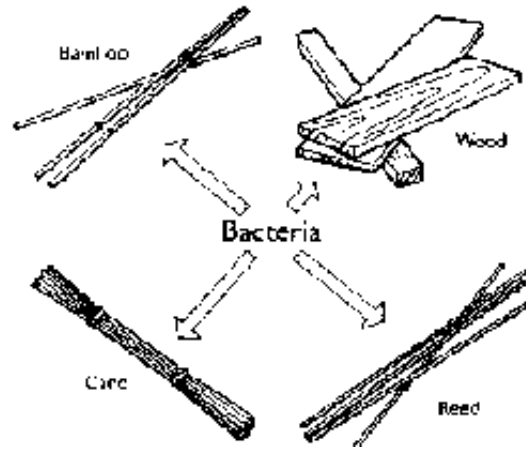
Figure

These basic points apply to the construction of all types of fish boxes.

How to make fish boxes

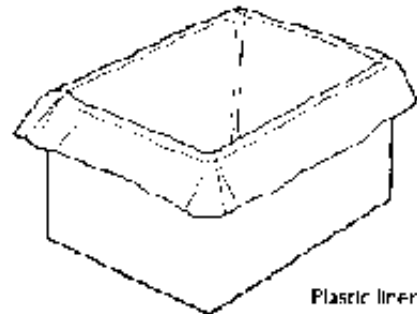
The material from which the box is made can effect the quality of the fish.

Materials such as wood, bamboo, cane and reeds are all absorbent and soak up dirty water in which bacteria can grow and spoil the fish. They are also difficult to clean, even when using detergents and chlorine disinfectants, and become heavy when they are waterlogged.



Figure

If wood is the only material available for making the boxes, it is possible to reduce absorption of water and dirt by either coating the wood with plastic or lining the box completely with a plastic sheet. These also help the box to last longer.



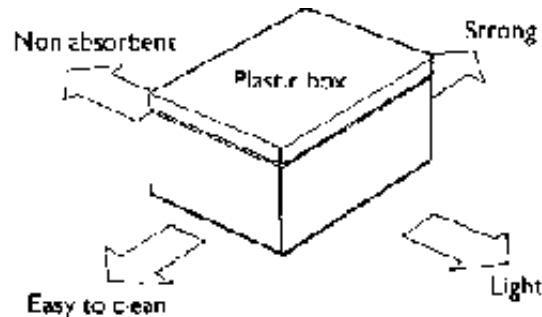
Figure

Plastic boxes are better because they are non-absorbent and durable. They are also easy to clean, light to handle and easy to stack. Various types of plastic can be used, depending on how strong or heat resistant they need to

be.

There are two disadvantages with plastic boxes.

- 1) They are more expensive than wooden boxes.**
- 2) They can be used for other purposes and may not always be returned.**



Figure

Insulated fish boxes In tropical climates ice melts quickly. To ensure that good quality fish arrives at the market, it must be iced. Insulation slows melting, so

reduces the amount of ice needed. This saves money. Uninsulated fish boxes may be used where other insulation is provided, for example, in an insulated fish hold or truck. Otherwise insulation of the fish boxes is needed. To work efficiently the boxes must be completely insulated using a suitable material and be provided with drainage to separate the fish from the meltwater.

Materials suitable for insulation

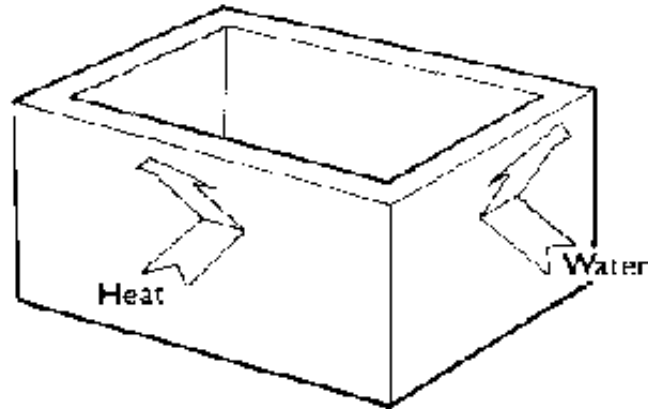
To make these boxes, insulating material is packed between two layers of strong, waterproof, non-absorbent boarding. Suitable materials for the insulating layer include cork, glassfibre, expanded polystyrene and polyurethane foam, although kapok or sawdust may be used.



Figure

Heat should not pass through the insulating material which should also be waterproof. There should be a waterproof layer between the fish and the inside of the box.

