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BRINE-SALTED MULLET [1/]

By Norman D. Jarvis, Technologist
Division of Commercial Fisheries

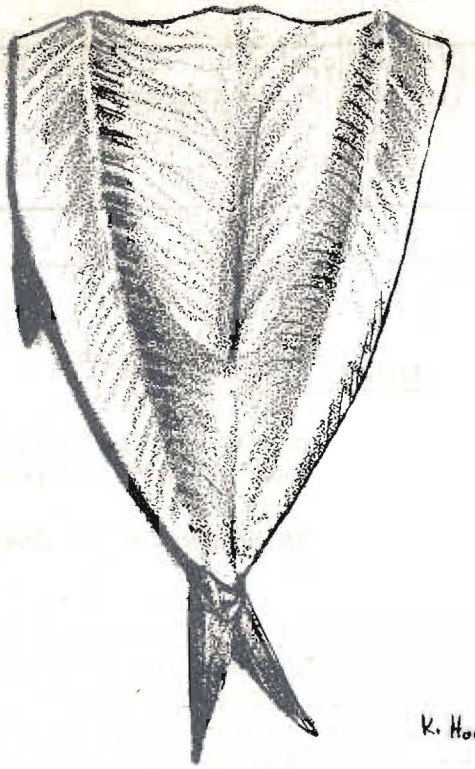
Illustrations by Katherine L. Howe

The mullet (Mugil cephalus) is the most important food fish of the southern coastal States. It is found from North Carolina to Mexico. This fish or related species is also found in Mexico and in Central and South America. The United States catch of mullet amounts to more than 30,000,000 pounds annually. Most of it is used fresh; from one to two million pounds are salted annually, mostly in North Carolina and Florida. Dry salting is the method for curing mullet on the Gulf coast of Florida, but on the Atlantic coast of Florida, and in North Carolina brine salting is used. This method was formerly more extensively employed, but as the result of a change in the food preferences of the southern population a great deal of the former market has been lost. Brine salting of fatty fish is usually considered necessary because the fat is less apt to become rancid than in the dry-salting process. Attempts at brine salting by curers who did not use the proper methods resulted in a very poor product, and this was another important cause of the decline in the market. With improvement in preparing the product the trade could be re-established.

Though southern coastal States offer good markets for fish when it is available, the facilities for handling fresh fish are limited, with the result that there are stretches of coast where the mullet is almost unused. If brine-salted mullet of good quality were prepared and marketed, the food supply of the country would be increased, and an appetizing protein food would become available to low-income groups. The method described herein is representative of good commercial practice.

Mullet are taken commercially by haul seines and gill, trammel, pound, and cast nets. The run-around gill net is the most important type of gear, accounting for 69 percent of the total catch in 1940. The haul seine is second in importance, being credited with 15 percent of the catch.

1/ Replaces Mem. S-4, issued by the former Bureau of Fisheries; and Sep. No. 24, a reprint from Fishery Market News, June 1943, p. 5.



Mullet Split for Brine Salting

Speed in handling is essential to a successful cure. Mullet must be split and cleaned as soon as landed. For a satisfactory product the maximum time allowable after catching is six hours. The fish are first rinsed thoroughly in clean salt water to remove slime and sand. The heads of all but the smallest mullet are removed, cutting along the forward edge of the nape, or collarbone, which should be left in. The fish are then split down the back from head to tail, so that they will lay flat. The knife should not cut entirely through the body in the tail section, to avoid a ragged appearance in the fish. A cut is made under the backbone also, to aid in penetration of the salt. If the mullet weigh more than $1\frac{1}{2}$ pounds each, about 3/5 of the backbone may be cut away, leaving only the tail section in the flesh. On larger mullet, the flesh is scored to a depth of about 1/2 inch, in lines parallel to the backbone. Often both medium and larger sized mullet are filleted before salting, especially if they are to be packed in kits or tubs.

After splitting, the mullet are eviscerated. The black membrane lining the belly cavity should be removed. This is best done by scrubbing with a piece of coarse canvas or sacking. Thorough cleaning helps in the removal of blood and bits of membrane. The fish are then trimmed to remove ragged edges, and washed in clean sea water, or in a 50° salinometer brine. The latter procedure is preferable. It is also good practice to soak the fish in brine from 30 minutes to an hour to remove diffused blood from the flesh.

After soaking, the mullet are heaped in a pile, flesh side down, to drain for about ten minutes. The fish are salted in butts holding about 400 pounds, though fountain syrup barrels or tierces may be used. Used meat, butter, or pickle barrels are likely to give an "off" flavor to the fish and should not be used. A thin layer of salt is scattered on the bottom of the butt or salting tank. The fish are then taken singly, dredged in salt, which is rubbed well into the flesh, especially into the cuts made in the surface. The salt used is of dairy fine grade. Some packers use half-ground salt, which is not good, because the coarse crystals puncture the flesh and are slower to dissolve. Fine salt gives better results, although more care and accuracy are required in salting. About one part salt should be used to three parts of fish. If the mullet are large and fat the salt may be increased to one part for each two parts of fish. An excess of salt will "burn" the flesh, giving it an acrid, unpleasant flavor.

The fish are laid in the butts, skin side down. A sprinkling of salt is scattered over each layer. Another layer of fish is laid in at right angles to the first. The last layer is packed skin side up and covered with a heavier layer of salt. The top is usually weighted down to keep the fish covered with the brine or "pickle."

Method of Packing Mullet in Butts for Brine Salting

Sufficient brine to cover the mullet should form in from 12 to 24 hours. The fish should remain in the brine until they are "struck." This varies from 72 hours for the smaller fish to 10 days for the largest; the average is a week. In warmer weather the time is reduced. The texture of the flesh determines when the fish are "struck;" the flesh should feel decidedly firm when pressed between the thumb and forefinger, and the depressions should disappear slowly.

When the mullet are "struck" they must be repacked. They are taken out of the salting butts, and scrubbed in clear brine to remove slime, undissolved salt, and other debris. They are graded as to size, thickness, and condition, and allowed to drain for one or two hours before packing in the final container. A barrel holding 100 pounds is the standard container for salt mullet, though tubs in sizes holding from 20 to 50 pounds are sometimes used. Mullet fillets are always packed in tubs.

A scattering of salt is thrown on the bottom of the container and the fish are laid in, flesh side up, with the thick side against the wall of the container. The mullet must be packed evenly and smoothly. A scattering of salt is thrown over the layer of fish and a second layer is packed at right angles to the first. This is continued until the container is filled, with the last layer packed skin side up. The amount of salt used in repacking should be about 10 pounds to 100 pounds of fish.

When filled the containers are headed up and fresh 90 to 95° brine is added through the bung hole, until no more can be absorbed. The bung is then driven in, and the barrel placed in chill storage at a temperature of approximately 40° F. Some of the fillets and larger choice fish are repacked in brine tanks in chill storage, and are not packed in the final container until ordered by the retailer. The containers must be inspected for leaks at regular intervals while in storage. Even when the container does not leak, there is loss of brine from absorption by the fish. Therefore, brine should be added at frequent intervals. Oxidation or "rusting" will occur if the mullet are exposed above the surface of the brine.

In storage in the southern States at average room temperatures, the salt mullet is reported at its best in from one to six weeks after packing; the maximum storage period is less than six months. It is believed that mullet should not be used after three months of storage at room temperature. The fish held in chill storage remains in excellent condition for a considerably longer period.

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