

Processing of prawns, shrimps crabs and lobster





Catching of prawns & other sea foods.

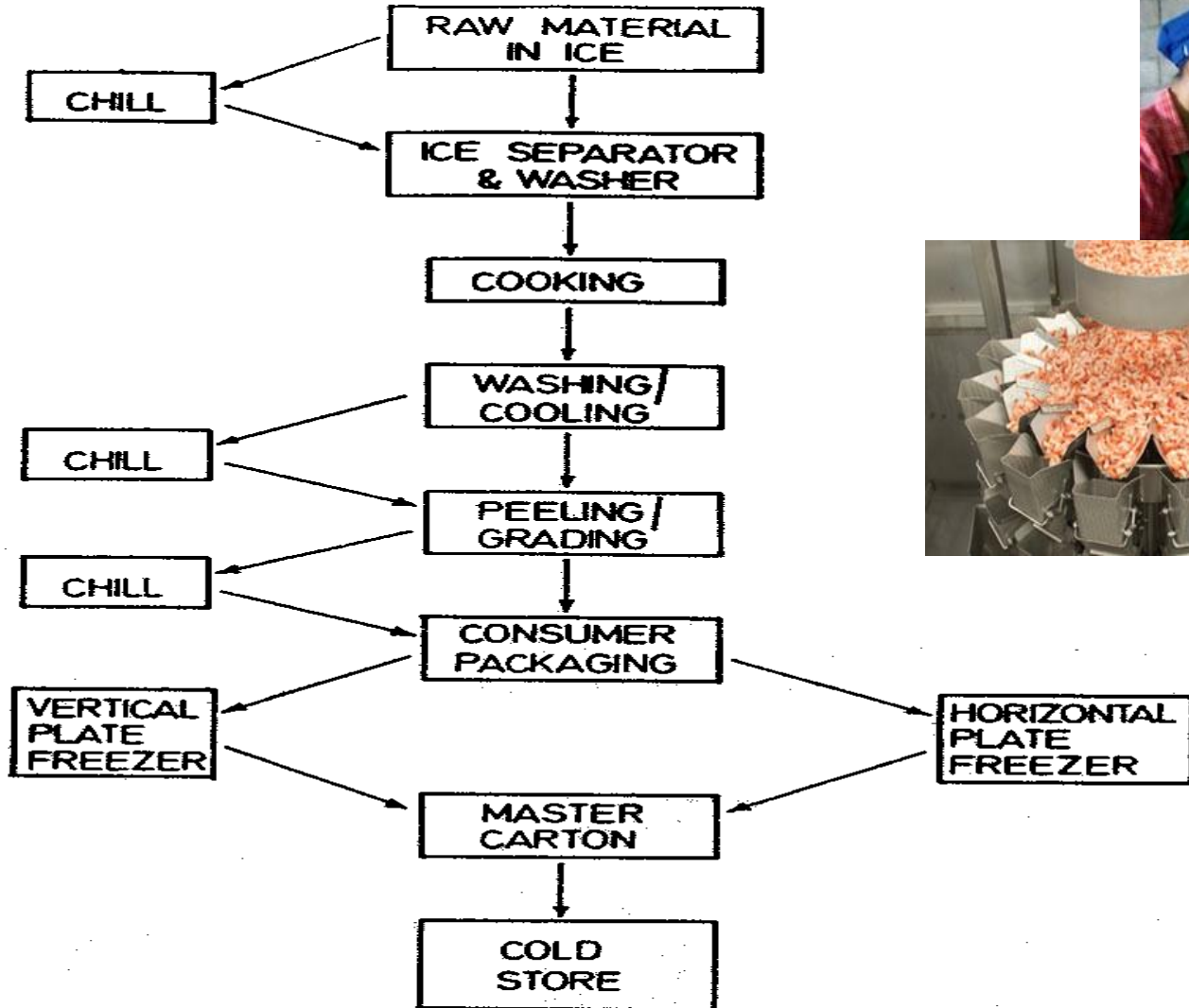


Processing of prawns

Processing starts with proper handling of the prawns caught from the seas or harvested from fishponds as they are transported to the processing plants. Usually, the newly caught or harvested prawns are temporarily refrigerated by packing them with crushed ice in insulated containers. These containers are transported from the fishpond by trucks or fishing vessel to the processing plant.



