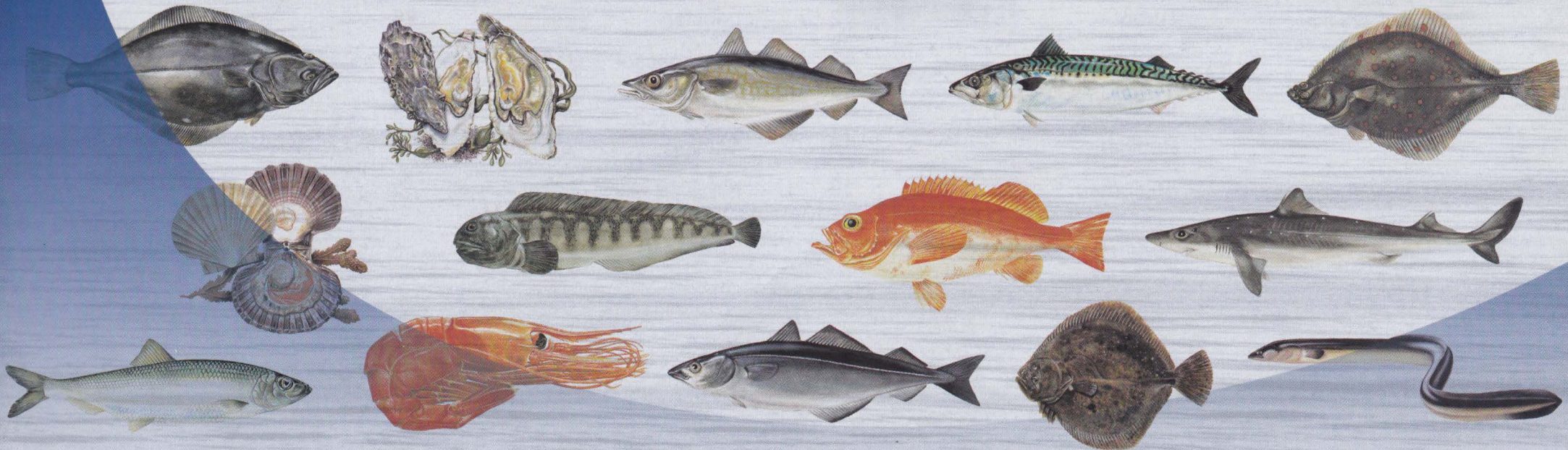


# Facts about fish



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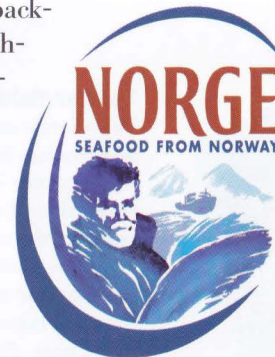
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**F**ishing has been an important activity in Norway since the country was first settled some 10 000 years ago. Together, the Norwegian coastal trades – traditionally fishing, fish farming, aquaculture, and the processing and sale of fish – constitute one of Norway's largest and most important export industries. Norway is the world's largest exporter of fish and Europe's largest fishing nation. The total sea areas under Norwegian jurisdiction cover some 2.1 million km<sup>2</sup>, which corresponds roughly to the size of Greenland, and Norway has a total coastline of approximately 50 000 kilometres, if we include the shores of the fjords and around the numerous islands off the coast.

Seafood is an important element of a healthy, balanced diet and covers a vast range of delicious foods. The consumption of seafood is on the increase, both in Norway and on a global level. The combination of up-to-date expertise and sound traditions that go back several thousand years has made Norway one of the world's leading suppliers of seafood products, and these are values that we hope this booklet will enhance.

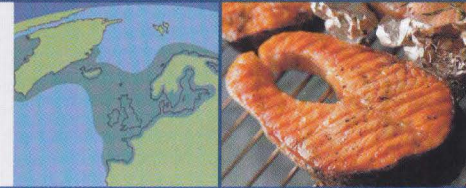
Facts about fish is a joint project between the Norwegian Seafood Export Council, the National Federation of Fish and Aquaculture Industries, the Directorate of Fisheries and the Directorate of Fisheries' Institute of Nutrition. This booklet is the backbone in a broad series of informational booklets about the Norwegian fishing industry. Detailed information about catches and exports, the presence of foreign substances, breeding and aquaculture and quality will be published separately.

There is also extensive information about the Norwegian fishing industry at the following web sites: [www.seafood.no](http://www.seafood.no) and [www.fiskeridir.no](http://www.fiskeridir.no).

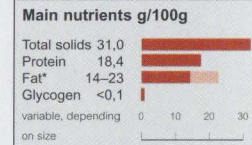


# atlantic salmon

*Salmo salar*  
Laks  
Saumon Atlantique  
Lachs



Season: Protection laws determine the fishing season.  
Farmed salmon is sold all year.  
Size: Up to 150 cm, weight up to 35 kg.



**VITAMINS** µg/100 G

Vitamin A	22
Vitamin D	8
Vitamin E	0.6-4.0

mg/100 g

Vitamin B12	4
Thiamine	0,21
Riboflavin	0,14
Niacin	8,2
Pantothenic acid	1,3
Pyridoxine	0,9

**AMINO ACIDS** g/100 g

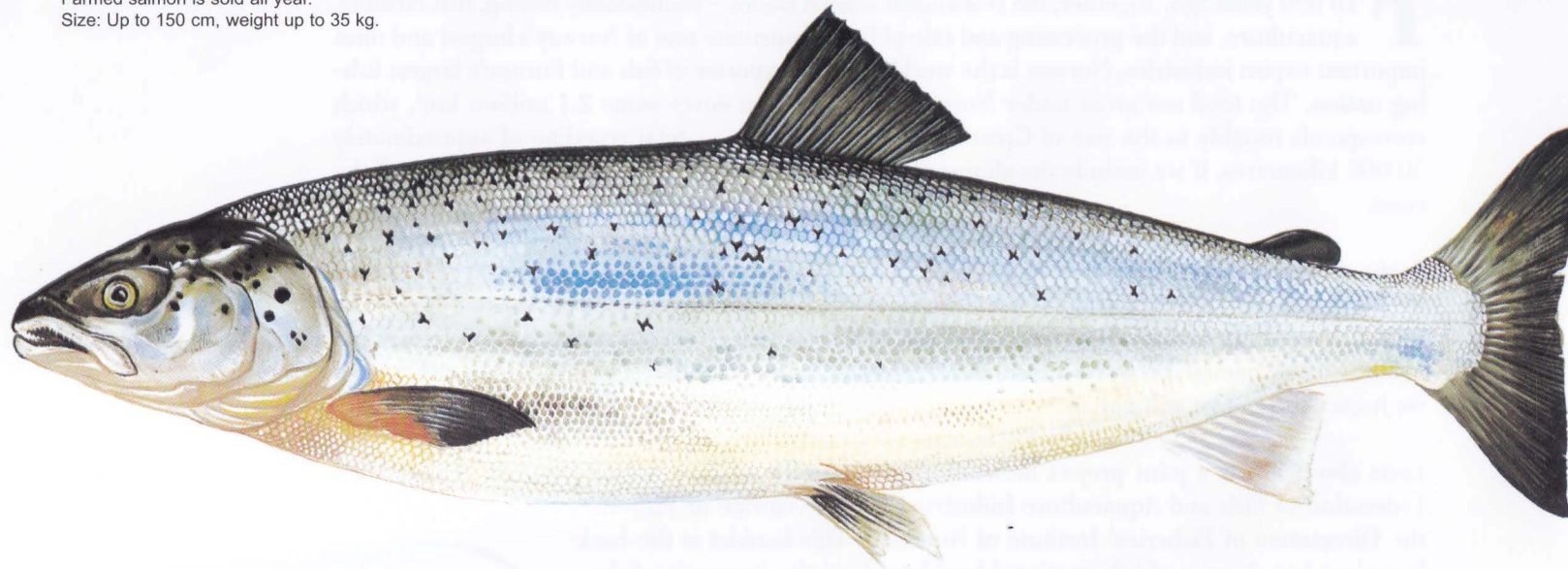
Aspartic acid (ASP)	1,9
Threonine (Thr)	0,9
Serine (Ser)	0,8
Glutamic acid (Glu)	3,0
Proline (Pro)	0,7
Glycine (Gly)	0,9
Alanine (Ala)	1,4
Valine (Val)	1,1
Methionine (Met)	0,6
Isoleucine (Ile)	1,1
Leucine (Leu)	1,7
Tyrosine (Tyr)	0,7
Phenylalanine (Phe)	1,0
Lysine (Lys)	1,7
Histidine (His)	0,8
Arginine (Arg)	1,3
Tryptophane (Trp)	0,2

**MINERALS AND TRACE ELEMENTS** mg/100 g

Sodium (Na)	57
Potassium (K)	441
Calcium (Ca)	12
Iron (Fe)	0,4
Selenium (Se)	0,03
Zink (Zn)	0,4
Manganese (Mn)	0,01
Magnesium (Mg)	28
Phosphorus (P)	245
Copper (Cu)	0,04
Cholesterol	66

**FATTY ACIDS** %

14:0	4,0-7,0
16:0	12,0-14,0
16:1*	4,0-7,0
18:0	2,0-3,0
18:1*	15,0-18,0
18:2ω6	2,0-16,0
18:3ω3	0,5-2,5
18:4ω3	0,5-2,5
20:1*	5,0-14,0
20:4ω3	1,0-2,0
20:4ω6	0,2-1,0
20:5ω3	4,0-10,0
22:1*	4,0-15,0
22:5ω3	1,5-5,0
22:6ω3	7,0-15,0
Total saturated	18,0-24,0
Total mono-saturated	28,0-54,0
Total ω3	12,5-37,0
Total ω6	2,2-17,0
g ω 3/100 g	1,0-4,0



## The fish/fishery

The Atlantic salmon is an anadromous fish, which means it migrates into freshwater to spawn but otherwise lives in the sea. It spawns in the autumn, and the eggs lie buried in the riverbed until they hatch in April or May. After two to five years in the river, the salmon fry undergoes a change, known as smoltification, rendering it able to live in saltwater. Once the salmon fry has become a smolt, it leaves the river and migrates out to sea. In the ocean, Atlantic salmon travel huge distances in search of food and grow quickly. After two to four years, the fish is fully matured and starts the migration back to its native river to spawn.

Nowadays, fishing wild salmon is limited to sports anglers for the most part. There is a certain amount of commercial fishing for Atlantic salmon by landowners that have a licence to set out salmon weirs.

## Farming

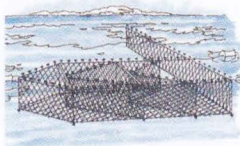
Salmon (and trout) farming have developed rapidly in Norway since the breakthrough in the mid-1970s. As a coastal trade and export industry, the salmon industry has had an enormous influence on where people live and the economy in Norway. In recent years, the industry has provided almost 40% of the total exports of Norwegian fish products.

## Use

Atlantic salmon is sold fresh, frozen, in fillets, smoked and cured. You can fry, boil, or broil Atlantic salmon and use it in a variety of dishes.

## Nutritional value

In terms of nutritional value, farmed salmon is an excellent product. It contains plenty of omega-3 fatty acids and is rich in the fat-soluble vitamins A and D. It also has a high content of the water-soluble vitamins B12 and pyridoxine.



# trout

Ørret  
Truite  
Forelle



## Main nutrients g/100g

Total solids	30,2
Protein	17,2
Fat	10,2
Glycogen	0,1

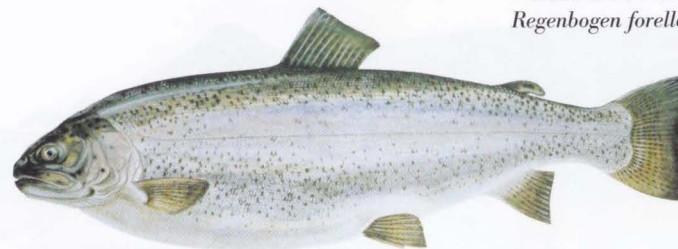
Season: May to September.  
Farmed trout is sold all year.

Size: Freshwater trout: 15 to 50 cm.  
Sea trout: up to 90 cm.  
Rainbow trout: up to 70 cm.

## Rainbow trout

*Salmo gairdneri/Salmo irideus*

*Regnbueørret*  
*Truite arc-en-ciel*  
*Regenbogen forelle*



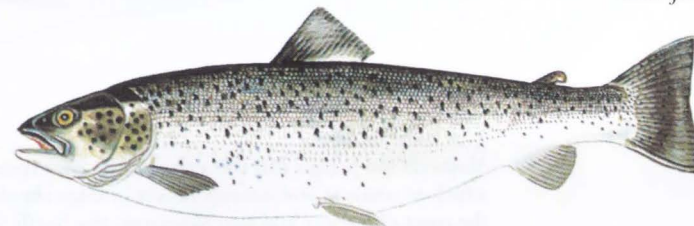
**Trout**  
*Salmo Spp.*  
*Ørret*  
*Truite*  
*Forelle*



## Sea trout

*Salmo trutta*

*Sjøørret*  
*Truite de mer*  
*Meer forelle*



**VITAMINS** µg/100 g  
Vitamin A 10  
Vitamin D 32,9  
Vitamin E 5

**mg/100 g**  
Vitamin B12 2,7  
Thiamine 0,10  
Riboflavin 0,21  
Niacin 5,2  
Pantothenic acid 2,0  
Pyridoxine 0,7

**AMINO ACIDS** g/100 g  
Aspartic acid (ASP) 2,0  
Threonine (Thr) 1,0  
Serine (Ser) 0,8  
Glutamic acid (Glu) 3,1  
Proline (Pro) 0,8  
Glycine (Gly) 0,9  
Alanine (Ala) 1,4  
Valine (Val) 1,0  
Methionine (Met) 0,6  
Isoleucine (Ile) 0,9  
Leucine (Leu) 1,7  
Tyrosine (Tyr) 0,7  
Phenylalanine (Phe) 1,1  
Lysine (Lys) 1,7  
Histidine (His) 0,8  
Arginine (Arg) 1,3  
Tryptophane (Trp) 0,2

**MINERALS AND TRACE ELEMENTS** mg/100 g  
Sodium (Na) 75  
Potassium (K) 417  
Calcium (Ca) 20  
Iron (Fe) 0,2  
Selenium (Se) 0,03  
Zink (Zn) 0,4  
Manganese (Mn) <0,01  
Magnesium (Mg) 28  
Phosphorus (P) 244  
Copper (Cu) <0,01  
Cholesterol 59

**FATTY ACIDS** %  
14:0 4,4  
16:0 15,5  
16:1\* 7,9  
18:0 2,8  
18:1\* 21,2  
18:2ω6 4,0  
18:3ω3 0,9  
18:4ω3 1,5  
20:1\* 10,2  
20:4ω3 1,0  
20:4ω6 0,4  
20:5ω3 4,6  
22:1\* 8,5  
22:5ω3 1,7  
22:6ω3 12,8  
Total saturated 23,4  
Total mono-saturated 48,1  
Total ω3 22,4  
Total ω6 4,6  
g ω 3/100 g 2,2

## The fish

Trout is a widespread member of the salmon family that is found in many different varieties. The different types of trout have different life cycles, depending on their habitat. We generally distinguish between sea trout, freshwater trout (lake trout), brown trout and rainbow trout. The rainbow trout was introduced to Europe from California in the nineteenth century.

Trout grow quickly and are particularly well suited to farming. In Norway, trout are bred in the sea and reach a considerable size.

## Fishing methods

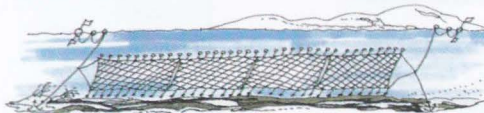
Nets.

## Use

Trout is sold fresh, frozen, smoked, cured and semi-fermented. You can fry, boil, or broil trout and use it in a variety of dishes.

## Nutritional value

Nutritionally, farmed trout is an excellent product. It contains a large amount of omega-3 fatty acids and is rich in the fat-soluble vitamins A and D. It also has a high content of the water-soluble vitamins B12 and pyridoxine.



# mackerel

*Scomber scombrus*  
Makrell  
Maquereau  
Makrele



Season: April to November.  
Size: Up to 66 cm, seldom longer than 40 cm.

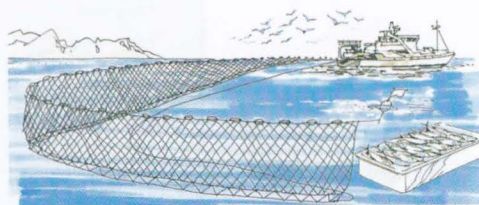


## The fish/fishery

Mackerel is a pelagic fish that can swim at great speeds and which in summer and autumn moves in huge shoals along the coast of Norway and into Skagerrak, the North Sea and the southern parts of the Norwegian Sea. In Europe, the mackerel family is divided into three main stocks: one living to the west of the British Isles, one in the North Sea, Skagerrak and the Norwegian Sea and the third in the Biscaya. The mackerel fished in the North Sea, Skagerrak and the Norwegian Sea belong to the western stock of mackerel.

Each year, between 140 and 160 000 tonnes of mackerel are landed in Norway, most of which is Atlantic mackerel that has migrated into the North Sea and Skagerrak for the autumn. Towards the end of the year, the fully matured fish swim out of the North Sea and towards their spawning grounds to the west and southwest of Ireland, where they start spawning in March.

Most of the commercial fishing for mackerel is done in the summer months. The vessels used vary from boats that use nets and trolling lines along the coast to large, ocean-going seiners.



## Fishing methods

Purse seines, pelagic trawlers, nets and trolling lines.

## Use

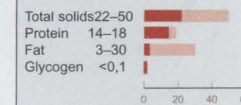
Mackerel is sold fresh, frozen, salted, smoked and canned. You can fry, boil, or broil mackerel and use it in a variety of dishes.

## Nutritional value

In spring, mackerel has a low fat content (approx. 3%), whereas mackerel caught in the autumn may contain as much as 30% fat and thus also a large supply of omega-3 fatty acids. Mackerel is also an excellent source of vitamins D and B12.



## Main nutrients g/100g



VITAMINS	µg/100 g
Vitamin A	14
Vitamin D	3-13
Vitamin E	12

	mg/100 g
Vitamin B12	0,6
Thiamine	0,11
Riboflavin	0,36
Niacin	9,4
Pantothenic acid	1,0
Pyridoxine	0,8

AMINO ACIDS	g/100 g
Aspartic acid (ASP)	1,9
Threonine (Thr)	0,9
Serine (Ser)	0,8
Glutamic acid (Glu)	2,6
Proline (Pro)	0,7
Glycine (Gly)	0,8
Alanine (Ala)	1,2
Valine (Val)	1,0
Methionine (Met)	0,5
Isoleucine (Ile)	0,9
Leucine (Leu)	1,6
Tyrosine (Tyr)	0,7
Phenylalanine (Phe)	0,8
Lysine (Lys)	1,4
Histidine (His)	0,7
Arginine (Arg)	1,2
Tryptophane (Trp)	0,2

MINERALS AND TRACE ELEMENTS	mg/100 g
Sodium (Na)	75
Potassium (K)	380
Calcium (Ca)	12
Iron (Fe)	0,9
Selenium (Se)	0,03
Zink (Zn)	0,8
Manganese (Mn)	0,03
Magnesium (Mg)	27
Phosphorus (P)	240
Copper (Cu)	0,1
Cholesterol	68

FATTY ACIDS	%
14:0	5,3
16:0	14,9
16:1*	4,0
18:0	3,1
18:1*	13,9
18:2ω6	1,7
18:3ω3	1,1
18:4ω3	2,5
20:1*	9,8
20:4ω3	0,9
20:4ω6	0,5
20:5ω3	5,7
22:1*	16,3
22:5ω3	1,2
22:6ω3	13,7
Total saturated	24,2
Total mono-saturated	45,7
Total ω3	25,0
Total ω6	2,5
g ω 3/100 g	0,8-7,5

# herring

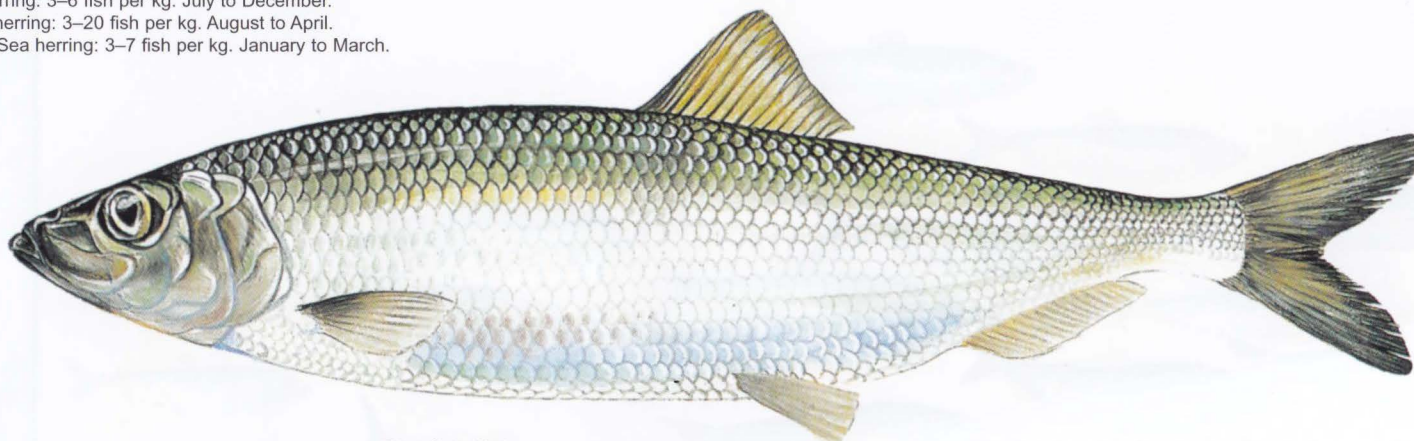
*Clupea harengus*  
Sild  
Hareng  
Hering



## Main nutrients g/100g

Total solids	32,6
Protein	15,2
Fat	14,0
Glycogen	<0,1

Winter herring: 2–6 fish per kg. January to March.  
Fat herring: 3–6 fish per kg. July to December.  
Fjord herring: 3–20 fish per kg. August to April.  
North Sea herring: 3–7 fish per kg. January to March.



