

Reinhardtius hippoglossoides – Greenland halibut

Greenland halibut is only found in cold waters. It is an oily fish full of marine omega-3 fatty acids, and it is well-suited to baked dishes.



Biology

Greenland halibut is an Arctic flatfish which is seldom found in water warmer than 4 °C. It resembles Atlantic halibut and has a dark brown or blue colour on both sides. The blind side is pigmented and only slightly lighter than the eye side. This may indicate that it lives more in open waters than Atlantic halibut. Like the Atlantic halibut, the Greenland halibut undergoes an eye migration. When the eggs hatch, the larvae have a normal shape, but gradually they lie on the bottom with their left side turned towards the bottom and their right side up. Little by little the left eye "migrates" over to the right side and finally gives the halibut a flat body shape.

The Greenland halibut is found at depths of 100–2000 metres. The female is larger, up to 1.2 metres, while the male is seldom larger than 65–70 cm. It can be more than 30 years old. The adult stock is mostly found along the continental shelf break from 62°N to north-east of Spitsbergen. The Greenland halibut is widespread in the northern Pacific Ocean and the northern Atlantic Ocean and is divided into three stocks: the North West stock along Canada and West Greenland, the West Nordic stock along East Greenland, Iceland and the Faroe Islands, and the North East Arctic stock in the Barents Sea.

North East Arctic Greenland halibut spawn in the winter, and the spawning areas lie between the Vesterålen Islands and Spitsbergen. The eggs and the larvae drift with the current depending on where the spawning has occurred. The larvae have a long pelagic phase of 8–10 months before they settle on the bottom at the end of summer/autumn. The Greenland halibut spends its first 3–4 years in or near the area where it settles on the bottom, generally in relatively shallow water (100–300 metres deep). When it eventually becomes larger, it will migrate out to greater depths along the continental shelf break.

Fishery

The Greenland halibut fishery is regulated within limited periods during the summer half of the year, in which fishing is halted when the period quotas are estimated to have been reached. Only vessels under 28 metres that fish with conventional gear may participate in direct fishing for Greenland halibut. Vessels which are not permitted to fish directly may have up to 7 per cent by-catch. Differentiated maximum quotas according to vessel length also constitute a part of the regulations.

SPECIES

Reinhardtius hippoglossoides
– Greenland halibut

FAMILY

Pleuronectidae – Flounder family

PRODUCTS

- ▶ Fresh (whole H/G)
- ▶ Smoked or salted (fillet and whole)
- ▶ Frozen (whole H/G, fillet, heads and tails)

SIZE

Maximum 20 kg and 120 cm

RANGE

In the Barents Sea and along the continental shelf break between Mainland Norway and Svalbard.

SEASON

Direct fishing is only permitted in two limited periods in the summer half the year.

FEEDS ON

Fish, octopus and crustaceans

NAMES IN OECD LANGUAGES

- ▶ **Latin:** *Reinhardtius hippoglossoides*
- ▶ **Norwegian:** Blåkveite
- ▶ **French:** Fletan noir
- ▶ **German:** Schwartzer heilbutt
- ▶ **Danish:** Hellefisk
- ▶ **Spanish:** Hipogloso negro
- ▶ **Finnish:** Grönlanninpallas
- ▶ **Italian:** Halibut di groenlandia
- ▶ **Icelandic:** Grálúða
- ▶ **Japanese:** Karasu-garei
- ▶ **Dutch:** Groenlandse heilbot
- ▶ **Portuguese:** Alabote-da-groelândia
- ▶ **Polish:** Halibut niebieski
- ▶ **Swedish:** Lilla hälleflundran



The fishery takes place along the continental shelf break from 62 °N (Stad) to north-east of Spitsbergen, and the largest share is caught between the Vesterålen Islands and Spitsbergen.

Sustainability

Each year, Norwegian and international research provides a basis for advice on sustainable catch in the North-eastern Atlantic Ocean. Norway then conducts negotiations on quotas with other countries that fish for the same stocks. Based on this, the Norwegian Ministry of Trade, Industry and Fisheries allocates the Norwegian share to Norwegian fishers. It is the authorities who grant a licence to everyone who participates in the industry, and provisions regarding quota allocation and conduct of the fishery are determined through annual regulations for each individual type of fish (control regulations).

Each year the Joint Norwegian-Russian Fisheries Commission allocates quotas for Greenland halibut between Norway, Russia and third countries. The stock of North East Greenland halibut is considered to be in good condition, and it is managed sustainably.

Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. The control system consists of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Nutritional content

The fat content in Greenland halibut varies with season and food availability, and the quantity of omega-3 fatty acids will therefore vary.

Greenland halibut is especially rich in:

- ▶ **Protein**, which builds and maintains all the cells in the body.
- ▶ **Vitamin D**, which is necessary for maintaining the right calcium balance in the body and which thus contributes to maintaining and strengthening the skeleton.
- ▶ **Marine omega-3 fatty acids**, which prevent cardiovascular disease and are important for the development of the brain.

Applications/uses

For the most part, only smoked Greenland halibut is sold. Raw Greenland halibut flesh is slightly soft and watery, but when it is treated with heat or smoked, it becomes white and firm in consistency. Smoked Greenland halibut is a delicacy, and it has a mild smoky taste. Smoked Greenland halibut is best suited to boiling or in baked dishes. It is usually served with a light sauce and boiled vegetables.

You can find more information about Greenland halibut here:

<http://www.imr.no/temasider/fisk/kveite/blakveite/nb-no>

NUTRITIONAL CONTENT

Nutritional content in 100 g raw/cold-smoked Greenland halibut:

Energy:	645 kJ / 155 kcal
---------	-------------------

Nutrients:

Protein:	14 g
Fat:	11 g
Saturated fatty acids:	1.7 g
Trans unsaturated fatty acids:	0 g
Mono unsaturated fatty acids:	6.9 g
Poly unsaturated fatty acids:	1 g
Omega-3:	0.8 g
Cholesterol:	74 mg

Vitamins:

Vitamin A:	10 RAE
Vitamin D:	9.1 µg
Riboflavin:	0.06 mg
Vitamin B12:	0.7 µg

Minerals:

Iron:	0.1 mg
Selenium:	60 µg
Iodine:	7 µg

More information about nutritional content will be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/fisk-og-skalldyr-g4/blakveite-raakaldroekt-04.001>

Mytilus edulis – Blue mussel

Blue mussels are protein-rich delicacies found along the entire Norwegian coast. They are easy to prepare and can be served in many creative ways – as an appetiser, main course or as an ingredient in another seafood dish. Blue mussel farming is one of the most environmentally and resource-friendly ways of producing food, and it requires no feeding.



Biology

Blue mussels are, as the name indicates, blue. The shells change from blue to dark brown on the exterior, while the interior of the shell is light blue. Blue mussels have two shells which can open and close with the aid of adductor muscles. Mussels often occur in or below the intertidal zone. In Norway, blue mussels are common along the entire coast. Elsewhere they are common from Northern Spain in the south to the White Sea in the north. Blue mussels are found at depths from 0 to 10 metres. They attach themselves to firm surfaces (stones, rocks, ropes) with the aid of byssus threads, also known as beards. Byssus threads differ from the byssus gland, which is located at the foot of the blue mussel.

Blue mussels are unisexual and usually spawn in April–June, but this depends on where they are located in Norway. The larvae swim freely in the water column for a few days up to a month before they attach themselves to firm surfaces.

Blue mussels have a large reproductive capacity, and they can occur in large concentrations. Blue mussels have a high tolerance for extreme environmental conditions such as temperature, salinity and drying out, and this makes them very adaptable. Blue mussels can be 20 years old or more.

In Norway, blue mussels are cultivated on hanging culture systems in selected fjords along the coast. There are many different forms of hanging culture systems, and each installation is adapted to the local surroundings. An installation consists of a line of buoys in which horizontal systems of ropes are held up by buoys. Ropes or bands hang from the buoys which the mussels attach themselves to.

Harvesting

Blue mussels are available throughout the year but are at their best late in autumn and during winter.

Harvesting of blue mussels is a difficult job and is therefore done mechanically with special harvest boats. The mussels are brought in to landing facilities where they are washed and rinsed and the byssus thread is removed. Then they are packed according to size.

Sustainability

Cultivation of blue mussels is regulated by the Norwegian Aquaculture Act. It stipulates that aquaculture shall be established, operated and wound up in an environmentally responsible manner. A requirement is imposed for a permit to cultivate blue mussels. In addition, a number of requirements are imposed for the operation, including as regards

SPECIES

Mytilus edulis – Blue mussel

FAMILY

Mytilidae – Sea mussel family

Products

- Live, in packs of 1 kg
- Live, in MAP packs of 1 and 2 kg

SIZE

Up to 10 cm long

RANGE

Blue mussels are widespread in the entire northern Atlantic Ocean and along the entire Norwegian coast.

SEASON

Year round, but best in autumn and winter. Check the blue mussel advisory at: <http://www.matportalen.no/verktøy/blaskjellvarsel/>

FEEDS ON

Blue mussels live off filtering phytoplankton, small zooplankton and other organic particles from seawater.

NAMES IN OECD LANGUAGES

- ▶ **Latin:** *Mytilus edulis*
- ▶ **Norwegian:** Blåskjell
- ▶ **French:** Moule commune
- ▶ **German:** Miesmuschel
- ▶ **Danish:** Blåmusling
- ▶ **Spanish:** Mejillón
- ▶ **Finnish:** Sinisimpukka
- ▶ **Greek:** Μύδι
- ▶ **Italian:** Mitilo
- ▶ **Icelandic:** Kræklingur
- ▶ **Japanese:** Lgai
- ▶ **Dutch:** Mossel
- ▶ **Portuguese:** Mexilhão
- ▶ **Polish:** Omulki
- ▶ **Swedish:** Blåmussla
- ▶ **Turkish:** Midye
- ▶ **Serbo-Croatian:** Dagnje



marking, mooring and placement, as well as the competence of managers and employees. Cultivation of blue mussels is considered one of the most sustainable methods of producing food. Blue mussels live on phytoplankton which grow in large quantities in the sea, and therefore they do not need to be fed. By filtering our phytoplankton and other particles in the water column, the blue mussels can contribute to better water quality in fjord areas with large added amounts of nutrient salts.

Several firms which cultivate blue mussels in Norway offer organic mussels bearing the Debio mark. Debio is a certification which shows that the production satisfies requirements which are imposed for environmentally friendly food production. Other certifications in blue mussel cultivation are the Aquaculture Stewardship Council (ASC) and Friend of the Sea.

Food safety/quality control

Norwegian cultivated blue mussels are produced under controlled conditions, and they undergo stringent quality inspections before and after harvesting. All commercial blue mussel production must be approved by the Norwegian Food Safety Authority, and the water quality and the mussels are inspected before they are sent out on the market. All the mussels in the grocery counter are therefore safe to eat. If blue mussels are personally picked in the foreshore, the blue mussel advisory at www.matportalen.no should be checked.

Blue mussels that are cultivated in Norway have several advantages with regards to quality. Since they hag freely in the ocean, they have no sand or mud, neither internally nor externally on the shell. Maturation in Norway with low winter temperatures makes the mussels robust and means that they tolerate being exposed to cold and ice.

Nutritional content

Blue mussels are especially rich in:

- **Protein**, which builds and maintains all the cells in the body.
- **Vitamin B₁₂**, which is important for the body's production of new cells, including red blood cells, and which can contribute to preventing anaemia.
- **Iodine**, which is important for the body's production of hormones which play a role in regulating metabolism.
- **Selenium**, which is an important element in the enzymes that combat harmful chemical processes in the body.

Applications/uses

The flesh on the inside of the mussel has a deep, yellow-orange colour and everything is edible. It is delicate and tasty, and it can be used in many different ways. Blue mussels can be served as an appetiser, main course or as one of several types of seafood.

You can read more about blue mussels here:

<http://www.imr.no/temasider/skjell/blaskjell/nb-no>

NUTRITIONAL CONTENT

Nutritional content per 100 g mussel:

Energy: 229 kJ / 54 kcal

Nutrients:

Protein:	10.4 g
Fat:	1.4 g
Saturated fatty acids:	0.3 g
Trans unsaturated fatty acids:	0 g
Cis-mono unsaturated fatty acids:	0.3 g
Cis-poly unsaturated fatty acids:	0.6 g
Omega-3:	0.5 g
Cholesterol:	38 mg

Vitamins:

Vitamin A:	14 RAE
Vitamin D:	0 µg
Riboflavin:	0.27 mg
Folate:	42 µg
Vitamin B ₁₂ :	25 µg

Minerals:

Iron:	7.7 mg
Selenium:	46 µg
Iodine:	140 µg

More information about nutritional content will be found at:

www.nifes.no/en/prosjekt/seafood-data

<http://www.matvaretabellen.no/skalldyr-fiskeinnmat-g4.3/blaaskjell-raa-04.053>

Lophius piscatorius – Monkfish

The monkfish, with its large mouth and sharp teeth, was formerly regarded as inedible and thrown into the sea if it was brought up into the boat. That was a mistake, because there are few kinds of fish that are as good to eat and as useful in food preparation as this big-mouthed fish, and today it is a very welcome guest at any dinner table.



Biology

The monkfish is a bony fish species in the monkfish family. It has a large, broad head which constitutes nearly half of the length of the body and a large mouth with sharp teeth. This gives it a frightening appearance which probably was the origin for the belief that it was inedible. The body is flat and has large pectoral fins. It has a dark grey/brown/light colour with darker spots, which are used as camouflage when it lies on the bottom.

The monkfish is a typical bottomfish. It lies half-buried in the sediment and waits for prey. The monkfish fans its leading dorsal fin spine to lure the prey to it. The dorsal fin spine functions almost like a fishing pole with a hangnail as bait. All types of fish which come close enough to the large mouth are swallowed when the monkfish opens its jaws and sucks the prey in. The monkfish is found from the foreshore and down to a depth of 1000 metres. During the spawning season it goes deeper, all the way down to 1800 metres.

The breeding grounds are the continental slope west of Britain, Norwegian fjords and deeper parts of the shelf. The monkfish can be more than 25 years old, up to 12 metres long and nearly 100 kg in weight. The species ranges from the Barents Sea to northern parts of West Africa, the Mediterranean Sea and the Black Sea. In Norway it ranges along the entire Norwegian coast. In the north-eastern Atlantic, we have two monkfish species: *Lophius piscatorius* (monkfish) and *Lophius budegassa* (black-bellied angler). *Lophius piscatorius* is the most widespread species and only about 1 in 1000 individuals are *Lophius budegassa*.

As a curiosity, it can be mentioned that the world's diabetics have a lot to thank the monkfish for, since insulin was first manufactured from the pancreas of the monkfish.

Fishery

Fishing for monkfish takes place the entire year along the Norwegian coast. Monkfish are primarily fished with large-mesh gillnets, but also with bottom otter trawl and bottom-set longlines.