SHRIMP



Steps:

- 1. Washing in clean cold water.**
- 2. Classifying according to buyer's requirements and specifications either as:**
 - A. Whole - the prawn is left with head and shell intact;**
 - B. Headless - head is removed with shell intact, or**
 - C. Peeled - the head and shell are removed**
 - D. Peeled - head, shell and veins are removed**
- 3. Sizing according to internationally accepted sizes ranging from under 8 pieces per pound to 90 pieces per pound;**
- 4. Weighing the sized prawns according to buyer's requirement;**
- 5. Rinsing again with clean cold water before positioning the sized prawns in tin containers;**
- 6. Filling up the tin containers with clean fresh water;**
- 7. Quick-freezing the processed prawns in the water-filled containers;**
- 8. Removing the frozen blocks from the containers and wrapping the blocks successively in plastic bags, consumer packs and bulk packs;**
- 9. Cold storage the fully wrapped prawns at low temperature.**

Processing of the crab



Catching And Handling The Crabs

Cooking

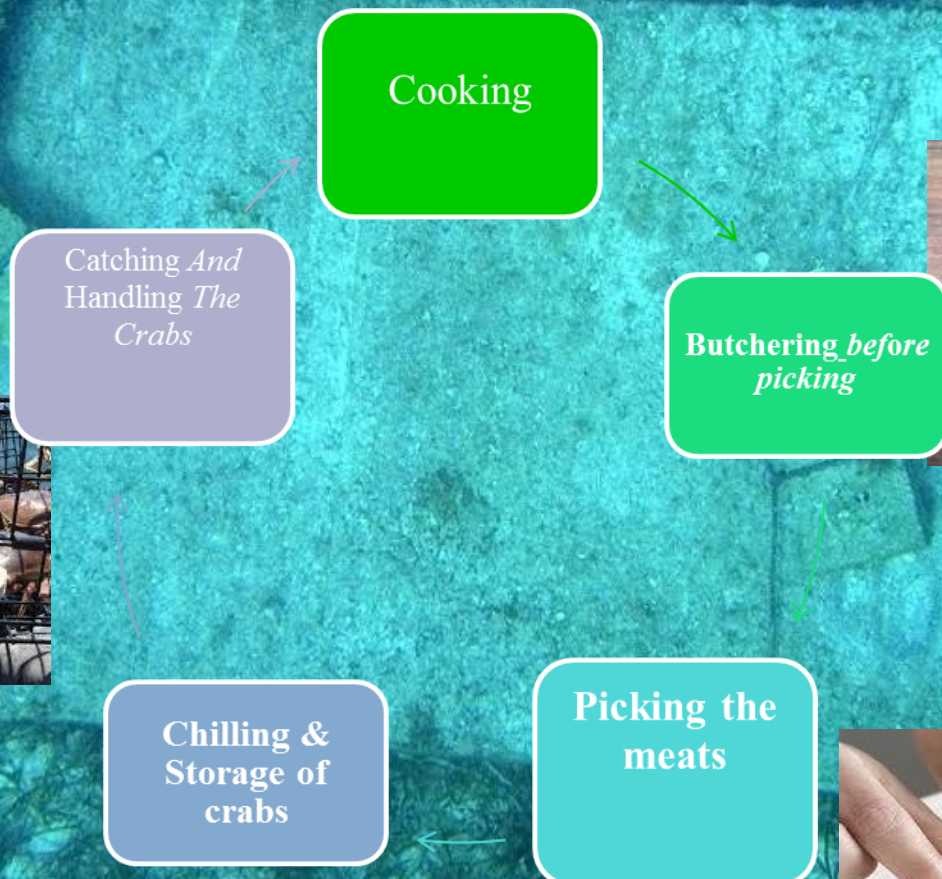
Butchering before picking



Picking the meats



Chilling & Storage of crabs





- Crabs should be carefully handled on board the fishing vessel and precautions should be taken to keep them alive and fresh. The crabs should be kept wet with sea water and shaded from the sun.



- Crab meat deteriorates rapidly after the death of the animal predominantly because of the action of enzymes in the white flesh and in the hepato-pancreas, the brown meat. Hence crabs should be boiled as soon as possible after they have been recovered from the catching vessel. The cooked crabs should then be stored, whole, in clean ice and picked just prior to the time of collection.



- *Butchering* i.e. the operation of evisceration of the crab and separation of the bodies into pieces suitable for picking, should be carried out just before picking of the meats and as a separate operation.



- *Picking* is the operation of extracting meat from the body sections, claws and legs. The extracted meats are vulnerable to contamination and great care must be taken to keep the meats free from dirt and insects during picking and on subsequent storage.