### The fish/fishery

There are several stocks of herring living in Norwegian waters, but the Norwegian spring-spawning herring is by far the largest. There are also important stocks of herring that live off the coast of Iceland, in the North Sea and in Skagerrak.

The Norwegian spring-spawning herring spends the winter in Vestfjorden. Around February or March, it starts its migration south to its main spawning grounds in the waters off the coast of mid-Norway. The herring then continues its journey westwards, in search of food, before heading north and later east in the autumn. The larvae are carried north by the coastal currents, and the main growing grounds for the herring fry are in the Barents Sea.

In the past, the Norwegian spring-spawning herring formed the basis for the Norwegian catch of winter herring, fat herring and whitebait. However, the changes in fishing methods as the result of developments in technological aids in the 1960s led to the near depletion of the stock through overfishing in the early 1970s, and a protection order was introduced.

However, thanks to strict regulation for 20 years, the stock has now been sufficiently replenished, and herring fishery is once again an important commercial activity. In Norway, herring is primarily caught between October and March, when the herring is of a very high quality and easily accessible.

The herring that live in the North Sea and Skagerrak are mainly caught during summer and autumn. At the beginning of 2000, marine researchers estimated that the spawning stock of Norwegian spring-spawning herring was approximately 9 million tonnes. There have been large catches from this stock, but these are expected to decline over the next few years.

### Fishing methods

Purse seines, pelagic trawlers and nets.

### Use

Herring is a delicious food fish and is eaten fresh, smoked or preserved as pickled herring, marinated herring, etc.

### Nutritional value

Herring is an excellent source of vitamins A, D and B12 and is rich in omega-3 fatty acids. The amount of omega-3 depends on the fat content, which can vary considerably.

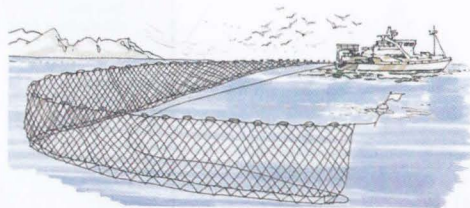
VITAMINS	µg/100 g
Vitamin A	6
Vitamin D	11,5
Vitamin E	14

	mg/100 g
Vitamin B12	2,0
Thiamine	0,04
Riboflavin	0,30
Niacin	4,0
Pantothenic acid	1,0
Pyridoxine	0,5

AMINO ACIDS	g/100 g
Aspartic acid (ASP)	1,4
Threonine (Thr)	0,6
Serine (Ser)	0,5
Glutamic acid (Glu)	2,5
Proline (Pro)	0,5
Glycine (Gly)	0,7
Alanine (Ala)	0,9
Valine (Val)	0,8
Methionine (Met)	0,4
Isoleucine (Ile)	0,7
Leucine (Leu)	1,1
Tyrosine (Tyr)	0,5
Phenylalanine (Phe)	0,6
Lysine (Lys)	1,4
Histidine (His)	0,4
Arginine (Arg)	0,9
Tryptophane (Trp)	0,2

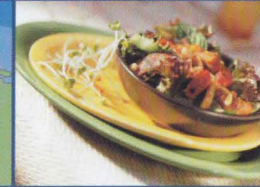
MINERALS AND TRACE ELEMENTS	mg/100 g
Sodium (Na)	87
Potassium (K)	440
Calcium (Ca)	38
Iron (Fe)	0,9
Selenium (Se)	0,04
Zinc (Zn)	0,4
Manganese (Mn)	0,02
Magnesium (Mg)	32
Phosphorus (P)	270
Copper (Cu)	0,06
Cholesterol	68

FATTY ACIDS	%
14:0	7,1
16:0	14,0
16:1*	6,1
18:0	1,0
18:1*	8,6
18:2ω6	1,2
18:3ω3	1,0
18:4ω3	3,3
20:1*	11,3
20:4ω3	0,5
20:4ω6	0,3
20:5ω3	9,4
22:1*	19,4
22:5ω3	0,7
22:6ω3	9,9
Total saturated	23,1
Total mono-saturated	46,5
Total ω3	24,8
Total ω6	1,7
g ω 3/100 g	3,5



# sprat

*Sprattus sprattus*  
Brisling  
Esprot  
Sprötte



Season: January, June to December.  
Size: Approx. 8 to 10 cm.



## The fish/fishery

Sprat resemble herring, but are much smaller. Sprat are a pelagic fish that swim in enormous shoals and are found in many seas and even brackish water.

In Norwegian waters, the Norwegian fjord sprat spawn each year in the Oslo fjord and in the eastern parts of the Skagerrak coast. Occasionally, sprat also spawn in the fjords between Lindesnes and Farsund on the southern coast of Norway and in some fjords on the western coast.

Most of the commercial fishing for Norwegian fjord sprat takes place in the fjords of southern Norway. Catches are left in impoundment nets or pens for at least three days to allow the intestines to empty before the fish are sent to processing plants. There is also some commercial fishery for North Sea sprat.

## Fishing methods

Purse seine.

## Use

Sprat is an important raw material for the canning industry, where it is marketed as sardines and anchovies. Sprat is also an important industrial fish. Fresh sprat is delicious fried or grilled.

## Nutritional value

Sprat is an excellent source of omega-3 fatty acids and vitamin D. It also has a high content of vitamin B12. Eating a small amount of sprat as a garnish or on bread (25 g) provides a valuable dietary contribution.

## Main nutrients g/100g

Total solids	49,1
Protein	12,4
Fat	17,6
Glycogen	<0,1

VITAMINS	µg/100 g
Vitamin A	-
Vitamin D	18,7
Vitamin E	7

Vitamin B12	mg/100 g
Thiamine	1,2
Riboflavin	0,08
Niacin	0,15
Pantothenic acid	4,7
Pyridoxine	0,6

AMINO ACIDS	g/100 g
Aspartic acid (ASP)	1,8
Threonine (Thr)	0,8
Serine (Ser)	0,7
Glutamic acid (Glu)	2,5
Proline (Pro)	0,7
Glycine (Gly)	0,8
Alanine (Ala)	1,0
Valine (Val)	0,9
Methionine (Met)	0,5
Isoleucine (Ile)	0,9
Leucine (Leu)	1,4
Tyrosine (Tyr)	0,7
Phenylalanine (Phe)	1,0
Lysine (Lys)	1,3
Histidine (His)	0,4
Arginine (Arg)	1,1
Tryptophane (Trp)	-

MINERALS AND TRACE ELEMENTS	mg/100 g
Sodium (Na)	279
Potassium (K)	209
Calcium (Ca)	47
Iron (Fe)	0,8
Selenium (Se)	0,01
Zinc (Zn)	2,2
Manganese (Mn)	0,1
Magnesium (Mg)	16
Phosphorus (P)	120
Copper (Cu)	0,07
Cholesterol	57

FATTY ACIDS	%
14:0	6,4
16:0	18,3
16:1*	5,4
18:0	2,0
18:1*	17,8
18:2ω6	1,2
18:3ω3	1,3
18:4ω3	2,6
20:1*	6,2
20:4ω3	0,7
20:4ω6	0,2
20:5ω3	6,1
22:1*	12,1
22:5ω3	0,7
22:6ω3	12,9
Total saturated	27,7
Total mono-saturated	42,8
Total ω3	24,2
Total ω6	1,6
g ω 3/100 g	4,3



# eel

*Anguilla anguilla*  
Ål  
Anguille  
Aal



Season: Autumn.  
Size: Females up to 150 cm, males up to 50 cm.

Main nutrients g/100g	
Total solids	54,1
Protein	17,3
Fatt	32,5
Glycogen	-

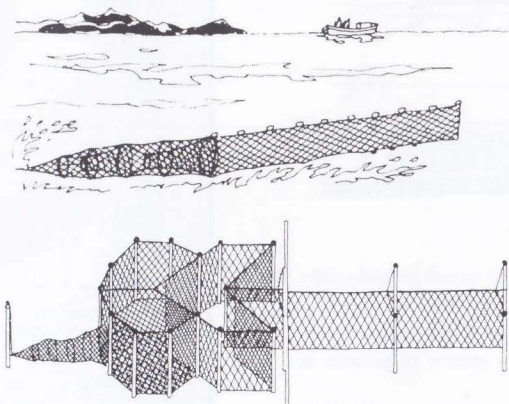
VITAMINS	
Vitamin A	600
Vitamin D	n.d.
Vitamin E	3,0

mg/100 g	
Vitamin B12	2,8
Thiamine	-
Riboflavin	0,04
Niacin	3,5
Pantothenic acid	0,2
Pyridoxine	-

AMINO ACIDS	
Aspartic acid (ASP)	1,6
Threonine (Thr)	0,7
Serine (Ser)	0,7
Glutamic acid (Glu)	2,1
Proline (Pro)	0,8
Glycine (Gly)	1,2
Alanine (Ala)	1,0
Valine (Val)	0,8
Methionine (Met)	0,4
Isoleucine (Ile)	0,7
Leucine (Leu)	1,2
Tyrosine (Tyr)	0,5
Phenylalanine (Phe)	0,6
Lysine (Lys)	1,4
Histidine (His)	0,5
Arginine (Arg)	1,0
Tryptophane (Trp)	0,2

MINERALS AND TRACE ELEMENTS	
Sodium (Na)	-
Potassium (K)	-
Calcium (Ca)	-
Iron (Fe)	-
Selenium (Se)	-
Zink (Zn)	-
Manganese (Mn)	-
Magnesium (Mg)	-
Phosphorus (P)	-
Copper (Cu)	-
Cholesterol	-

FATTY ACIDS	
14:0	3,4
16:0	16,8
16:1*	8,5
18:0	4,5
18:1*	32,4
18:2ω6	5,2
18:3ω3	6,0
18:4ω3	0,5
20:1*	1,2
20:4ω3	1,5
20:4ω6	2,4
20:5ω3	2,8
22:1*	-
22:5ω3	2,5
22:6ω3	3,1
Total saturated	26,1
Total mono-saturated	42,8
Total ω3	17,1
Total ω6	8,8
g ω 3/100 g	5,6



## The fish/fishery

Eels spawn in the Sargasso Sea off the coast of Florida. The eel larvae, leptocephali, are then carried across the Atlantic Ocean to Europe by currents. During the course of the three years in which the larvae drift northwards towards their growing grounds, they metamorphose to become transparent glass eel or elvers, measuring some 7 cm in length.

Elvers then migrate into freshwater and change colour to become yellow eels. When they reach maturity, after approx. 10 years, they change colour again and become silver eels with a shiny black back and pale underside. They then migrate out to sea and disappear from coastal waters.

Relatively few eel are caught in Norway, and the stock would tolerate further exploitation.

## Fishing methods

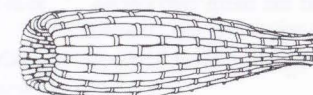
Pots.

## Use

Eel is sold fresh and smoked and is regarded by many people as a great delicacy.

## Nutritional value

Eel is extremely rich in omega-3 fatty acids, containing more than 5 grammes per 100 grammes. It is also a very good source of vitamin A.

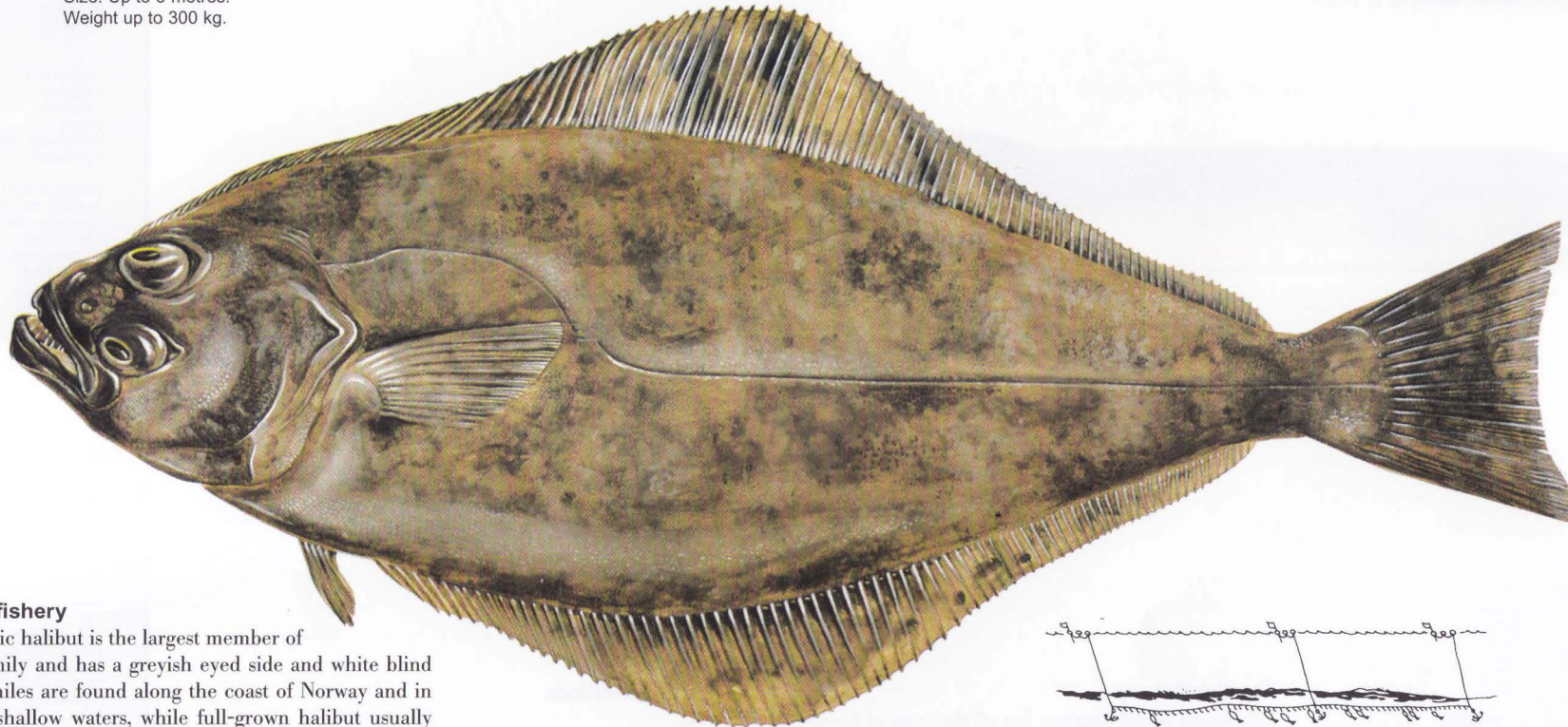


# atlantic halibut

*Hippoglossus hippoglossus*  
 Kveite  
 Flétan del Atlantique  
 Heilbutt



Season: April to December.  
 Size: Up to 3 metres.  
 Weight up to 300 kg.



## The fish/fishery

The Atlantic halibut is the largest member of flatfish family and has a greyish eyed side and white blind side. Juveniles are found along the coast of Norway and in relatively shallow waters, while full-grown halibut usually stay in deep waters, between 300 and 2000 metres.

Atlantic halibut spawn at depths of 300–700 metres, in deep hollows in the banks off the coast and in the fjords. In addition to the coast of Norway, halibut also spawn off the Faeroe Islands, along the ridge between Greenland, Iceland and Scotland, in the Denmark Strait, in the Davis Strait and on the banks off Newfoundland.

Atlantic halibut is extremely vulnerable to overfishing – it is territorial, grows very slowly and matures late. In addition to minimum size limits and net mesh restrictions, fishing for Atlantic halibut using nets, trawl nets, Danish seine nets and other fixed equipment is prohibited between 20 December and 31 March.

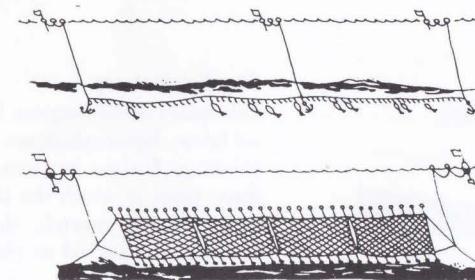
There is currently a great deal of research and development being done to establish commercial farming of Atlantic halibut, the preliminary results of which look very promising.

## Use

Atlantic halibut is one of the most highly prized edible fishes, due its tasty, firm, white meat. It is sold in slices; either fresh or frozen. You can fry, boil, or broil Atlantic halibut and use it in a variety of dishes.

## Fishing methods

Longlines, ground nets.



## Nutritional value

The fat content of Atlantic halibut varies considerably, but it normally contains roughly 1 gramme of omega-3 fatty acids per 100 g fillet and is a good source of vitamin D. Atlantic halibut is also a healthy source of protein and is rich in selenium.

