

# Quality Handling of Hook-Caught Rockfish

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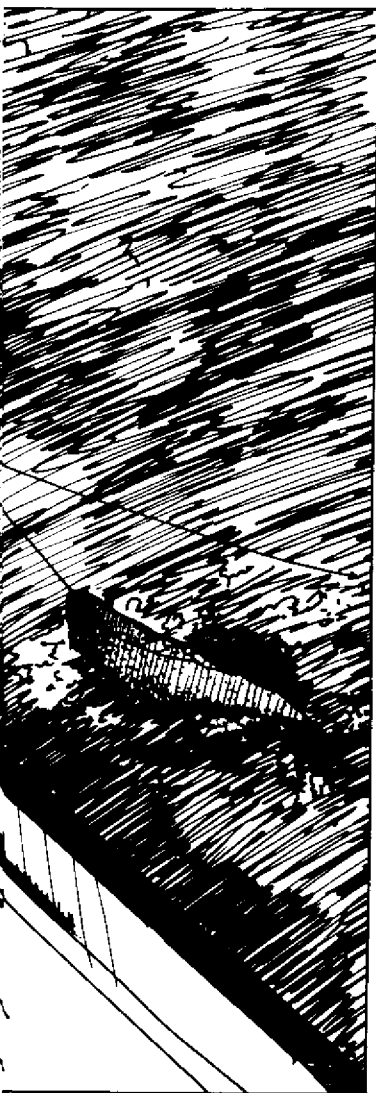
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## Table of Contents

Introduction .....	2
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1. Soak Time .....	3
2. Gaffing .....	3
3. Bleeding .....	4
Gill Cut .....	6
Throat Cut .....	7
Dorsal Cut .....	8
Ventral Cut .....	8
Tongue Thrust Cut .....	9
Tail Cut .....	10
4. Washing .....	11
5. Dressing .....	13
6. Holding .....	14
7. Holding Time .....	15
8. Filleting .....	15
9. Packing .....	16
10. Dressed Head-on .....	16
11. Shipping .....	17
12. Sanitation .....	18

## Introduction

In 1979, a Boston Whaler skippered by Buck Allen of Sitka was the only boat in Alaska licensed to target rockfish as a commercial fishery. Just six years later, 187 different Alaskan vessels were targeting rockfish. The 1985 catch soared to 1.8 million pounds.

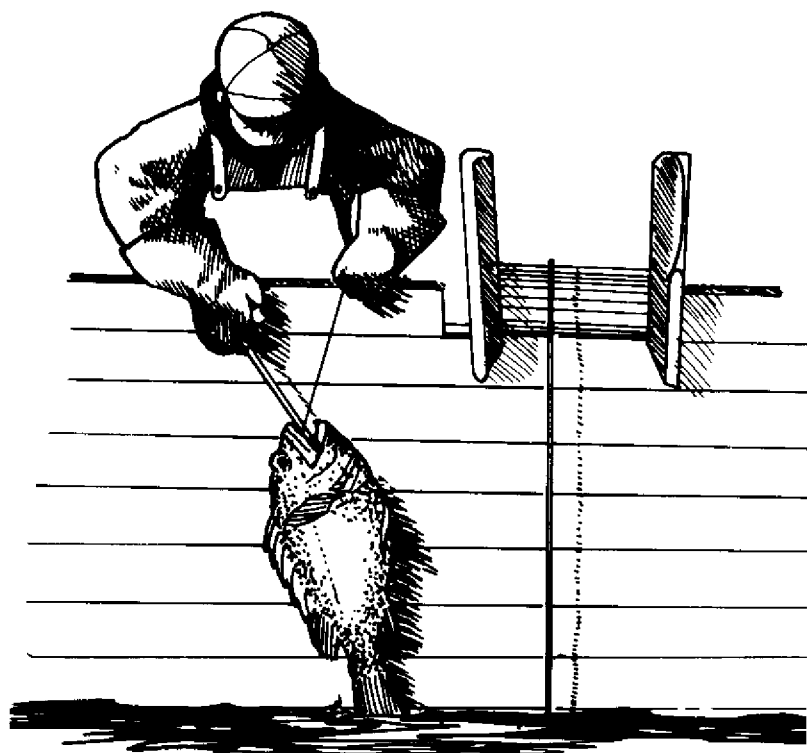
The surge in buyer interest comes primarily from the high-value restaurant market, in which supply has not yet met demand. Fisheries managers, in fact, feel the supply probably never will meet demand due to declining rockfish stocks. The Alaska Department of Fish and Game has estimated that if rockfishing continues at its present rate, chances are that there will be nothing but scratch fishing left by the end of the decade.