Storage :

When picking is finished the bags of meat should be closed or the basins covered and stored in a cool place. If possible, the containers should be packed in ice.

End Processing Of Crab



Processing Of


Shrimp

Handling shrimp at sea

- Catching
- Cold Storage of Whole Shrimp
- Cooking on board
- Grading
- Chilling on board
- **Be heading**
- **Peeling & deveining**
- **Processing (cooked)**
- Dried shrimp
- Freezing
- Glazing
- Cold storage

Handling shrimp on shore

- Freezing Of Whole Shrimp
- Cold Storage
- **Thawing**
- Size Grading
- Cooking
- Cooling
- Peeling
- **Yield And Packing Density**
- Dipping
- Freezing Of Meats
- **Packing And Glazing**
- **Cold Storage Of Meats**

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- ❖ **Catching** : Once the shrimp are on board, they must be handled quickly and carefully. Exposure to sun and wind on deck should be avoided, otherwise spoilage will be increased and chilling made more difficult.
 - ❖ **Cold Storage of Whole Shrimp** : Frozen shrimp should be stored at sea at -30°C . The frozen shrimp can be transferred to shore cold storage at -30°C on arrival at the port, or thawed immediately for further processing.
 - ❖ **Cooking On Board** : Cooking immediately after capture helps to retain the best flavor and color, but food poisoning bacteria can grow rapidly on the product if it becomes contaminated after cooking. In order to reduce the risk of food poisoning, the cooked shrimp must either be frozen on board immediately, or landed and processed ashore the same day.
 - ❖ **Grading (size and counts)** : Shrimp are graded in count per pound as explained above. Shell-on sizes range from under 10 to over 70. Peeled shrimp are sold according to their size.
 - ❖ **Chilling On Board** : After sorting and washing, the raw whole shrimp are drained and packed in ice in shallow boxes; the time between catching and chilling must be short. A delay of an hour or so on a warm day can cause considerable spoilage.
 - ❖ **Beheading** : The head is usually removed at the pond site if the processing plant is far away. Otherwise, from the weigh system, the product moves to the beheading tables where the heads are separated from the tails either *manually* or *mechanically*.

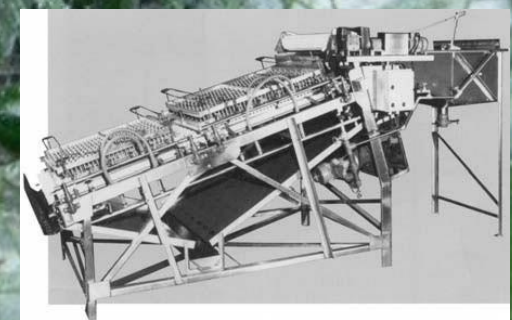
❖ Peeling and deveining

Peeling refers to removing shell from the meat. Shrimp is peeled and deveined by machines, although it is done manually in most of the developing countries. Typical peeling machines (for example, the automatic shrimp peeler) singulate the shrimp and cut the shell along the body length on the dorsal side beside the vein. Once the cut is made, the shrimp pass onto a bed of rollers.



1. Automatic shrimp peeler

Another system removes the vein by catching it on indentations on the internal surface of a cylinder



2. Shrimp deveining machine

❑ Processing (Cooked)

Some manufacturers treat shrimp with sodium tripolyphosphate (STPP) before it is cooked. This is done to prevent drip loss of natural shrimp moisture and flavor and it protects against dehydration during frozen storage.

❑ Dried Shrimp

The cooked shrimp is either seasoned in a solution of common salt before drying or boiled in seasoned water (saltwater) and dried in forced air dryers, usually for 6–7 h.

❑ Freezing

Traditionally, using cold air blasts (-40°F) blocks of shrimp are frozen in an insulated container (air-blast/spiral freezer), or in a contact plate freezer.

❑ Glazing

After the product is frozen, it is taken out of the freezer and sprayed with ice-cold water. Glaze is usually provided to prevent dehydration (freezer burn) and oxidation of the product while in cold storage by supplementing the protective effect of the outer package.



❑ Cold Storage

Once the freezing and glazing is complete the product goes into cold storage until it is distributed. A standard cold storage facility is designed to hold a month's production.

Handling shrimp on shore

✓ Freezing Of Whole Shrimp

The methods described earlier for freezing shrimp at sea are equally applicable on shore, provided the chilled raw material is frozen within 2-3 days of capture; the thawed product can then be used for further processing in the same way as fresh shrimp.