## Main nutrients g/100g

Total solids	27.9
Protein	16.2
Fat	10.4
Glycogen	<0.1

<b>VITAMINS</b>		<b>µg/100 g</b>
Vitamin A	<2	
Vitamin D	18	
Vitamin E	1	

<b>VITAMINS</b>		<b>mg/100 g</b>
Vitamin B12	1	
Thiamine	0.04	
Riboflavin	0.06	
Niacin	4.4	
Pantothenic acid	0.4	
Pyridoxine	0.5	

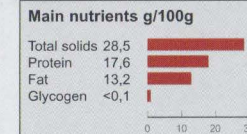
<b>AMINO ACIDS</b>		<b>g/100 g</b>
Aspartic acid (ASP)	1.6	
Threonine (Thr)	0.7	
Serine (Ser)	0.7	
Glutamic acid (Glu)	2.1	
Proline (Pro)	0.6	
Glycine (Gly)	0.7	
Alanine (Ala)	0.9	
Valine (Val)	0.8	
Methionine (Met)	0.5	
Isoleucine (Ile)	0.7	
Leucine (Leu)	1.3	
Tyrosine (Tyr)	0.6	
Phenylalanine (Phe)	0.6	
Lysine (Lys)	1.7	
Histidine (His)	0.4	
Arginine (Arg)	1.0	
Tryptophane (Trp)	0.3	

<b>MINERALS AND TRACE ELEMENTS</b>		<b>mg/100 g</b>
Sodium (Na)	90	
Potassium (K)	363	
Calcium (Ca)	6	
Iron (Fe)	0.2	
Selenium (Se)	0.04	
Zink (Zn)	0.3	
Manganese (Mn)	<0.05	
Magnesium (Mg)	16	
Phosphorus (P)	200	
Copper (Cu)	<0.06	
Cholesterol	49	

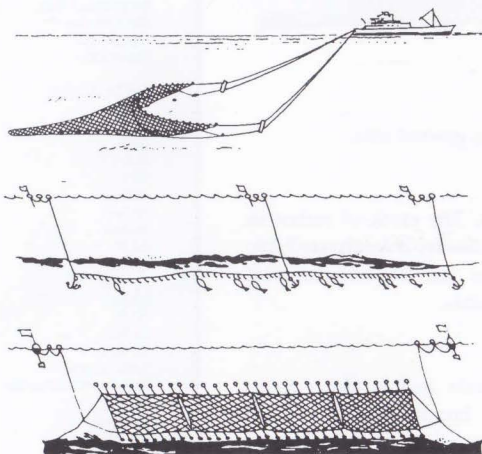
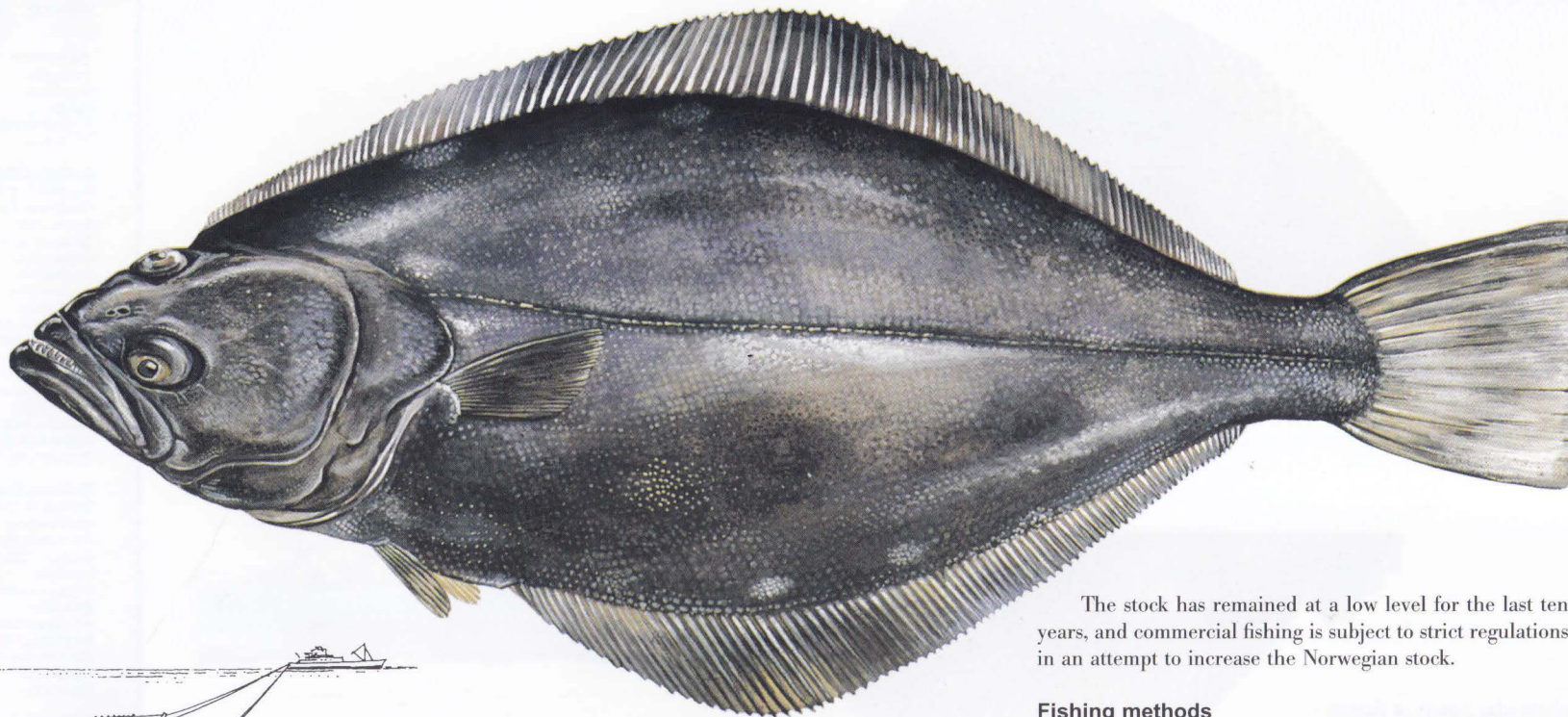
<b>FATTY ACIDS</b>		<b>%</b>
14:0	4.5	
16:0	9.0	
16:1*	8.7	
18:0	1.9	
18:1*	24.4	
18:2ω6	1.3	
18:3ω3	0.5	
18:4ω3	0.7	
20:1*	18.5	
20:4ω3	0.4	
20:4ω6	0.4	
20:5ω3	2.7	
22:1*	19.6	
22:5ω3	0.6	
22:6ω3	2.9	
Total saturated	16.1	
Total mono-saturated	72.4	
Total ω3	7.7	
Total ω6	2.1	
g ω 3/100 g	0.8	

# greenland halibut

Reinhardtius  
hippoglossoides  
Blåkeite  
Flétan noir  
Schwarzer Heilbutt



Season: All year. Rarely sold fresh in summer.  
Size: Up to 120 cm.



## The fish/fishery

Greenland halibut is an arctic species that prefers cold waters. It lives at depths of between 200 and 2000 metres, but is seldom found in water less than 400 metres deep. Greenland halibut live both on the sea floor and in the upper waters of the open sea. The main Norwegian spawning grounds are in the northern parts of the continental shelf, from the Vesterålen archipelago up to the island of Bjørnøya.

Most of the fishing for Greenland halibut takes place along the edge of the continental shelf as far north as the island of Prins Karls Forland.

The stock has remained at a low level for the last ten years, and commercial fishing is subject to strict regulations in an attempt to increase the Norwegian stock.

## Fishing methods

Bottom trawling, longlines, nets.

## Use

Greenland halibut is an oily fish and is mostly sold smoked and sliced. You can fry, boil, or broil Greenland halibut and use it in a variety of dishes.

## Nutritional value

The fat content of Greenland halibut varies according to the season and the individual fish's diet, meaning the amount of omega-3 fatty acids is also variable. However, Greenland halibut provides plenty of these essential fatty acids and is an excellent source of vitamin D.

VITAMINS	µg/100 g
Vitamin A	5
Vitamin D	11,4
Vitamin E	1

	mg/100 g
Vitamin B12	2,2
Thiamine	0,06
Riboflavin	0,08
Niacin	1,5
Pantothenic acid	0,3
Pyridoxine	0,6

AMINO ACIDS	g/100 g
Aspartic acid (ASP)	1,5
Threonine (Thr)	0,8
Serine (Ser)	0,7
Glutamic acid (Glu)	2,5
Proline (Pro)	0,6
Glycine (Gly)	0,6
Alanine (Ala)	0,9
Valine (Val)	0,7
Methionine (Met)	0,4
Isoleucine (Ile)	0,7
Leucine (Leu)	1,4
Tyrosine (Tyr)	0,6
Phenylalanine (Phe)	0,8
Lysine (Lys)	1,4
Histidine (His)	0,3
Arginine (Arg)	1,0
Tryptophane (Trp)	0,2

MINERALS AND TRACE ELEMENTS	mg/100 g
Sodium (Na)	82
Potassium (K)	360
Calcium (Ca)	8,5
Iron (Fe)	0,1
Selenium (Se)	0,02
Zink (Zn)	0,4
Manganese (Mn)	<0,05
Magnesium (Mg)	19
Phosphorus (P)	180
Copper (Cu)	0,2
Cholesterol	40

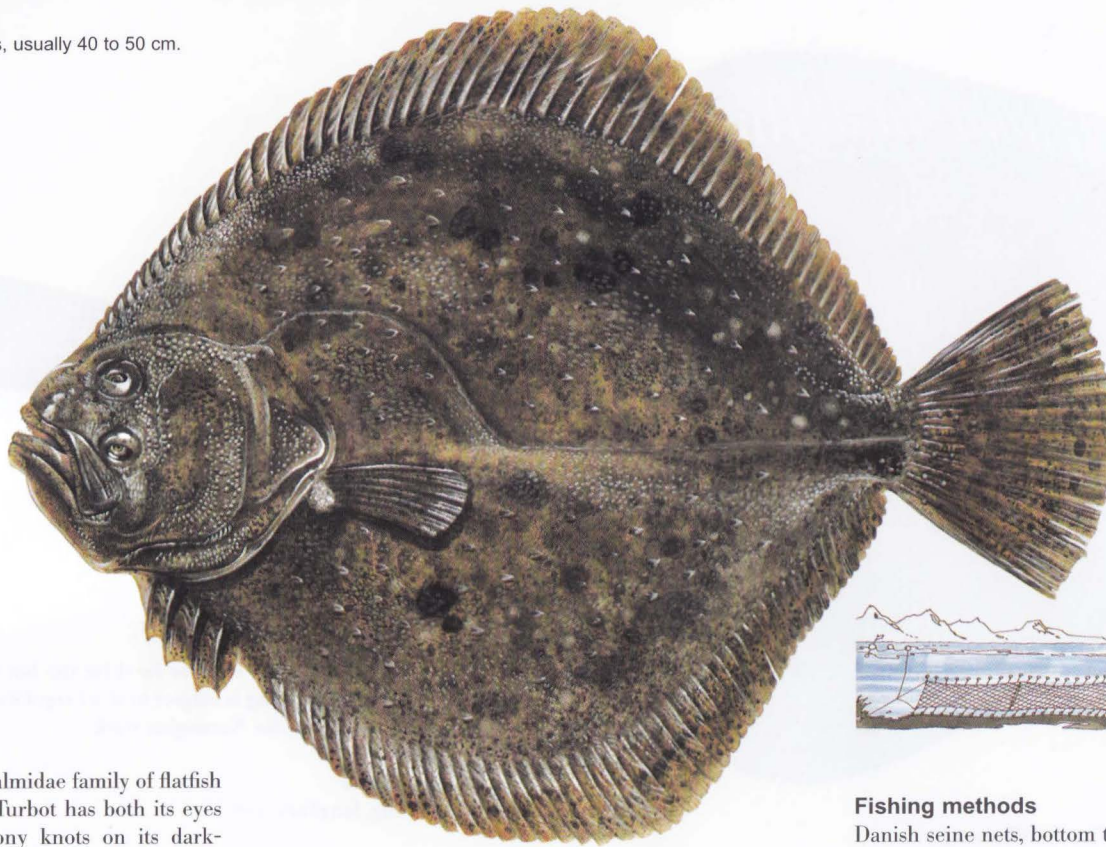
FATTY ACIDS	%
14:0	4,2
16:0	11,0
16:1*	10,5
18:0	2,0
18:1*	24,6
18:2ω6	0,9
18:3ω3	0,4
18:4ω3	0,9
20:1*	18,1
20:4ω3	0,3
20:4ω6	0,3
20:5ω3	3,0
22:1*	14,3
22:5ω3	0,7
22:6ω3	4,2
Total saturated	17,8
Total mono-saturated	68,7
Total ω3	9,5
Total ω6	1,6
g ω 3/100 g	1,3

# turbot

*Psetta maxima*  
Piggar  
Turbot  
Steinbutt



Season: All year.  
Size: Up to 1 metre.  
In Norwegian waters, usually 40 to 50 cm.



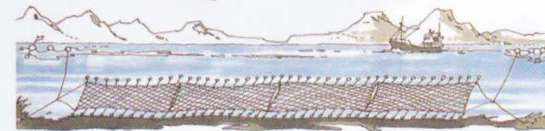
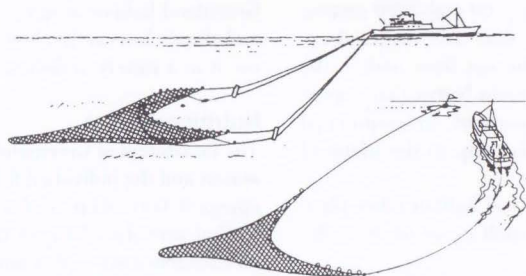
## The fish/fishery

Turbot is a member of the Scophthalmidae family of flatfish and is almost completely circular. Turbot has both its eyes on its left side and has large, bony knots on its dark-coloured eyed side. It lives in the intertidal zone and down to depths of approx. 80 metres.

Turbot is often found partially buried in the seabed in sand, gravel, rocks and sediment. It is an active predator, and adult turbot live almost exclusively off other fish.

The best places to fish for turbot in the North Sea are along the fish banks off the coast of northern Jutland. In Norway, turbot are generally caught incidentally along with other fish.

There is currently extensive research and development work in Norway to establish turbot as a farmed fish.



## Fishing methods

Danish seine nets, bottom trawling, ground nets.

## Use

Turbot is sold fresh and in slices. The stock of turbot in Norwegian waters is small, so the species is rarely available from Norwegian fishmongers. You can fry, boil, or broil turbot and use it in a variety of dishes.

## Nutritional value

Turbot is a good source of protein and is also rich in selenium. Its fat content varies, but it usually contains roughly 1 gramme of omega-3 fatty acids per 100g fillet.

## Main nutrients g/100g

Total solids	20,9
Protein	15,9
Fat	2,4
Glycogen	0,1

VITAMINS	µg/100 g
Vitamin A	4
Vitamin D	1,7
Vitamin E	-

	mg/100 g
Vitamin B12	0,6
Thiamine	-
Riboflavin	-
Niacin	-
Pantothenic acid	1,0
Pyridoxine	0,3

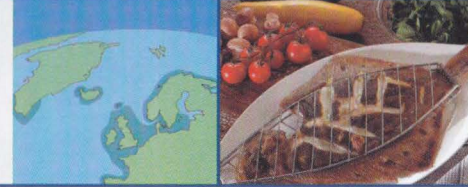
AMINO ACIDS	g/100 g
Aspartic acid (ASP)	1,3
Threonine (Thr)	0,7
Serine (Ser)	0,6
Glutamic acid (Glu)	2,1
Proline (Pro)	0,5
Glycine (Gly)	0,7
Alanine (Ala)	0,8
Valine (Val)	0,6
Methionine (Met)	0,4
Isoleucine (Ile)	0,6
Leucine (Leu)	1,1
Tyrosine (Tyr)	0,5
Phenylalanine (Phe)	0,7
Lysine (Lys)	1,3
Histidine (His)	0,3
Arginine (Arg)	0,9
Tryptophane (Trp)	0,2

MINERALS AND TRACE ELEMENTS	mg/100 g
Sodium (Na)	73
Potassium (K)	290
Calcium (Ca)	16
Iron (Fe)	0,2
Selenium (Se)	0,03
Zink (Zn)	0,6
Manganese (Mn)	<0,05
Magnesium (Mg)	19
Phosphorus (P)	160
Copper (Cu)	<0,06
Cholesterol	54

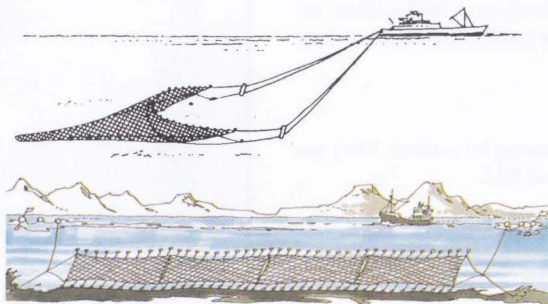
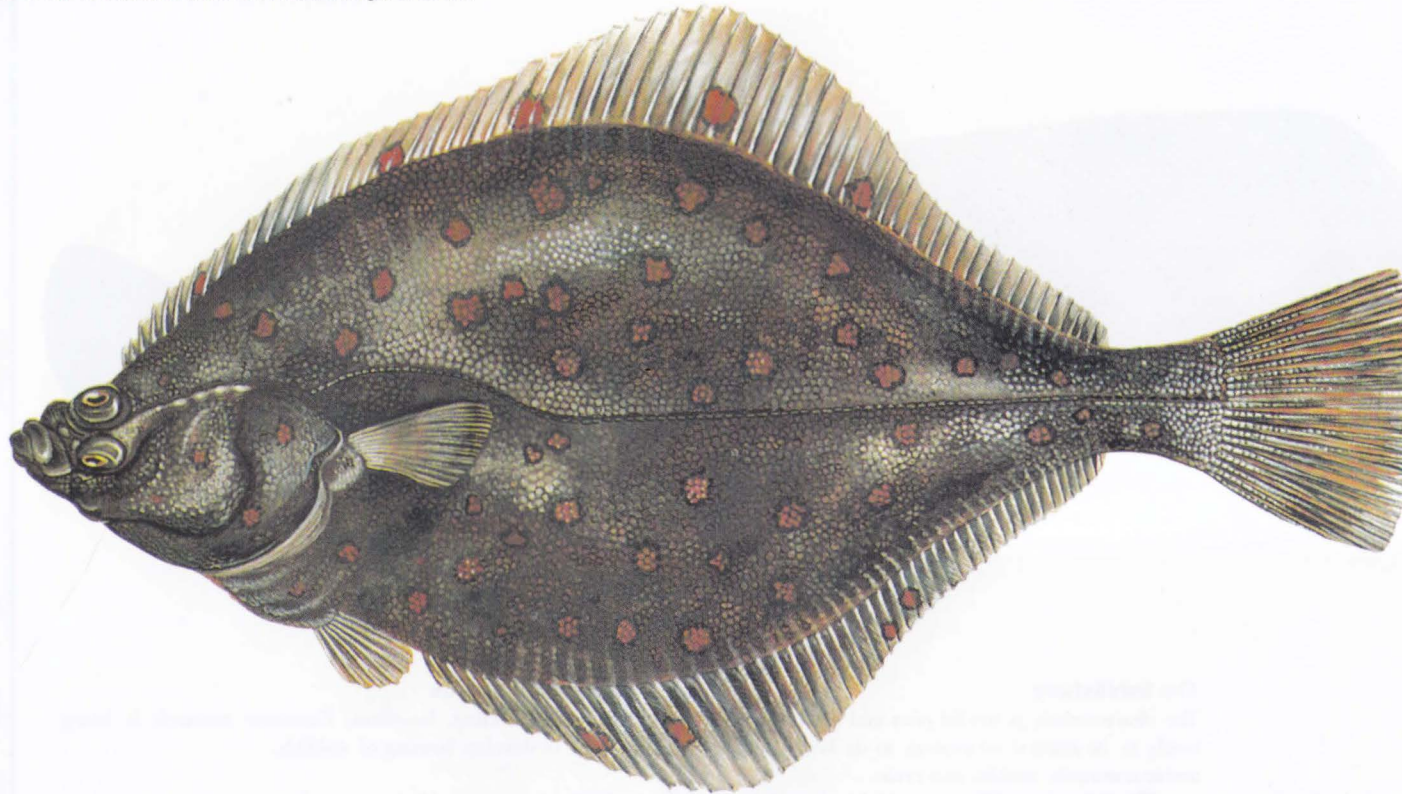
FATTY ACIDS	%
14:0	4,5
16:0	15,4
16:1*	6,6
18:0	1,9
18:1*	23,3
18:2ω6	4,2
18:3ω3	2,2
18:4ω3	2,1
20:1*	1,3
20:4ω3	1,3
20:4ω6	1,3
20:5ω3	8,1
22:1*	0,4
22:5ω3	3,1
22:6ω3	18,6
Total saturated	23,0
Total mono-saturated	31,9
Total ω3	35,9
Total ω6	6,2
g ω 3/100 g	0,7

# plaice

*Pleuronectes platessa*  
*Rødspette*  
*Plie, Carrelet*  
*Goldbutt*



Season: July to December.  
 Size: 25 to 40 cm. Individual females can reach a length of 95 cm.



### The fish/fishery

Plaice is a flatfish that has its eyes on the right side, which is smooth and brown with numerous characteristic reddish spots. The species is common in the North Sea, from the intertidal zone and down to depths of 250 metres.

The main spawning grounds for North Sea plaice are south of Dogger Bank. Certain stocks migrate over huge distances.

### Fishing methods

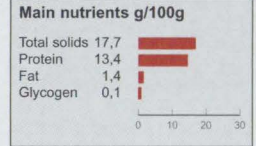
Bottom trawling, beam trawls, Danish seine nets, nets.

### Use

Plaice is sold fresh or frozen in slices. You can fry, boil, or broil plaice and use it in a variety of dishes.

### Nutritional value

Plaice is an outstanding source of B12 and also contains plenty of the fat-soluble vitamins A and D. The fat content of plaice varies, entailing a corresponding variation in the amount of omega-3 fatty acids.