Sustainability

Fishing for monkfish is not subject to a quota but is regulated through closed seasons and gillnet limitations. Fishing for monkfish is prohibited north of 64°N from 20 December to 20 May and in the area 62°N–64°N between 1 March and 20 May. The largest quantity of gillnets permitted in fishing for monkfish is 500 gillnets, with a maximum individual gillnet size of 2.75 metres. Fishing for monkfish with a trawl is prohibited, except for up to 15 % by-catch with large-mesh trawls and 0.5 % with small-mesh trawls. Up to 10 % by-catch is permitted with shrimp trawls.

SPECIES

Lophius piscatorius – Monkfish

FAMILY

Lophiidae – Monkfish family

PRODUCTS

- ▶ Fresh (fillet and whole)
- ▶ Frozen (fillet and whole)

SIZE

Up to 2 m long and 100 kg

RANGE

Along the entire Norwegian coast

SEASON

Entire year

FEEDS ON

Fish, crustaceans and octopus

OTHER NAMES

- ▶ **Latin:** *Lophius piscatorius*
- ▶ **English:** Angler
- ▶ **Norwegian:** Breiflabb
- ▶ **French:** Baudroie commune
- ▶ **German:** Seeteufel
- ▶ **Danish:** Havtaske
- ▶ **Spanish:** Rape
- ▶ **Finnish:** Merikrotti
- ▶ **Greek:** Vatrochópsaro
- ▶ **Italian:** Rana pescatrice
- ▶ **Icelandic:** Skötuselur
- ▶ **Japanese:** Anko
- ▶ **Dutch:** Zeeduivel
- ▶ **Portuguese:** Tamboril
- ▶ **Polish:** Zabnica
- ▶ **Swedish:** Marluk
- ▶ **Turkish:** Fener baliği
- ▶ **Serbo-Croatian:** Grdobina



The ICES assesses the stock of monkfish in the North Sea and Skagerrak based on measurements in the area west of Scotland. The stock has had a positive trend in recent years, and it is considered to be in good condition. The Norwegian Institute of Marine Research presumes that the monkfish stock north of Stad is connected to a certain degree with the stock in the North Sea.

Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. The control system consists of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Nutritional content

Monkfish is a lean fish rich in:

- **Protein**, which builds and maintains all the cells in the body.
- **Vitamin A**, which is involved in providing good vision and a good immune system.
- **Selenium**, an important element in the enzymes that combat harmful chemical processes in the body.

Applications/uses

Monkfish flesh is white and firm, with a taste reminiscent of lobster. It is rich in fibre and very useful. Monkfish can be fried and boiled, and they can be prepared with many different spices.

You can read more about monkfish here:

<http://www.imr.no/temasider/fisk/breiflabb/nb-no>

NUTRITIONAL CONTENT

Nutritional content in 100 g monkfish (edible food):

Energy: 272 kJ / 64 kcal

Nutrients:

Protein:	15.8 g
Fat:	0.1 g
Saturated fatty acids:	0 g
Trans unsaturated fatty acids:	0 g
Cis-mono unsaturated fatty acids:	0 g
Cis-poly unsaturated fatty acids:	0 g
Omega-3:	0 g
Cholesterol:	25 mg

Vitamins:

Vitamin A:	80 RAE
Vitamin B12:	0.23 mg
Vitamin D:	1 µg
Riboflavin:	0.06 mg

Minerals:

Iron:	0 mg
Selenium:	30 µg

More information about nutritional content will be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/fisk-og-skalldyr-g4/breiflabb-raa-04.211>

Sprattus sprattus – European sprat

The sprat is regarded by many people as a natural part of breakfast at Christmas and Easter, because it tastes so good with eggs. The sprat differs from ordinary herring with its sharp keel under the abdomen, which is probably why the Swedes call it *skarpsill* (*sharp herring*). It is rich in omega-3 and vitamins D and B12 and is mostly used in the tinning industry as sardines and anchovies.



Biology

The sprat is a pelagic shoaling fish that lives in open waters. The sprat resembles a small herring but can be distinguished from herring by looking at the abdomen, where the scales form a sharp ridge. It has a greenish colour on the back, and the rest of the body is silver in colour. It lives on the surface and down to a depth of 1000 metres. At night when it is dark, it migrates up to the surface, and in the summer when it is light out, it stays high in the water, often near or at the surface. The sprat can be up to 19.5 cm long and 54 gram in weight, and it is seldom more than 5 years old. In Norwegian waters, there are two stocks: ocean sprat, which are widespread in the North Sea/Skagerrak and Kattegat, and coastal and fjord sprat.

The most important spawning areas in Norwegian waters are the eastern part of the Skagerrak coast and in Oslo Fjord, but spawning also takes place in other fjords. The sprat spawns in the period February–July. It thus has a long spawning period in which it spawns in several rounds in a period of 2–3 months. The sprat spawns in pelagic waters near the surface, and the eggs and larvae are carried with the ocean current to the maturing and feeding areas. The sprat becomes sexually mature when it is 1–2 years old and it grows rapidly. In the course of its first autumn, it can be 9–10 cm. The sprat feeds on zooplankton and is itself an important food source for other fish species.

Fishery

Sprat fishing takes place in January and from August–December. The catch is put in "traps" or seines for at least three days in order to empty the intestines before the fish go to the factories. The sprat is fished in the North Sea, Skagerrak and Norwegian coastal areas and fjords. Usual fishing gear is ring nets and purse seines, but also industrial trawls.

Sustainability

Sprats in the North Sea have been regulated based on consideration for the North Sea herring stock (rules for maximum mixing, by-catch quota, etc.) Licences and regulations (on regulation of fishing for sprats) determine and regulate whether fishing may occur in given areas and zones. The ICES considers the sprat stock in the North Sea as vigorous.

Sprats east of Lindesnes are managed through a quota agreement with the EU (the Skagerrak Agreement). The Norwegian coastal fishing for sprat west of Lindesnes is not regulated by quota. The annual catch quantity is agreed between the Norwegian Herring Sales Association and the tinning industry. There is no estimate of the sprat stock along the coast and in the fjords.

SPECIES

Sprattus sprattus – European sprat

FAMILY

Clupeidae – Herring family

PRODUCTS

Whole fish (Fresh, frozen and tinned).
The European sprat is also used as an industrial fish, for the meal and oil industry.

SIZE

Up to 19.5 cm and 54 grams

RANGE

From the Black Sea to Finnmark, in coastal and fjord areas along the coast of Norway, but rarely north of Helgeland. The most important areas are the Baltic Sea, the North Sea and the Skagerrak and Kattegat straits.

SEASON

August–January

FEEDS ON

Zooplankton

OTHER NAMES

- ▶ **Latin:** *Sprattus sprattus*
- ▶ **Norwegian:** Brisling
- ▶ **French:** Sprat, esprot
- ▶ **German:** Sprotte
- ▶ **Danish:** Brisling
- ▶ **Spanish:** Espadín
- ▶ **Finnish:** Kilohaili
- ▶ **Greek:** Sardella
- ▶ **Italian:** Papalina
- ▶ **Icelandic:** Brislingur
- ▶ **Dutch:** Sprot
- ▶ **Portuguese:** Espadilha
- ▶ **Polish:** Szprot
- ▶ **Swedish:** Skarpsill
- ▶ **Turkish:** çaça- platika
- ▶ **Serbo-Croatian:** Papalina



Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. The control system consists of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Nutritional content

The sprat is a fat fish, and it is especially rich in:

- ▶ **Protein**, which builds and maintains all the cells in the body.
- ▶ **Marine omega-3 fatty acids**, which prevent cardiovascular disease and are important for the development of the brain.
- ▶ **Vitamin D**, which is necessary for the right calcium balance in the body and which thus contributes to maintaining and strengthening the skeleton.

Applications/uses

The sprat is an important raw material for industry, where it is used for anchovy production, among other things. In Norway, tins of sprat are sold as toppings under the names *sardin* (*sardines*) and *ansjos* (*anchovies*). Fresh sprat can be baked and grilled.

You can read more about the European sprat here:

http://www.imr.no/temasider/fisk/brisling/brisling_i_nordsjoen/nb-no

NUTRITIONAL CONTENT

Nutritional content in 100 g raw European sprat (edible portion):

Energy:	862 kJ / 208 kcal
---------	-------------------

Nutrients:

Protein:	12.4 g
Fat:	17.6 g
Saturated fatty acids:	4.4 g
Trans unsaturated fatty acids:	0 g
Cis-mono unsaturated fatty acids:	6.8 g
Cis-poly unsaturated fatty acids:	4.1 g
Omega-3 fatty acids:	4.1 g
Cholesterol:	57 mg

Vitamins:

Vitamin A:	150 RAE
Vitamin B12:	7 µg
Vitamin D:	18.7 µg
Folate:	9 µg
Riboflavin:	0.15 mg

Minerals:

Iron:	0.8 mg
Selenium:	10 µg

More information about nutritional content will be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/fisk-og-skalldyr-g4/brisling-raa-04.003>

Brosme brosme – Tusk

Tusk belong to the cod family but differ from their relatives with their continuous dorsal fin. It is a lean fish with a high protein content. With its mild, lobster-like taste, it is well-suited to stir-frys, for example.



Biology

Tusk is a fish species in the cod family. It is recognisable by its extended body shape, the barbel under the chin, one continuous dorsal fin, a greyish/brownish back and a greyish white underside. The fins are brown and white on the tip. The tusk is a bottom-dwelling species which prefers rocky bottoms on the continental shelf and the slope from 100 to 1000 metres, but it is most common from depths of 200–500 metres in deep fjords. The adults live in deep areas, while the young fish live in quite shallow areas. Tusk feed on fish, but also on crayfish, squat lobsters and prawns. They can be up to 1.1 metre and 15 kg and can probably live to be more than 20 years old.

The tusk becomes sexually mature relatively late, at the age of 8–10. It spawns in the period April–June, and the spawning areas are off the coast of Southern and Central Norway and south and south-west of Iceland and the Faroe Islands.

Fishery

Tusk are fished year round in the North sea, along the Norwegian coast and in the Barents Sea. They are mainly fished as by-catch with bottom otter trawls, bottom-set longlines and bottom-set gillnets.

Sustainability

In the Norwegian zone, there is no quota regulation of fishing for tusk for Norwegian vessels. For vessels from other countries, annual quotas are set in the Norwegian zone.

Tusk are considered to have a good utilisation pattern without a recruitment deficiency. The wide distribution both at sea and along the coast and in fjords indicates that the probability of extirpation is very small.

Food safety and quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. The control system consists of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

A quality standard has been developed for Norwegian fresh tusk (NS 9442:2013) which is intended to ensure that the quality requirements are met.

SPECIES

Brosme brosme – Tusk

FAMILY

Gadidae – Cod family

PRODUCTS

- ▶ Fresh and frozen fillet
- ▶ Salted (fillet and whole)
- ▶ Salted and dried (whole)
- ▶ Dried (whole)

SIZE

Up to 1.1 m and 15 kg

RANGE

From Ireland to Iceland, in the Skagerrak and Kattegat straits, western Barents Sea, North West Atlantic, on the Norwegian continental shelf and in the fjords

SEASON

Entire year

FEEDS ON

Fish, but also Norway lobster, squat lobster and prawns

NAMES IN OECD LANGUAGES

- ▶ **Latin:** *Brosme brosme*
- ▶ **English:** Cusk
- ▶ **Norwegian:** Brosme
- ▶ **French:** Brosme
- ▶ **German:** Lumb
- ▶ **Danish:** Brosme
- ▶ **Spanish:** Brosmio
- ▶ **Finnish:** Keila
- ▶ **Italian:** Brosmio
- ▶ **Icelandic:** Keila
- ▶ **Dutch:** Lom
- ▶ **Portuguese:** Bolota
- ▶ **Polish:** Brosma
- ▶ **Swedish:** Lubb



Nutritional content

Tusk is a lean fish which is especially rich in:

- **Protein**, which builds and maintains all the cells in the body.
- **Vitamin B₁₂**, which is important for the body's production of new cells, including red blood cells, and which can contribute to preventing anaemia.
- **Selenium**, an important element in the enzymes that combat harmful chemical processes in the body.

Applications/uses

Tusk has a chalk-white and firm flesh with a mild taste of lobster and cod. It can be prepared in small pieces, as in stir-frying. The flesh is succulent and fine, and in addition to fried dishes it is well-suited to baked dishes. Lightly salted fillets can be boiled or used in various dishes.

You can read more about tusk here:

<http://www.imr.no/temasider/fisk/brosme/nb-no>

NUTRITIONAL CONTENT

Nutritional content in 100 g raw tusk (edible portion):

Energy:	281 kJ / 66 kcal
---------	------------------

Nutrients:

Protein:	16.1 g
Fat:	0.2 g
Saturated fatty acids:	0 g
Trans unsaturated fatty acids:	0 g
Cis-mono unsaturated fatty acids:	0 g
Cis-poly unsaturated fatty acids:	0.1 g
Omega-3 fatty acids:	4.1 g
Cholesterol:	53 mg

Vitamins:

Vitamin A:	2 µg
Vitamin B ₁₂ :	1 µg
Vitamin D:	0 µg
Riboflavin:	0.15 mg
Folate:	2 µg

Minerals:

Iron:	0.1 mg
Selenium:	30 µg
Iodine:	-

More information about nutritional content will be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/fisk-og-skalldyr-g4/brosme-raa-04.004>

Trachurus trachurus – Horse mackerel

The horse mackerel is a silver-coloured shoaling fish found in northern waters from the North Sea to the Norwegian Sea off Nord-Trøndelag. The season is mainly from August to October.



Biology

The horse mackerel is characterised by the plate-shaped scales along the lateral line. It has barbs and an obvious dark spot on the back edge of the gill cover. The horse mackerel is a thermophilic, pelagic shoaling fish which stays between depths of 0 to 100 metres. In the winter, the horse mackerel lives on bottom-dwelling animals, and in the summer it eats plankton, fry, herring, small sprats and octopus.

In the North-east Atlantic, the horse mackerel is widespread from Africa to the North Sea. In the European fishing areas, there are three stocks of horse mackerel which have been named after their spawning areas: the western stock, the southern stock and the North Sea stock. The southern stock spawns off Spain and Portugal, the western spawns west of Ireland and Great Britain, and the North sea stock spawns in the southern North Sea. When the horse mackerel has spawned, it wanders into the Norwegian Sea and the North sea to find food.

Fishery

The Norwegian fishery for horse mackerel takes place in the North Sea and the Norwegian Sea, with the high season from August to October. Usual fishing gear is purse seines or pelagic trawls.

Sustainability

Each year, Norwegian and international research provides a basis for advice on sustainable catch. Norway then conducts negotiations on quotas with other countries that fish for the same stocks. Based on this, the Norwegian Ministry of Trade, Industry and Fisheries allocates the Norwegian share to Norwegian fishers. It is the authorities who grant a licence to everyone who participates in the industry, and provisions regarding quota allocation and conduct of the fishery are determined through annual regulations for each individual type of fish (control regulations).

The horse mackerel fishery in the Norwegian zone in practice is not subject to a quota. The ICES makes stock assessments for horse mackerel in the North Sea and the Skagerrak and Kattegat straits. The stock is considered low, but relatively stable.