✓ Cold Storage Of Whole Shrimp

Whole shrimp, raw or cooked, frozen individually in air blast or in blocks with water in a plate freezer, will keep in good condition in cold store at -30°C for at least 6 months. Raw and cooked frozen whole shrimp develop cold store odors and flavors during storage and the higher the storage temperature, the more quickly they develop. Shrimp cooked after freezing and cold storage are usually paler in color than shrimp that are cooked before freezing.

✓ Thawing

Blocks of whole shrimp frozen at sea or on shore can be thawed in air or water.

Thawing times for a typical commercial block measuring 1050 mm × 530 mm × 50 mm thick and containing about 18 kg shrimp and 6 kg water are as follows; 20 hours in still air at 18°C, 2 hours in saturated moving air at 18°C, 1½ hours immersed in water at 18°C and 1 hour in a water spray at 18°C. The thawed shrimp can be further processed in the same way as whole chilled shrimp.

Individually frozen shrimp can be thawed in a few minutes, or they can be cooked directly from the frozen state.

✓ Cooking

Shrimp are cooked to provide a product that is ready to eat, and to loosen the meat in the shell prior to peeling.

✓ Cooling

The shrimp should be cooled immediately after cooking. Cooling in air is claimed to give the whole cooked shrimp a better color but, unless the shrimp are to be marketed in this form, it is recommended they be cooled in water.

✓ Peeling

Brown shrimp and pink shrimp from inshore waters are still normally peeled by hand, but machines are now available that will handle the larger deep-water



✓ Dipping

A number of dipping treatments between peeling and freezing of deep-water shrimp have been tried in British trade practice, in order to improve flavor or color. For example, salt, monosodium glutamate, citric acid or sodium citrate, polyphosphate and dye have all been, or are being, used at some stage in the process.

✓ Freezing Of Meats

The peeled meats can be frozen individually or in blocks. Individually quick frozen, IQF, meats are particularly suitable for catering and retail outlets, since the required amount can be dispensed from the pack without thawing. IQF meats can be frozen in either an air blast freezer or a liquid nitrogen freezer.

✓ Packing And Glazing

The film used for the individual packs should have a high resistance to the passage of water vapor and oxygen, so that dehydration and oxidation are kept to a minimum. The individual meats are often glazed, that is dipped in cold water to coat them with ice, before packing them, to protect the product against drying in cold storage.

✓ Cold Storage Of Meats

Frozen cooked shrimp meats should be stored at -30°C ; they will keep in good condition at this temperature, provided they are properly wrapped or glazed, for at least 6 months.

Catching Of Lobster

An underwater photograph showing a large number of lobsters on a sandy seabed. The lobsters are scattered across the frame, with a higher concentration in the center. They appear to be foraging or resting. The water is clear, and the seabed is covered in sand and some green seaweed or algae. A metal structure, possibly part of a boat or a trap, is visible at the top of the image.

All lobster are using the for processing. The diver will select only legal sized lobsters with a carapace length of at least 3.25 inches for harvesting.