Rockfish are old when they are caught. The average yelloweye, for instance, is more than half a century old; and probably one of every three is closer to 100. They are long-lived, slow-growing creatures. Once gone, they will be a long, slow time coming back.

In the meantime, buyer interest does remain high for fish that bring top dollar for top quality. The fisherman who takes the care to produce consistently good quality will have no trouble selling the product. The following is a list of methods for maintaining consistent rockfish quality onboard a small to medium sized fishing vessel.

## 1. Soak Time:

Short soaks (two to four hours) will result in landing a high percentage of live fish. Live fish are necessary for the production of a good quality bled product.

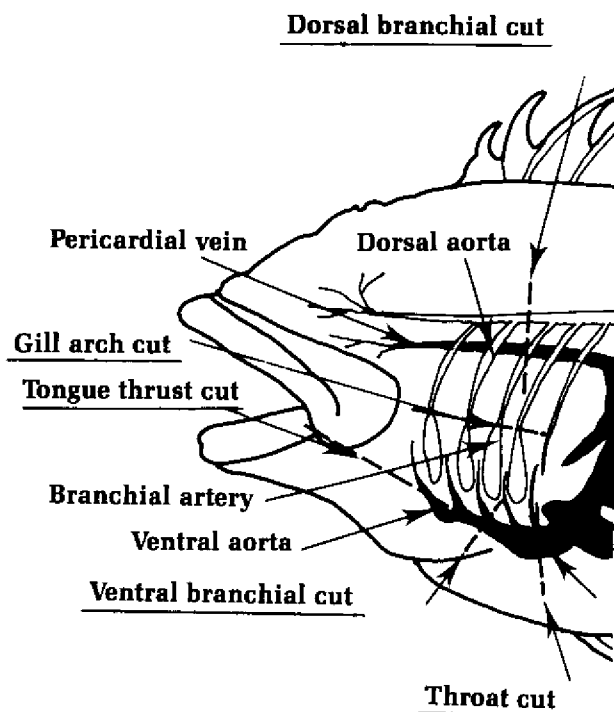


## 2. Gaffing:

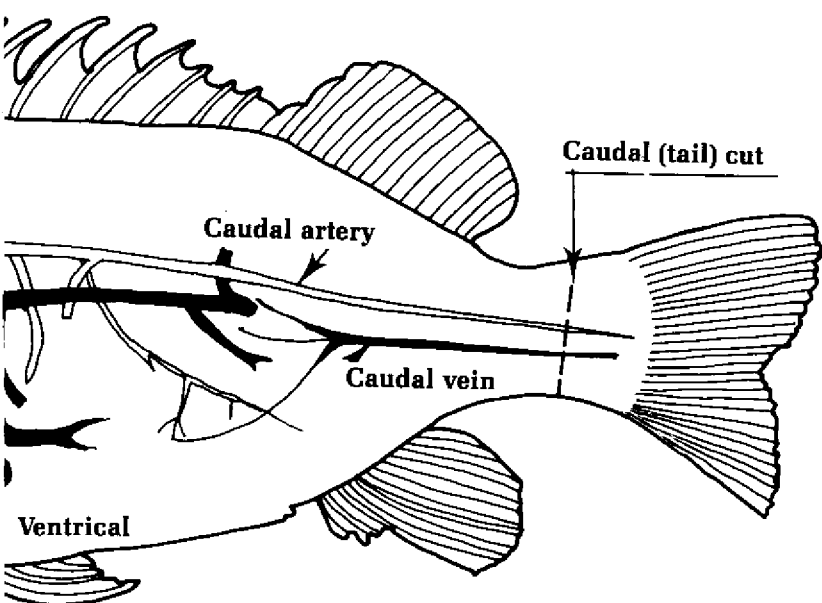
If fishing conditions require gaffing, gaff rockfish only in the head (preferably in the mouth) and remove the hook when the fish is aboard. On vessels using snap-on gear, the snap can be removed and the fish lifted aboard without gaffing. Pughs and forks must not be used!