VITAMINS	µg/100 g
Vitamin A	4
Vitamin D	9,0
Vitamin E	10

	mg/100 g
Vitamin B12	0,6
Thiamine	0,15
Riboflavin	0,09
Niacin	3,5
Pantothenic acid	0,7
Pyridoxine	0,3

AMINO ACIDS	g/100 g
Aspartic acid (ASP)	1,5
Threonine (Thr)	0,7
Serine (Ser)	0,7
Glutamic acid (Glu)	2,5
Proline (Pro)	0,5
Glycine (Gly)	0,7
Alanine (Ala)	0,9
Valine (Val)	0,7
Methionine (Met)	0,4
Isoleucine (Ile)	0,7
Leucine (Leu)	1,3
Tyrosine (Tyr)	0,5
Phenylalanine (Phe)	0,7
Lysine (Lys)	1,1
Histidine (His)	0,3
Arginine (Arg)	1,0
Tryptophane (Trp)	0,1

MINERALS AND TRACE ELEMENTS	mg/100 g
Sodium (Na)	95
Potassium (K)	260
Calcium (Ca)	34
Iron (Fe)	0,1
Selenium (Se)	0,03
Zink (Zn)	0,6
Manganese (Mn)	<0,05
Magnesium (Mg)	19
Phosphorus (P)	140
Copper (Cu)	<0,06
Cholesterol	54

FATTY ACIDS	%
14:0	3,3
16:0	17,3
16:1*	8,9
18:0	4,1
18:1*	12,3
18:2ω6	1,1
18:3ω3	1,0
18:4ω3	0,7
20:1*	4,0
20:4ω3	0,4
20:4ω6	6,6
20:5ω3	17,0
22:1*	0,5
22:5ω3	4,8
22:6ω3	10,4
Total saturated	26,6
Total mono-saturated	26,5
Total ω3	34,3
Total ω6	8,2
g ω 3/100 g	0,2

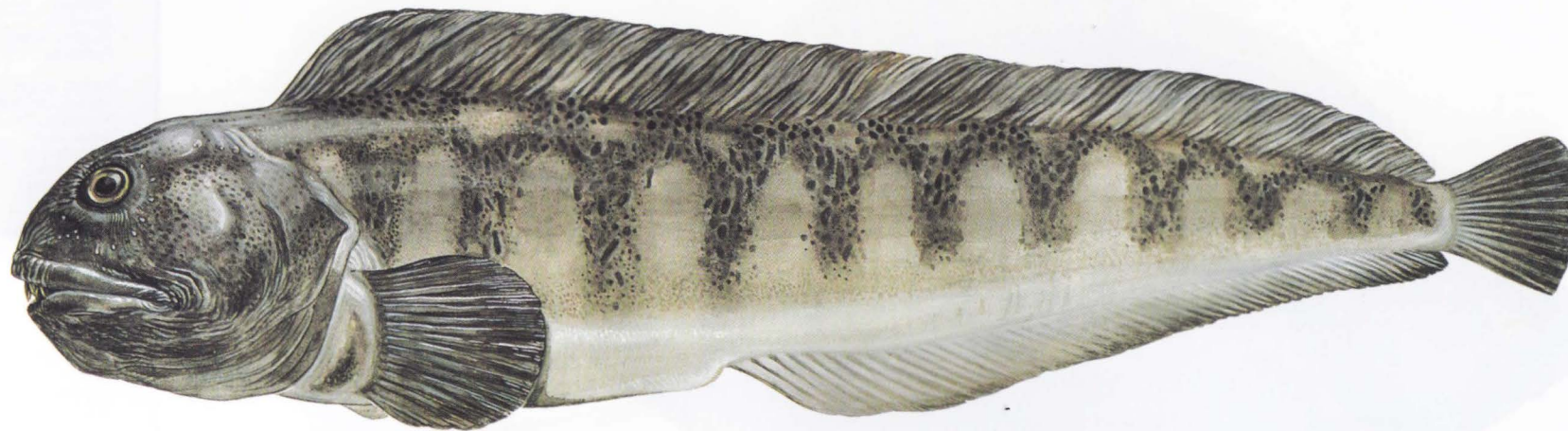
# wolffish

Anarhichas spp.  
Steinbit  
Loup de mer  
Katfisch



Main nutrients g/100g	
Total solids	22,4
Protein	18,6
Fat	2,5
Glycogen	0,1

Season: All year.  
Size: Up to 125 cm.



VITAMINS	
Vitamin A	27
Vitamin D	1,8
Vitamin E	2

mg/100 g	
Vitamin B12	1,1
Thiamine	0,07
Riboflavin	0,08
Niacin	2,2
Pantothenic acid	0,6
Pyridoxine	0,3

AMINO ACIDS g/100 g	
Aspartic acid (ASP)	1,6
Threonine (Thr)	0,8
Serine (Ser)	0,7
Glutamic acid (Glu)	2,6
Proline (Pro)	0,5
Glycine (Gly)	0,7
Alanine (Ala)	0,9
Valine (Val)	0,7
Methionine (Met)	0,5
Isoleucine (Ile)	0,7
Leucine (Leu)	1,3
Tyrosine (Tyr)	0,6
Phenylalanine (Phe)	0,8
Lysine (Lys)	1,6
Histidine (His)	0,4
Arginine (Arg)	1,0
Tryptophane (Trp)	0,1

MINERALS AND TRACE ELEMENTS mg/100 g	
Sodium (Na)	82
Potassium (K)	363
Calcium (Ca)	13
Iron (Fe)	0,2
Selenium (Se)	0,05
Zink (Zn)	0,9
Manganese (Mn)	<0,05
Magnesium (Mg)	20
Phosphorus (P)	212
Copper (Cu)	<0,06
Cholesterol	55

FATTY ACIDS %	
14:0	3,7
16:0	13,2
16:1*	10,0
18:0	20,9
18:1*	2,7
18:2ω6	1,2
18:3ω3	1,7
18:4ω3	1,7
20:1*	5,2
20:4ω3	0,6
20:4ω6	4,4
20:5ω3	10,8
22:1*	2,1
22:5ω3	1,8
22:6ω3	10,1
Total saturated	21,5
Total mono-saturated	38,5
Total ω3	26,7
Total ω6	6,5
g ω 3/100 g	0,7

## The fish/fishery

The characteristic powerful jaws and teeth of this species testify to its natural adaptation to its favourite foods: sea urchins, mussels, cockles and crabs.

The Atlantic wolffish (*Anarhichas lupus*) is generally found in rocky areas with seaweed, and in the spawning period, often all the way up to the intertidal area. Wolffish spawn between November and February at depths of 40–200 metres. Spawning is earlier in more northerly areas and later in southern climes.

The spotted catfish or spotted wolffish (*Anarhichas minor*) is more commonly found in arctic areas.

Commercial fishery takes place in the Barents Sea and in the banks off the north of Norway.

The catch statistics for Atlantic wolffish include its cousin, the spotted catfish, which is more common in northern waters.

## Fishing methods

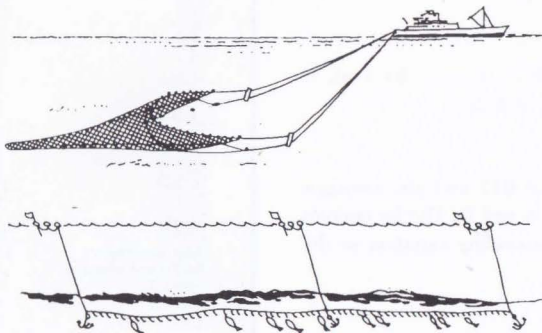
Bottom trawling, longlines. Extensive research is being done to develop farming of wolffish.

## Use

Wolffish is delicious and is sold fresh or as frozen fillets, on ice or frozen. You can fry, boil, or broil wolffish and use it in a variety of dishes.

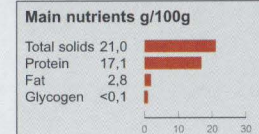
## Nutritional value

Catfish and wolffish have a fluctuating fat content. They are a good source of vitamin A, D and B12.

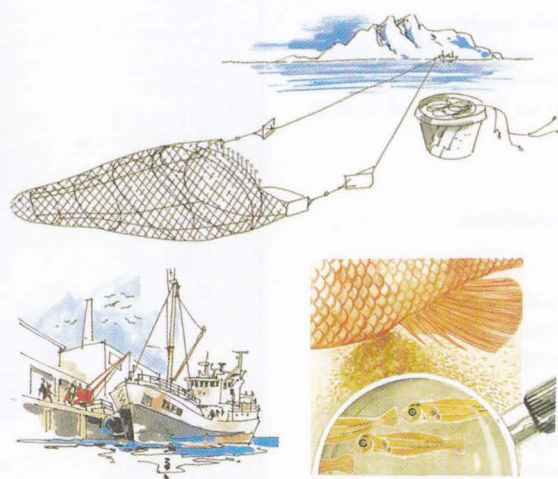
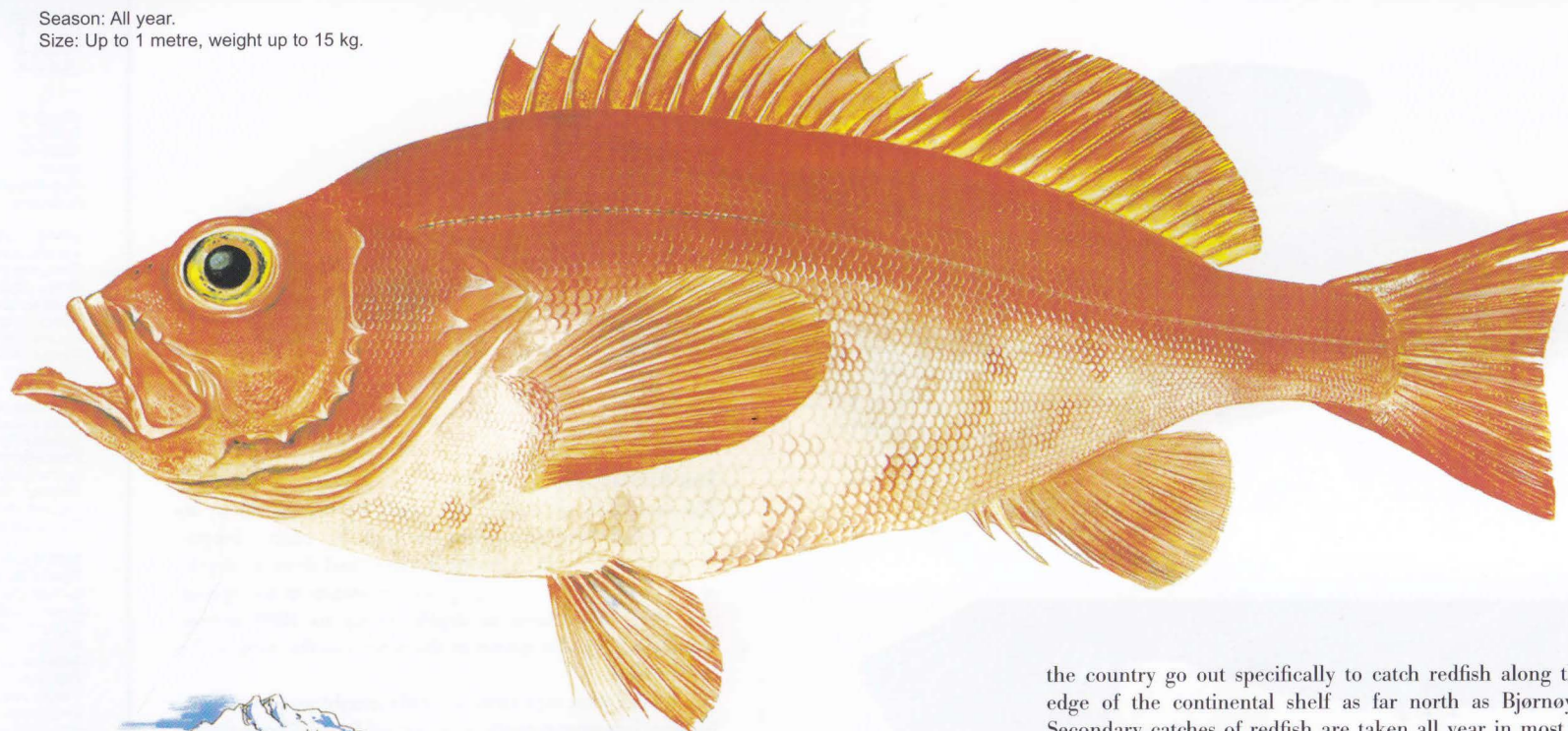


# redfish

Sebastes spp.  
Uer  
Sébaste, Chèvre  
Rotbarsch



Season: All year.  
Size: Up to 1 metre, weight up to 15 kg.



## The fish/fishery

There are two main species in the redfish family, the common redfish (*Sebastus marinus*) and rosefish (*Sebastus mentella*), both of which are common in Norwegian waters.

Redfish are found along the edge of the continental slope, at depths of 100 to 500 metres, although individual specimens have been caught at depths of up to 900 metres. In the Norwegian Sea and the Arctic Ocean, redfish are pelagic and live in large shoals.

Redfish migrate in the summer. Fully matured redfish have their feeding grounds in the Barents Sea, where they mate in the period August to October. In the winter, they migrate south to their spawning grounds off the Vesterålen archipelago.

The largest catches of redfish are taken by trawlers in the north of Norway. In the spring, fishermen in this part of

the country go out specifically to catch redfish along the edge of the continental shelf as far north as Bjørnøya. Secondary catches of redfish are taken all year in most of the Norwegian economic zone and in the waters around Svalbard.

## Fishing methods

Trawler, Danish seine nets, nets.

## Use

Redfish is a tasty food fish, with oily meat that stays fresh for a long time, but which tastes best salted. Sold as fresh fillet and as salted whole fish or fillet. Fresh fillet can be fried or broiled and used in various dishes. You can boil salted redfish.

## Nutritional value

The fat content of redfish can vary quite considerably, but it usually contains approx. 1 gramme of omega-3 fatty acids per 100 g fillet. Redfish is also a good source of protein.

VITAMINS	µg/100 g
Vitamin A	3
Vitamin D	n.d.
Vitamin E	1

	mg/100 g
Vitamin B12	1,0
Thiamine	0,10
Riboflavin	0,11
Niacin	2,0
Pantothenic acid	0,4
Pyridoxine	0,2

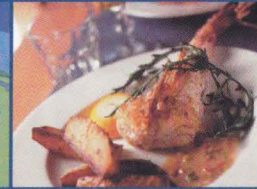
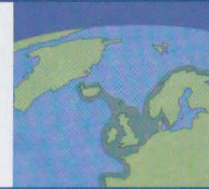
AMINO ACIDS	g/100 g
Aspartic acid (ASP)	1,8
Threonine (Thr)	0,9
Serine (Ser)	0,8
Glutamic acid (Glu)	2,9
Proline (Pro)	0,6
Glycine (Gly)	0,8
Alanine (Ala)	1,1
Valine (Val)	0,8
Methionine (Met)	0,5
Isoleucine (Ile)	0,8
Leucine (Leu)	1,6
Tyrosine (Tyr)	0,7
Phenylalanine (Phe)	1,0
Lysine (Lys)	1,9
Histidine (His)	0,4
Arginine (Arg)	1,2
Tryptophane (Trp)	0,2

MINERALS AND TRACE ELEMENTS	mg/100 g
Sodium (Na)	108
Potassium (K)	378
Calcium (Ca)	21
Iron (Fe)	0,3
Selenium (Se)	0,05
Zink (Zn)	0,2
Manganese (Mn)	0,004
Magnesium (Mg)	26
Phosphorus (P)	190
Copper (Cu)	0,01
Cholesterol	43

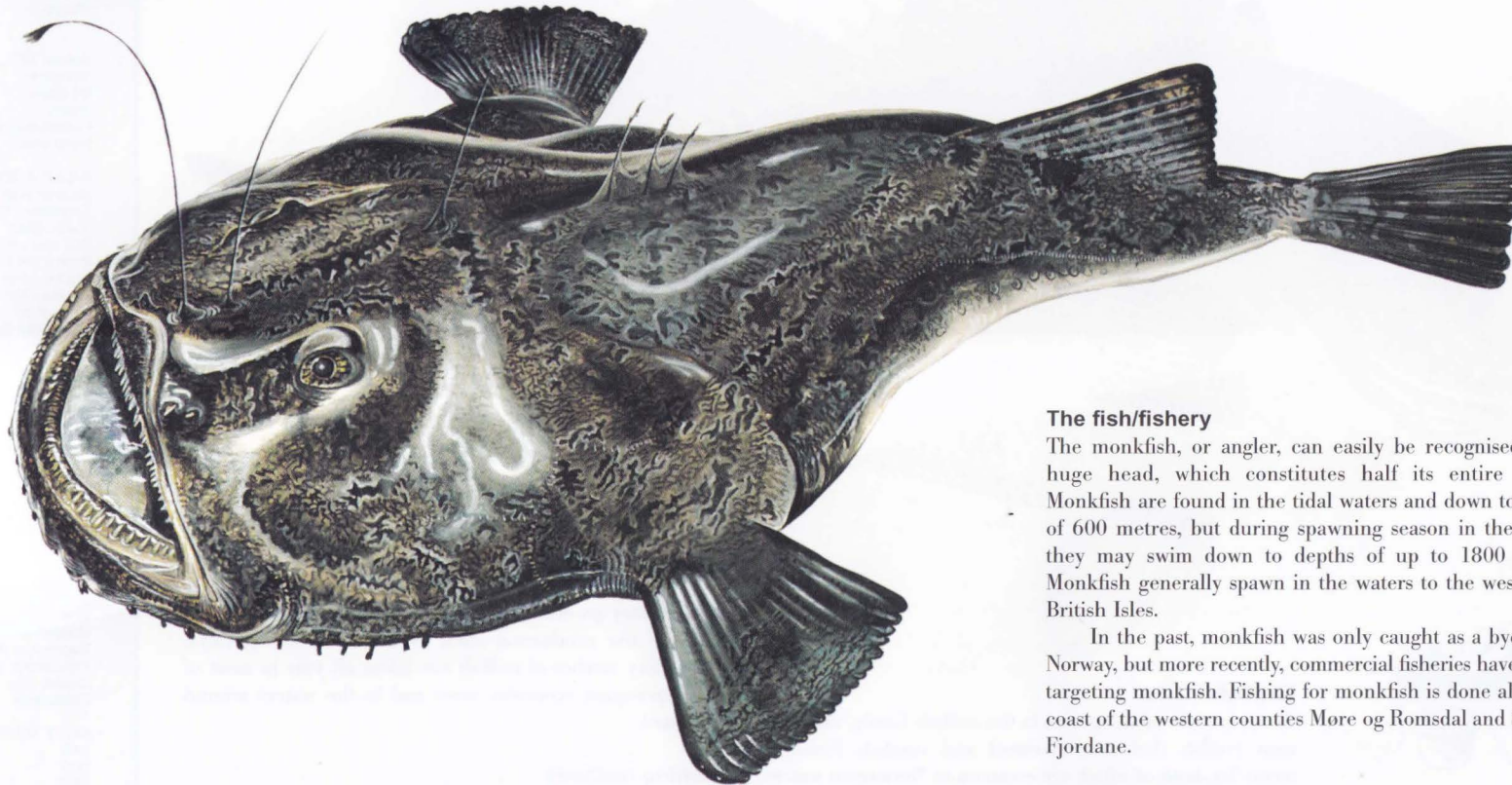
FATTY ACIDS	%
14:0	5,6
16:0	13,0
16:1*	7,1
18:0	2,0
18:1*	17,0
18:2ω6	1,6
18:3ω3	0,9
18:4ω3	2,4
20:1*	12,2
20:4ω3	0,5
20:4ω6	0,5
20:5ω3	8,3
22:1*	12,2
22:5ω3	0,8
22:6ω3	11,3
Total saturated	21,4
Total mono-saturated	49,5
Total ω3	24,2
Total ω6	2,3
g ω 3/100 g	1,2

# anglerfish

*Lophius piscatorius*  
Breiflabb  
*Baudroie commune*  
Seeteufel



Season: All year.  
Size: Up to 170 cm.



## The fish/fishery

The monkfish, or angler, can easily be recognised by its huge head, which constitutes half its entire length. Monkfish are found in the tidal waters and down to depths of 600 metres, but during spawning season in the spring, they may swim down to depths of up to 1800 metres. Monkfish generally spawn in the waters to the west of the British Isles.

In the past, monkfish was only caught as a bycatch in Norway, but more recently, commercial fisheries have started targeting monkfish. Fishing for monkfish is done along the coast of the western counties Møre og Romsdal and Sogn og Fjordane.

## Fishing methods

Ground nets, bottom trawling, groundlines.

## Use

Monkfish is a superb food fish, with delicious, firm, white meat. It is sold skinned and headless or filleted. You can fry, boil, or broil monkfish and use it in a variety of dishes.

## Nutritional value

Monkfish is an excellent source of protein, is rich in vitamin A and provides a good supply of selenium, zinc and calcium.

