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# *The* NEW FROZEN SEAFOOD HANDBOOK

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A COMPLETE REFERENCE  
FOR THE SEAFOOD BUSINESS

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GETTING WHAT YOU PAY FOR

INCLUDES PROFITABILITY, BUYING, SELLING, MARKETING,  
PACKAGING, HANDLING, SUBSTITUTIONS, IDENTIFICATION,  
NAMING RULES, QUALITY, PRODUCT INTEGRITY  
AND MUCH MORE



IAN  
DORE



OSPREY BOOKS  
HUNTINGTON, NEW YORK

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## **THE NEW FROZEN SEAFOOD HANDBOOK**

### **A Complete Reference for the Seafood Business**

**The New Frozen Seafood Handbook** is packed with relevant, timely information for everyone who uses, buys or sells seafood – frozen OR fresh. A fully updated and greatly enlarged revision of Ian Dore's classic **Frozen Seafood – the Buyer's Handbook**, it is more than twice the size of the original book with new and updated information and many species and products not included in the earlier text.

Crisply written, easy-to-read, in encyclopedia format with topics from A to Z. Contents include:

- Full description of hundreds of fish and shellfish items.
- How to recognize and identify product and avoid substitutions.
- Information on names and naming including the latest rules and all the approved market and common names.
- How to determine and maintain quality.
- Specific problems to watch for with certain products.
- How to use less known alternative items to cut your costs.
- Cross-referenced text which makes it easy to find what you are looking for. Plus a full index.
- Large bibliography of other books, magazines and newsletters covering seafoods.

A unique, comprehensive and easy-to-use guide to every aspect of fish and shellfish use. An invaluable resource and business tool for: Processors • Distributors • Marketers • Buyers • Importers • Traders • Brokers • Retailers • Restaurants • Supermarkets • and for everyone who risks a buck on fish or shellfish.

This book is about getting what you pay for. It covers buying, selling, profitability, quality, marketing, packaging, handling, substitutions, identification, naming rules, product integrity and much more.

What they said about **Frozen Seafood – the Buyer's Handbook**:

***"An incredible book – paid for itself ten times over."***

Wholesaler, Pittsburgh

***"A clear guide to the many dangers and pitfalls of the seafood industry."***

Knut Nordness, Boston

***"An excellent reference tool for the seafood industry."***

New York Public Library

***"A bible to many major U.S. seafood buyers."***

Seafood Processing and Packaging

***"What do you want to tell them all this stuff for?"*** asked a well-known New York City wholesaler. Now there's even more to tell with many new topics and an up-to-the-minute section on substitutions and economic fraud.

ISBN: 0-943738-26-1

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**Osprey  
Books**



# **The New Frozen Seafood Handbook A Complete Reference for the Seafood Business**

by Ian Dore

Published by  
Osprey Books  
6 West 18th Street  
Huntington Station, NY 11746

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Design by Lorraine Brod, Centerport, New York  
Composition by New Age Typographers, Inc., Huntington, New York  
Printed in the U.S.A.

## **Library of Congress Cataloging in Publication Data**

Dore, Ian, 1941 –

The new frozen seafood handbook : a complete reference for the  
seafood business / Ian Dore

p. cm. – (Osprey seafood handbooks)

Rev. ed. of: Frozen seafood, the buyer's handbook. c1982.

Bibliography: p.

Includes index.

ISBN 0-943738-26-1 : \$69.00

I. Frozen seafood – Purchasing. I. Dore, Ian, 1941 –  
Frozen

seafood, the buyer's handbook. II. Title. III. Series.

TX385.D67 1989

641.3'92 – dc19

88-36828

CIP



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## Foreword

This book is based on *Frozen Seafood — the Buyer's Handbook* which was first published in 1982. It contains over twice as much information and has been completely revised and updated. The format, though, is the same: it is an encyclopedia of fish, shellfish and seafood products used in the U.S.A.