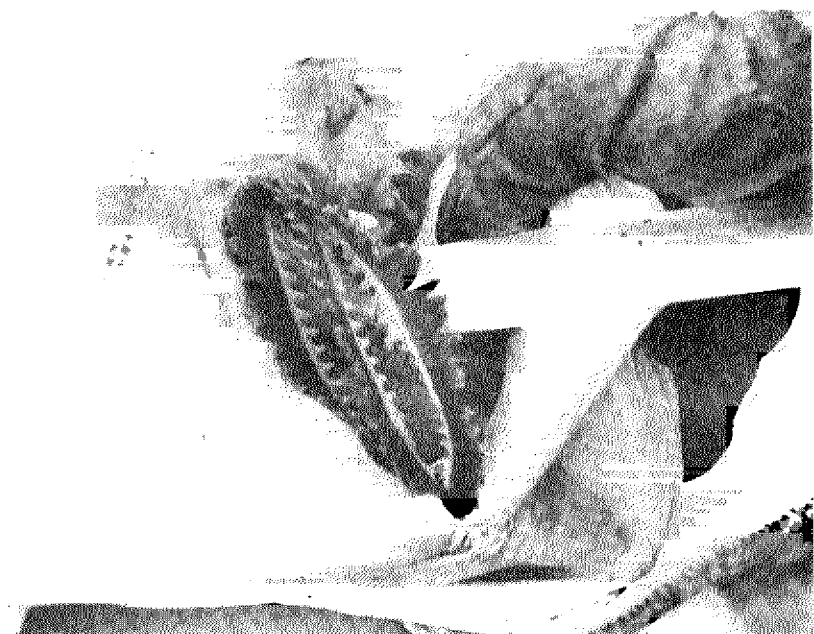
### 3. Bleeding:

Since bleeding makes an easily detectable difference in product quality, all rockfish should be immediately bled when landed. There is no ideal bleeding method for rockfish, but most cuts commonly practiced result in a good product. Retaining blood in the rockfish body will accelerate deterioration.



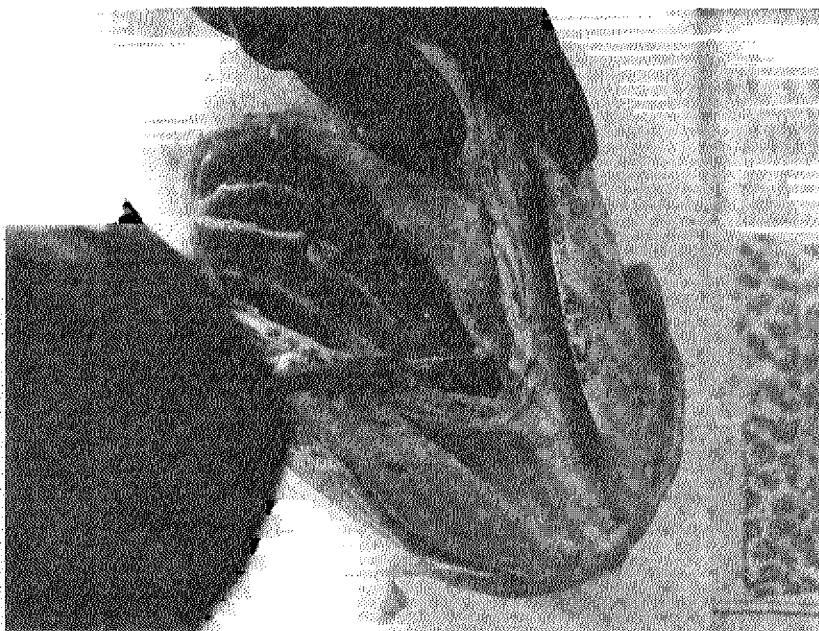






## Gill cut

While a number of bleeding methods work on rockfish, individual operations and catch rates will determine the method most efficient. The "gill cut" is the most popular, since it can be done quickly as the fish come aboard. It doesn't require much time looking at the fish, thus the busy fisherman has more time to pay attention to his gear. The gill cut is usually made with a knife, severing one or more gill arches. When the landing rate is high, a gill arch can simply be torn free with a finger from one of its two bases, thus rupturing an artery. Some markets, however, may consider a loose gill arch a blemish.