### Main nutrients g/100g

Total solids	17,4
Protein	15,8
Fat	0,1
Glycogen	<0,1

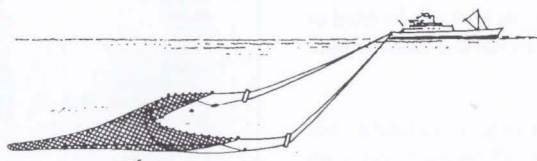
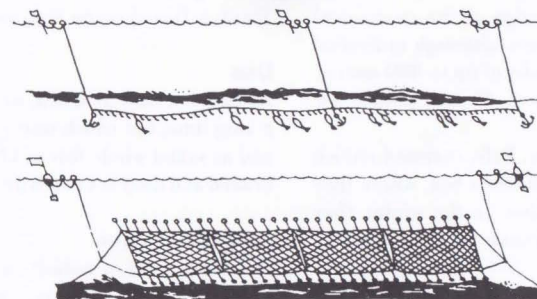
<b>VITAMINS</b>		<b>µg/100 g</b>
Vitamin A		80
Vitamin D		1
Vitamin E		-

		<b>mg/100 g</b>
Vitamin B12		0,5
Thiamine		-
Riboflavin		-
Niacin		-
Pantothenic acid		-
Pyridoxine		-

<b>AMINO ACIDS</b>		<b>g/100 g</b>
Aspartic acid (ASP)		1,5
Threonine (Thr)		0,7
Serine (Ser)		0,6
Glutamic acid (Glu)		2,1
Proline (Pro)		0,6
Glycine (Gly)		0,7
Alanine (Ala)		0,9
Valine (Val)		0,8
Methionine (Met)		0,5
Isoleucine (Ile)		0,7
Leucine (Leu)		1,2
Tyrosine (Tyr)		0,6
Phenylalanine (Phe)		0,6
Lysine (Lys)		1,5
Histidine (His)		0,4
Arginine (Arg)		1,0
Tryptophane (Trp)		0,2

<b>MINERALS AND TRACE ELEMENTS</b>		<b>mg/100 g</b>
Sodium (Na)		82
Potassium (K)		342
Calcium (Ca)		5
Iron (Fe)		0,03
Selenium (Se)		0,03
Zink (Zn)		0,3
Manganese (Mn)		<0,05
Magnesium (Mg)		19
Phosphorus (P)		160
Copper (Cu)		<0,06
Cholesterol		-

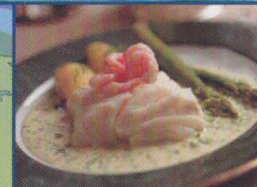
<b>FATTY ACIDS</b>		<b>%</b>
14:0		1,0
16:0		17,7
16:1*		2,1
18:0		6,8
18:1*		14,0
18:2ω6		1,2
18:3ω3		0,2
18:4ω3		0,3
20:1*		2,5
20:4ω3		0,1
20:4ω6		4,3
20:5ω3		6,9
22:1*		0,7
22:5ω3		1,3
22:6ω3		34,2
Total saturated		26,6
Total mono-saturated		20,2
Total ω3		43,0
Total ω6		5,6
g ω 3/100 g		0,1



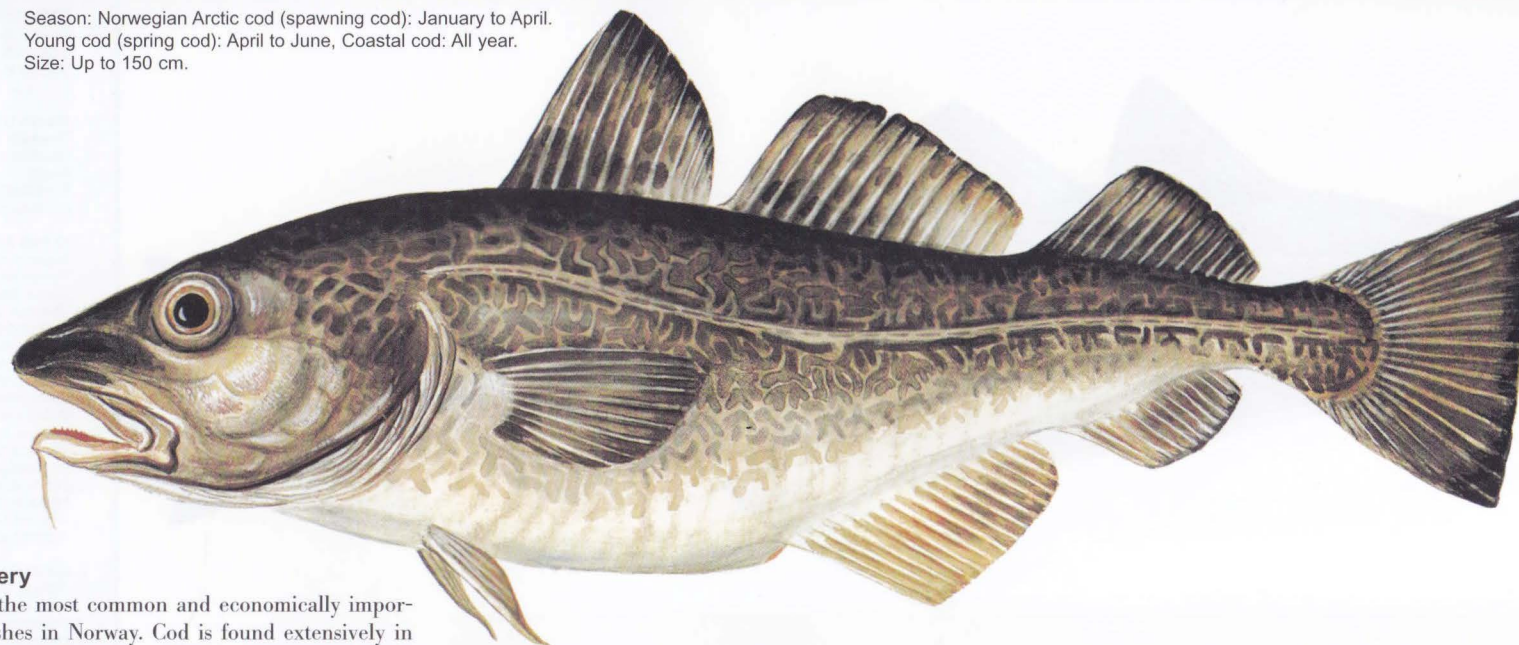


# cod

**Gadus morhua**  
*Torsk*  
*Morue, Cabillaud*  
*Dorsch, Kabeljau*



Season: Norwegian Arctic cod (spawning cod): January to April.  
 Young cod (spring cod): April to June, Coastal cod: All year.  
 Size: Up to 150 cm.



## The fish/fishery

Cod is one of the most common and economically important marine fishes in Norway. Cod is found extensively in the northern parts of the Atlantic Ocean, where it can be further subdivided into several distinct groups. We generally differentiate between two main categories of cod: the migratory, oceanic cod and the non-migratory coastal cod. The coastal cod is a typical bottom fish, while the migratory cod is pelagic and covers huge distances.

Of the various stocks of cod in Norwegian waters, the Norwegian Arctic cod is the most important. It spends most of its life in the Barents Sea, but migrates both as a juvenile and as a mature spawning cod (Skrei). The spawning grounds of the Skrei stretch all the way down the northern part of the Norwegian coast from Finnmark to Stad, but the most important spawning grounds are off the Lofoten archipelago.

The migrations of Skrei still form the basis for the most important seasonal fishing activity in Norway, the Lofot fishery, but cod is also caught using trawlers in the Barents Sea.

The young cod in the Barents Sea swim towards the coast of Finnmark in the spring in search of spawning

capelin and form the basis for the traditional spring cod catch. The coastal cod are similar to the cod found in the Barents Sea, but tend to stay put in shallow waters and have adapted to the various local habitats along the coast of Norway. Coastal cod are found from the intertidal zone down to depths of approx. 600 metres.

Cod is fished in the North Sea all year and is harvested as one of several species caught for consumption. There is currently a great deal of research being done to develop farming and sea ranching of cod.

## Fishing methods

Bottom trawling, Danish seine nets, longlines, nets, handlines, pots.

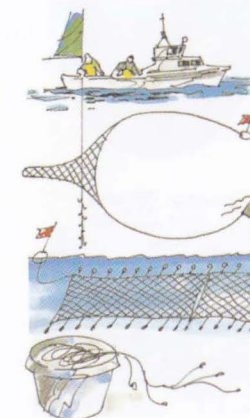
## Use

Cod is one of the best food fishes on the market and is sold fresh, frozen, filleted, smoked and salted. Cod is also

processed to produce stockfish and clipfish. By-products of cod processing include cod liver and cod liver oil, roe, stomach, milt, cheeks and tongue. Fresh cod can be fried, poached and used in any number of dishes. Salted and smoked cod are best poached or in soups and stews.

## Nutritional value

Cod is primarily a good source of protein. It also contains plenty of vitamin B12 and selenium and has a healthy balance of sodium and potassium.



Main nutrients g/100g	
Total solids	19,6
Protein	18,1
Fat	0,3
Glycogen	<0,1

VITAMINS	µg/100 g
Vitamin A	2
Vitamin D	1,5
Vitamin E	0,8

	mg/100 g
Vitamin B12	1,1
Thiamine	0,05
Riboflavin	0,11
Niacin	2,0
Pantothenic acid	0,2
Pyridoxine	0,2

AMINO ACIDS	g/100 g
Aspartic acid (ASP)	1,4
Threonine (Thr)	0,7
Serine (Ser)	0,7
Glutamic acid (Glu)	2,4
Proline (Pro)	0,5
Glycine (Gly)	0,6
Alanine (Ala)	1,0
Valine (Val)	0,7
Methionine (Met)	0,5
Isoleucine (Ile)	0,7
Leucine (Leu)	1,3
Tyrosine (Tyr)	0,6
Phenylalanine (Phe)	0,7
Lysine (Lys)	1,6
Histidine (His)	0,4
Arginine (Arg)	1,0
Tryptophane (Trp)	0,2

MINERALS AND TRACE ELEMENTS	mg/100 g
Sodium (Na)	82
Potassium (K)	455
Calcium (Ca)	8,3
Iron (Fe)	0,1
Selenium (Se)	0,03
Zink (Zn)	0,4
Manganese (Mn)	0,01
Magnesium (Mg)	29
Phosphorus (P)	-
Copper (Cu)	0,02
Cholesterol	58

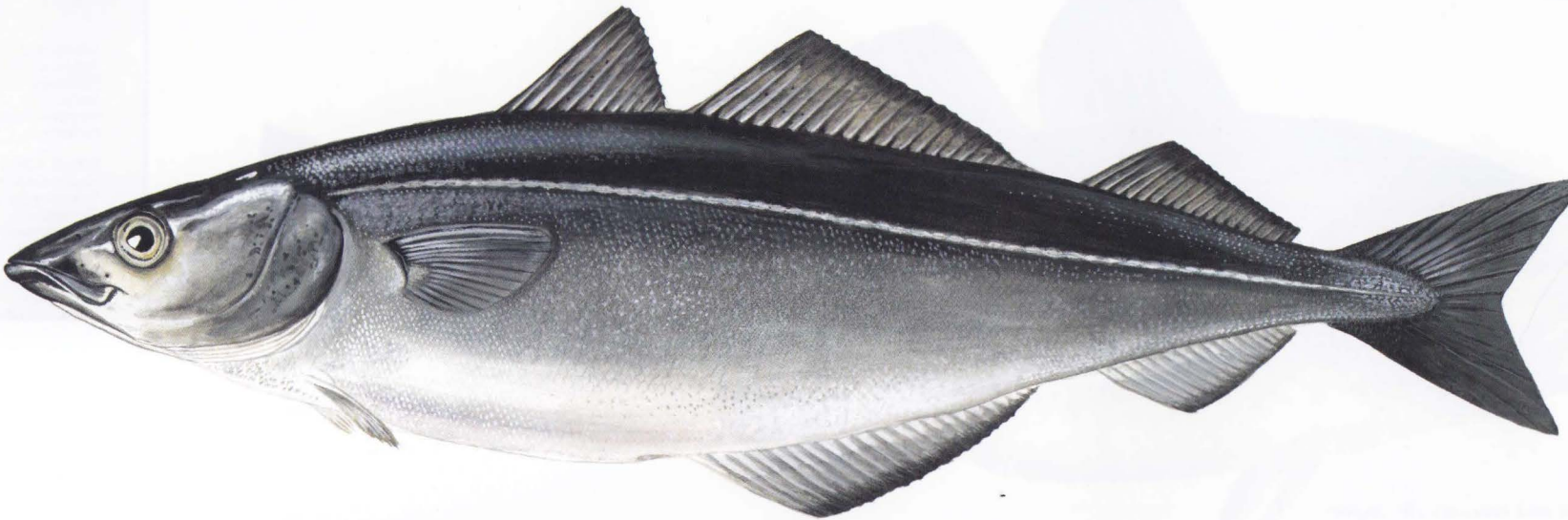
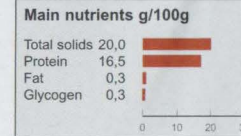
FATTY ACIDS	%
14:0	2,0
16:0	16,3
16:1*	2,5
18:0	2,9
18:1*	9,0
18:2ω6	1,2
18:3ω3	0,3
18:4ω3	1,1
20:1*	4,7
20:4ω3	0,4
20:4ω6	1,8
20:5ω3	14,5
22:1*	1,3
22:5ω3	1,2
22:6ω3	36,8
Total saturated	22,2
Total mono-saturated	17,8
Total ω3	54,3
Total ω6	3,1
g ω 3/100 g	0,2

# saithe, coalfish

*Pollachius virens*  
Sei  
Lieu noir  
Köhler



Season: All year.  
Size: Up to 120 cm.



VITAMINS	µg/100 g
Vitamin A	2
Vitamin D	0,7
Vitamin E	4

	mg/100 g
Vitamin B12	0,6
Thiamine	0,05
Riboflavin	0,20
Niacin	3,4
Pantothenic acid	0,4
Pyridoxine	0,5

AMINO ACIDS	g/100 g
Aspartic acid (ASP)	1,7
Threonine (Thr)	0,8
Serine (Ser)	0,7
Glutamic acid (Glu)	2,6
Proline (Pro)	0,6
Glycine (Gly)	0,8
Alanine (Ala)	1,1
Valine (Val)	0,8
Methionine (Met)	0,5
Isoleucine (Ile)	0,8
Leucine (Leu)	1,4
Tyrosine (Tyr)	0,6
Phenylalanine (Phe)	0,9
Lysine (Lys)	1,5
Histidine (His)	0,4
Arginine (Arg)	1,1
Tryptophane (Trp)	0,2

MINERALS AND TRACE ELEMENTS	mg/100 g
Sodium (Na)	77
Potassium (K)	396
Calcium (Ca)	7,5
Iron (Fe)	0,1
Selenium (Se)	0,03
Zink (Zn)	0,3
Manganese (Mn)	0,01
Magnesium (Mg)	22
Phosphorus (P)	230
Copper (Cu)	0,04
Cholesterol	49

FATTY ACIDS	%
14:0	2,5
16:0	17,1
16:1*	3,7
18:0	3,8
18:1*	15,3
18:2ω6	1,8
18:3ω3	1,1
18:4ω3	0,8
20:1*	4,6
20:4ω3	0,6
20:4ω6	1,9
20:5ω3	10,7
22:1*	3,1
22:5ω3	1,4
22:6ω3	29,0
Total saturated	24,0
Total mono-saturated	27,2
Total ω3	43,6
Total ω6	3,6
g ω 3/100 g	0,1

## The fish/fishery

Saithe is both a pelagic fish and a demersal fish, living at depths of between 0 and 300 metres. It swims in shoals, which can be enormous in good habitats with plenty of food.

Saithe spawn along the coastal banks from the Lofoten islands and south and in the North Sea. The saithe fry then drift northwards, carried by the coastal currents, and young saithe start to appear in the south and south-west of Norway in the spring, arriving in Finnmark as late as August. Saithe migrate huge distances from their feeding and growing grounds to their spawning grounds.

Saithe is an important commercial species in Norway. Fishing for saithe is performed in coastal waters and in the far north to the west of North Cape. In the fjords and off the coast of Finnmark in the north, saithe is caught using seine nets. In addition, the North Sea and banks off the coast of western Finnmark are also good fishing grounds.

The saithe found in Norwegian waters can be divided into two main groups, with 62°N marking the line between

them. The stocks north of this latitude have remained relatively stable, whereas the stocks south of this line have recently been found to be under their minimum biologically acceptable level.

## Fishing methods

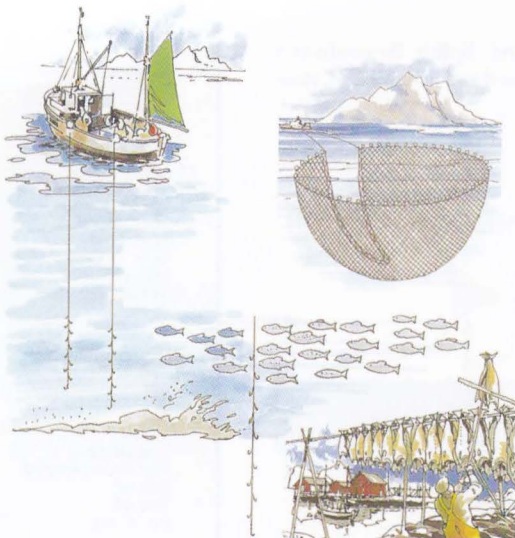
Bottom trawling, Danish seine nets, purse seine, nets, hand-lines.

## Use

Saithe is sold fresh, dried and salted. You can fry, boil, or broil saithe and use it in a variety of dishes.

## Nutritional value

Like the other fish in the cod family, saithe is an outstanding source of protein. It is also rich in vitamin B12 and selenium and has a healthy balance of sodium and potassium.

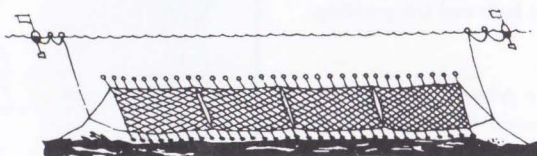


# ling

*Molva molva*  
Lange  
Linque  
Leng



Season: All year.  
Size: Up to 180 cm.



### The fish/fishery

This species almost appears to be a cross between a cod and a conger eel. Ling is a typical deep-sea fish that is found at depths of between 60 and 1000 metres, but is most common at 300 to 400 metres. Only juveniles are found in waters less than 100 metres deep.

Ling is caught all year round, both as a primary and as a secondary catch.

### Fishing methods

Groundlines, ground nets, bottom trawling.

### Use

Ling is a delicious food fish that has relatively coarse meat.

### Nutritional value

Like the other members of the cod family, ling is an excellent source of protein and also contains plenty of selenium, calcium and magnesium.

Main nutrients g/100g	
Total solids	21,0
Protein	17,1
Fat	2,8
Glycogen	<0,1

VITAMINS	
Vitamin A	2 µg/100 g
Vitamin D	3,4
Vitamin E	0,5

mg/100 g	
Vitamin B12	0,3
Thiamine	0,05
Riboflavin	0,08
Niacin	2,3
Pantothenic acid	0,3
Pyridoxine	0,3

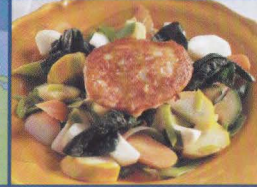
AMINO ACIDS	
Aspartic acid (ASP)	1,9 g/100 g
Threonine (Thr)	0,8
Serine (Ser)	0,8
Glutamic acid (Glu)	3,1
Proline (Pro)	0,6
Glycine (Gly)	0,7
Alanine (Ala)	1,1
Valine (Val)	0,9
Methionine (Met)	0,5
Isoleucine (Ile)	0,8
Leucine (Leu)	1,5
Tyrosine (Tyr)	0,7
Phenylalanine (Phe)	0,9
Lysine (Lys)	1,8
Histidine (His)	0,5
Arginine (Arg)	1,1
Tryptophane (Trp)	0,2

MINERALS AND TRACE ELEMENTS	
Sodium (Na)	72 mg/100 g
Potassium (K)	360
Calcium (Ca)	28
Iron (Fe)	0,2
Selenium (Se)	0,03
Zink (Zn)	0,2
Manganese (Mn)	<0,005
Magnesium (Mg)	24
Phosphorus (P)	200
Copper (Cu)	0,01
Cholesterol	46

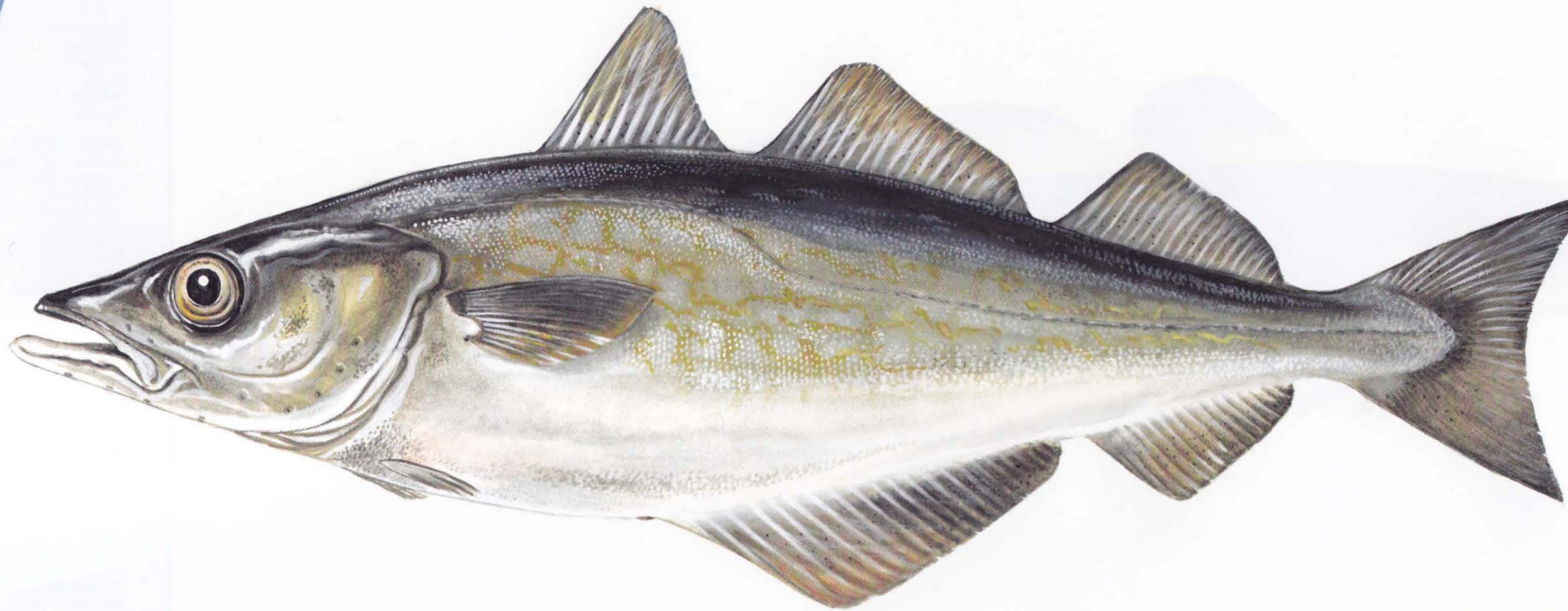
FATTY ACIDS	
14:0	0,6 %
16:0	18,1
16:1*	1,1
18:0	5,8
18:1*	12,1
18:2ω6	0,8
18:3ω3	0,2
18:4ω3	0,2
20:1*	2,2
20:4ω3	0,5
20:4ω6	3,3
20:5ω3	8,3
22:1*	0,4
22:5ω3	2,0
22:6ω3	41,6
Total saturated	24,8
Total mono-saturated	16,2
Total ω3	52,9
Total ω6	4,1
g ω 3/100 g	0,1

# pollack

*Pollachius pollachius*  
Lyr  
Lieu jaune  
Pollack



Season: All year.  
Size: Up to 130 cm (but usually smaller).