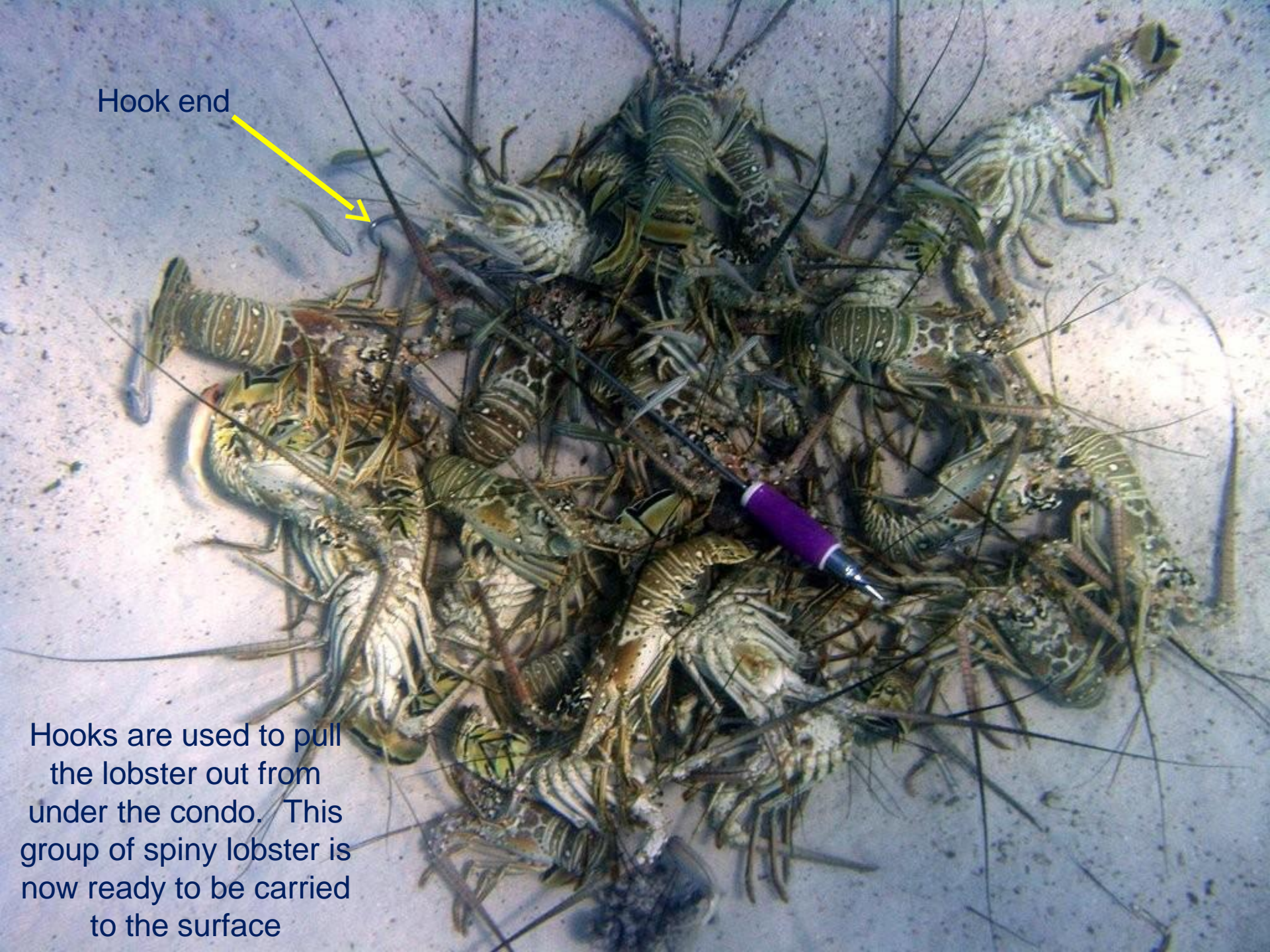


Undersize lobsters are left alone to return to the condo to continue growing so that they have the chance to spawn at least one time before being harvested

Hook end



Hooks are used to pull the lobster out from under the condo. This group of spiny lobster is now ready to be carried to the surface