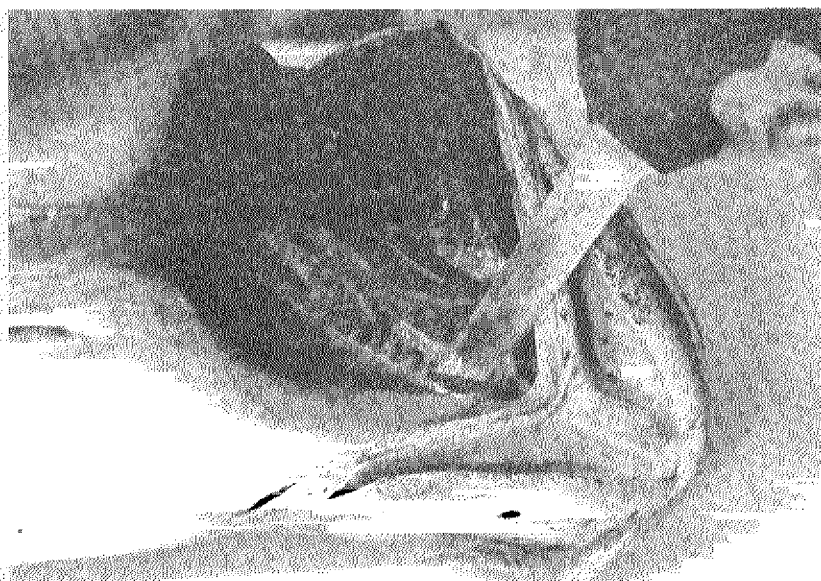
## Throat cut

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The “throat cut” is another effective method, if done properly. The throat cut has a number of variations, but in each, the major artery is severed just forward of the heart. “Mis-cuts” however can damage the heart, resulting in incomplete bleeding. Heart damage slows or stops the active pumping of blood.



Dorsal cut



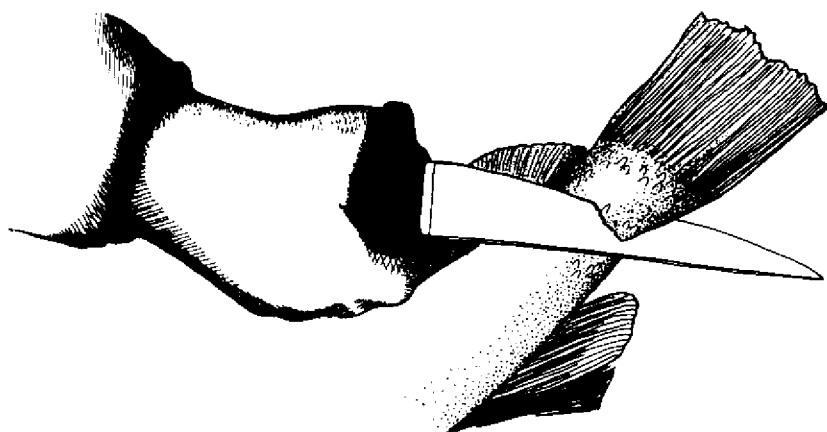
Ventral cut

Another useful bleeding technique is to sever major blood vessels at the top or bottom of the gill arches. Such cuts result in effective bleeding, yet cause very little visible damage to the fish. To cut the dorsal aorta, stab with a knife tip above the roof of the gill chamber. To cut the ventral aorta, slice where the gill arch bases meet. A variation of this second cut is occasionally known as the "tongue thrust," in which the narrow blade of a knife is thrust through the mouth of the fish and stabbed under the tongue. The knife is inserted until its tip lies just under the gill arches to cut the ventral aorta.



Tongue thrust cut

A “tail cut” also is effective, but in some markets for gilled and gutted rockfish, the tail cut is considered a blemish. Tail cuts also make filleting more difficult.