## The fish/fishery

Pollack distinguishes itself from its cousin, the saithe, by its large, prominent lower jaw. It also has a dark, wavy lateral line, while the saithe has a pale, straight one. Pollack is a pelagic fish found at depths of up to 200 metres.

In Norway, the number of pollack varies along the southern and western coasts. In general, pollack prefer warmer waters and only migrate out to deeper waters in the winter.

Pollack is normally caught as a bycatch of cod fishery and has relatively little commercial value on the western European market.

## Fishing methods

Nets, trawlers, trolling lines.

## Use

Pollack is a tasty edible fish. It is sold in fresh fillets and can be fried, poached and used in a wide range of dishes. It is excellent for making fishcakes, fish balls and fish pudding.

## Nutritional value

Like the other gadoids, pollack is primarily an excellent source of protein. It is rich in vitamin B12 and selenium and has a good ratio of sodium to potassium.

## Main nutrients g/100g

Total solids	18,4
Protein	16,0
Fat	0,2
Glycogen	<0,1

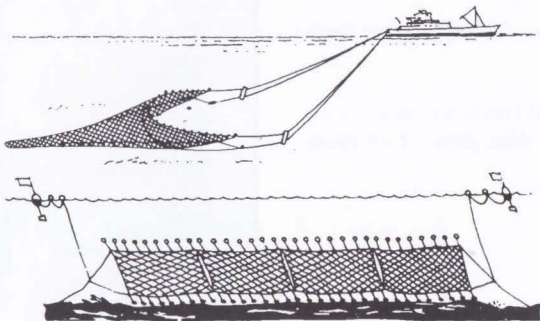
<b>VITAMINS</b>		<b>µg/100 g</b>
Vitamin A		2
Vitamin D		2,2
Vitamin E		1

<b>VITAMINS</b>		<b>mg/100 g</b>
Vitamin B12		0,7
Thiamine		0,05
Riboflavin		0,10
Niacin		1,9
Pantothenic acid		0,3
Pyridoxine		0,1

<b>AMINO ACIDS</b>		<b>g/100 g</b>
Aspartic acid (ASP)		1,3
Threonine (Thr)		0,7
Serine (Ser)		0,7
Glutamic acid (Glu)		2,6
Proline (Pro)		0,5
Glycine (Gly)		0,7
Alanine (Ala)		1,0
Valine (Val)		0,8
Methionine (Met)		0,5
Isoleucine (Ile)		0,7
Leucine (Leu)		1,3
Tyrosine (Tyr)		0,6
Phenylalanine (Phe)		0,8
Lysine (Lys)		1,3
Histidine (His)		0,4
Arginine (Arg)		1,0
Tryptophane (Trp)		0,2

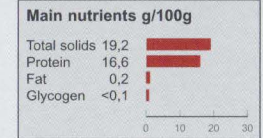
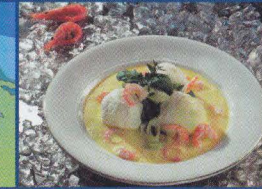
<b>MINERALS AND TRACE ELEMENTS</b>		<b>mg/100 g</b>
Sodium (Na)		65
Potassium (K)		385
Calcium (Ca)		8
Iron (Fe)		0,1
Selenium (Se)		0,03
Zink (Zn)		0,3
Manganese (Mn)		<0,05
Magnesium (Mg)		23
Phosphorus (P)		220
Copper (Cu)		<0,06
Cholesterol		40

<b>FATTY ACIDS</b>		<b>%</b>
14:0		0,8
16:0		19,1
16:1*		1,0
18:0		4,4
18:1*		7,8
18:2ω6		0,8
18:3ω3		0,3
18:4ω3		0,3
20:1*		1,6
20:4ω3		0,4
20:4ω6		2,3
20:5ω3		11,6
22:1*		0,2
22:5ω3		1,5
22:6ω3		45,1
Total saturated		24,9
Total mono-saturated		11,2
Total ω3		59,2
Total ω6		3,2
g ω 3/100 g		0,1

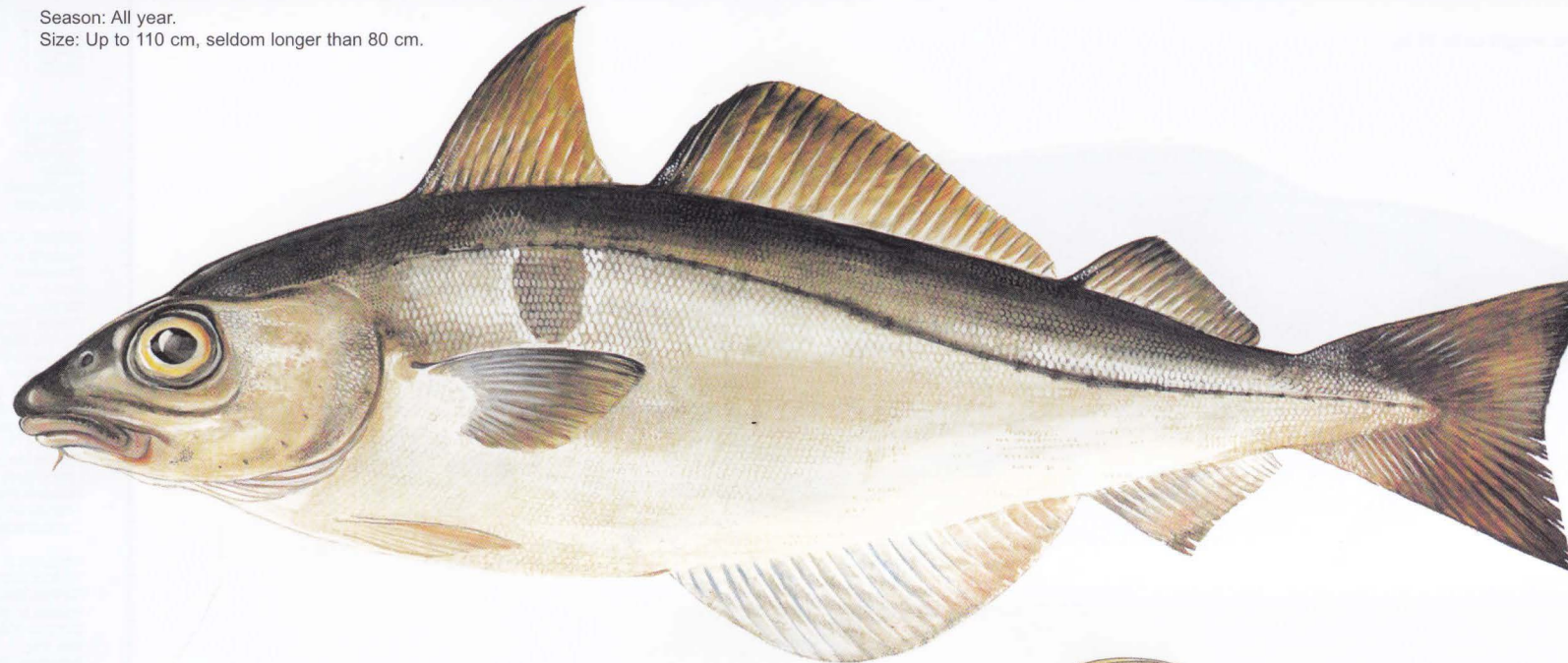


# haddock

*Melanogrammus aeglefinus*  
Hyse  
Églefin  
Schellfisch



Season: All year.  
Size: Up to 110 cm, seldom longer than 80 cm.



## The fish/fishery

Haddock is a bottom fish that lives at depths of between 40 and 300 metres. Its most important spawning grounds are in the waters off middle Norway, near south-west Iceland and the Faeroe Islands.

The young haddock in the Barents Sea do not venture very far from home, whereas larger fish undertake long migrations. For example, haddock migrate down to the coast of northern Norway to spawn. They also spawn on banks near the Tromsøflaket shelf plain.

Haddock is one of the most important food fishes in Norway. Haddock fishery is primarily performed in coastal waters, but in the north, haddock is also caught on the fish banks in the eastern parts of the Norwegian economic zone.

Haddock is fished all year round, but in the summer, there is a special haddock fishery off the coast of eastern Finnmark using floating longlines.

Haddock is also fished in the North Sea all year round, where it is caught along with other commercial species. Along the coasts of Møre and Trøndelag, haddock is caught using longlines and nets in the summer.

The stocks of haddock south of 62°N have increased, and it is expected that good annual population increases over several years will be reflected in the haddock fishery in the North Sea and Skagerrak.

## Fishing methods

Danish seine nets, trawler, longlines, nets.



## Use

Haddock is sold fresh, frozen, dried and smoked. You can fry or boil haddock and use it in a variety of dishes.

## Nutritional value

Haddock is primarily an excellent source of protein. It also contains plenty of vitamin B12, pyridoxine and selenium and has a good balance of sodium and potassium.

**VITAMINS**

	µg/100 g
Vitamin A	2
Vitamin D	n.d.
Vitamin E	2

	mg/100 g
Vitamin B12	0,5
Thiamine	0,05
Riboflavin	0,11
Niacin	4,0
Pantothenic acid	0,3
Pyridoxine	0,5

**AMINO ACIDS**

	g/100 g
Aspartic acid (ASP)	1,7
Threonine (Thr)	0,7
Serine (Ser)	0,7
Glutamic acid (Glu)	2,6
Proline (Pro)	0,5
Glycine (Gly)	0,7
Alanine (Ala)	1,0
Valine (Val)	0,8
Methionine (Met)	0,5
Isoleucine (Ile)	0,7
Leucine (Leu)	1,4
Tyrosine (Tyr)	0,6
Phenylalanine (Phe)	0,8
Lysine (Lys)	1,4
Histidine (His)	0,5
Arginine (Arg)	1,1
Tryptophane (Trp)	0,2

**MINERALS AND TRACE ELEMENTS**

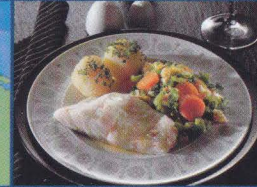
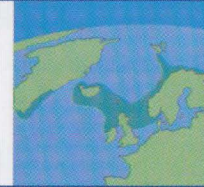
	mg/100 g
Sodium (Na)	96
Potassium (K)	335
Calcium (Ca)	19
Iron (Fe)	0,1
Selenium (Se)	0,03
Zink (Zn)	0,2
Manganese (Mn)	0,005
Magnesium (Mg)	27
Phosphorus (P)	190
Copper (Cu)	0,01
Cholesterol	46

**FATTY ACIDS**

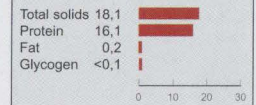
	%
14:0	1,1
16:0	20,1
16:1*	1,6
18:0	4,0
18:1*	11,0
18:2ω6	0,9
18:3ω3	0,2
18:4ω3	0,3
20:1*	1,6
20:4ω3	0,4
20:4ω6	4,6
20:5ω3	16,1
22:1*	0,7
22:5ω3	2,0
22:6ω3	31,4
Total saturated	26,0
Total mono-saturated	15,3
Total ω3	50,3
Total ω6	5,7
g ω 3/100 g	0,1

# tusk

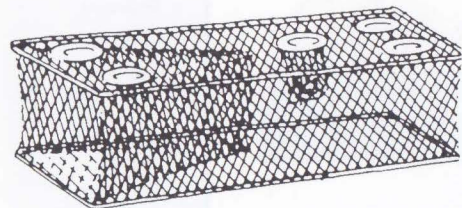
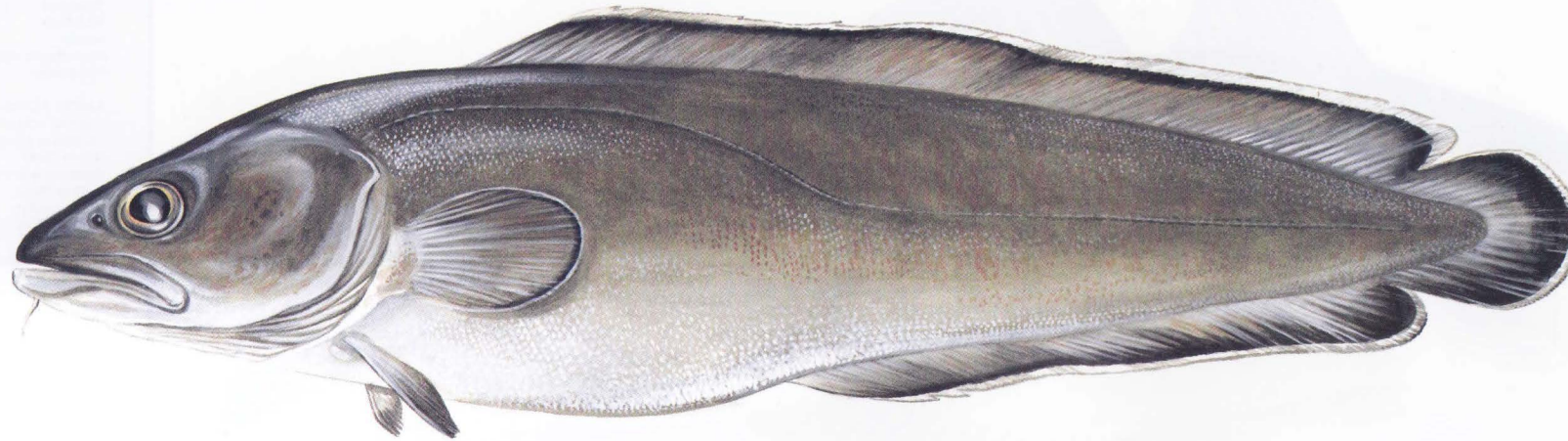
Brosme brosme  
Brosme  
Brosme  
Lumb



## Main nutrients g/100g



Season: All year.  
Size: Up to 1.1 metre, weight up to 15 kg.



### The fish/fishery

In terms of the shape of its body, the tusk resembles the two kinds of ling found in Norwegian waters, but is slightly plumper and has a single, continuous dorsal fin.

In Norway, tusk is common in the deepest fjords of the western coast and along the continental slope. It is found in depths of from 50 to 1000 metres, but is most common at depths of between 200 and 500 metres. The tusk's main spawning grounds are between Scotland, the Faeroe Islands and Iceland.

In Norway, tusk is caught throughout the year; in the north, mostly along the edge of the continental shelf up to approx. 72°N. Some tusk is caught a by-catch of trawls. Farther south, tusk is mainly caught using longlines on the banks off Møre og Romsdal and Sogn og Fjordane.

### Fishing methods

Longlines, pots.

### Use

Tusk has firm, white meat that tastes a little like lobster. Tusk is sold fresh, frozen, dried and salted. Lightly salted fillet can be boiled and used in various dishes.

### Nutritional value

Tusk is a lean fish and is an excellent source of protein, as well as providing plenty of vitamin B12, pyridoxine and selenium.

VITAMINS	µg/100 g
Vitamin A	2
Vitamin D	n.d
Vitamin E	1

	mg/100 g
Vitamin B12	0,3
Thiamine	0,05
Riboflavin	0,15
Niacin	2,8
Pantothenic acid	0,3
Pyridoxine	0,3

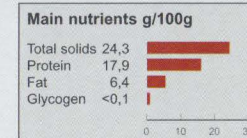
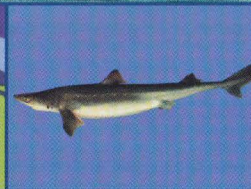
AMINO ACIDS	g/100 g
Aspartic acid (ASP)	1,6
Threonine (Thr)	0,7
Serine (Ser)	0,7
Glutamic acid (Glu)	0,2
Proline (Pro)	0,6
Glycine (Gly)	0,7
Alanine (Ala)	1,0
Valine (Val)	0,8
Methionine (Met)	0,5
Isoleucine (Ile)	0,7
Leucine (Leu)	1,2
Tyrosine (Tyr)	0,6
Phenylalanine (Phe)	0,7
Lysine (Lys)	1,6
Histidine (His)	0,3
Arginine (Arg)	1,0
Tryptophane (Trp)	0,2

MINERALS AND TRACE ELEMENTS	mg/100 g
Sodium (Na)	118
Potassium (K)	294
Calcium (Ca)	37
Iron (Fe)	0,1
Selenium (Se)	0,03
Zink (Zn)	0,2
Manganese (Mn)	0,01
Magnesium (Mg)	23
Phosphorus (P)	170
Copper (Cu)	0,01
Cholesterol	53

FATTY ACIDS	%
14:0	1,0
16:0	19,8
16:1*	1,3
18:0	4,5
18:1*	11,6
18:2ω6	1,1
18:3ω3	0,3
18:4ω3	0,3
20:1*	3,4
20:4ω3	0,4
20:4ω6	2,4
20:5ω3	6,3
22:1*	1,0
22:5ω3	1,6
22:6ω3	41,6
Total saturated	26,0
Total mono-saturated	18,1
Total ω3	50,3
Total ω6	3,5
g ω 3/100 g	0,1

# picked dogfish

*Squalus acanthias*  
Pigghå  
Aiguillat commun  
Dornhai



Season: All year.  
Size: Up to 120 cm.



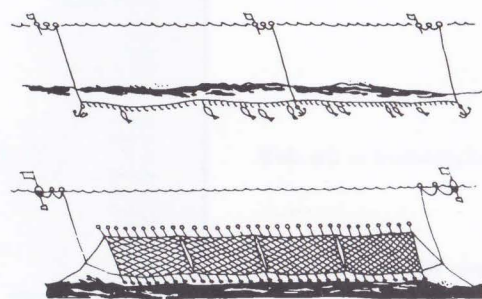
VITAMINS	µg/100 g
Vitamin A	<2
Vitamin D	n.d
Vitamin E	2

	mg/100 g
Vitamin B12	2
Thiamine	-
Riboflavin	0,14
Niacin	5,2
Pantothenic acid	0,7
Pyridoxine	0,5

AMINO ACIDS	g/100 g
Aspartic acid (ASP)	-
Threonine (Thr)	-
Serine (Ser)	-
Glutamic acid (Glu)	-
Proline (Pro)	-
Glycine (Gly)	-
Alanine (Ala)	-
Valine (Val)	-
Methionine (Met)	-
Isoleucine (Ile)	-
Leucine (Leu)	-
Tyrosine (Tyr)	-
Phenylalanine (Phe)	-
Lysine (Lys)	-
Histidine (His)	-
Arginine (Arg)	-
Tryptophane (Trp)	-

MINERALS AND TRACE ELEMENTS	mg/100 g
Sodium (Na)	100
Potassium (K)	289
Calcium (Ca)	5,5
Iron (Fe)	0,3
Selenium (Se)	0,02
Zink (Zn)	0,3
Manganese (Mn)	<0,05
Magnesium (Mg)	18
Phosphorus (P)	220
Copper (Cu)	<0,06
Cholesterol	-

FATTY ACIDS	%
14:0	2,1
16:0	15,9
16:1*	3,8
18:0	2,8
18:1*	17,0
18:2ω6	1,6
18:3ω3	0,8
18:4ω3	1,1
20:1*	8,7
20:4ω3	0,9
20:4ω6	2,8
20:5ω3	8,0
22:1*	7,8
22:5ω3	2,2
22:6ω3	18,3
Total saturated	21,6
Total mono-saturated	37,8
Total ω3	31,4
Total ω6	4,8
g ω 3/100 g	2,0



## The fish/fishery

The spiny dogfish is the most common kind of shark in Norwegian waters and is often found in dense shoals. The two dorsal fins have a long spine at the front that contains venom and can give a painful wound if touched.