SPECIES

Trachurus trachurus – Horse mackerel

FAMILY

Carangidae – Horse mackerel family

PRODUCTS

- ▶ Fresh
- ▶ Frozen
- ▶ Smoked
- ▶ Tinned

SIZE

Maximum 40 cm and 1.6 kg

RANGE

In the North-east Atlantic, the horse mackerel is distributed from Africa to approximately 66 °N, including the Mediterranean Sea, the Black Sea and the strait of Skagerrak.

SEASON

August–December

FEEDS ON

Bottom-dwelling animals in the winter and plankton, fry, herring, small sprats and octopus in the summer.

OTHER NAMES

- ▶ **Latin:** *Trachurus trachurus*
- ▶ **Norwegian:** Hestmakrell
- ▶ **French:** Chinchard
- ▶ **German:** Bastardmakrele
- ▶ **Danish:** Hestemakrel
- ▶ **Spanish:** Jurel
- ▶ **Finnish:** Piikkimakrilli
- ▶ **Greek:** Savrídi
- ▶ **Italian:** Suro
- ▶ **Icelandic:** Brynstirtla
- ▶ **Japanese:** Muroaji
- ▶ **Dutch:** Horsmakreel
- ▶ **Portuguese:** Carapau
- ▶ **Polish:** Ostrobok
- ▶ **Swedish:** Taggmakrill
- ▶ **Turkish:** Istavrit
- ▶ **Serbo-Croatian:** Trnobok



Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. The control system consists of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Nutritional content

Horse mackerel are an oily fish and are rich in marine omega-3 fatty acids. The fat content of the horse mackerel depends on the season. It is especially rich in:

- **Protein**, which builds and maintains all the cells in the body.
- **Marine omega-3 fatty acids**, which prevent cardiovascular disease and are important for the development of the brain.
- **Vitamin B₁₂**, which is important for the body's production of new cells, including red blood cells. Vitamin B₁₂ can contribute to preventing anaemia.

Applications/uses

Horse mackerel are primarily exported from Norway frozen or fresh. They are prepared in the same manner as sardines and are sold fresh or smoked in Southern Europe. They are also sold to a great extent in tins, and they are used as industrial fish in meal or oil production.

You can read more about horse mackerel here:

<http://www.imr.no/temasider/fisk/makrell/taggmakrell/nb-no>

The information has been obtained from:

Pethon, P. (1998). Aschehougs store fiskebok. 4th edition Oslo: Aschehoug.

NUTRITIONAL CONTENT

Nutritional content per 100 g horse mackerel (edible portion):

Energy:	974 kJ / 232 kcal
---------	-------------------

Nutrients:

Protein:	18.7 g
Fat:	15.8 g
Saturated fatty acids:	4.5 g
Mono unsaturated fatty acids:	6 g
Poly unsaturated fatty acids:	3.2 g
Omega-3:	0 g
Cholesterol:	52 mg

Vitamins:

Vitamin E:	1.2 mg
Folate:	7 µg
Riboflavin:	0.15 mg
Vitamin B ₁₂ :	6 µg

Minerals:

Iron:	1.4 mg
Selenium:	0.1 mg

More information about nutritional content will be found at:

www.nifes.no/en/prosjekt/seafood-data

Source: NIFES

Homarus gammarus – European lobster

The lobster is one of the largest crustaceans in Norwegian waters and is considered a delicacy. It is usually enjoyed au naturel, but the possibilities for using it in cold and hot dishes are endless.



Biology

The lobster has five pairs of legs, and one of them constitute the claws. One claw is larger than the other and is used to crush shellfish, while the smaller claw is used as a weapon. The lobster is dark blue in colour, but the colour can vary and depends on the place it lives. The lobster's natural range is from the Mediterranean Sea to the Arctic Circle. In Norwegian waters, lobsters are abundant from the Swedish border to Trøndelag, but they are found sporadically in Nordland. The lobster lives at a depths of 5 to 50 metres and mainly on hard bottoms. It finds hiding places on hard bottoms in mounds of stones, clefts or holes under large stones. If it finds itself on a soft bottom, it digs holes in the bottom to conceal itself. It prefers temperatures of 10–20 °C. The females can be up to 70 years old, while the males can be as old as 40.

During the day the lobster lies concealed, and at night it actively hunts for prey. The lobster feeds on crustaceans, snails, polychaetes and bivalves. Spawning occurs in the summer when the lobster moults. The eggs attach to the swimmerets under the hind part of the body, and after one year the eggs hatch. After hatching, the lobster larvae live freely in the water column, and during this period they moult three times. When it has reached a total length of approximately 3–4 mm, it will change its swimming behaviour and sink down to the bottom.

Lobsters are also farmed in Norway, and this has been successful. In addition, setting out and sea ranching of lobsters are done to increase the stock. Sea ranching with lobsters requires a licence, and a right to recapture is granted for a specified area. Sea ranching is also done as a regional and national measure.

Fishery

The lobster season goes from 1 October to 30 November for the coastal stretch from the Swedish border up to and including Sogn og Fjordane. For the rest of Norway, the season goes from 1 October to 31 December.

Lobsters are caught along the Norwegian coast all the way to Trøndelag, and the only legal fishing gear is lobster traps.

SPECIES

Homarus gammarus – European lobster

FAMILY

Nephropidae

PRODUCTS

- ▶ Live
- ▶ Cooked
- ▶ Deep-fried
- ▶ Tinned

SIZE

Rarely caught with back shield length over 140 mm (38 cm total length)

RANGE

Along the coast from the Swedish border to Trøndelag and sporadically in Nordland

SEASON

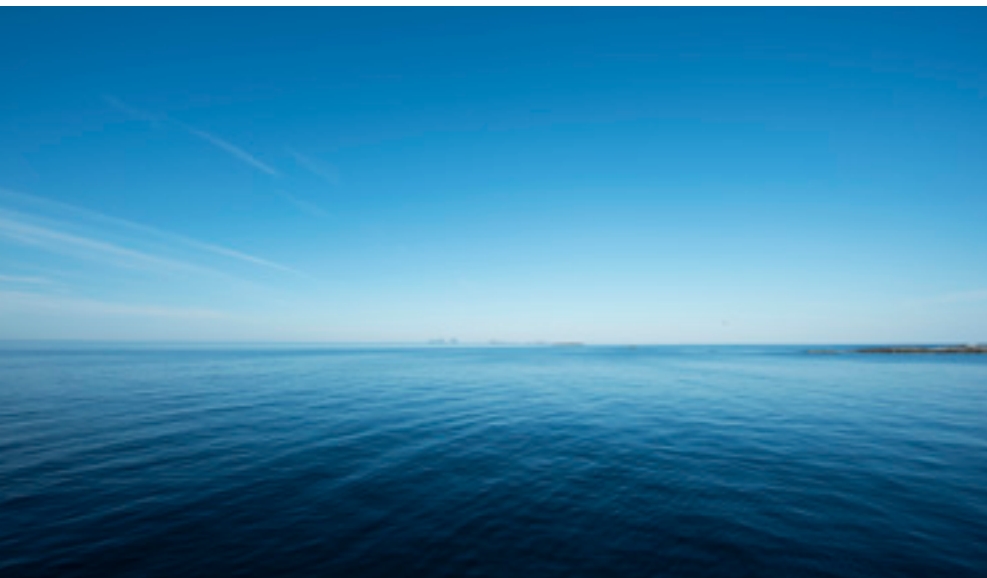
October–December

FEEDS ON

Crustaceans, snails, polychaetes and bivalves

NAMES IN OECD LANGUAGES

- ▶ **Latin:** *Homarus gammarus*
- ▶ **English:** European lobster
- ▶ **Norwegian:** Europeisk hummer
- ▶ **French:** Homard
- ▶ **German:** Hummer
- ▶ **Danish:** Hummer
- ▶ **Spanish:** Bogavante
- ▶ **Finnish:** Hummeri
- ▶ **Greek:** Astakós
- ▶ **Italian:** Astice
- ▶ **Icelandic:** Humar
- ▶ **Dutch:** Kreeft
- ▶ **Portuguese:** Lavagante
- ▶ **Polish:** Homar
- ▶ **Swedish:** Hummer
- ▶ **Turkish:** Istakoz
- ▶ **Serbo-Croatian:** Rarog



Sustainability

In order to rebuild the stock of European lobster, stringent catch rules have been introduced. It is prohibited to catch lobster with roe, and the minimum size for lobster is 25 cm. An escape opening of 60 mm is required in lobster traps, so that undersize lobsters can get out of the gear. Commercial fishers may fish with up to 100 traps, while recreational fishers have a limit of 10 traps per person/vessel. Sanctuaries and special protection zones have been established for catching lobsters.

Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. The control system consists of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Nutritional content

Lobster is rich in:

- **Protein**, which builds and maintains all the cells in the body.
- **Vitamin B₁₂**, which is important for the body's production of new cells, including red blood cells, and which can contribute to preventing anaemia.
- **Selenium**, an important element in the enzymes that combat harmful chemical processes in the body.
- **Iodine**, which regulates the body's metabolism and is important for normal growth and development of the nervous system.

Applications/uses

Cooked lobster is used most of the time au naturel, but it can be prepared as a separate hot or cold dish just as well. Au naturel, it is tasty with a well-spiced dressing instead of the traditional mayonnaise.

You can read more about lobster here:

<http://www.fiskeridir.no/Fritidsfiske/Noen-utvalgte-arter/Hummer>

http://www.imr.no/temasider/skalldyr/hummer/europeisk_hummer/nb-no

NUTRITIONAL CONTENT

Nutritional content per 100 g lobster

Energy: 280 kJ / 66 kcal

Nutrients:

Protein:	15.2 g
Fat:	0.6 g
Saturated fatty acids:	0.1 g
Trans unsaturated fatty acids:	0 g
Cis-mono unsaturated fatty acids:	0.2 g
Cis-poly unsaturated fatty acids:	0.2 g
Omega-3:	0.2 g
Cholesterol:	93 mg

Vitamins:

Vitamin A:	0 RAE
Vitamin B ₁₂ :	1 µg
Vitamin E:	4.3 alpha-TE
Riboflavin:	0.06 mg

Minerals:

Iron:	0.7 mg
Selenium:	80 µg
Iodine:	700 µg

More information about nutritional content will be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/skalldyr-fiskeinnmat-g4.3/hummer-kokt-04.054>

Melanogrammus aeglefinus – Haddock

The haddock belongs to the cod family and has a delicate, lean flesh with good bonding ability. It is often used in processed fish and is one of the most common types of fish in the classic dish *fish and chips*.



Biology

The haddock is easily recognisable with the black spot under the leading dorsal fin, the black stripe along the body and the small barbel on the chin. The haddock is a bottom fish and is found at depths between 40 and 300 metres. In Norway, a distinction is made between two different haddock stocks: North East Arctic haddock, which are found north of 62° N, and the haddock stock in the North Sea and the strait of Skagerrak. The North East Arctic haddock stock, which is found along the entire Norwegian coast north of Stad, in the Barents Sea and on the west side of Svalbard, constitutes the majority of the fisheries. An immature haddock grows approximately 7–9 cm per year, but the growth varies from year to year and from area to area. The haddock becomes sexually mature when it is 40–60 cm long and 4–7 years old. It can be up to 20 years old.

The spawning period is between March and July, and haddock spawn widely over deep water. The most important spawning area is the west side of the bank area known as Tromsøflaket. Other important spawning areas in Northern Norway are off the bank areas of Røstbanken and Vesterålsbankene, but haddock also spawn along the Eggakanten area off Møre og Romsdal.

The haddock lives on various types of bottom-dwelling animals. The younger fish eat plankton found in the upper part of the ocean, while the older and larger fish eat fish eggs, prawns and other small fish. Even though the haddock is a bottom feeder, it can also be found higher up in the water column.

Fishery

Haddock are fished throughout the entire year. The fishing takes place in coastal areas and on the fishing banks to the north in the eastern portions of the Norwegian Exclusive Economic Zone. Bottom otter trawls, Danish seines, lines and gillnets are the most common types of fishing gear.

Sustainability

Each year, Norwegian and international research provides a basis for advice on sustainable catch in the North-eastern Atlantic Ocean. Based on the advice from the ICES, Norway negotiates on the quota allocation with other countries that fish for the same stocks. When the quota has been determined, the Norwegian Ministry of Trade, Industry and Fisheries allocates the Norwegian share to Norwegian fishers. It is the authorities who grant a licence to participants in the industry, and provisions regarding quota allocation and conduct of the fishery are determined through annual regulations for each individual type of fish (control regulations).

SPECIES

Melanogrammus aeglefinus – Haddock

FAMILY

Gadidae – Cod family

PRODUCTS

- ▶ Fresh (fillet and whole)
- ▶ Frozen (fillet and whole)
- ▶ Dried (pieces, fillet and whole)
- ▶ Smoked (fillet)
- ▶ Salted (whole)

SIZE

Up to 110 cm and 14 kg

RANGE

Along the entire Norwegian coast north of Stad, in the Barents Sea, on the west side of Svalbard and in the North Sea/Skagerrak

SEASON

Entire year

FEEDS ON

Bottom-dwelling organisms, fish and eggs of herring and capelin

NAMES IN OTHER LANGUAGES

- ▶ **Latin:** *Melanogrammus aeglefinus*
- ▶ **Norwegian:** Hyse
- ▶ **French:** Églefin
- ▶ **German:** Schellfisch
- ▶ **Danish:** Kuller
- ▶ **Spanish:** Eglefino
- ▶ **Finnish:** Kolja
- ▶ **Greek:** Gádós sp
- ▶ **Italian:** Asinello
- ▶ **Icelandic:** Ýsa
- ▶ **Dutch:** Schelvis
- ▶ **Portuguese:** Arinca
- ▶ **Polish:** Plamiak
- ▶ **Swedish:** Kolja
- ▶ **Serbo Croatian:** Ugotica



The ICES has classified the North East Arctic haddock stock as having a high reproductive capacity and a sustainable utilisation. According to the ICES, the stock in the North Sea and in Skagerrak is in good condition and is sustainably harvested.

The haddock fishery north of 62° N has the following certifications:

- **Marine Stewardship Council (MSC)** – MSC's fishery certification programme and environmental label for seafood certifies and rewards sustainable fishing.
- **KRAV** – The KRAV label is Sweden's best known environmental label for food, based on an organic basis with particularly high requirements for animal welfare, health, social responsibility and environmental impact.

Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. The system consists of several bodies which jointly monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Nutritional content

Haddock is a lean fish which is rich in:

- **Protein**, which builds and maintains all the cells in the body.
- **Vitamin B₁₂**, which is important for the body's production of new cells, including red blood cells, and which can contribute to preventing anaemia.
- **Selenium**, an important element in the enzymes that combat harmful chemical processes in the body.
- **Iodine**, which regulates the body's metabolism and is important for normal growth and development of the nervous system.

Applications/uses

Haddock has a firm consistency and a white colour to the flesh. The flesh is quite coarse and granular with a good bonding ability which makes it well suited for processed fish such as fish cakes. Haddock can also be fried, smoked, dried and boiled.