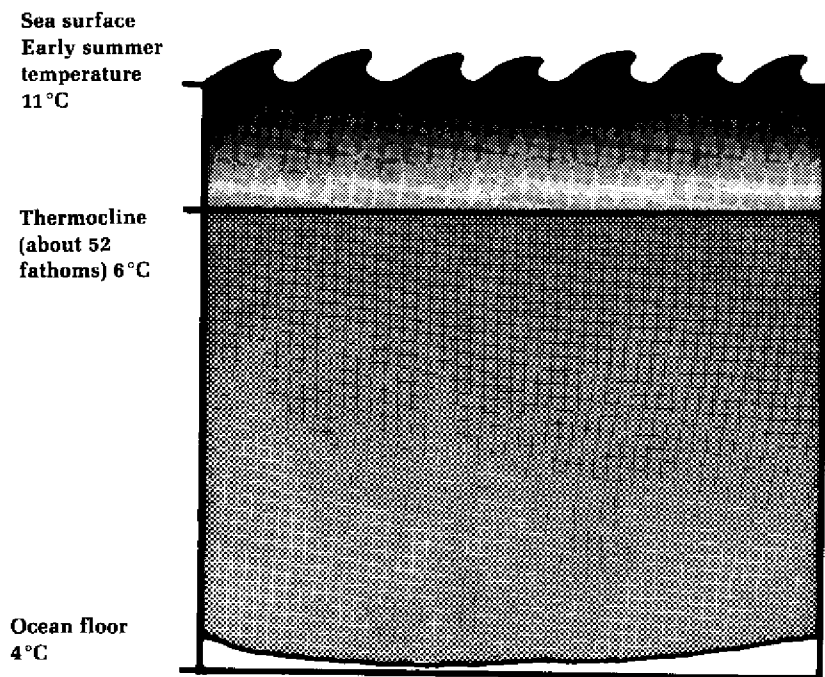
Tail cut

How much blood is actually lost during proper bleeding? It hasn't been determined yet for rockfish; but in rainbow trout, the ventral caudal cut or “tail cut”, led to an estimated 37 percent loss of total blood volume, and significant improvements in product quality.



#### 4. Washing:

Fish should be placed in a circulating water tank to bleed until they die. In British Columbia, salmon fishermen claim that fish bleed better when placed in a checker under a heavy spray of water. In any case, it is apparent that circulating water is important to effective bleeding. CAUTION: Dead fish should not be left in water for long. The result will be a rise in temperature which can hasten spoilage. The temperature rise is caused by the body temperature of a bottom-caught fish, which can be as much as  $13^{\circ}$  higher than the temperature of the surface water used for washing.



For most of the year, bottom and near-bottom ocean temperatures are no higher than 42° to 48°F (6° to 9°C). Typical sea surface water temperatures in winter range no higher than 44° to 48°F (7° to 9°C), while spring-to-fall temperatures range up to 52° to 55°F (11° to 13°C). Washing a 43°F (6°C) rockfish in 52°F (11°C) surface water will cause the fish to quickly heat to the higher temperature.

Some California fishermen use inexpensive air conditioning compressors and homemade refrigeration coils to cool and maintain water temperature. Information on how it's done is available from Ed Melvin, California Marine Advisory Program, 1432 Freedom Blvd., Watsonville, CA 95076.



## 5. Dressing:

The value of dressing or gutting rockfish is debated regionally by fishermen and processors. Even if dressing is unnecessary to meet market standards, it has never been shown to result in quality loss. In addition, it has been shown to increase both holding time and shelf life. In some instances, superior fillets can be produced from dressed rockfish. If the rockfish have been feeding on such "hot" foods as needlefish or shrimp, gutting may be necessary to prevent belly burn. The decision whether or not to gut is determined by the fisherman and the market, depending upon local conditions.





## 6. Holding:

Slide rockfish down a chute into the hold to prevent bruising. Some handlers even recommend clipping dorsal spines before icing to prevent the spines from puncturing the other fish. All iced fish should be stored in layers not more than 3 ft deep. The ice should separate the fish from each other, and from the bottom and sides of the boat. The use of shelves or plastic fish boxes in the hold help prevent crushing.

When icing rockfish, be sure to separate them from each other. Skin-to-skin contact results in skin discoloration that persists even after freezing. Such discoloration is considered a significant defect in several markets.

Keep track of the various lots of fish aboard the boat, including for identification the catch date, the species composition, and the location caught. Such information helps determine which lots to ship first; and if provided to buyers, the information aids them in making shelf-life determinations.

## 7. Holding Time:

If properly iced, rockfish can be held for at least three days. Live or freshly caught rockfish can produce fillets with bloody spots that are difficult to wash away. Fillets tend to be the whitest if cut from the fish after about three days of iced storage. The timing is important since rockfish can begin to soften after four days of iced storage.

## 8. Filleting:

Ideally, filleting should be done just before shipping. Some people argue that the quality realized by the consumer would be improved even more if the gutted fish were filleted at the consumer level. At any rate, filleting should be delayed at least until the last moment before shipping.