Because the entries are in alphabetical order, finding what you need is simple. However, some fish species have many names and it takes too much space to list each one separately. Therefore, if what you are looking for is not listed with its own entry, use the index to locate the word.

Commercially used names for fish and seafood are an important aspect of the industry and of this book. We have tried to find all names that are commonly used and to indicate which ones are likely to be legal and which ones are probably illegal. See the item Names for a full discussion. The U.S. Food and Drug Administration is the agency mainly responsible for determining how our foods should be labelled and named. However, the Customs service, the Department of Commerce and the Department of Agriculture all get involved from time to time. This book does not give you definitive answers; these can come only from the bureaucrats or, in the last resort, from the courts. Our intention is to provide as much information as possible on which you can base a judgement and, if necessary, a debate with the authorities.

## Note on pack descriptions

Throughout this book the seafood industry's standard way of describing packs is used: the first figure represents the numbers of packages inside a master carton; the second figure gives the weight of each package.

For example, 10/5lb means there are ten packages of five pounds each, giving a master carton net weight of 50lbs; 12/3lbs shows there are twelve packages each of three pounds, for a master carton weight of 36lbs. 1/25lbs indicates a bulk pack (that is, one per master carton) of 25lbs.

This rule can be extended to define more complex packs also: for example, langostinos are frequently packed 4/12/12oz meaning that there are four inner packages each containing 12 pieces, each piece being 12oz in weight; so the total weight of the master carton is 48 units of 12oz each, which is 36lbs.

### **Fresh or Frozen Fish and Shellfish?**

This book concentrates on frozen product, but also covers numerous items that are not usually available to the trade in frozen form. This helps to make it a one-volume reference and also provides information on many products which might, given market demand or changed harvesting methods, become available more widely. There is considerable prejudice in the U.S.A. in favor of “fresh” seafoods, fresh in this case meaning “not frozen.” Like all prejudices, this one is based on ignorance. Distinguished food columnists and other formers of consumer opinion almost universally maintain the superiority of unfrozen fish over frozen. It is doubtful if many of them have ever given the alternatives a fair test.

Freshness is an aspect of quality not related to freezing. Unfrozen fish takes time, sometimes a lot of time, to reach the plate. Its quality, including its freshness, deteriorates rapidly over time. Even with the best handling – stable, cold temperatures, lots of ice which is removed and replenished every day or so – fish decomposes quite fast. Harold Wilson said a week is a long time in politics. It is also a long time in the storage life of a dead fish. Poor handling can reduce the shelf life to a matter of hours instead of days.

Nowadays, most frozen seafoods are processed soon after catching. Once frozen, the product maintains its quality, including its freshness, for a long time, making it possible to handle and distribute it to any place that has a freezer chest. Just as unfrozen fish must be handled properly, so must frozen product be handled and processed. Stale fish is not improved by freezing it. But good fish can be preserved as good fish by freezing.

The supermarket industry has in the last few years been particularly oriented to unfrozen product, often with poor bottom-line effects. There are clear signs that retailers now understand that good frozen fish is not only superior to stale, unfrozen product but also is much less wasteful, easier to inventory and more profitable to handle.

Raw fish in the form of sushi is an American craze which continues to grow. Sushi fans are horrified at the idea of eating frozen fish. Yet in Japan, where sushi originated, a great deal of the fish is frozen. This has two overwhelming advantages: it makes it possible to offer the essential wide variety of seafoods, all in top condition; and it removes the problem of parasites, which are destroyed after short periods in the freezer (see the items Parasites and Sushi). In fact, top hotel and restaurant groups in the U.S.A. specify only frozen fish if it is to be eaten raw. Anyone who cannot afford a lawsuit from a possibly parasitized customer should follow their example.