You can read more about haddock here:

http://www.imr.no/filarkiv/2016/05/hyse_noa.pdf/nb-no

<http://www.matvaretabellen.no/fisk-og-skalldyr-g4/hyse-kolje-raa-04.110>

NUTRITIONAL CONTENT

Nutritional content per 100 g haddock (edible food):

Energy: 290 kJ / 68 kcal

Nutrients:

Protein:	16.6 g
Fat:	0.2 g
Saturated fatty acids:	0 g
Cis-mono unsaturated fatty acids:	0 g
Cis-poly unsaturated fatty acids:	0.1 g
Omega-3:	0.1 g
Cholesterol:	46 mg

Vitamins:

Vitamin A:	2 RAE
Vitamin D:	0.5 µg
Riboflavin:	0.11 mg
Vitamin B ₁₂ :	2 µg

Minerals:

Iron:	0.1 mg
Selenium:	30 µg
Iodine:	320 µg

More information about nutritional content can be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/fisk-og-skalldyr-g4/hyse-kolje-raa-04.110>

Salvelinus alpinus

– Norwegian Arctic Char

The Arctic char arrived in Norway several thousand years ago, when the ice cap covering the land retreated. The fish adapted to the cold, rough surroundings that characterised Arctic Norway, and it is today considered Norway's oldest and the world's northernmost freshwater fish.



Biology

The Norwegian Arctic Char has an oblong body shape and a small head. It has a silvery colour on its body and a darker colour on its back. Norwegian Arctic Char is the commercial name for Norwegian farmed Arctic char. In its wild state, a distinction is made between two types of Arctic char: the anadromous marine Arctic char which migrates to the sea, and the stationary freshwater Arctic char which lives its entire life in freshwater. Norwegian Arctic Char is an Arctic species which thrives at low temperatures. About 60–70 per cent of Norwegian Arctic char farming takes place in Nordland.

Aquaculture

The eggs from brood stock are fertilised in October, when the temperature in the water where the fish are located is 7 °C. The fertilised eggs are put in hatching trays and hatch after approximately 480 degree days. In its initial stage of life, the fry nourish themselves on the yolk sac which they have on their stomachs. When that has been consumed, they change to being fed. For this entire stage, the temperature is under 7 °C.

At the start of the feeding, the fry are transferred to a smaller farming tank in order to gradually accustom themselves to bright surroundings. Eventually the fry are sorted according to size to avoid cannibalism. When the fish have reached 50–200 g in size, they are ready to be transferred to larger units, either in brackish water in tight pens in the ocean facility or in clean seawater in net bags.

Norwegian Arctic Char stay in seawater for approximately two months before being transferred back to pens located in brackish water. The fish are sorted, and when they have reached slaughter-ready size of 0.6–0.8 kg, the feeding ceases for seven days before they are slaughtered. This is done to increase the stress tolerance of the fish, reduce defecation in the water and improve hygiene during the slaughtering.

Sustainability

The relationship of Norwegian fish farming to the environment is primarily regulated by the Norwegian Aquaculture Act. The Act specifies that aquaculture is to be established, conducted and wound up in an environmentally-responsible manner. Aquaculture is supervised by various authorities, such as the Norwegian Food Safety Authority, the Norwegian Directorate of Fisheries, the Norwegian Coastal Administration and the Norwegian Water Resources and Energy Directorate.

SPECIES

Salvelinus alpinus – Norwegian Arctic Char

FAMILY

Salmonidae – Salmonid family

PRODUCTS

- ▶ Fresh (fillet and whole fish)
- ▶ Frozen (fillet and whole fish)
- ▶ Smoked (fillet)

SIZE

0.6–0.8 kg

RANGE

In pens located in brackish water

SEASON

Available year round

FEEDS ON

Pellets

NAMES IN OECD LANGUAGES

- ▶ **Latin:** *Salvelinus alpinus*
- ▶ **Norwegian:** Ishavsrøye
- ▶ **French:** Omble chevalier
- ▶ **German:** Saibling
- ▶ **Danish:** Fjældørred
- ▶ **Spanish:** Salvelino
- ▶ **Finnish:** Nieriä
- ▶ **Italian:** Salvelino artico
- ▶ **Icelandic:** Bleikja
- ▶ **Dutch:** Riddervis
- ▶ **Polish:** Golec zwyczajny
- ▶ **Swedish:** Röding



Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. The control system consists of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

A quality standard has been defined for Norwegian Arctic Char (NS 9411:2011) which is intended to ensure that the quality requirements are met. The purpose of the standard is to promote good, stable quality of fresh Norwegian Arctic Char. Only fresh Norwegian Arctic Char which meets the requirements in the standard may be marked with the quality mark. The quality mark is the seller's commitment to a purchaser that the fish meets the quality requirements set by the standard. Approved enterprises which mark and sell fresh Norwegian Arctic Char under the trademark are responsible for the quality requirements being met.

Nutritional content

Norwegian Arctic Char has a lower fat content than other salmonids and is especially rich in:

- **Protein**, which builds and maintains all the cells in the body.
- **Vitamin A**, which contributes to good vision and immune response and is important for foetal development and reproductive capacity.
- **Vitamin B₁₂**, which is important for the body's production of new cells, including red blood cells, and which can contribute to preventing anaemia.

Applications/uses

The flesh has a reddish colour and firm consistency. Norwegian Arctic Char has a lower fat content than Atlantic salmon, which gives it a milder taste. This means that the Norwegian Arctic Char can easily be combined with various taste additives and accompaniments. The firm consistency of the flesh also provides many options when preparing the fish. Norwegian Arctic Char tolerates brief heating and can be fried, grilled, baked, smoked or boiled. It is also well-suited for being used raw in sushi and sashimi.

NUTRITIONAL CONTENT

Nutritional content per 100 g Arctic char (edible portion):

Energy: 546 kJ / 128 kcal

Nutrients:

Protein:	16.1 g
Fat:	7.1 g
Saturated fatty acids:	1.2 g
Trans unsaturated fatty acids:	0 g
Cis-mono unsaturated fatty acids:	3.2 g
Cis-poly unsaturated fatty acids:	1.2 g
Omega-3:	1.5 g
Cholesterol:	61 mg

Vitamins:

Vitamin A:	30 RAE
Vitamin B ₁₂ :	10 µg
Vitamin D:	6.9 µg
Folate:	26 µg
Riboflavin:	0.02 mg

Minerals:

Iron:	0.2 mg
Selenium:	30 µg
Iodine:	-

More information about nutritional content will be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/fisk-og-skalldyr-g4/roeye-raa-04.117>

Pecten maximus – Great scallop

In the cold, clear water of Norway, there is a protein-rich delicacy just beneath the intertidal zone, namely the great scallop. In Swedish, the species is called the *pilgrimsmussla* precisely because it migrates. In the course of a short time, an area that is almost empty of scallops can be filled with fully mature shells.



Biology

The great scallop is the largest of the Norwegian scallop species. It is characterised by the shell, which has a yellow-brown/brownish gleam on the flat part, while the curved part of the shell is yellow-white. The species is widespread along the coast of the north-eastern Atlantic Ocean and in Norway from the outer Oslo Fjord to Nordland. Scallops are found from just beneath the intertidal zone down to a depth of more than 100 metres. In Norwegian waters, the greatest occurrence has been recorded at depths between 5 and 30 metres in Trøndelag and in Nordland. The scallop often lives partially buried in coarse sand bottoms, usually in areas with some current.

Scallops are hermaphroditic, and the roe sac lies in a bow in front of the muscle. The orange part constitutes the eggs, while the grey-white part is the milt. The spawning itself takes place during the summer half of the year, and the larvae swim freely in the water column before they attach themselves after more than a month to a firm substrate. When the scallops reach a size of 10–15 mm, they attach themselves to the bottom. It takes between 4 and 5 years before the scallops have become large enough to be harvested. It is the water which transports food to the shells, and factors such as depth, tides and water movement affect the access of the shells to food.

Harvesting

The catch method for scallops in Norway is diving. Each scallop is picked by hand according to size. Through use of this catch method, careful treatment of the bottom fauna is ensured and that the shells have a minimum size of 10 cm. In other countries, dredges are used for the most part to catch scallops, but this method is little used in Norway because of unfavourable bottom conditions. A dredge takes with it everything that exists on the bottom, and it can harm other bottom-dwelling organisms, affect the environment on the bottom, damage the scallops and result in harvesting scallops that are less than 10 cm. Scallops are harvested year round, but they only have roe part of the year, and the time depends on the part of the country.

Research is being conducted on farming scallops, but is still at an early stage. Scallop farming has not commercial value for the time being. Farming of scallops falls under the category of sea ranching and is regulated pursuant to the Norwegian Sea Ranching Act.

SPECIES

Pecten maximus – Great scallop

FAMILY

Pectinidae – Scallops

PRODUCTS

- ▶ Fresh
- ▶ Frozen and gratinéed
- ▶ Frozen muscles
- ▶ Muscles in salt and sugar brine
- ▶ Live

SIZE

Up to 17 cm in diameter, but this is rare. Minimum size is 10 cm. Maximum weight is 500–600 g.

RANGE

Along the coast of the north-eastern Atlantic Ocean

SEASON

Year round, but it has roe only parts of the year, depending on part of the country

FEEDS ON

Phytoplankton, bacteria, other micro-organisms and dead organic material

NAMES IN OECD LANGUAGES

- ▶ **Latin:** *Pecten maximus*
- ▶ **English:** Great scallop, king scallop
- ▶ **Norwegian:** Stort kamskjell
- ▶ **French:** Coquille St. Jacques
- ▶ **German:** Kamm-muschel
- ▶ **Danish:** Kammusling
- ▶ **Spanish:** Vieira
- ▶ **Finnish:** Kampasimpukka
- ▶ **Greek:** Cteni
- ▶ **Italian:** Ventaglio-pettine maggiore
- ▶ **Icelandic:** Hörpudiskur
- ▶ **Japanese:** Hotategai
- ▶ **Dutch:** Grote mantel
- ▶ **Portuguese:** Vieira
- ▶ **Polish:** Przegrzebki
- ▶ **Swedish:** Kammussla
- ▶ **Turkish:** Tarak
- ▶ **Serbo-Croatian:** Kapica



Sustainability

The Norwegian Institute of Marine Research has previously conducted survey cruises to study the age composition in the stock in Trøndelag. The survey showed that both reproductive capacity and recruiting are good and vary little from year to year. This indicates that harvesting of scallops is sustainable managed.

Commercial fishing for scallops is limited to commercial fishers with registered vessels and crews. Catching scallops 10 cm in diameter is prohibited. Some suppliers of scallops are certified by Friend of the Sea.

Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. The control system consists of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Unlike other types of bivalves, scallops may be harvested outside areas classified by the Norwegian Food Safety Authority. Nevertheless, the same requirements are imposed for microbiological content as in bivalves from classified areas. Scallop producers must be able to document that the requirements are followed and that the scallops are safe to eat. The Norwegian Food Safety Authority conducts regular inspections of production areas.

Nutritional content

Scallops are lean food which is rich in:

- ▶ **Protein**, which builds and maintains all the cells in the body.
- ▶ **Vitamin D**, which is necessary for the right calcium balance in the body and which contributes to maintaining and strengthening the skeleton.
- ▶ **Vitamin B12**, which is important for the body's production of new cells, including red blood cells, and which can contribute to preventing anaemia.
- ▶ **Selenium**, an important element in the enzymes that combat harmful chemical processes in the body.

Applications/uses

The edible parts in scallops are the white muscle and the roe/milt or the gonads. Scallops may be eaten raw, slightly steamed, fried or gratinéed, and are ideally served in the shell.

You can read more about scallops here:

http://www.mattilsynet.no/mat_og_vann/produksjon_av_mat/fisk_og_sjomat/skjell_mat/kommersiell_hosting_og_omsetning_av_levende_skjell.3961
<http://www.imr.no/filarkiv/2016/05/kamskjell.pdf/nb-no>
http://www.miljodirektoratet.no/no/Tema/Vann_og_hav/Pavirkning-i-havet-og-langs-kysten/Akvakultur/Havbeite/

NUTRITIONAL CONTENT

Nutritional content per 100 g raw great scallop (edible food)

Energy: 345 kJ / 81 kJ

Nutrients:

Protein:	17.9 g
Fat:	1.1 g
Saturated fatty acids:	0.2 g
Cis-mono unsaturated fatty acids:	0 g
Cis-poly unsaturated fatty acids:	0.4 g
Omega-3:	0.3 g
Cholesterol:	116 mg

Vitamins:

Vitamin A:	4 RAE
Vitamin B12:	4 µg
Vitamin D:	4.2 µg
Riboflavin:	0.09 mg

Minerals:

Iron:	0.6 mg
Selenium:	20 µg
Iodine:	4 µg

More information about nutritional content will be found at:

www.nifes.no/en/prosjekt/seafood-data

Paralithodes camtschaticus

– Red king crab

The red king crab is one of the largest crabs found, and it is easy to recognise. With its succulent and tasty flesh, king crab is a delicacy which can be prepared in many ways, in both cold and hot dishes.



Biology

The shield length of an adult king crab can be as much as 23 cm, and the weight up to 8–9 kg. The crab is a cold water species which thrives in temperatures between 1 and 4 °C, and it is found at depth from about 5 to 400 metres. It has a red colour, three pair of legs and a pair of claws which are extended. The males are larger than the females, and the sex can be determined by examining the underside of the hind part of the body. The male crab has a triangular, symmetric abdominal flap, while the female crab's abdominal flap is wide, asymmetric and covers most of the underside. The king crab has to shed its shell to become larger, and it moults regularly. The frequency and time for moulting depends on age and sex. The king crab can live up to age 20.

When the king crabs are going to mate, they migrate from deep to shallower areas. They mate in the spring, and after mating, spawning and hatching have been completed, they migrate back to deeper areas. The crabs become sexually mature when the shield length is about 11 cm, and they travel with the spawn on the outside of the body the entire year before the eggs are hatched in the spring. When the eggs hatch, the larvae have a pelagic stage which lasts about 45 days before they settle on the bottom in shallow water. The spawn stay there until they have reached a shield length of approximately 50 millimetres. It takes two to three years, and eventually as the crabs grow, they seek deeper water.

The king crab is an introduced species in the Barents Sea. It was put out by Russian researchers in the 1960s in order to establish a fishing resource. The crab was put out in the Kola Fjord at Murmansk and has gradually spread to all of the southern Barents Sea. Its natural range is the Bering Sea and the North Pacific.

Fishery

Fishing for king crab takes place the entire year. King crab are fished with traps, in the fjords and in coastal areas along East Finnmark. Fishing for king crab is done with the aid of small coastal vessels, which have a short distance to travel from catch area to landing facility.

SPECIES

Paralithodes camtschaticus – Red king crab

FAMILY

Lithodidae – King crabs

PRODUCTS

- ▶ Live
- ▶ Whole (raw or cooked)
- ▶ Clusters and sections (raw or cooked)
- ▶ Individual legs and claws

SIZE

Up to 23 cm (shield length) and 8 kg.

RANGE

Along coastal areas in Norway and at sea in the southern Barents Sea.