Granular insulators, such as sawdust, tend to settle and this reduces their insulating effect. Materials like kapok, when compressed, also lose their power. Any material used should be resistant to rodent or fungal attack and non-toxic.



Figure

Types of insulated fish boxes

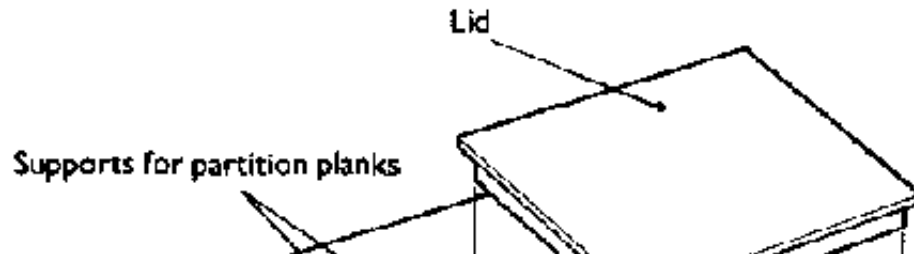
The exact design of fish box chosen depends where it will be used. The points already discussed should always be considered. The thickness of the insulating layer is related to the intended use.

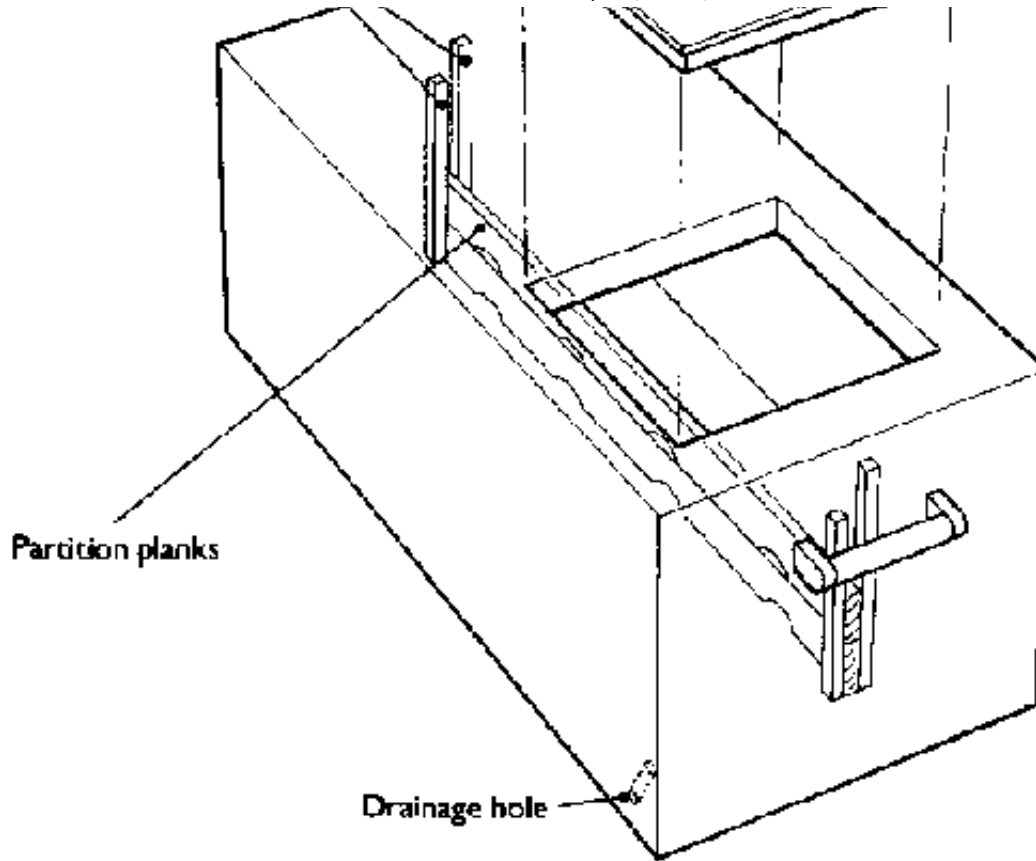
If an insulated container cannot be used, the use of

cheap materials, e.g. newspaper, woven palm leaves, banana leaves, sawdust, to wrap the box in can be considered. Fresh materials are needed each time the box is used.

Box I

This box has a fibre reinforced plastic inner and outer lining (3 mm thick), laminated directly on to 70 mm thick polyurethane foam. An insulated lid drops into a hole at one end of the box. A drainage hole is fitted at a bottom corner and removable wooden divider boards are provided.