Successfully freezing fish for sushi is not easy. The fish must be fresh and be kept very cold and well iced before it is processed. It must be frozen immediately and held at low, stable temperatures. But such specifications are normal for any first-class freezing operation, of which there are many throughout the world. Fish frozen to the right specifications and properly handled after freezing will be almost as good as just-caught product – which is not available in the normal course of trade.

This is not to say that all frozen product is better. A few species do not freeze well. American lobster is one of them. Some frozen product is stale when it is processed. It is, of course, still stale when thawed and cooked. But a lot of “fresh” product is equally stale by the time it is eaten. One theme of this book is the importance of knowing your product and judging it for yourself. If you do that, the question of whether to use frozen or unfrozen product becomes moot: the important thing is to use good product, which your customers will want to keep buying.

**ABALONE:** *Haliotis rufescens*, red abalone, is the commonest California species. Also known as ormer. A large single shell mollusc that looks like a huge limpet. The meat is very expensive and highly regarded. Red abalone is the largest (it may reach 8lbs) and the most common, although no species is found in large quantities. Other Pacific coast abalone species include:

- Haliotis corrugata* – pink abalone
- Haliotis cracherodii* – black abalone
- Haliotis fulgens* – green abalone
- Haliotis kamtschatkana* – pinto abalone
- Haliotis sorenseni* – white abalone.

The European abalone, *Haliotis tuberculata*, which is now found mainly in the Channel Islands and the Japanese abalone, *Haliotis discus*, are both similar to the California species. There are a number of abs in Australia, including greenlip, blacklip, brownlip and Roe's. New Zealand has *Haliotis iris*, known locally as paua which has a black covering on the flesh and is available mainly canned.

Pacific abalone eats kelp, so it is immune to the red tide which affects filter-feeding molluscs. It ranges from Baja California to Alaska, but stocks are small, partly because of over-fishing and partly because of the re-emergence of the sea otter as a significant predator. It is harvested by divers who pick them off the kelp one at a time.

California is the source of most U.S. abalone as well as being the major market area. Small quantities of abalone are landed in Alaska. Chile has also shipped abalone to the U.S.A., but this is a small, tough shellfish that bears little resemblance to the real thing. They are called "locos" in Chile. Usually canned, they are an inexpensive shellfish which is not an alternative to abalone.

Red abalone is now farmed quite successfully in California. Supplies may increase from other aquaculture work carried out in Europe, South America and Japan, although European and Japanese markets are at least as hungry for abalone as is California. Taiwan and China are cultivating local species of abalone and Australians are exploring prospects as well.

Frozen abalone meats are sold whole cleaned, or they may be beaten out and cut into steaks which are sometimes sold breaded, ready to cook. To prepare as steaks, the meaty foot is removed from the shell, cleaned of viscera and frill and sliced across the grain into

round steaks, which are then pounded gently to soften the fibers. Abalone steaks must be cooked only very briefly, or the flesh toughens.

Because abalone steaks are one of the highest priced seafood products, there is considerable temptation to substitute other, cheaper products.

Cuttlefish is sometimes substituted for abalone steaks. The mantle (body flesh) of large cuttlefish may be cut into shapes resembling abalone. Cuttlefish is generally run through a meat tenderizer with needles. The needle pattern is quite distinctive. Another distinction between the two molluscs is that the cuttlefish has a membrane, small pieces of which may remain attached to the meat. Abalone steaks have no membrane. Giant squid is also used as a substitute for abalone. This similarly needs tenderizing so may have pin marks in the flesh.

**ADDITIVES:** Many substances are added to foods for flavor, for preservation or stabilization, for nutritional enhancement or for many other good reasons connected with enhancing, preserving and distributing the food supply. Additives have been tested possibly more than anything else we eat or drink. Without preservatives and anti-oxidants, much of our food would spoil too quickly. The amount and variety of our diet would worsen and many more people throughout the world would starve.