SEASON

Entire year

FEEDS ON

Bottom-dwelling animals and algae, especially chaetopods and small mussels.

OTHER NAMES

- ▶ **Latin:** *Paralithodes camtschaticus*
- ▶ **Norwegian:** Rød kongekrabbe
- ▶ **French:** Crabe royal du Kamchatka
- ▶ **German:** Kamschatka-Krabbe
- ▶ **Spanish:** Cangrejo japonés
- ▶ **Danish:** Japan-Krabbe
- ▶ **Italian:** Granchio reale
- ▶ **Dutch:** Kamtsjatkakrab
- ▶ **Portuguese:** Caranguejo real
- ▶ **Finnish:** Kuningasrapu
- ▶ **Swedish:** Japansk trollkrabba



Sustainability

King crab in the Norwegian Exclusive Economic Zone (NEEZ) are managed by Norwegian authorities. The management has two goals: to maintain a long-term fishery within a limited area in East Finnmark which is quota-regulated and to limit the dispersal of king crab outside this area. Fishing in the area west of the North Cape is unrestricted in order to limit the dispersal of the species. The reason is a desire to avoid dispersal to spawning areas for codfish. In addition, research has shown that organisms in the bottom fauna are affected in areas where the crab has been present for long periods. The king crab stock is currently at a low level.

Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. The control system consists of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Regardless of which form king crab are sold in, the colour in raw condition must be evenly brown on the upper side and white or cream-coloured on the underside. The crab must be alive and in good condition while caught and produced or packed. In addition,, it must have abundant flesh and not have wounds and/or discolouration or scrapes on any parts of the shell, whether it involves the back shield, legs or claws. The crab must not have defects in the form of lacking entire legs and claws or parts of these.

Nutritional content

Red king crab is especially rich in:

- **Protein**, which builds and maintains all the cells in the body.
- **Vitamin B12**, which is important for the body's production of new cells, including red blood cells. Vitamin B12 can also contribute to preventing anaemia.
- **Selenium**, an important element in the enzymes that combat harmful chemical processes in the body.

Applications/uses

The flesh we eat in a king crab is found in the legs and claws in the "shoulder part" and in the tail. Crab flesh has a sweet taste and tastes so good that it is only necessary to boil the claws and then serve the crab as it is. Crab can also be used in many different ways and is perfect for frying and grilling in spices and other flavour additives.

More information about red king crab can be found here:

<http://www.imr.no/temasider/skalldyr/kongekrabbe/nb-no>
http://www.rafisklaget.no/portal/page/portal/RafisklagetDokumenter/Nettbutikk/Veiledning_Kongekrabbe_%201607_web.pdf

NUTRITIONAL CONTENT

Nutritional content per 100 g red king crab:

Energy: 351 kJ /84 kcal

Nutrients:

Protein: 18.29 g
 Fat: 0.60 g
 Saturated fatty acids: 0.090 g
 Trans unsaturated fatty acids: [MISSING NUMBER] g
 Cis-mono unsaturated fatty acids: 0.080 g
 Cis-poly unsaturated fatty acids: 0.130 g
 Omega-3: 0.141 g
 Cholesterol: 42 mg

Vitamins:

Vitamin A: 7 µg
 Vitamin B12: 9 µg
 Riboflavin: 0.043 mg
 Folate: 44 µg
 Vitamin B12: 9 µg

Minerals:

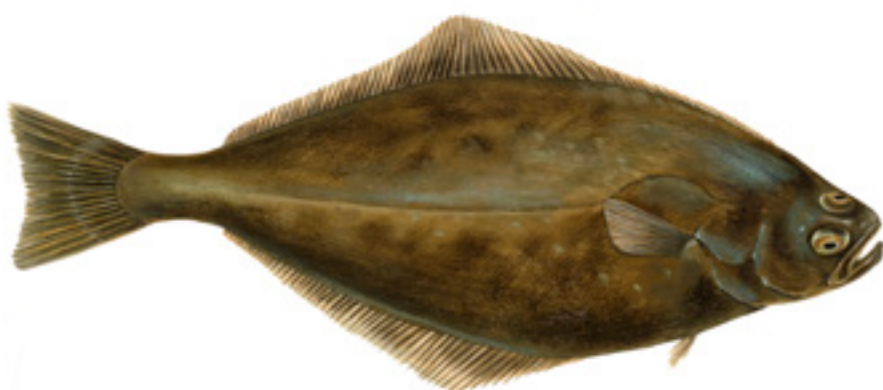
Iron: 0.59 mg
 Selenium: 36.4 µg
 Iodine: [MISSING NUMBER] µg

Source:

<https://ndb.nal.usda.gov/ndb/foods/show/4615?fgcd=&manu=&facet=&format=&count=&max=50&offset=&sort=default&order=asc&qlookup=red+king+crab&ds=>

Hippoglossus hippoglossus – Atlantic halibut

Ten-thousand-year-old rock carvings from Stone Age settlements along the Norwegian coast bear witness to how our ancestors honoured halibut. They called it the “holy fish” or the “fish god”, and the fisher population believed the halibut was a personification of the kind and wise Norse god *Balder*.



Biology

The halibut is the largest bony fish in Norwegian waters. The flat body has a small tail and a small head, and both eyes are located on the right side of the head. The underside is white and the upper side brown-grey. On live fish, the pigment on the upper side changes colour according to the surroundings. Young halibut live in rather shallow areas along the coast, while the older ones may live all the way down to 2000 metres. Atlantic halibut are distributed on both sides of the North Atlantic. They can be up to 60 years old.

Halibut tend to stay in one place and they often spawn within a very limited area. The spawning period is between December and March. The female may spawn up to 7 million eggs, either on or near the bottom of the sea. The eggs rise, and after about 18 days they hatch. The larvae initially have a normal fish body. Gradually they undergo a so-called eye migration and are transformed into flatfish. The fish will lie down with the left side towards the bottom and the right side up. The left eye then migrates to the upper side of the head.

Farming

Halibut production is currently being carried out by a small number of firms operating in Norway. The production starts on land in large tubs, where the eggs hatch after ten days. At first, the larvae lives off the yolk sac. When that has been eaten, they switch to eating the crustacean *Artemia* as live feed. Gradually they switch to dry feed. When the fish has reached a certain size, it is moved to large tubs at facilities on land or to flat-bottomed ocean pens with special shelf systems. The pens have fresh seawater with a cool, stable water temperature. After three or four years, the halibut has reached a size of 6–7 kg and is ready for slaughter.

Fishery

Fishing for halibut is prohibited in the period 20 December–31 March, except for hook-and-line gear north of 62°N. The fishing takes place along the Norwegian coast and in the fjords. Halibut are most often fished with bottom-set gillnets, trawls and lines.

Sustainability

The halibut fishery is not quota-regulated, and the catching of halibut occurs to a large extent as by-catch when fishing for other species. The halibut fishery is subject to a minimum size of 80 cm and a mesh size limitation of 470 mm. In addition, fishing is prohibited

SPECIES

Hippoglossus hippoglossus – Atlantic halibut

FAMILY

Pleuronectidae – Flounder family

PRODUCTS

- **Fresh** (steaks, fillets and whole fish)
- **Frozen** (steaks, fillets and whole fish)

SIZE

- **Wild fish:** Wild halibut (females) can be over 3.5 m and weigh close to 300 kg. The males can be up to 50 kg.
- **Farmed fish:** 6–7 kg

RANGE

- **Wild fish:** Young halibut live near the coast in relatively shallow water; large halibut are found both in fjords and at sea.
- **Farmed fish:** Farmed halibut mature in pens along the Norwegian coast.

SEASON

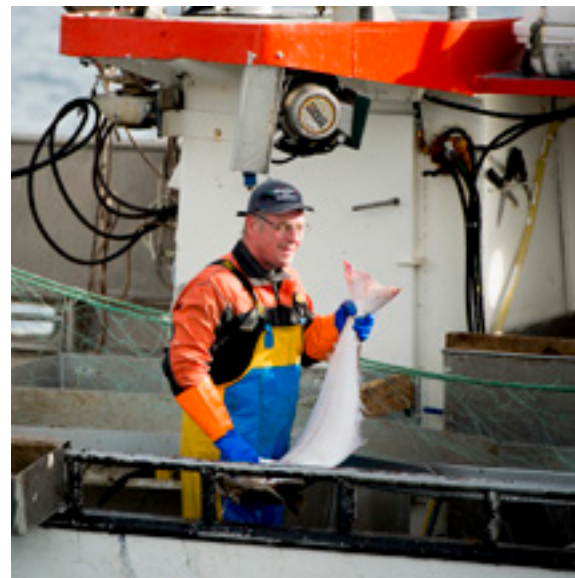
- Fishing for halibut is prohibited between 20 December and 31 March, except for hook-and-line gear north of 62°N.
- Farmed halibut is available the entire year.

FEEDS ON

Halibut is a predatory fish which eats bottom-dwelling fish and pelagic fish.

NAMES IN OTHER LANGUAGES

- **Latin:** *Hippoglossus hippoglossus*
- **Norwegian:** Kveite
- **French:** Flétan de l'Atlantique
- **German:** Heilbutt
- **Danish:** Helleflynder
- **Spanish:** Halibut
- **Finnish:** Ruijanpallas
- **Greek:** Hippóglossa
- **Italian:** Halibut
- **Icelandic:** Flyðya
- **Japanese:** Ohyō
- **Dutch:** Heilbot
- **Portuguese:** Alabote-do-Atlântico
- **Polish:** Halibut
- **Swedish:** Hälleflundra
- **Serbo-Croatian:** Konsiski jezik



in the period between 20 December and 31 March, except for hook-and-line gear north of 62°N. This prohibition is intended to protect halibut from being fished during the spawning period, as it gathers in spawning groups and is vulnerable to exploitation.

The halibut stock along the Norwegian coast, both north and south of 62°N, is considered vigorous.

Farming of halibut is mainly regulated by the Norwegian Aquaculture Act. This act specifies that aquaculture is to be established, conducted and wound up in an environmentally-responsible manner. Aquaculture is supervised by several authorities, such as the Norwegian Food Safety Authority, the Norwegian Directorate of Fisheries, the Norwegian Coastal Administration, the County Governor and the Norwegian Water Resources and Energy Directorate.

Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. It is a system consisting of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

A Norwegian Standard (NS 9407:2008) has been defined which is intended to ensure that halibut farming meets the quality requirements.

Nutritional content

Halibut is especially rich in:

- ▶ **Protein**, which builds and maintains all the cells in the body.
- ▶ **Vitamin D**, which is necessary for getting the right calcium balance in the body and which contributes to maintaining and strengthening the skeleton.
- ▶ **Vitamin B12**, which is important for the body's production of new cells, including red blood cells, and which can contribute to preventing anaemia.
- ▶ **Selenium**, an important element in the enzymes that combat harmful chemical processes in the body.

Applications/uses

Halibut have large bones which are easy to remove. The flesh is known for its white colour and thick fillets. The fillet has a meat-like consistency and a good firm, flaky structure which makes it easy to prepare in many ways. The skin is tasty and healthy to eat.

Halibut is a versatile seafood product which is firm and easy to work with. The fish can be used in both boiled and fried dishes.

You can read more about halibut here:

<http://www.imr.no/temasider/fisk/kveite/kveite/nb-no>

NUTRITIONAL CONTENT

Nutritional content in 100 g raw Atlantic halibut (edible portion):

Energy: 515 kJ / 123 kcal

Nutrients:

Protein:	17 g
Fat:	6.1 g
Saturated fatty acids:	1 g
Trans unsaturated fatty acids:	0 g
Cis-mono unsaturated fatty acids:	3.1 g
Cis-poly unsaturated fatty acids:	1.2 g
Omega-3:	1 g
Cholesterol:	50 mg

Vitamins:

Vitamin A:	17 RAE
Vitamin D:	9.7 µg
Riboflavin:	0.05 mg
Folate:	7 µg
Vitamin B12:	0.7 µg

Minerals:

Iron:	0.2 mg
Selenium:	60 µg
Iodine:	10 µg

More information about nutritional content can be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/fisk-og-fiskeprodukter-g4.1/kveite-hellefisk-raa-04.014>

Salmo salar – Atlantic salmon

Farmed salmon from Norway is a sought-after product which is eaten in more than a hundred countries. The Norwegian salmon was the first type of salmon used in sushi, and it has been included in various food traditions across the world.



Biology

The salmon is easy to recognise with the streamlined body shape, the dark blue upper side, the shiny skin with black dots and the so-called fat (adipose) fin, located in front of the tail fin. Atlantic salmon are farmed along nearly the entire coastline from East Finnmark to Western Norway. The facilities are carefully planned and located in fjords and other areas with good water replacement, which ensures optimal living conditions for the fish.

Salmon start life in freshwater and are eventually put out in pens in seawater. They stay in the pens in the ocean and fjords for 14–22 months, right up until they have reached a slaughter-ready size of 4–6 kg.

Aquaculture

Farming and sales of Atlantic salmon take place year round.

The salmon start life on land in an incubator tray. The roe is fertilised in freshwater and is incubated at a constant temperature for 80 days before hatching.

After hatching, the fry nourish themselves on the yolk sac which they have on their stomachs. When the yolk sac has been consumed, they change to being fed. This process occurs four to six weeks after hatching. When they begin to eat feed, they are moved to larger freshwater tanks.

After 10–16 months in freshwater, the salmon are ready to be put in the sea. At this stage, each fish weighs between 60 and 100 grams. Before they are put into the sea, they must undergo a smoltification process. This process enables the fish to live in saltwater, and then it is called a smolt.

The salmon mature in pens located in the ocean and fjords. They stay in the pens for 14–22 months until they reach a favourable slaughter weight (4–6 kg). Then they are shipped in wellboats to processing facilities, where they are slaughtered and processed.

Technology and welfare

Norway is today a world leader in farming of Atlantic salmon and has some of the most advanced technology solutions for ensuring good fish welfare and high quality. A great emphasis is placed on research, and work is done continuously on developing new technological concepts which will meet the challenges the industry faces.

Sustainability

The relationship of Norwegian fish farming to the environment is primarily regulated by the Norwegian Aquaculture Act. The Act specifies that aquaculture is to be established, conducted and wound up in an environmentally-responsible manner. Aquaculture is supervised by several authorities, such as the Norwegian Food Safety Authority, the Norwegian Directorate of Fisheries, the Norwegian Coastal Administration, the County Governor and

SPECIES

Salmo salar – Atlantic salmon

FAMILY

Salmonidae – Salmonid family

PRODUCTS

- ▶ **Fresh** (fillet and whole fish)
- ▶ **Frozen** (fillet and whole fish)
- ▶ **Smoked** (steaks and fillets)

SIZE

4–6 kg

RANGE

Farmed salmon mature in pens along the Norwegian coast.