## 9. Packing:

Fillets must be washed and inspected for skin fragments, imbedded scales and abdominal lining fragments. They should be candled for parasites; and all ragged edges and extraneous material should be removed by trimming. Wash fillets in clean, 3 percent salt water to improve the physical appearance of the fresh fillet. The rinse water used must come from a sanitary source. After washing, the fillets can be placed in clear food-grade plastic bags. CAUTION: Avoid "garbage bags" or other non-food grade plastics in order to prevent possible chemical contamination.

Although plastic bags and plastic tubes are commonly used for temporary storage of fillets, these containers may prevent proper drainage, exposing the flesh to chemically active juices originating from the meat. If plastic containers must be used to ship fillets, pay attention to drainage. Some rockfish processors use vacuum packaging.

## 10. Dressed Head-On:

Many markets prefer rockfish shipped with the head on, but only those fish without outer blemishes should be shipped in this form. A high proportion of total rockfish weight is head, but its removal provides another site for bacterial contamination, and possibly shorter shelf life. Before it is packed in the shipping container, the rockfish should be rinsed in cold chlorinated tap water. The containers should be refrigerated when shipped.

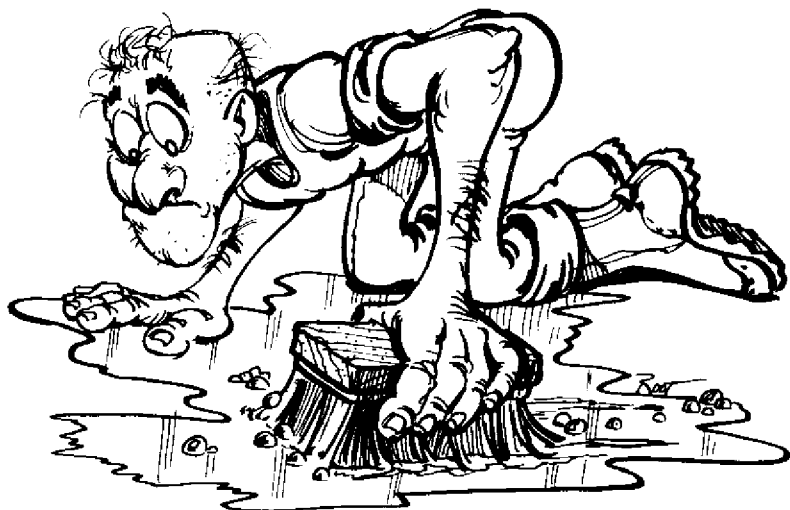
## 11. Shipping:

Fillets should be kept well iced prior to shipping, and temperature control should be provided during shipping. Most airlines refuse shipments of fish containing wet ice. The shipper should be aware of any airline packaging requirements.

A common practice is to add chemical ice ("gel packs") at a ratio of 5 to 10 lb per 100 lb of fish. To prevent surface freezing of the fillets while they are in contact with the chemical ice, wrap the gel packs in newspaper and place in a sturdy plastic bag to prevent the newsprint from fragmenting during shipment.

Effective temperature control is better in styrofoam insulated shipping containers. Such containers are available in an increasing number of sizes and types.

An effective method of shipping includes chilling the fish immediately prior to shipping, either in the shipping box or on trays in a freezer, to a temperature of 28° to 29°F. Freezing will not occur at this temperature, but even slightly colder temperatures produce superficial freezing and possible dehydration and discoloration. This "deep chilling" allows rockfish to absorb small quantities of heat while keeping the product temperature in the range of 28° to 32°F. Insulated shipping containers drastically reduce the amount of heat entering the shipping container. Always take the precaution of allowing for an unanticipated 24-hour delay during air shipment.



## 12. Sanitation:

The need for sanitation cannot be overstated. It is essential to thoroughly clean the fish hold, checkers, boxes, cleaning areas, knives, scrapers and any other equipment that the fish will contact. Ice, whether used or not, should be changed with each trip. All fish preparation surfaces should be of smooth, non-porous material. During the trip, all knives, steels, gaffs, and gloves used in processing should be stored in a mild chlorine solution. This can be made by pouring one "glug" of standard chlorine bleach into five gallons of water, producing a solution of 50 to 300 parts available chlorine per million parts of water. More precise measurement is not needed.