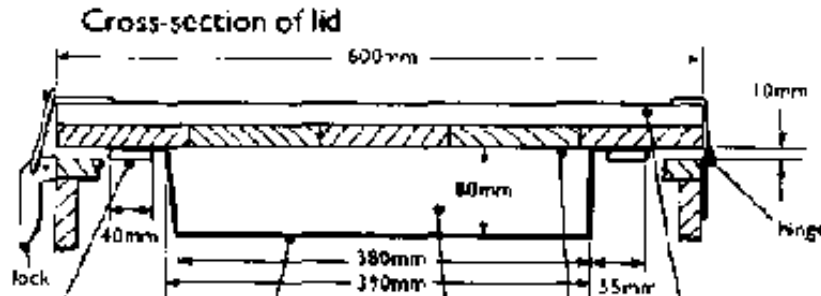




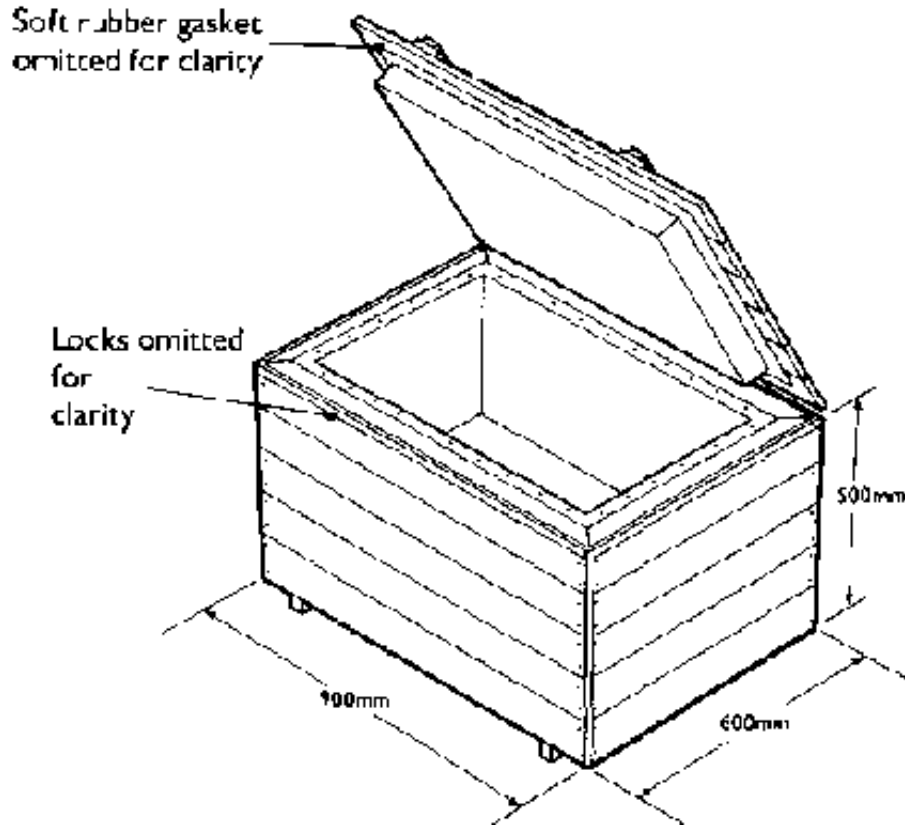
Figure

Box 2

This box has a wooden outer layer (20 mm), a 80 mm layer of tarred expanded polystyrene, and an inner (0.5 mm) layer of aluminium sheet. A rubber ring is fitted around the lid to ensure a good seal. The lid is hinged on one side and secured by locks on the other. A drainage hole is included.



Figure



Figure

Conclusions

If fish boxes are used at all stages of fish handling, at sea, during transport and at retail sale outlets, the fish are protected from physical damage and the use of ice is made easier. Plastic boxes, though expensive, are the most useful as they are long lasting, easy to clean and non-absorbent.

If there is no insulation in the hold or transport, insulated boxes should be used. These are more expensive than uninsulated fish boxes but less ice melts during storage.

Further reading

Clucas, I.J. and Whitehead, W.D.J. (1986) The design and construction of fish boxes from locally available

materials in developing countries. TDR I Report No. G192.

Kamari, A. and Sayers, J.A.C. (1979) The Use of Standard Returnable Fish Containers in ASEAN Countries. ASEAN-Australian Economic Co-operation Food Handling Project. ASEAN Food Handling Bureau, Malaysia.

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