SEASON

Entire year

FEEDS ON

Pellets

NAMES IN OECD LANGUAGES

- ▶ **Latin:** *Salmo salar*
- ▶ **Norwegian:** Laks
- ▶ **French:** Saumon atlantique
- ▶ **German:** Lachs
- ▶ **Danish:** Laks
- ▶ **Spanish:** Salmón
- ▶ **Finnish:** Lohi
- ▶ **Greek:** Solomós
- ▶ **Italian:** Salmone del reno
- ▶ **Icelandic:** Lax
- ▶ **Japanese:**
- ▶ **Dutch:** Zalm
- ▶ **Portuguese:** Salmão-do-atlântico
- ▶ **Polish:** Losoś
- ▶ **Swedish:** Lax
- ▶ **Turkish:** Alabalık (atlantik)
- ▶ **Serbo-Croatian:** Losos



the Norwegian Water Resources and Energy Directorate. There are several environmental certifications with stringent environmental, ecological, fish welfare, food safety and HSE criteria. The environmental certifications for farming of salmon are GLOBALG.A.P., Aquaculture Stewardship Council (ASC) and Best Aquaculture Practices (BAP).

Food safety and quality control

Public administration of food safety in Norway is intended to ensure safe seafood for consumers. Work is done on food safety throughout the entire value chain. The authorities have laid down regulations which are intended to ensure food safety, and it is the Norwegian Food Safety Authority which supervises how enterprises comply with these. The inspection authorities obtain scientific knowledge from a number of independent technical institutions, such as the Norwegian Scientific Committee for Food Safety (VKM), the Norwegian National Institute of Nutrition and Seafood Research (NIFES) and the Norwegian Veterinary Institute. An individual business owner must itself ensure that the seafood is safe and of proper quality.

Nutritional content

Salmon is an oily fish which is rich in:

- ▶ **Protein**, which builds and maintains all the cells in the body.
- ▶ **Marine omega-3 fatty acids**, which prevent and retard cardiovascular disease and are important for the development of the brain.
- ▶ **Vitamin A**, which contributes to providing good vision and immune response and is important for foetal development and reproductive capacity.
- ▶ **Vitamin B₁₂**, which is important for the body's production of new cells, including red blood cells, and which can contribute to preventing anaemia.
- ▶ **Selenium**, an important element in the enzymes that combat harmful chemical processes in the body.

Applications/uses

Salmon has a mild, full and rich taste, with a clean after taste. It has a firm orange-red flesh with white marbling.

Salmon is a all-round ingredient which has become a part of many different food cultures across the world. It is suited to nearly all types of seasonings and preparation methods, in both cold and hot dishes. Norwegian farmed salmon is perfect for raw consumption, and it is one of the few types of fish that can be eaten raw without freezing in advance.

You can read more about salmon here:

www.salmon.fromnorway.com

www.laksefakta.no

<http://www.matvaretabellen.no/fisk-og-skalldyr-g4/laks-oppdrett-raa-04.220>

NUTRITIONAL CONTENT

Nutritional content per 100 g farmed salmon (edible food):

Energy:	932 kJ / 224 kcal
---------	-------------------

Nutrients:

Protein:	20 g
Fat:	14 g
Saturated fatty acids:	3 g
Cis-mono unsaturated fatty acids:	5.9 g
Cis-poly unsaturated fatty acids:	5 g
Omega-3 fatty acids:	3.6 g
Omega-3 fatty acids:	1.2 g
Cholesterol:	80 mg

Vitamins:

Vitamin A:	26 RAE
Vitamin D:	10 µg
Riboflavin:	0.11 mg
Vitamin B ₁₂ :	3.5 µg

Minerals:

Iron:	0.3 mg
Selenium:	30 µg
Iodine:	12 µg

More information about nutritional content can be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/fisk-og-skalldyr-g4/laks-oppdrett-raa-04.220>

Molva molva – Ling

Ling has gotten its name because of its long, narrow body. It is a splendid fish for eating, firm and white in the flesh, and it has large, good roe and liver. Most of the catch in Norway and Sweden ends up as either clipfish or spillånga (stockfish), which is a Swedish favourite on Christmas Eve itself.



Biology

Ling is a bony fish species in the rockling family which has an long, narrow body shape. It has a long barbel on the chin, two dorsal fins, in which one is short and the other long, and a ventral fin. It has a grey-brown colour and white abdomen.

Ling live on hard bottoms or sand bottoms with large rocks in warm, relatively deep areas at depths of 60–1000 metres, but are most commonly found at depths of 300–400 metres. The young fish are found widely in shallow coastal areas, on the banks and in the northern part of the North Sea. When it reaches a certain age and size, it migrates out into deeper areas. The spawning grounds for ling are in the North Sea, at Storegga, off the Faroe Islands, on the banks west of the British Isles and south-west of Iceland. Ling become sexually mature at ages 5–7, and they can probably live to be more than 30 years old, up to 2 metres long and weighing 40 kg. Ling feed on fish such as cod, herring, mackerel, redfish and various flatfish.

Fishery

Fishing for ling takes place year round. Ling are fished from the Iceland Ridge to Vesterålsbankene, but most of the fishing occurs in the North Sea and the Norwegian Sea. Usual fishing gear is bottom-set longline and bottom-set gillnets.

Sustainability

In Norwegian areas, there is no quota regulation of fishing for ling for Norwegian vessels, whereas quotas are set annually for vessels from other countries.

There is little basis for assessing the ling stock, and the information that is available mainly comes from the fisheries. the catches have been stable since the beginning of the 1980s and have increased somewhat in recent years.

Food safety / Quality controls

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. The control system consists of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

SPECIES

Molva molva – Ling

FAMILY

Gadidae – Cod family

PRODUCTS

- ▶ Fresh fillet
- ▶ Prepared:
 - ▶ salted
 - ▶ salted and dried
 - ▶ dried

SIZE

Maximum 2 m and 40 kg

RANGE

On the Norwegian continental shelf, on the banks and in the fjords from the Bay of Biscay to Iceland, and in the south-western Barents Sea

SEASON

Entire year

FEEDS ON

Fish

NAMES IN OECD LANGUAGES

- ▶ **Latin:** *Molva molva*
- ▶ **English:** Ling
- ▶ **French:** Lingue
- ▶ **German:** Leng
- ▶ **Danish:** Lange
- ▶ **Spanish:** Maruca
- ▶ **Finnish:** Molva
- ▶ **Greek:** Pontinki
- ▶ **Italian:** Molva
- ▶ **Icelandic:** Langa
- ▶ **Dutch:** Leng
- ▶ **Portuguese:** Donzela
- ▶ **Polish:** Molwa
- ▶ **Swedish:** Långa
- ▶ **Turkish:** Gelincik
- ▶ **Serbo-Croatian:** Manjic morski



Nutritional content

Ling is a lean fish and is especially rich in

- **Protein**, which builds and maintains all the cells in the body.
- **Vitamin D**, which is necessary for getting the right calcium balance in the body and thus contributes to maintaining and strengthening the skeleton.
- **Selenium**, which is an important element in an enzyme that combats harmful chemical processes in the body.
- Ling is also rich in **calcium and magnesium**.

Applications/uses

Ling has a white, tasty, firm flesh which is quite coarse. The taste can remind one of cod. It is useful and can be grilled, fried or boiled, and it can be used with many types of accompaniments and spices.

You can read more about ling here:

<http://www.imr.no/temasider/fisk/linge/linge/nb-no>

NUTRITIONAL CONTENT

Nutritional content in 100 g raw ling (edible portion):

Energy: 305 kJ / 72 kcal

Nutrients:

Protein:	17.5 g
Fat:	0.2 g
Saturated fatty acids:	0 g
Trans unsaturated fatty acids:	0 g
Cis-mono unsaturated fatty acids:	0 g
Cis-poly unsaturated fatty acids:	0.1 g
Cholesterol:	46 mg

Vitamins:

Vitamin A:	2 RAE
Vitamin B ₁₂ :	0.5 µg
Vitamin D:	3.4 µg
Riboflavin:	0.08 mg
Folate:	7 µg

Minerals:

Iron:	0.2 mg
Selenium:	30 µg
Iodine:	80 µg

More information about nutritional content will be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/fisk-og-skalldyr-g4/linge-raa-04.019>

Mallotus villosus – Capelin

Female capelin are a delicacy in Japan, where the Japanese fry spawning capelin whole and eat them as bar snacks. Capelin contain marine omega-3 fatty acids and are very rich in protein. The Norwegian name "lodde" comes from the male having a strip of hairy scales along the side of the body during the spawning season, so that it looks "hairy" ("lodden" in Norwegian).



Biology

Capelin are small salmonids and pelagic shoaling fish which are dark on the back and light on the underside. It is widespread in polar regions in the Northern Hemisphere. The most important stocks are in the Barents Sea, off Iceland and Newfoundland and in the Bering Sea. The stock in the Barents Sea constitutes the largest.

In spring, capelin acquire characteristic spawning colours. The male fish then acquires a line of hairy scales along the side of the body and a greatly enlarged and black-coloured anal fin. The male is called a "faks-lodde" in Norwegian, and the female, which lacks this strip, is called a "sil-lodde". Capelin live the entire three to five years of their life in shoals in the Barents Sea. They mature and feed between Svalbard and Novaya Zemlya, spawn along the coast of the Kola Peninsula, Finnmark and Nord-Troms and usually die immediately afterwards. This also explains the great variations in the capelin stock. The spawning takes place at the bottom, at a depth of between 20 and 60 metres, and the eggs attach themselves to the bottom and lie there until they hatch after a month. The larvae will come up into the upper water column and drift with the current away from the coast and up towards the Barents Sea. Capelin grow quickly and in the course of 3–4 years they have grown to 14–18 cm. They have a very short life and are seldom more than five years old. Capelin are a key organism in the ecosystem, and capelin are an important food for predators including cod and herring.

Fishery

Capelin are mainly fished in the Barents Sea between January and April. Usual fishing gear is purse seines and pelagic trawls.

Sustainability

Each year, Norwegian and international research provides a basis for advice on sustainable catch in the North-eastern Atlantic Ocean. Norway then conducts negotiations on quotas with other countries that fish for the same stocks. Based on the negotiations, the Norwegian Ministry of Trade, Industry and Fisheries allocates the Norwegian share to Norwegian fishers. It is the authorities who grant a licence to everyone who participates in the industry, and provisions regarding quota allocation and conduct of the fishery are determined through annual regulations for each individual type of fish (control regulations). The capelin stock in the Barents Sea is currently quite weak because of poor recruitment, high mortality (pressure from good annual cohorts of herring and cod) and a decline in the quantity of plankton in the Barents Sea. The authorities have halted the fishing for capelin for the moment in order to improve the stock. During the last thirty years, the capelin fishery has been halted several times because of large changes in the size of the stock.

Missing text, Species + + +



Food safety and quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. It is a system consisting of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Nutritional content

Capelin are rich in:

- **Protein**, which builds and maintains all the cells in the body.
- **Marine omega-3 fatty acids**, which prevent cardiovascular disease and are important for the development of the brain. The fat content varies with the seasons.
- **Vitamin A**, which contributes to strengthening vision and the immune system and is important for foetal development and reproductive capacity.

Applications/uses

Capelin roe is considered a delicacy, but almost all capelin are ground into fish meal and fish oil and used for animal feed. In Japan, spawning capelin (female capelin) are used as food, often baked, in Shishamo or as grilled capelin snacks. Capelin can be eaten whole. they do not need to be filleted or cleaned before preparation.

You can read more about capelin here:

<http://www.imr.no/temasider/fisk/lodde/lodde/nb-no>

NUTRITIONAL CONTENT

Nutritional content per 100 g capelin (edible portion):

Energy: 779 kJ eller 186 kcal

Nutrients:

Protein:	17.5 g
Fat:	10.8 g
Saturated fatty acids:	2 g
Trans unsaturated fatty acids:	0 g
Mono unsaturated fatty acids:	5.6 g
Poly unsaturated fatty acids:	1.6 g
Cholesterol:	178 mg

Vitamins:

Vitamin A:	101 µg
Vitamin D:	0 µg
Riboflavin:	0.27 mg
Folate:	30 µg
Vitamin B12:	7 µg

Minerals:

Iron:	3.3 mg
Selenium:	0.04 µg
Iodine:	-

More information about nutritional content can be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

The Norwegian Food Composition Table or other sources

Pollachius pollachius – Pollack

The pollack belongs to the cod family, but it most resemble saithe in appearance and structure. It is mostly taken as by-catch in other fishing and lives on other fish and crustaceans. In food preparation, pollack can generally be used in the same manner as cod and haddock.



Biology

Pollack is a species of fish in the cod family but lacks the typical barbel under the chin that many other cod species have. Pollack resemble saithe but differ in appearance by having a strongly protruding jaw, a dark lateral line that bends downwards, dark back and yellowish designs along the sides. Pollack live on the bottom and move in open waters. They prefer coastal areas with a rocky seabed at a depth of 40–100 metres. Pollack are distributed as far south as Portugal's west coast, around the British Isles, along the Norwegian coast and in the North Sea/Skagerrak.

The pollack spawns in open waters in the spring or early in the summer. Its spawning grounds are the North Sea, the strait of Skagerrak and along the Norwegian coast. The first two or three years the fry lives near the coast, and when it becomes an adult it migrates out into the open sea.

Fishery

Pollack are fished the entire year but are mostly taken as by-catch during the fishing for cod and saithe. It is fished in the North Sea, the strait of Skagerrak and along the Norwegian coast. Usual fishing gears are lines, gillnets and trawls.

Sustainability

There are nonational control regulations on fishing for pollack. Pollack reproduce in Norwegian waters, but the spawning areas are poorly mapped. In recent years, about 60% of the Norwegian catch has been taken north of 62°N. In the North Sea, there are limited data on this species. It is presumed that pollack had a much larger range when the stock was at its peak. The catch rates are now small and greatly varying but show no clear trend. Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. The control system consists of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

SPECIES

Pollachius pollachius – Pollack

FAMILY

Gadidae – Cod family

PRODUCTS

- ▶ Fresh whole
- ▶ Frozen fillet and whole

SIZE

Up to 130 cm and 10 kg

RANGE

North-east Atlantic, around the British Isles and along the Norwegian coast

SEASON

Entire year

FEEDS ON

Fish and crustaceans

OTHER NAMES

- ▶ **Latin:** *Pollachius pollachius*
- ▶ **Norwegian:** Lyr
- ▶ **French:** Lieu jaune
- ▶ **German:** Pollack, Steinköhler
- ▶ **Danish:** Lubbe
- ▶ **Spanish:** Abadejo
- ▶ **Finnish:** Lyyraturska
- ▶ **Greek:** Bakaliaros
- ▶ **Italian:** Merluzzo giallo
- ▶ **Icelandic:** Lýr
- ▶ **Dutch:** Pollak
- ▶ **Portuguese:** Julinana
- ▶ **Polish:** Rdzawiec
- ▶ **Swedish:** Lyrtorsk
- ▶ **Serbo-Croatian:** Ugotica



Nutritional content

Pollack is a lean fish which is rich in:

- **Protein**, which builds and maintains all the cells in the body.
- **Vitamin B₁₂**, which is important for the body's production of new cells, including red blood cells, and which can contribute to preventing anaemia.
- **Selenium**, an important element in the enzymes that combat harmful chemical processes in the body.
- **Iodine**, which regulates the body's metabolism and is important for normal growth and development of the nervous system.