The diver surfaces
with the lobster after
harvesting each condo



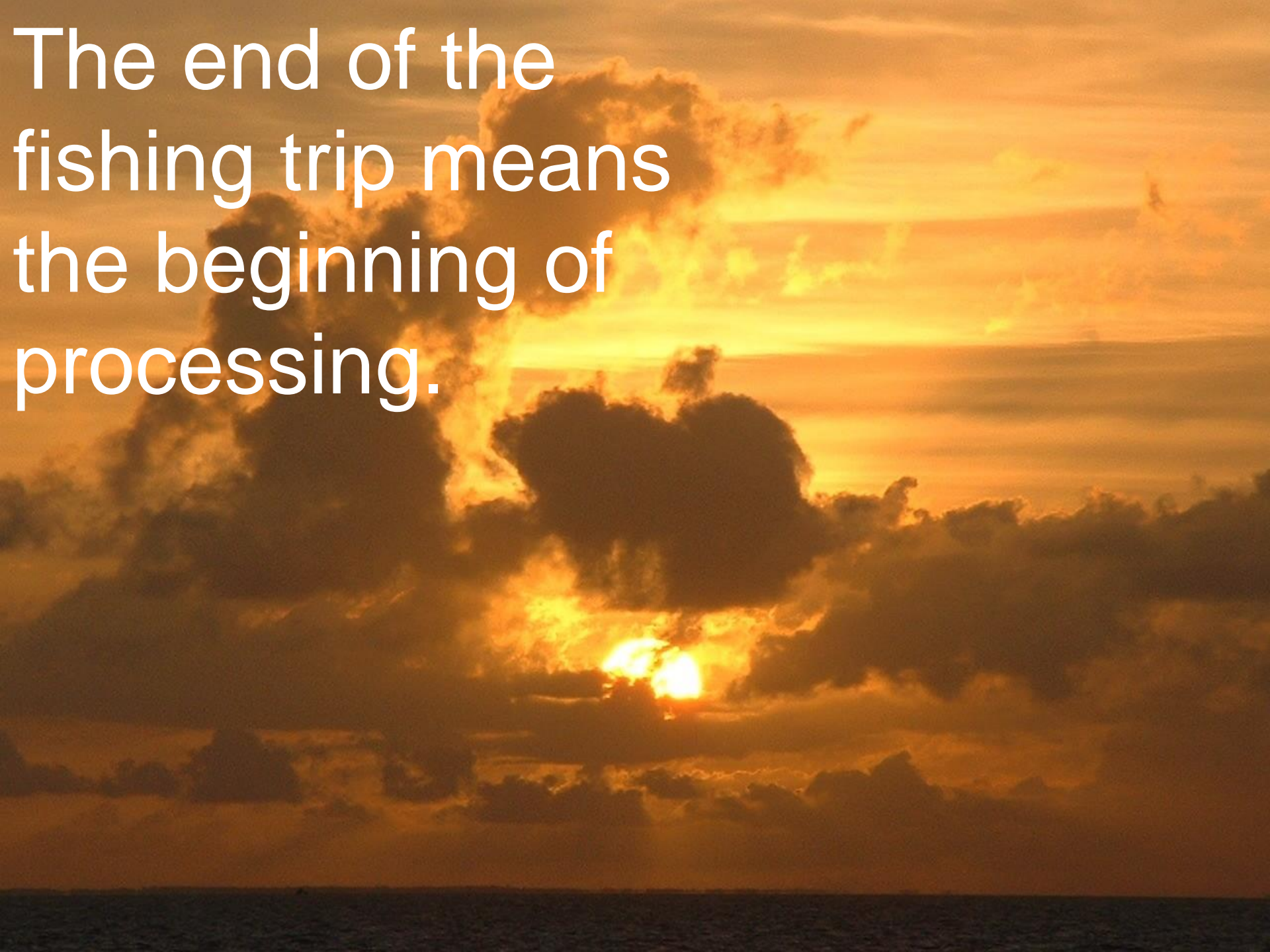
Lobsters are placed on ice in the fish holds of each skiff. This helps maintain freshness.





Once aboard the skiff the tails are removed and delivered to the mother-ship

The end of the
fishing trip means
the beginning of
processing.



40 lb. bags of frozen lobster tails
are received into the plants.



Each bag (or “Kit” as it is called in the Bahamas) is weighed and checked for temperature, quality and level of bi-sulfite





Frozen tails are placed in environmentally controlled thawing tanks overnight



After overnight thawing
the tails are place on a
conveyor for cleaning
and inspection

Technicians extract the
intestinal tract and check
the tail for quality



Approximately 75 trained technicians are used each day to clean and inspect the lobster tails





Tails are sprayed with
Ozonated water for
continuous sanitization
throughout the process line

After cleaning tails are soaked in an ice-slush bath for re-chilling prior to grading



Lobster tails are placed onto the grading conveyor where they are weighed and graded at 80 tails per minute






Each tail is weighed 9 times as it moves across the scale. Those weights are averaged and the information is sent to the grader selector which reaches out and collects each



After Grading, tails are inspected and placed into individual poly bags then put into 10 lb. Net Wt. boxes

10 lb. Net Wt. boxes are then re-weighed by Check-Weigher-Technicians to make sure that net weights are correct



A photograph of a large industrial freezer facility. The scene is dimly lit, with a prominent bright light source at the top center, possibly a window or a light fixture, creating a strong glow. The facility consists of several large, rectangular racks or units, likely used for storing frozen products. The overall atmosphere is cold and industrial.

Products are placed on Freezer racks
and moved to the Blast Freezer
overnight where the temperature is
maintained at -20 deg. F.

It is essential that all tails are “Hard-
Frozen” completely through before
they can be moved to the
Metal Detection Area

After Blast Freezing each 10 lb. Net Wt. box is checked for pack quality, appearance, frozen state and uniformity prior to being put through the Safeline Metal Detection System





In the morning, the product is checked for its frozen state. Racks are removed from the Blast Freezer and brought to the Metal Detection area



No cleaning or sanitizing chemicals are used in the processing area at TSL.

Only ozone is used as a sanitizing agent at TSL. It is generated in-house and it is extremely effective in pathogen reduction.

Reference :

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Thank you



*Thank you
For
Watching*