This species of shark lives at depths of from 10 to 200 metres, but has also been found at 960 metres. Tagging of individuals by Norwegian researchers has demonstrated that in the autumn, the spiny dogfish migrates to the waters west of the Shetland and Orkney Islands and returns to the Norwegian coast in the early spring.

Most longline fishing for spiny dogfish is carried out in the winter when the species is closest to the coast.

## Fishing methods

Longlines, nets.

## Use

Sold as fresh or frozen filet. It can also be smoked. Picked dogfish can be fried or broiled and used in various dishes.

## Nutritional value

Spiny dogfish is a good source of omega-3 fatty acids – 100 grammes of meat providing roughly 2 grammes of these essential fatty acids.

# crab

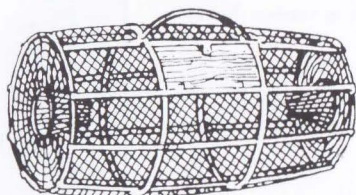
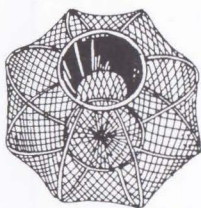
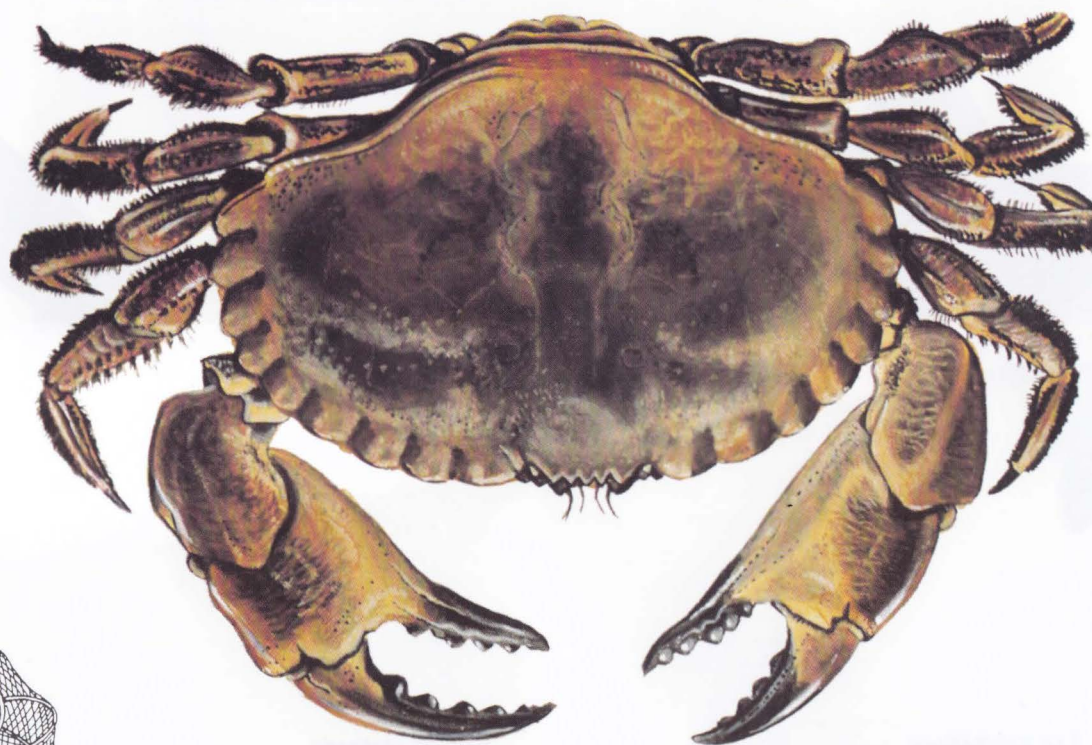
Cancer pagurus  
Krabbe  
Crabe  
Kurzschwanz - Kreps



Main nutrients g/100g	
Total solids	27,6
Protein	22,9
Fat	1,8
Glycogen	1,0

Season: September to November.

Size: Male crabs up to 30 cm across the carapace, females up to 20 cm.



## Biology/fishery

The edible crab lives along the coast of Norway as far north as Troms county and is generally found at depths of up to 50 metres. The female crab has a broader apron than the male, whereas the male has larger claws.

Normally, edible crabs spawn every second autumn after they have reached maturity, from the age of roughly five years. The female crab carries the eggs around in her abdominal apron throughout the winter, until they hatch in the spring. The larvae, called zoea, swim around on the surface of the water for the first two months of their lives, before moving down to the sea floor.

## Fishing methods

Pots.

## Use

Crab is sold live, boiled, pickled and presented in the shell, frozen and canned.

## Nutritional value

Crab is a very good source of vitamin B12 and zinc and is also rich in vitamin E.

VITAMINS	µg/100 g
Vitamin A	4
Vitamin D	n.d
Vitamin E	13,5

	mg/100 g
Vitamin B12	6,3
Thiamine	0,05
Riboflavin	0,4
Niacin	1,7
Pantothenic acid	0,7
Pyridoxine	0,2

AMINO ACIDS	g/100 g
Aspartic acid (ASP)	1,5
Threonine (Thr)	0,8
Serine (Ser)	0,8
Glutamic acid (Glu)	2,4
Proline (Pro)	0,8
Glycine (Gly)	0,9
Alanine (Ala)	0,8
Valine (Val)	0,8
Methionine (Met)	0,4
Isoleucine (Ile)	0,7
Leucine (Leu)	1,2
Tyrosine (Tyr)	0,7
Phenylalanine (Phe)	0,8
Lysine (Lys)	1,2
Histidine (His)	0,4
Arginine (Arg)	1,4
Tryptophane (Trp)	0,2

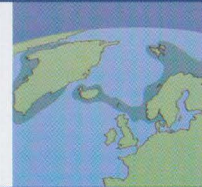
MINERALS AND TRACE ELEMENTS	mg/100 g
Sodium (Na)	550
Potassium (K)	244
Calcium (Ca)	551
Iron (Fe)	1,8
Selenium (Se)	0,2
Zink (Zn)	6,5
Manganese (Mn)	0,3
Magnesium (Mg)	63
Phosphorus (P)	450
Copper (Cu)	1,6
Cholesterol	142

FATTY ACIDS	%
14:0	2,5
16:0	15,2
16:1*	3,0
18:0	4,4
18:1*	6,8
18:2ω6	1,5
18:3ω3	1,5
18:4ω3	2,8
20:1*	6,6
20:4ω3	0,9
20:4ω6	2,1
20:5ω3	15,6
22:1*	nd
22:5ω3	1,2
22:6ω3	16,5
Total saturated	25,0
Total mono-saturated	16,9
Total ω3	38,5
Total ω6	4,0
g ω 3/100 g	0,5

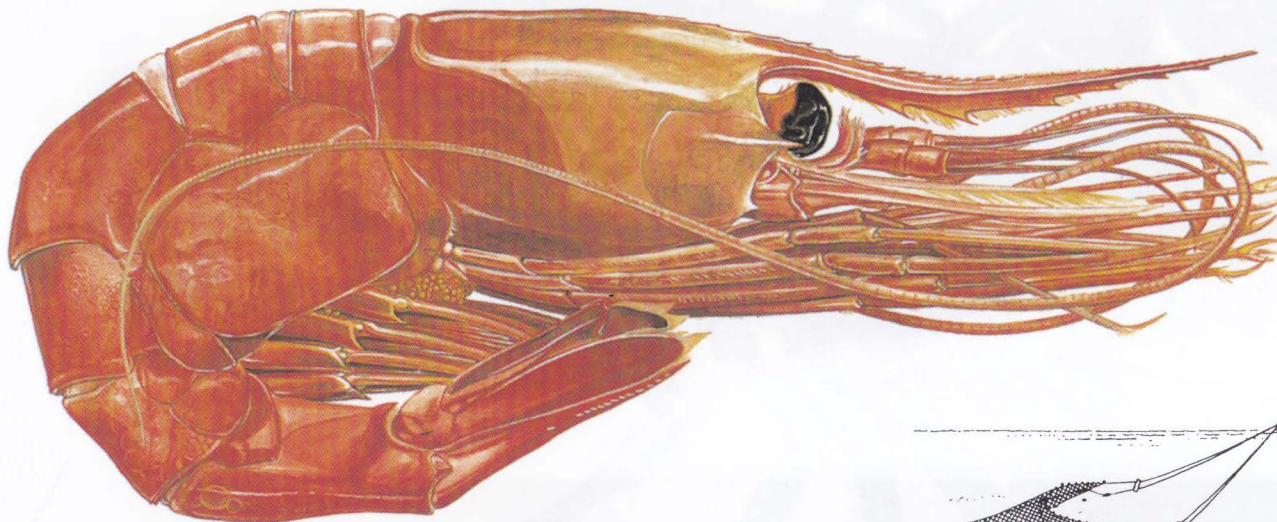


# deep-water prawn

*Pandalus borealis*  
Reke  
*Crevette nordique*  
Tiefsee garnele



Season: All year.  
Size: 10 to 12 cm.



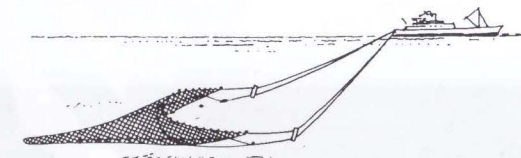
## Biology/fishery

There are some 50 different species of shrimp living in Norwegian waters, along Svalbard, in the Barents Sea, in the shallow waters along the coast of Norway and in the deep fjords, but only the red deep-water prawn is harvested and sold in Norway.

Deep-water prawns thrive in cold water and occasionally disappear altogether from known shrimping fields in the south of Norway, if the water temperature gets too high.

Shrimps start life as a male and then, sometime between the age of 2 1/2 and 4 years, they change sex and become female. Shrimp mate in the autumn and the female carries the eggs round in her abdomen throughout the winter.

Trawling for deep-water prawn is done in Skagerrak, along the coast of Norway and in the fjords using smaller vessels, while the prawn fishery in the Barents Sea and up near Svalbard and Greenland is performed using large



ocean-going trawlers, some of which also process the catch. Prawns are thus landed both fresh and frozen, ready for the domestic market and direct export. In Skagerrak and to a lesser degree in the North Sea, shrimp are caught using small shrimp trawlers.

## Fishing methods

Trawl nets.

## Use

Prawns are sold boiled, either peeled or in their shell, fresh, frozen and in brine. Boiled shrimp can be eaten as is or used in various hot or cold dishes.

## Nutritional value

Prawns are a good source of vitamin B12 and are also rich in the fat-soluble vitamins A, E and D.

## Main nutrients g/100g

Total solids	31,9
Protein	23,3
Fat	0,8
Glycogen	<0,1

VITAMINS	µg/100 g
Vitamin A	2
Vitamin D	3,5
Vitamin E	4,6

Vitamin B12	mg/100 g
Thiamine	-
Riboflavin	0,07
Niacin	2,3
Pantothenic acid	2,3
Pyridoxine	0,1

AMINO ACIDS	g/100 g
Aspartic acid (ASP)	1,8
Threonine (Thr)	0,8
Serine (Ser)	0,9
Glutamic acid (Glu)	2,7
Proline (Pro)	1,2
Glycine (Gly)	1,9
Alanine (Ala)	1,1
Valine (Val)	0,8
Methionine (Met)	0,5
Isoleucine (Ile)	0,9
Leucine (Leu)	1,5
Tyrosine (Tyr)	0,6
Phenylalanine (Phe)	0,9
Lysine (Lys)	1,3
Histidine (His)	0,4
Arginine (Arg)	1,8
Tryptophane (Trp)	0,2

MINERALS AND TRACE ELEMENTS	mg/100 g
Sodium (Na)	600
Potassium (K)	239
Calcium (Ca)	61
Iron (Fe)	0,4
Selenium (Se)	0,03
Zinc (Zn)	1,1
Manganese (Mn)	0,03
Magnesium (Mg)	43
Phosphorus (P)	150
Copper (Cu)	0,4
Cholesterol	184

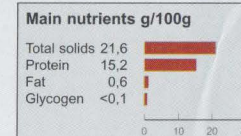
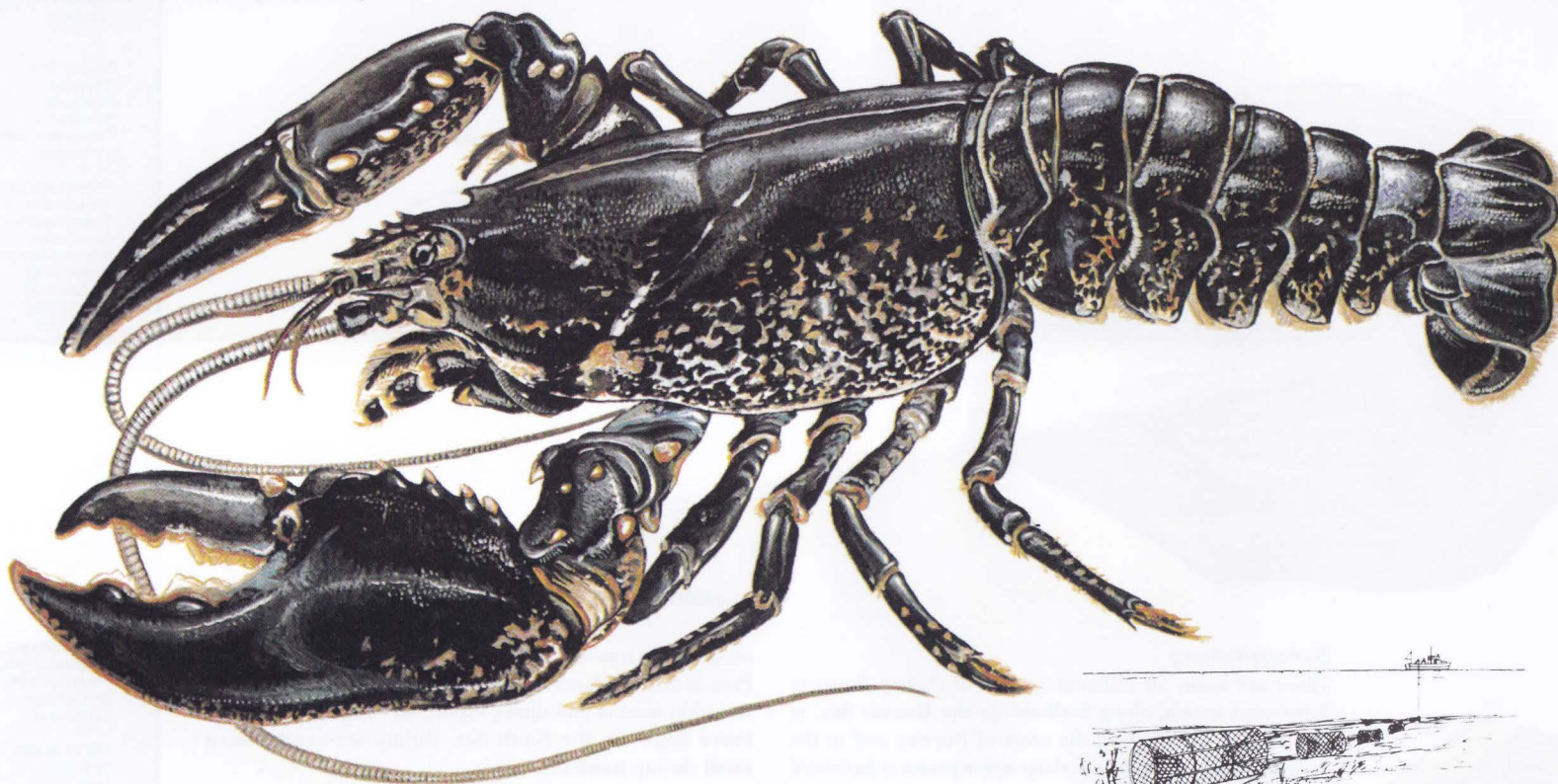
FATTY ACIDS	%
14:0	2,4
16:0	14,4
16:1*	5,8
18:0	2,3
18:1*	20,1
18:2ω6	0,9
18:3ω3	0,3
18:4ω3	0,3
20:1*	7,0
20:4ω3	0,3
20:4ω6	1,2
20:5ω3	17,4
22:1*	5,1
22:5ω3	1,0
22:6ω3	16,0
Total saturated	19,9
Total mono-saturated	38,8
Total ω3	35,3
Total ω6	2,4
g ω 3/100 g	0,3

# lobster

*Homarus vulgaris*  
Hummer  
Homard  
Hummer



Season: October to December.  
Size: Up to 50 cm, weight up to 4 kg.



VITAMINS	µg/100 g
Vitamin A	<2
Vitamin D	n.d.
Vitamin E	1

	mg/100 g
Vitamin B12	4.3
Thiamine	0.10
Riboflavin	0.06
Niacin	1.8
Pantothenic acid	1.7
Pyridoxine	-

AMINO ACIDS	g/100 g
Aspartic acid (ASP)	1.4
Threonine (Thr)	0.6
Serine (Ser)	0.7
Glutamic acid (Glu)	2.2
Proline (Pro)	0.9
Glycine (Gly)	1.2
Alanine (Ala)	0.8
Valine (Val)	0.6
Methionine (Met)	0.3
Isoleucine (Ile)	0.6
Leucine (Leu)	1.1
Tyrosine (Tyr)	0.5
Phenylalanine (Phe)	0.7
Lysine (Lys)	0.8
Histidine (His)	0.3
Arginine (Arg)	1.5
Tryptophane (Trp)	0.1

MINERALS AND TRACE ELEMENTS	mg/100 g
Sodium (Na)	590
Potassium (K)	150
Calcium (Ca)	120
Iron (Fe)	0.5
Selenium (Se)	0.07
Zink (Zn)	4.0
Manganese (Mn)	0.2
Magnesium (Mg)	42
Phosphorus (P)	155
Copper (Cu)	1.9
Cholesterol	93

FATTY ACIDS	%
14:0	5.1
16:0	13.9
16:1*	7.3
18:0	4.3
18:1*	20.7
18:2ω6	1.0
18:3ω3	0.3
18:4ω3	0.4
20:1*	6.3
20:4ω3	nd
20:4ω6	4.0
20:5ω3	19.1
22:1*	1.9
22:5ω3	1.4
22:6ω3	12.8
Total saturated	20.9
Total mono-saturated	36.7
Total ω3	34.0
Total ω6	6.1
g ω 3/100 g	0.2

## Biology/fishery

The lobster is one of the largest crustaceans found in Norwegian waters. However, it grows very slowly, roughly 2–3 cm per year, and the females only reach maturity at a length of 22–23 cm.

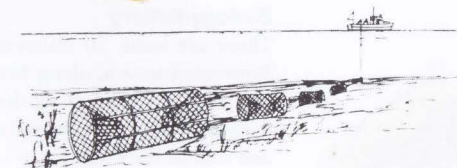
Lobsters are happiest in shallow waters, down to depths of 40 metres, with rock or stony beds where they can find plenty of good hiding places.

Lobsters spawn in the summer, and the female carries the roe throughout the winter and until hatching in June or July of the following year. The larva swim around in the upper waters for 14 days or so until, at a length of 18 mm,

they begin to resemble adult lobsters and settle down to life on the sea floor.

We have seen a dramatic drop in the stocks of lobster in Norwegian waters during the last couple of decades, and it is now protected by conservation orders. Lobster may only be caught using lobster pots, and the minimum size for lobster was increased in 1992 from 22 cm to 24 cm.

Research is currently being undertaken to develop commercial lobster farming, and attempts are being made to strengthen local stocks by setting out young lobster bred in captivity.



## Fishing methods

Lobster pots.

## Use

Lobster is sold alive or boiled.

## Nutritional value

Lobster provides plenty of vitamin B12, vitamin E and zinc.

# blue mussel

*Mytilus edulis*  
Blåskjell  
Moule Commune  
Miesmuschel, Pfahlmuschel



Season: All year, but is often best in autumn and winter. Blue mussel is found along the entire Norwegian coast.



## Biology/fishery

Blue mussels are found along the entire coast of Norway. They are often found in vast quantities in belts in the tidal waters, generally a little way into the fjords or in other protected places where freshwater enters the sea. Blue mussels usually spawn between April and June, depending on their location. The larvae remain free-swimming for approximately one month and then attach themselves to a hard surface, such as rocks, cliffs, boats and moorings, usually in the intertidal zone. Mussels attach themselves to solid objects by strands they secrete from the bottom of the shell called byssus threads, and are able to move a little by stretching out new threads.