Applications/uses

The flesh of the pollack is lean and relatively dry, and it is very well suited for use in a fish farce (stuffing). The fish can also be boiled and fried and used in the same dishes as cod and haddock. Pollack benefits from being marinated before it is prepared.

You can read more about pollack here:

<http://www.imr.no/temasider/fisk/lyr/nb-no>

NUTRITIONAL CONTENT

Nutritional content in 100 g raw pollack (edible portion):

Energy: 279 kJ / 66 kcal

Nutrients:

Fat:	0.2 g
Cholesterol:	40 mg
Saturated fatty acids:	0 g
Protein:	16 g
Trans unsaturated fatty acids:	0 g
Cis-mono unsaturated fatty acids:	0 g
Cis-poly unsaturated fatty acids:	0.1 g

Vitamins:

Vitamin A:	2 RAE
Vitamin B ₁₂ :	1 µg
Vitamin D:	2.2 µg
Riboflavin:	0.1 mg
Folate:	3 µg

Minerals:

Iron:	0.1 mg
Selenium:	30 µg
Iodine:	143 µg

More information about nutritional content will be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/fisk-og-skalldyr-g4/lyr-raa-04.021>

Scomber scombrus – Mackerel

Norwegian mackerel is known for consistent high quality, and most mackerel are caught in cold Norwegian waters in autumn. That's when it has a high fat content, which makes the fish extra succulent, tasty and healthy.



Biology

The mackerel has a characteristic appearance with its black "tiger" stripes along the back and its round, streamlined body. On the back it has a blue-green colour, while the underside is shiny. The body scales are small, and the body is soft to touch. Mackerel are fast-swimming shoaling fish which can migrate over large areas of the sea. It is also pelagic, which means that they live in open water which is neither near the bottom nor the water surface. The mackerel lacks a swim bladder and must therefore constantly move in order not to sink. Movement, growth and development of reproductive organs mean that it needs a lot of food. The mackerel is a typical plankton feeder which swims with its mouth open and sifts plankton through its gills. It also eats fish larvae and small fish. A mackerel can be up to 65 cm long and 3.5 kg in weight. It can be up to 25 years old.

The mackerel has three spawning areas: the North Sea, south and west of Ireland and off Portugal and Spain. The mackerel spawns at the surface, and when the eggs hatch, the larvae are 3.5 mm in length. They grow to 20 cm the same autumn.

When the mackerel has spawned, it migrates to the North Sea and the Norwegian Sea to feed. The distribution of mackerel in the summer is greater now than before. Mackerel are found west to Greenland, all the way north in the Barents Sea to Svalbard, and into the strait of Skagerrak in the summer. It stays here up until it migrates back to the spawning areas from the end of December to February.

Fishery

Fishing for mackerel takes place mainly in the period May – November. The largest share of the mackerel fishery takes place from September to November, when the fish has its highest fat content. The mackerel is fished in the North Sea, the Norwegian Sea and the strait of Skagerrak. The fishing gear is mainly purse seines, but pelagic trawls and gillnets are also used somewhat.

Sustainability

Each year, Norwegian and international research provides a basis for advice on sustainable catch in the North-eastern Atlantic Ocean. Norway then conducts negotiations on quotas with other countries that fish for the same stocks, and based on this the Norwegian Ministry of Trade, Industry and Fisheries allocates a share to Norwegian fishers. It is the authorities who grant a licence to everyone who participates in the industry, and provisions regarding quota allocation and conduct of the fishery are determined through annual regulations for each individual type of fish (control regulations).

SPECIES

Scomber scombrus – Mackerel

FAMILY

Scombridae – Mackerel family

PRODUCTS

- ▶ **Fresh** (fillet and whole fish)
- ▶ **Frozen** (fillet and whole fish)
- ▶ **Smoked** (fillet and whole fish)
- ▶ **Tinned** (fillet)

SIZE

Maximum 70 cm and 3.5 kg, usually not larger than 1 kg

RANGE

Black Sea, Mediterranean Sea, West Atlantic, East Atlantic where it occurs from North West Africa to the Faroe Islands and Iceland.

SEASON

May–November

FEEDS ON

Zooplankton, fish larvae and small fish

NAMES IN OTHER LANGUAGES

- ▶ **Latin:** *Scomber scombrus*
- ▶ **Norwegian:** Makrell
- ▶ **French:** Maquereau
- ▶ **German:** Makrele
- ▶ **Danish:** Makrel
- ▶ **Spanish:** Caballa
- ▶ **Finnish:** Makrilli
- ▶ **Greek:** Scoumbri
- ▶ **Italian:** Maccarello
- ▶ **Icelandic:** Makrill
- ▶ **Japanese:** Saba
- ▶ **Dutch:** Makreel
- ▶ **Portuguese:** Sarda
- ▶ **Polish:** Makrela
- ▶ **Swedish:** Makrill
- ▶ **Turkish:** Uskumru
- ▶ **Serbo-Croatian:** Skuša



The mackerel stock is characterised as healthy and sustainably managed. The spawning stock increased in the period 2002–2014 but declined slightly in 2015.

The North-east Atlantic fishery for mackerel is certified by the Marine Stewardship Council (MSC), which is a certification programme for sustainable and well-managed fishery stocks.

Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. It is a system consisting of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Nutritional content

The fat content in mackerel varies with the season. In spring, the mackerel's fat content goes all the way down to about 3%. In autumn, when large parts of the fishery take place, it has a fat content of up to 30%. Mackerel is rich in:

- ▶ **Protein**, which builds and maintains all the cells in the body.
- ▶ **Marine omega-3 fatty acids**, which prevent and retard cardiovascular disease and are important for the development of the brain.
- ▶ **Vitamin B₁₂**, which is important for producing new cells, including red blood cells, and which can prevent anaemia.
- ▶ **Vitamin D**, which is necessary for the right calcium balance in the body and contributes to maintaining and strengthening the skeleton.
- ▶ **Iodine**, which regulates the body's metabolism and is important for normal growth and development of the nervous system.

Applications/uses

Mackerel can be prepared in many different ways. It can be smoked in several varieties – hot smoked, cold smoked and pepper smoked. Fresh mackerel can be fried, boiled and grilled. It is also suited to curing. There are several tinned varieties, for example, mackerel in tomato sauce as a topping.

You can read more about mackerel here:

www.mackerel.fromnorway.com

<https://www.regjeringen.no/no/dokumenter/fiskekvoter---fastsetting-og-fordeling/id87879/>

<http://www.matvaretabellen.no/fisk-og-fiskeprodukter-g4.1/makrell-aa-vill-hoest-04.023>

<http://www.imr.no/temasider/fisk/makrell/makrell/nn-no>

<https://lovdata.no/dokument/SF/forskrift/2013-06-28-844>

NUTRITIONAL CONTENT

Nutritional content in 100 g wild mackerel (autumn) (edible food):

Energy:	1214 kJ / 293 kcal
---------	--------------------

Nutrients:

Protein:	17 g
Fat:	25 g
Saturated fatty acids:	5.3 g
Cis-mono unsaturated fatty acids:	9.1 g
Cis-poly unsaturated fatty acids:	7.2 g
Omega-3:	6.3 g
Omega-6:	0.5 g
Cholesterol:	80 mg

Vitamins:

Vitamin A:	15 RAE
Vitamin D:	5.4 µg
Vitamin B ₁₂ :	7.4 µg
Riboflavin:	0.28 mg

Minerals:

Selenium:	60 µg
Iron:	0.8 mg
Iodine:	63 µg

More information about nutritional content can be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/fisk-og-fiskeprodukter-g4.1/makrell-aa-vill-hoest-04.023>

Oncorhynchus mykiss – Rainbow trout

Fjord Trout is the commercial name for Norwegian farmed rainbow trout. It matures in the clear, cold Norwegian fjords where the seawater meets fresh meltwater from the glaciers in the mountains. The Fjord Trout is a niche product known for its high quality.



Biology

The rainbow trout is a predatory fish in the salmon family. It has a streamlined, silver-coloured body with black dots overall except for the abdomen, which means it resembles Atlantic salmon.

Farming of trout takes place along nearly the entire Norwegian coast, from Finnmark in the north to Vest-Agder in the south. The facilities are located in fjords with good water replacement which ensures optimal living conditions for the fish. The trout pens are located further inside the fjords than pens for Atlantic salmon, for example. Like Atlantic salmon, the trout starts its life in freshwater. Eventually when it has reached a certain size and has adapted to seawater, it is moved to pens in the fjords. It stays there until it has reached a slaughter-ready size of 2–5 kg.

Aquaculture

Sales and farming of Fjord Trout take place year round.

The farming process begins in tubs on land, and the roe is fertilised in fresh water. When the eggs hatch, the fry nourish themselves with the yolk sac until this has been consumed, before they change to being fed with pellets. Eventually as the fry become larger, they are moved to larger tubs. When the fish have reached a certain size and have been through the so-called smoltification process, they are put out in pens in fjords to grow more there. The trout spend the rest of the time in the pens, right up until they have arrived at slaughter-ready size.

Technology and welfare

The history of success with Norwegian fish farming began with farming rainbow trout. The pioneering work which the first trout farmers did has been important for the rapid development we see in the aquaculture industry today. Today Norway has some of the most advanced technology solutions for ensuring good fish welfare and high quality.

Sustainability

The relationship of Norwegian fish farming to the environment is primarily regulated by the Norwegian Aquaculture Act. The Act specifies that aquaculture is to be established, conducted and wound up in an environmentally-responsible manner. Aquaculture is supervised by several authorities, such as the Norwegian Food Safety Authority, the Norwegian

SPECIES

Oncorhynchus mykiss – Rainbow trout

FAMILY

Salmonidae – Salmonid family

PRODUCTS

- ▶ **Fresh and frozen** (fillet and whole fish)
- ▶ **Smoked** (steaks and fillets)

SIZE

2–5 kg

RANGE

Farmed trout mature in pens in Norwegian fjords.

SEASON

Entire year

FEEDS ON

Pellets

NAMES IN OECD LANGUAGES

- ▶ **Latin:** *Oncorhynchus mykiss*
- ▶ **Norwegian:** Regnbueørret
- ▶ **French:** Truite arc-en-ciel
- ▶ **German:** Regenbogenforelle
- ▶ **Danish:** Regnbueørred
- ▶ **Spanish:** Trucha arco iris
- ▶ **Finnish:** Kirjolohi
- ▶ **Greek:** Pestropha
- ▶ **Italian:** Trota iridea
- ▶ **Icelandic:** Regnboga-silungur
- ▶ **Japanese:** Nijimasu
- ▶ **Dutch:** Regenboogforel
- ▶ **Portuguese:** Truta-arco-iris
- ▶ **Polish:** Pstrąg tęczowy
- ▶ **Swedish:** Regnbåge
- ▶ **Turkish:** Alabalık tırü
- ▶ **Serbo-Croatian:** Pastrva



Directorate of Fisheries, the Norwegian Coastal Administration, the County Governor and the Norwegian Water Resources and Energy Directorate. There are several environmental certifications with stringent environmental, ecological, fish welfare, food safety and HSE criteria. The environmental certification for farming of rainbow trout is Aquaculture Stewardship Council (ASC).

Food safety and quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. It is a system consisting of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

A quality standard has been developed for Norwegian farmed trout, NS 9412:2010, which is intended to ensure consistent good quality.

Nutritional content

Fjord Trout is especially rich in

- **Protein**, which builds and maintains all the cells in the body.
- **Marine omega-3 fatty acids**, which prevent and retard cardiovascular disease and are important for the development of the brain.
- **Vitamin D**, which is necessary for getting the right calcium balance in the body and which contributes to maintaining and strengthening the skeleton.
- **Selenium**, an important element in the enzymes that combat harmful chemical processes in the body.

Applications/uses

The flesh of the trout is known for its deep red-orange colour and white marbling. The colour lies between 29 and 32 on the colour scale of SalmoFan™. The flesh has a healthy gloss and is firm, but nevertheless tender and soft. Trout is less exposed to fillet splitting because it has a tighter and firmer flesh structure than other red fish.

Trout is well-suited to many types of dishes. It is more sensitive to heating than salmon and is well-suited in raw condition or in lightly heated dishes. It can be baked, grilled, fried or boiled. With the right handling, the trout becomes delicate and succulent. In addition, it can be cold smoked and hot smoked, used as a topping, for salads and pasta or in other combinations. Fjord Trout has a rich taste and a clean after taste which is reminiscent of shellfish.

You can read more about trout here:

(Missing text)

NUTRITIONAL CONTENT

Nutritional content per 100 g farmed trout (edible food):

Energy:	693 kJ / 166 kcal
---------	-------------------

Nutrients:

Protein:	19 g
Fat:	10 g
Saturated fatty acids:	2 g
Trans unsaturated fatty acids:	0 g
Cis-mono unsaturated fatty acids:	3.5 g
Cis-poly unsaturated fatty acids:	3.2 g
Omega-3 fatty acids:	2.5 g
Cholesterol:	73 mg

Vitamins:

Vitamin A:	32 RAE
Vitamin D:	16.9 µg
Riboflavin:	0.13 mg
Folate:	5 µg
Vitamin B12:	4.8 µg

Minerals:

Iron:	0.3 mg
Selenium:	30 µg
Iodine:	5 µg

More information about nutritional content can be found at:

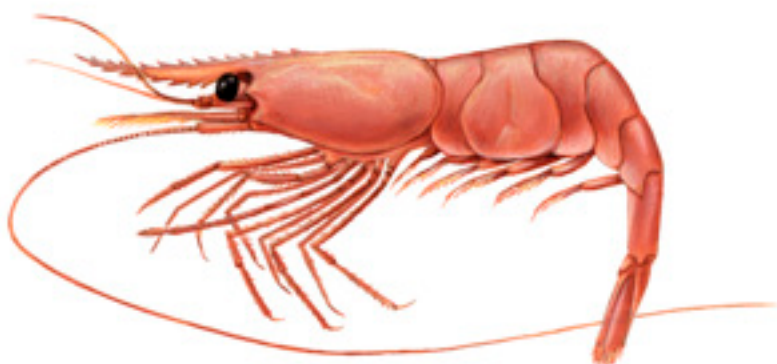
www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/fisk-og-fiskeprodukter-g4.1/oerret-oppdrett-raa-04.256>

Pandalus borealis – Norwegian prawns (Northern prawns)

Norwegian prawns prefer cold, clean water which means that they grow and mature slowly. Prawns are an ingredient for any occasion. They have a fresh taste, a firm flesh and a natural pink colour.



Biology

Prawns are usually found at a depth between 100 and 700 metres but are found both shallower (up to 20 metres) and deeper (down to 900 metres), and they prefer temperatures between 1-6 °C. The prawn stock is classified according to where it lives. In Norway, prawns are found in fjords, coastal areas, in the North Sea/Skagerrak and in the Barents Sea. In the North Sea, the fishery involves the stock that is found in the Norwegian Trench. Prawns are also found on both sides of the North Atlantic, around Iceland, Jan Mayen and Greenland and along the east coast of Canada.