Even though freezing is a preservative process, some frozen foods require food additives. Generally, the more processed the food, the more likely it is to need and to contain some additives. Whole fish is gutted and frozen with no other process involved. Additives are seldom used. Fish fillets, however, are sometimes dipped in phosphate solutions to help them retain moisture when thawed and to improve their appearance by whitening them. Cooked product will almost certainly have some salt or spices added to give flavor. Highly processed products such as breaded portions will contain a number of additives including flavorings, preservatives, anti-caking agents and possibly nutritional enhancements in the breading, which is highly engineered to perform consistently in the varied environments of restaurant kitchens.

For more information on additives, see Dips and G.R.A.S. Various additives are mentioned individually.



**ADEN TAILS:** Also known as deep sea tails. Lobsterette may be the best term for this group of animals. See the description under Lobsterette.

Aden became the People's Democratic Republic of Yemen in 1967, but the small lobster tails exported from the region are still known as Aden tails or Aden dainties.

**AHI:** Hawaiian name for tuna, usually yellowfin.

**A.K.C.:** Short for Alaska king crab. See Crabs.

**ALBACORE:** See Tuna.

**ALEWIFE** *Scientific name: Alosa pseudoharengus:* Also called river herring; gaspareau is the French name often used in Canada and occasionally in the U.S.A. Gaspergoo is a corruption of the French word and is also heard occasionally.

Alewife is an anadromous North Atlantic herring, spawning in the rivers of New England and the Canadian Maritimes in April and May. Large numbers of the fish swim together into the streams of Rhode Island and Cape Cod where the fish is then caught easily with simple gear. Alewives are about ten inches long and are rather deeper in the body than regular herring. The flesh is dry and very bony, but fresh and salted alewives are eaten by a number of different ethnic groups.

The same fish lives in the Great Lakes, swimming up the tributary streams to spawn. The freshwater version of the species is small, usually around three inches long. Use is the same for the freshwater as for the anadromous alewife.

Alewife may be canned or pickled. Frozen product is generally whole (not gutted) and is used as raw material for further processing. Frozen alewife is often used for bait and for animal feed for zoos and aquaria.

**ALLIGATOR:** American alligators ceased to be on the "threatened" list in 1986. Since then, hunters and alligator farmers have provided an increasing supply of meat. Although most alligators are harvested for skins, the mild, boneless meat is also finding markets. Production is centered in Florida, with Louisiana and the other Gulf states also producing.

Tail meat is considered the best part. Other white meat comes from the jaws and loins. Leg and belly meat is darker and less favored.

**AMBERJACK** *Scientific name: *Seriola dumerili**: Also called greater amberjack and Florida amberjack. A large member of the jack family, reaching as much as 100 pounds. Most fish handled commercially are between 10 and 40 pounds. The flesh is dark and oily and shelf life is short. Both appearance and freshness are improved if the fish is properly bled when it is first caught. This lightens the flesh color, reduces the off flavors caused by the oxidation of the blood and makes it possible to freeze the fillets, which are normally sold skin-on. In general, the fish is similar to mahi-mahi, although oilier and can be used in similar ways.

Amberjack is sometimes sold as a substitute for the similar but more expensive California yellowtail. Most fish are line-caught in the Gulf of Mexico. It ranges throughout the tropical and subtropical Atlantic from the Mediterranean to West Africa in the east and from Brazil to the Chesapeake in the west. In the summer, amberjack may be caught as far north as Cape Cod.

Although there are isolated reports of ciguatera in amberjack, this is not a problem outside the Caribbean islands. Parasitic worms are also quite common from time to time. Candling or simple inspection is usually sufficient to find them. They can then be removed easily with a knife.

**ANADROMOUS FISH:** Sea fish which migrate to freshwater rivers, streams and lakes to spawn. Salmon are the best known anadromous fish. Other examples are shad and alewife (river herring). Anadromous fish are vulnerable to pollution and to developments which may destroy the delicate and vital habitat in which these fish breed.