Collecting blue mussels is a popular pastime in Norway, and the shells are often plucked by hand and taken home for dinner or boiled on a bonfire on the beach.

In particularly rich mussel banks, blue mussels are harvested using dredges from boats. However, farmed blue mussel provides the bulk of the crop in Norway. The mussels are grown on suspension culture systems consisting of a network of horizontal lines suspended in the water from buoys from which ropes or lines called droppers are hung. The larvae, driven by the water, attach themselves to the droppers and grow to a marketable size in a year or two. The shells are thinned out, harvested, sorted and the byssus threads are removed by machines onboard the harvesting vessels.

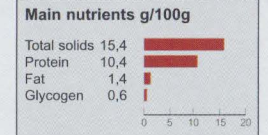
## Use

Blue mussels have traditionally been sold live, canned or in brine. Now they are also available frozen and vacuum-packed, raw or cooked. Blue mussels are delicious steamed in white wine, olive oil and onion until they begin to open,

served with finely chopped onion, sour cream and fresh bread. Like so much other seafood, blue mussels are best in the autumn and reach peak quality and plumpness just before Christmas. Steam them au naturel, or add them to any variety of hot and cold dishes.

## Nutritional value

Blue mussels are a good source of iron, selenium and vitamin B12. They are low in fat and yet still rich in the healthy omega-3 fatty acids.



VITAMINS	
Vitamin A	-
Vitamin D	-
Vitamin B12	25

mg/100g	
Thiamine	-
Riboflavin	2,7
Niacin	12,2
Pantothenic acid	4,7
Pyridoxine	-

AMINO ACIDS	
Aspartic acid (ASP)	1,7
Threonine (Thr)	0,8
Serine (Ser)	0,8
Glutamic acid (Glu)	2,4
Proline (Pro)	-
Glycine (Gly)	1,2
Alanine (Ala)	0,9
Valine (Val)	0,7
Methionine (Met)	0,4
Isoleucine (Ile)	0,8
Leucine (Leu)	1,2
Tyrosine (Tyr)	0,6
Phenylalanine (Phe)	0,5
Lysine (Lys)	1,2
Histidine (His)	0,3
Arginine (Arg)	1,2
Tryptophane (Trp)	-

MINERALS AND TRACE ELEMENTS	
Sodium (Na)	-
Potassium (K)	-
Calcium (Ca)	-
Iron (Fe)	2,46
Selenium (Se)	0,2
Zink (Zn)	1,14
Manganese (Mn)	0,08
Magnesium (Mg)	-
Phosphorus (P)	-
Copper (Cu)	0,2
Cholesterol	-

FATTY ACIDS	
14:0	1,8
16:0	13,4
16:1	8,3
18:0	3,7
18:1	4,6
18:2n-6	1,3
18:3n-3	1,5
18:4n-3	1,9
20:1	6,3
20:4n-3	0,3
20:4n-6	2,7
20:5n-3	10,9
22:1	nd
22:5n-3	1,1
22:6n-3	20,7
Total saturated	20,4
Total mono-saturated	22,0
Total n-3	36,5
Total n-6	4,8
n-3/n-6	7,6
g (n-3)/100 g	0,4

# oyster

*Ostrea edulis*  
Østers  
Huître plate  
Auster



Season: All year, but best in autumn, winter and spring.  
Wild oyster is found only in shallow areas well heated by the sun in summer, from the Swedish border to Sandnessjøen, Norway.



## Biology/fishery

The European edible oyster or common oyster is the only species of oyster that occurs naturally in Norway and is also the most commercially valuable type of oyster on the European market. It is also possible to buy Japanese oysters (*Crassostrea gigas*), which are narrower and longer than their European cousins and easier to farm.

Until the middle of the nineteenth century, oysters were common along the whole coastline of Norway, and relatively large quantities were harvested. However, the oyster has been on the decline and is now only found halfway up the coast, as far north as Trøndelag, in protected fjords that are heated by the sun and shallow areas, where the water reaches a sufficient temperature in the summer.

Oysters start building up roe and milt from the spring until they breed in late summer, but they only spawn if the temperature is high enough. The eggs are fertilised inside the shell, and the larvae stay there for five days before leaving their mother. They are then released as free swimming larvae before attaching themselves to a suitable surface for the rest of their lives. Traditionally, oysters were cultivated in enclosed fjords heated by the sun, where the parent oyster released larvae into the water and the young oysters, known as spat, were then gathered using various different devices, such as onion sacks. Nowadays, oysters are cultivated under slightly more controlled conditions, in hatcheries or in a combination of a hatchery and temperate conditions in which oysters grow naturally. The shells are cultivated up to a marketable size in boxes in the sea or in protected fjords.

## Use

Oysters are generally sold alive and eaten raw, sometimes with a dash of lemon or vinaigrette, although they can also be used in sauces and other hot dishes.

## Nutritional value

Oysters are an excellent source of zinc. They also have a high content of other important trace elements, such as copper and iron, and are a good source of niacin. They are rich in vitamins B12 and D. Oysters have a healthy combination of fatty acids with plenty of omega-3 fatty acids.

Main nutrients g/100g	
Total solids	20,8
Protein	-
Fat	2,4
Glycogen	-

VITAMINS	
Vitamin A	-
Vitamin D	-
Vitamin B12	20

mg/100g	
Thiamine	-
Riboflavin	1,7
Niacin	19,0
Pantothenic acid	5,0
Pyridoxine	-

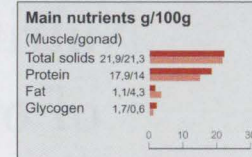
AMINO ACIDS	
Aspartic acid (ASP)	-
Threonine (Thr)	-
Serine (Ser)	-
Glutamic acid (Glu)	-
Proline (Pro)	-
Glycine (Gly)	-
Alanine (Ala)	-
Valine (Val)	-
Methionine (Met)	-
Isoleucine (Ile)	-
Leucine (Leu)	-
Tyrosine (Tyr)	-
Phenylalanine (Phe)	-
Lysine (Lys)	-
Histidine (His)	-
Arginine (Arg)	-
Tryptophane (Trp)	-

MINERALS AND TRACE ELEMENTS	
Sodium (Na)	-
Potassium (K)	-
Calcium (Ca)	-
Iron (Fe)	2,8
Selenium (Se)	0,15
Zink (Zn)	60
Manganese (Mn)	0,15
Magnesium (Mg)	-
Phosphorus (P)	-
Copper (Cu)	3,0
Cholesterol	-

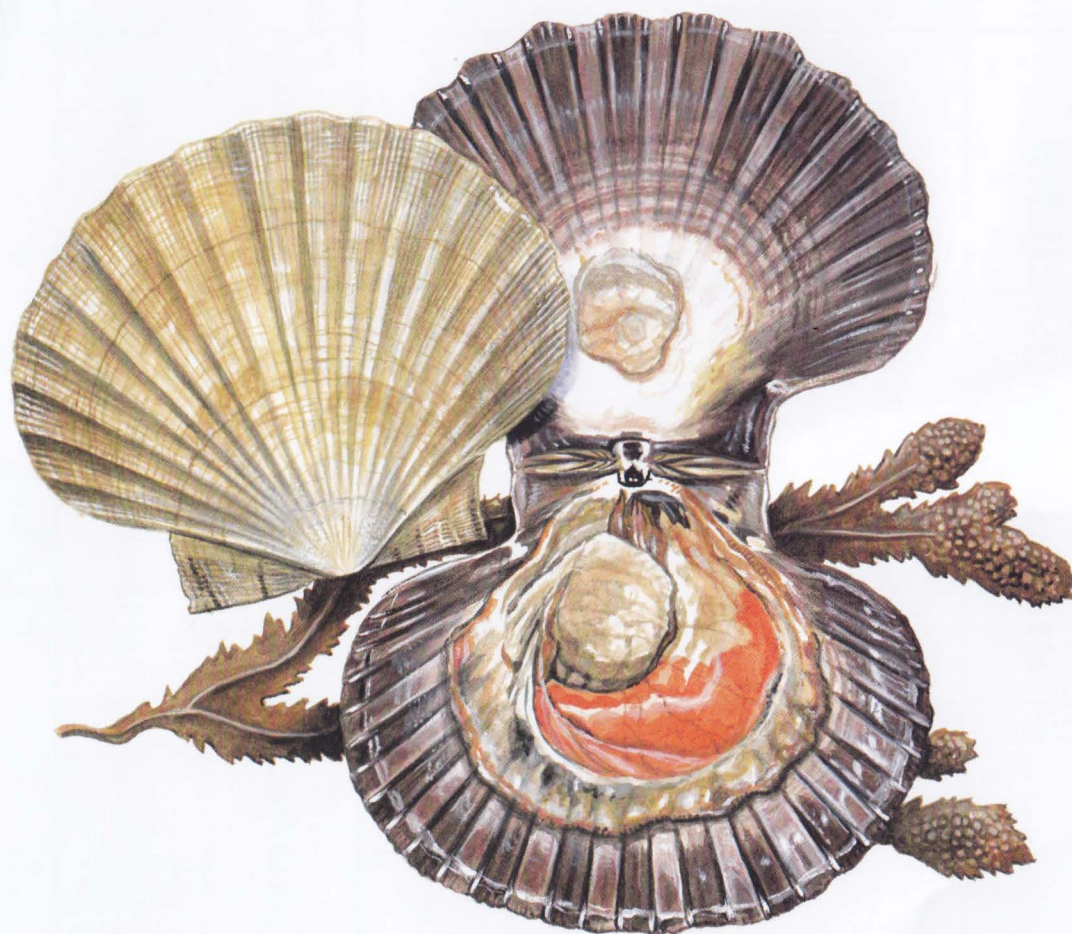
FATTY ACIDS	
14:0	3,6
16:0	16,5
16:1	3,2
18:0	4,3
18:1	5,7
18:2n-6	1,9
18:3n-3	1,3
18:4n-3	2,3
20:1	5,5
20:4n-3	0,6
20:4n-6	2,0
20:5n-3	12,8
22:1	nd
22:5n-3	1,0
22:6n-3	21,3
Total saturated	27,4
Total mono-saturated	16,7
Total n-3	39,3
Total n-6	4,4
n-3/n-6	9,0
g (n-3)/100 g	0,8

# scallop

*Pecten maximus*  
Kamskjell, Stort kamskjell  
Coquille St. Jacques  
Kamm-Muschel



Season: All year, but the roe only during parts of the year, depending on what part of the country it's from. Scallops are found from the outer Oslo Fjord to Vesterålen, but the largest finds are from Western to Northern Norway.



## Biology/fishery

The giant scallop is the largest of the scallop species found in Norway and is generally simply called scallop. Scallops are found from the intertidal zone and down to depths of several hundred metres, but occur most frequently at depths of between 10 and 30 metres. Giant scallops often live in areas with sandy bottoms, resting in small hollows with the less-sculptured upper shell covered by sand, but they are also found on other types of seabed. Scallops are hermaphrodites. They carry their eggs in a special sac in front of the adductor muscle, and the orange part is the egg and the grey-white part is the milt. Scallop spawn in the summer. The larva swim freely for approximately one month before attaching themselves to a surface. Juvenile scallops remain stationary until they reach a size of 10–15 mm, when they settle on the bottom. Scallops are marketable after four or five years, when they have reached a size of at least 10 cm.

In Norway, giant scallops are primarily collected by divers. In some countries, scallops are harvested by dredging the seabed, but this is not an option in Norway as the seabed around the coast is not flat. More refined methods for harvesting giant scallops from the seabed are currently being developed. Research is also underway to develop commercial scallop farming. Scallops are hatched artificially in incubators and are nurtured in cases in the sea, before being set out into prepared seabed cultures.

## Fishing methods

Dredging, diving

## Use

Giant scallops are sold fresh and alive, frozen and gratinated in their shells, frozen without their shells, and in brine. The edible parts are the white muscle and the egg sac. Giant scallops can be eaten raw lightly steamed, lightly fried or gratinated in any number of different ways. They are often served in their shells, which are very decorative.

## Nutritional value

The muscle of the giant scallop is lean but has a very high content of omega-3 fatty acids. The egg sac is particularly rich in riboflavin and pantothenic acid and also contains plenty of zinc.

	MUSCLE	GONAD
<b>VITAMINS</b>	µg/100g	µg/100g
Vitamin A	-	-
Vitamin D	-	-
Vitamin B12	4	15
	mg/100g	mg/100g
Thiamine	-	-
Riboflavin	0,8	5,4
Niacin	18,7	17,4
Pantothenic acid	1,2	14,2
Pyridoxine	-	-
<b>AMINO ACIDS</b>	g/100g	g/100g
Aspartic acid (ASP)	-	-
Threonine (Thr)	-	-
Serine (Ser)	-	-
Glutamic acid (Glu)	-	-
Proline (Pro)	-	-
Glycine (Gly)	-	-
Alanine (Ala)	-	-
Valine (Val)	-	-
Methionine (Met)	-	-
Isoleucine (Ile)	-	-
Leucine (Leu)	-	-
Tyrosine (Tyr)	-	-
Phenylalanine (Phe)	-	-
Lysine (Lys)	-	-
Histidine (His)	-	-
Arginine (Arg)	-	-
Tryptophane (Trp)	-	-
<b>MINERALS AND TRACE ELEMENTS</b>	mg/100 g	mg/100 g
Sodium (Na)	-	-
Potassium (K)	-	-
Calcium (Ca)	-	-
Iron (Fe)	0,47	1,16
Selenium (Se)	0,08	0,13
Zink (Zn)	0,94	3,41
Manganese (Mn)	0,03	0,15
Magnesium (Mg)	-	-
Phosphorus (P)	-	-
Copper (Cu)	0,05	0,3
Cholesterol	-	-
<b>FATTY ACIDS</b>	%	%
14:0	2,2	2,5
16:0	16,5	15,8
16:1	1,8	3,7
18:0	6,7	3,9
18:1	3,4	6,9
18:2n-6	0,6	1,4
18:3n-3	0,4	1,7
18:4n-3	1,4	5,9
20:1	1,9	2,3
20:4n-3	0,6	1,1
20:4n-6	2,9	2,3
20:5n-3	20,1	20,0
22:1	nd	nd
22:5n-3	1,7	1,5
22:6n-3	29,6	19,1
Total saturated	27,3	24,3
Total mono-saturated	7,9	13,6
Total n-3	53,8	49,2
Total n-6	4,1	4,7
n-3/n-6	13,0	10,4
g (n-3)/100 g	0,5	1,7

# Nutritional values of other species:

## Blue ling

Blue ling is a good source of protein, it is rich in vitamin B12 and has a good ratio of sodium to potassium.

## Porbeagle

Porbeagle liver is generally regarded as a good source of protein, but it also contains plenty of vitamin B12.

## Char

Nutritionally, char is an excellent product. It contains plenty of omega-3 fatty acids and is rich in the vitamins A, D and B12.

## Sole

Sole is a good source of protein. Its fat content can vary considerably and thus also the quantity of omega-3 fatty acids.

## Skate

Skate contains a large amount of calcium, in addition to being a good source of protein.

## Tuna

Tuna contains a relatively large amount of vitamin D, omega-3 fatty acids and selenium. It also has a healthy balance of sodium and potassium.

## Conger eel

Conger eel contains omega-3 fatty acids and has a good ratio of sodium to potassium.

## Crayfish (freshwater)

Crayfish provides plenty of calcium and vitamins B12 and E.

Main nutrients g/100 g	Blue ling	Porbeagle	Char	Sole	Skate	Tuna	Conger eel	Crayfish
Total solids	17,9	21,3	26,9	16,3	14,8	26,0	24,6	14,7
Protein	15,7	20,3	16,1	14,8	14,0	25,1	18,0	10,7
Fat	0,1	0,4	7,1	0,5	0,2	0,2	5,2	1,3
Glycogen	-	-	0,1	-	-	<0,1	-	0,5
<b>Vitamins</b>								
Vitamin A, µg/100 g	2	<2	-	<2	<2	-	-	<2
Vitamin D, µg/100	-	-	6,9	-	-	1,6	-	n.d.
B12 µg/100 g	2	3	10	-	-	-	-	3
Vitamin E, mg/100 g	0,2	0,6	1,3	0,6	0,7	-	-	3,2
Thiamin, mg/100 g	0,05	0,08	0,09	-	-	-	-	-
Riboflavin, mg/100 g	0,12	0,10	0,02	-	-	-	-	0,06
Niacin, mg/100 g	2,5	7,0	6,1	-	-	-	-	2,4
Pantothenic acid, mg/100 g	0,3	0,3	0,9	-	-	-	-	4,1
Pyridoxine, mg/100 g	0,3	0,6	0,6	-	-	-	-	0,2
<b>Minerals and trace elements, mg/100</b>								
Sodium (NA)	104	160	48	98	118	40	56	765
Potassium (K)	312	242	420	363	232	475	408	106
Calcium (Ca)	9	8,6	16	29	83	11	13	222
Iron (Fe)	0,1	0,5	0,2	0,1	0,2	2,3	0,1	2,4
Selenium (Se)	0,04	0,03	0,03	0,03	0,04	0,2	0,09	0,03
Zink (Zn)	0,4	0,4	0,4	0,5	0,3	0,6	1,4	2,4
Manganese (Mn)	<0,05	<0,05	<0,05	<0,05	<0,05	<0,07	<0,05	3,1
Magnesium (Mg)	23	19	25	25	18	39	22	33
Phosphorus (P)	160	200	267	200	150	266	215	150
Copper (Cu)	<0,06	<0,06	0,07	<0,06	<0,06	0,1	0,2	1,9
Cholesterol	-	-	61	-	-	41	-	125
<b>Fatty acids, %</b>								
14:0	2,4	0,8	4,6	4,1	1,0	0,1	4,3	1,5
16:0	19,2	20,2	12,3	18,4	21,5	13,2	18,4	17,3
16:1*	2,7	2,1	9,2	8,0	2,0	1,9	9,2	7,4
18:0	4,0	5,5	1,5	3,2	5,6	9,2	3,0	4,7
18:1*	13,3	13,1	17,0	15,4	11,8	13,2	35,5	22,5
18:2ω6	1,0	0,6	3,4	0,9	1,2	1,9	0,8	17,3
18:3ω3	0,5	nd	0,7	0,5	0,2	0,3	0,4	7,1
18:4ω3	0,8	nd	2,2	0,8	0,2	0,3	0,3	nd
20:1*	3,4	2,6	12,1	6,3	2,3	3,2	4,3	nd
20:4ω3	0,5	0,2	0,9	0,8	0,3	0,3	0,8	nd
20:4ω6	2,4	5,3	0,4	3,0	5,1	5,8	2,1	5,3
20:5ω3	8,5	3,7	6,4	5,9	5,2	3,6	3,6	6,0
22:1*	3,4	nd	11,8	4,0	1,1	2,2	1,2	nd
22:5ω3	1,5	7,2	1,3	5,0	5,3	1,4	3,6	nd
22:6ω3	30,8	33,6	11,0	16,2	32,7	26,9	8,9	1,5
Total saturated	26,2	27,0	19,2	26,9	29,0	24,9	26,5	25,3
Total mono-unsaturated	23,5	19,2	50,7	33,7	18,4	20,9	50,2	30,2
Total ω3	42,5	44,6	22,5	29,2	44,0	32,8	17,6	14,6
Total ω6	3,6	6,2	4,1	4,3	6,5	8,2	3,3	23,9
g ω3/100 g	0,1	0,2	1,6	0,2	0,1	-	0,9	0,2
<b>Amino acids, g/100 g</b>								
Aspartic acid (Asp)	-	-	1,6	-	-	1,9	-	1,2
Threonine (Thr)	-	-	2,3	-	-	1,0	-	0,5
Serine (Ser)	-	-	0,7	-	-	0,8	-	0,5
Glutamic acid (Glu)	-	-	0,9	-	-	3,0	-	1,9
Proline (Pro)	-	-	0,6	-	-	0,7	-	0,4
Glycine (Gly)	-	-	0,8	-	-	0,9	-	0,5
Alanine (Ala)	-	-	1,2	-	-	1,5	-	0,6
Valine (Val)	-	-	0,9	-	-	1,0	-	0,5
Methionine (Met)	-	-	0,5	-	-	0,6	-	0,3
Isoleucine (Ile)	-	-	0,8	-	-	1,0	-	0,5
Leucine (Leu)	-	-	1,4	-	-	1,7	-	1,0
Tyrosine (Tyr)	-	-	0,6	-	-	0,7	-	0,4
Phenylalanine (Phe)	-	-	0,9	-	-	1,0	-	0,6
Lysine (Lys)	-	-	1,4	-	-	1,6	-	0,9
Histidine (His)	-	-	0,6	-	-	1,7	-	0,2
Arginine (Arg)	-	-	1,0	-	-	1,2	-	1,1
Tryptophan (Trp)	-	-	0,2	-	-	0,3	-	<0,1

\*)Total isomers

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