**ANAEROBIC BACTERIA:** Bacteria which multiply without oxygen. Canned and vacuum packed foods are vulnerable, since in both forms of packaging oxygen is excluded to deter spoilage of the product. Low-acid products in these forms of packaging are particularly at risk.

Botulinus is the best known anaerobic bacteria. The toxin that

this bug produces causes botulism, which is a very severe and sometimes fatal form of food poisoning. The risk of botulism is mainly in low-acid foods such as canned mushrooms, but it is an occasional hazard with vacuum packed and especially smoked items if they are improperly handled.

Correct processing and handling virtually guarantees that the product will be good; it is poor handling or production errors that lead to the spread of bacteria and consequent problems. Although there are fortunately very few instances of botulism, any occurrence gets widespread publicity.

**ANCHOVY:** A small sardine-like fish, mostly sold canned for human consumption.

There are numerous species of anchovy and anchoveta in both Atlantic and Pacific oceans. Main species are *Engraulis mordax* the northern anchovy from the Pacific and *Engraulis encrasicolus*, the European or Atlantic anchovy. For other species, see Names.

In California, anchovies used to be the basis of substantial fish-meal industry, but the decline of the fish stock put an end to that business and the small quantities now available are frozen whole for use as bait and for aquarium and zoo food. There are quantities available in both oceans for freezing. Sale as whitebait is possible. The fish is tasty, but needs to be handled with speed and care, since it will turn rancid very quickly.

**ANGLERFISH:** *Lophius americanus* and *Lophius piscatorius* are respectively goosefish and monkfish. Both are also known as anglerfish. For details, see Monkfish.

**ANTARCTIC QUEEN:** See Whiting.

**ANTIBIOTICS:** Some countries permit the use of antibiotics to preserve fish. This practice is not allowed in the U.S.A. Aureomycin, terramycin and tetracycline are among the antibiotics used in some countries. The purpose is to kill the bacteria which spoil the product. The reason for banning the use of antibiotics is simple: small quantities remaining on product will build resistance among people who eat the food, so making the drugs ineffective when they are needed to treat disease.

The absence of antibiotics is monitored by the regular F.D.A. inspection of imported foodstuffs.

**A.O.A.C.:** The Association of Official Analytical Chemists. Laboratory tests approved by A.O.A.C. are recognized by Federal and state courts as conclusive. Testing laboratories should always use A.O.A.C. methods when these are available.

**AQUACULTURE:** Fish farming is the fastest growing sector of the fishing industry and the great hope for the future of supplies of fish and shellfish.

Fish farming has been an important activity in parts of Asia for many centuries; carp, milkfish and shrimp are all grown as staple items. In the U.S., oysters have been farmed for many years following upon European tradition, which saw the start of oyster farming in Roman times. Trout is farmed on a large scale in the western mountain states and about 90 percent of production is now from Idaho. Nearly all the crawfish and domestic catfish used in the U.S.A. is farmed. The catfish industry particularly is an enormous success story with sales rising consistently and rapidly for a number of years. Catfish is a major cash crop in a number of southern states.

Aquaculture not only made headlines in the 1980s, it also produced a lot of fish and shellfish. Salmon has been the major breakthrough in fish farming. Norway led the way with cage-based techniques. A number of other countries, from Chile to northern Europe, have followed suit. Legal restrictions have been responsible for the late entrance of the U.S.A. into the business, though Canadian salmon farming on the Pacific coast has been a gold-rush type of activity.

Shrimp is the other aquaculture headliner. Asian countries, led by Taiwan and Thailand and now followed by China, are producing very large quantities of shrimp from ponds. In South America, Ecuador was the first, but is no longer the only country to market large tonnages of farmed shrimp. Shrimp markets have been transformed by the availability of farmed product.

Many other seafoods are now being farmed. Salmon technology is adapting to sea-going rainbow trout and even to cod. Turbot (the real one, not Greenland turbot) is also farmed now. Other flatfish will follow. Scallops and abalone have joined the tradi-