During the day, the prawn lies on the bottom to rest or feed. At night, it rises in the water column to eat zooplankton. The prawn mostly moves up and down in the water column, but the female can move to shallower water around hatching time.

Northern prawns are hermaphrodites. In other words, they are born as males and change sex. Sex change varies with the various maturation areas. In the North Sea and the strait of Skagerrak, prawns change sex when they are between 1.5–2.5 years old, while in the Barents Sea it happens when they are between 4–7 years old. For prawns in fjords and coastal areas, the sex change occurs at ages 2–6. Sex change increases the further north they live. Prawns can be 15–16 cm and up to 10 years old.

Prawns mate in autumn, and the female prawn carries the spawn under the hind part of its body through the winter. The eggs hatch in the spring. The newly hatched larvae feed on small plankton in the uppermost water layers before they migrate towards the bottom after 2–3 months.

Fishery

The prawn fishery takes place year round. The prawns in the Barents Sea are fished with large freezer trawlers which process and pack the catch on board. The prawns in the North Sea, the strait of Skagerrak, fjords and coastal areas are fished with small prawn trawlers. The prawns are then primarily cooked on board and sold as fresh, cooked prawns.

The fishing gear used in the prawn fishery is trawls with a minimum mesh size of 35 mm. Sorting grates for fish are required on the prawn trawl. The sorting grate ensures that the majority of fish and small prawns over a certain size are sent out of the trawl again. Studies are also being done on fishing for prawns in Norway with pots, which are common fishing gear in other parts of the world where prawns are fished.

There are several interesting R&D projects under way in the prawn industry. These include a project which is looking at catching, storing and shipping of live prawns to domestic and international markets. These prawns are fished with pots.

SPECIES

Pandalus borealis – Northern prawns

FAMILY

Pandalidae

PRODUCTS

- ▶ **Cooked prawns with shell**
(fresh and frozen)
- ▶ **Cooked peeled prawns, hand peeled and machine peeled**
(lightly preserved in brine and frozen)
- ▶ **Raw prawns** (fresh and frozen)

SIZE

- ▶ **Prawns in the Barents Sea:** 16 cm and 20 g
- ▶ **Prawns in the North Sea and Skagerrak:** 18 cm
- ▶ **Coastal and fjord prawns:** 16 cm and 20 g

RANGE Catch areas and natural habitats

- ▶ Fjords and coastal areas
- ▶ North Sea/Skagerrak
- ▶ Barents Sea

SEASON

Entire year

FEED ON

- ▶ **Barents Sea, coastal and fjord prawns:** organic material, carrion, small crustaceans, worms
- ▶ **North Sea and Skagerrak prawns:** plankton, small bottom-dwelling animals and plant and animal remains

NAMES IN OTHER LANGUAGES

- ▶ **Latin:** *Pandalus borealis*
- ▶ **Norwegian:** Norske reker; kaldtvannsreker
- ▶ **French:** Crevette nordique
- ▶ **German:** Eismeergarnele
- ▶ **Danish:** Reje
- ▶ **Spanish:** Camarón
- ▶ **Finnish:** Katkarapu
- ▶ **Greek:** Garída
- ▶ **Italian:** Gamberello
- ▶ **Icelandic:** Rækja
- ▶ **Japanese:** Ebi
- ▶ **Dutch:** Garnaal
- ▶ **Portuguese:** Camaráo
- ▶ **Polish:** Krewetki
- ▶ **Swedish:** Raka
- ▶ **Turkish:** Karides
- ▶ **Serbo-Croatian:** Kozica



Sustainability

Each year, Norwegian and international research provides a basis for advice on sustainable catch in the North-eastern Atlantic Ocean. Norway then conducts negotiations on quotas with other countries that fish for the same stocks. Based on the negotiations, the Norwegian Ministry of Trade, Industry and Fisheries allocates the Norwegian share to Norwegian fishers. It is the authorities who grant a licence to everyone who participates in the industry, and provisions regarding quota allocation and conduct of the fishery are determined through annual regulations for each individual type of fish (control regulations). Regulations for the various stocks:

Fishing for prawns in the Barents Sea is regulated by the number of permitted fishing days for the prawn boats per calendar year. If a large number of fish fry are present in the area where prawn fishing is being done, the authorities can close the fishing grounds. The prawn stock in the Barents Sea is in good condition, and the fishery is sustainably managed.

For the North Sea and the strait of Skagerrak, quotas are determined each year for prawn fishing. The prawns that are caught must measure at least 7 cm. The Norwegian Institute of Marine Research calculates the size of the prawn stock in the Skagerrak/Norwegian Trough areas. The stock has increased in recent years, and it is considered to be in good condition.

No quotas are set for prawn fishing in coastal areas and fjord areas, but the prawn fishing grounds in these areas can also be closed because of a large number of fish fry in the catches. Coastal and fjord prawns north of 70°N are managed as a part of the Barents Sea stock, while the stock south of 62°N is managed as a part of the North Sea/Skagerrak stock. Between 62°N and 70°N, no equivalent monitoring of the stock is carried out.

The prawn fishery in both the Barents Sea and the North Sea/Skagerrak is certified by the Marine Stewardship Council (MSC). The prawn fishery in the Barents Sea is also certified by KRAV and Friend of the Sea.

Food safety and quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. It is a system consisting of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

A Norwegian Standard (NS 9409:2009) has been defined which must be followed when prawns are supplied with the quality mark Norwegian Prawns.

Nutritional content

Prawns are rich in:

- **Protein**, which builds and maintains the cells in the body.
- **Vitamin D**, which is necessary for the right calcium balance in the body and which contributes to maintaining and strengthening the skeleton.
- **Vitamin B₁₂**, which is important for the body's production of new cells, including red blood cells, and which can contribute to preventing anaemia.
- **Selenium**, an important element in the enzymes that combat harmful chemical processes in the body.

Applications/uses

Prawns have a firm flesh and a natural pink colour. The fresh, sweet and slightly salty taste goes well with a wide selection of hot and cold dishes. Prawns can be served by themselves or in salads with various types of sauces or dressings. If the prawns are to be served in hot dishes, they should be added right at the end, so that they stay succulent and tender.

NUTRITIONAL CONTENT

Nutritional content per 100 g cooked prawns (edible food):

Energy: 426 kJ / 100 kcal

Nutrients:

Protein:	23.3 g
Fat:	0.8 g
Saturated fatty acids:	0.1 g
Cis-mono unsaturated fatty acids:	0.2 g
Cis-poly unsaturated fatty acids:	0.2 g
Omega-3:	0.2 g
Cholesterol:	150 mg

Vitamins:

Vitamin A:	2 RAE
Vitamin D:	3.5 µg
Riboflavin:	0.07 mg
Vitamin E:	5.3 alpha-TE
Vitamin B ₁₂ :	4.6 µg

Minerals:

Calcium:	61 mg
Selenium:	30 µg
Iodine:	-

More information about nutritional content can be found at:

www.nifes.no/en/prosjekt/seafood-data

You can read more about prawns here:

http://www.imr.no/temasider/skalldyr/reke/reke_i_barentshavet/status_rad_og_fiskeri_2010/status_rad_fiskeri_og_bestandstaksering/nb-no

<http://www.fiskeridir.no/Yrkesfiske/Regelverk-og-reguleringer>

Pleuronectes platessa – European plaice

The European plaice is a species in the flounder family. In contrast to the halibut, it is a right-eyed flounder. European plaice can be fried and breaded and is well suited to fish and chips.



Biology

The European plaice is known by the grey or brown, shiny eye side with many red spots – but it must not be confused with the European flounder, which is very similar at times. On the underside the European plaice is white. The fish prefers depths between 7 and 200 metres. The European plaice feeds on chaetopods, bivalves, jellyfish, crustaceans, echinoderms and small fish that it finds on the bottom. As is common among flatfish, the female grows much faster and becomes much larger than the male. Sexual maturity usually occurs at the age 2 or 3, but the female becomes sexually mature later than the male. The European plaice can be up to 50 years old.

The European plaice is distributed in the eastern Atlantic Ocean from the Barents Sea in the north and southwards to the Mediterranean Sea and the coast of Africa. The species is divided into several stocks, and the largest stock is found in the North Sea. The European plaice is considered a territorial species, but when the spawning period is approaching, it migrates long distances to certain spawning areas. It spawns in November–May in the central and southern portion of the North Sea.

The European plaice spawns on the bottom, and the eggs float up to the surface. When the eggs hatch, the larvae have the usual fish shape. Little by little the left eye migrates over to the right side, and the fry more and more acquires the shape of a flatfish. After about two months, it will find its way down to the sand bottom in shallow areas. When it eventually becomes larger, it finds its way down to deeper areas.

Fishery

European plaice are fished year round. The fishing takes place in the North Sea and the strait of Skagerrak, with bottom otter trawls, Danish seines or bottom-set gillnets.

Sustainability

Each year, Norwegian and international research provides a basis for advice on sustainable catch in the North-eastern Atlantic Ocean. Norway then conducts negotiations on quotas with other countries that fish for the same stocks. Based on the negotiations, the Norwegian Ministry of Trade, Industry and Fisheries allocates the Norwegian share to Norwegian fishers. It is the authorities who grant a licence to everyone who participates in the industry, and provisions regarding quota allocation and conduct of the fishery are determined through annual regulations for each individual type of fish (control regulations).

SPECIES

Pleuronectes platessa – European plaice

FAMILY

Pleuronectidae – Flounder family

PRODUCTS

- ▶ **Fresh** (fillet and whole fish)
- ▶ **Frozen** (fillet)

SIZE

Up to 100 cm and 7 kg

RANGE

North Sea and Skagerrak

SEASON

Entire year

FEEDS ON

Bottom-dwelling animals

NAMES IN OTHER LANGUAGES

- ▶ **Latin:** *Pleuronectes platessa*
- ▶ **Norwegian:** Rødspette
- ▶ **French:** Plie, Carrelet
- ▶ **German:** Goldbutt, Scholle
- ▶ **Danish:** Rødspætte
- ▶ **Spanish:** Solla
- ▶ **Finnish:** Punakampela
- ▶ **Greek:** Glossáki-chomatida
- ▶ **Italian:** Passera
- ▶ **Icelandic:** Skarkoli
- ▶ **Dutch:** Schol
- ▶ **Portuguese:** Solha
- ▶ **Polish:** Gładzica
- ▶ **Swedish:** Rödspätta
- ▶ **Turkish:** Pisi balığı
- ▶ **Serbo-Croatian:** Iverak



The minimum size for catching European plaice outside the strait of Skagerrak is 29 cm, while the minimum size in the strait of Skagerrak is 27 cm.

The ICES considers the European plaice stock to be in good condition and sustainably harvested. The stock is well within the precautionary limits.

Food safety and quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. It is a system consisting of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Nutritional content

European plaice is especially rich in:

- ▶ **Protein**, which builds and maintains all the cells in the body.
- ▶ **Vitamin B₁₂**, which is important for the body's production of new cells, including red blood cells.
- ▶ **Vitamin B₁₂**, which can contribute to preventing anaemia.
- ▶ **Selenium**, an important element in the enzymes that combat harmful chemical processes in the body.

Applications/uses

European plaice has tasty, white and firm flesh. The flesh tastes slightly sweet, which makes the fish easy to like. European plaice can be fried, baked, boiled and grilled. It can also be breaded and deep-fried and served with chips, as in the traditional British dish fish and chips. Small European plaice can be baked whole.

You can read more about European plaice here:

<http://www.imr.no/temasider/fisk/rodslette/nb-no>

Information obtained from:

Pethon, P. 1998. Aschehougs store fiskebok. 4th edition Aschehoug

NUTRITIONAL CONTENT

Nutritional content per 100 g European plaice (edible portion):

Energy: 382 kJ / 91 kcal

Nutrients:

Protein:	16.8 g
Fat:	2.6 g
Saturated fatty acids:	0.5 g
Trans unsaturated fatty acids:	0 g
Mono unsaturated fatty acids:	0.8 g
Poly unsaturated fatty acids:	0.8 g
Cholesterol:	68 mg

Vitamins:

Vitamin A:	12 RAE
Vitamin D:	6 µg
Riboflavin:	0.1 mg
Folate:	10 µg
Vitamin B ₁₂ :	1.2 µg

Minerals:

Iron:	0.2 mg
Selenium:	30 µg
Iodine:	14 µg

More information about nutritional content can be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/fisk-og-fiskeprodukter-g4.1/rodslette-raa-04.005>

Pollachius virens – Saithe

The saithe is a master swimmer and lively sprinter that does best in locations with a strong current. The pearl grey flesh is lean and has a more characteristic taste than other white fish, which makes it well suited to strong flavours.



Biology

The saithe is a species in the cod family. It has a powerful and muscular body, is a good swimmer and is easy to recognise by the weakly protruding jaw and the straight lateral line along the body. The abdomen and sides are silver grey, while the back has a darker colour. Saithe occur as both pelagic and bottom fish, from the sea surface to a depth of 300 metres. They often swim in shoals and hunt herring and other prey. The saithe is also a wanderer that goes on feeding and spawning migrations.

Saithe are only found in the North Atlantic. In the western portion, there is only a small population between Canada and the United States. Saithe in the north-eastern portion are divided into six stocks with main areas west of Ireland, west of Scotland, along the Faroe Islands, along Iceland, in the North Sea and on the Norwegian coast north of 62° N. In Norwegian waters, the stock is divided in two: North East Arctic saithe and saithe in the North Sea/Skagerrak.

The North East Arctic saithe becomes sexually mature when it is 5–6 years old and spawns in the winter along the Norwegian coast, from the Lofoten Islands to the North Sea. The spawning period is in February, and eggs and fry are carried northwards with the current. The fry establish themselves in the beach zone along the coast and migrate out to the coastal banks as 2–4-year-olds. The saithe can be up to 30 years old.

Fishery

The season is the entire year, and the fishing takes place in coastal waters and fjords, mainly off the coast of Finnmark, the North Sea and the banks northward to West Finnmark. The most common types of fishing gear are bottom otter trawl, Danish seine, line, closing net, gillnet and hand line.

Sustainability

Each year, Norwegian and international research provides a basis for advice on sustainable catch in the North-eastern Atlantic Ocean. Norway then conducts negotiations on quotas with other countries that fish for the same stocks. Based on this, the Norwegian Ministry of Trade, Industry and Fisheries allocates the Norwegian share to Norwegian fishers. It is the authorities who grant a licence to everyone who participates in the industry. Provisions regarding quota allocation and conduct of the fishery are determined through annual regulations for each individual type of fish (control regulations).

Saithe north of 62 ° are considered a purely Norwegian stock, and Norway can thus unilaterally set a Norwegian quota for North East Arctic saithe.

SPECIES

Pollachius virens – Saithe

FAMILY

Gadidae – Cod family

PRODUCTS

- ▶ **Fresh** (fillet and whole)
- ▶ **Frozen** (fillet and whole)
- ▶ **Salted and dried** (fillet and whole)
- ▶ **Dried** (whole)
- ▶ **Salted** (whole)

SIZE

- ▶ **North East Arctic Saithe:**
up to 130 cm long and 20 kg
- ▶ **Saithe in the North Sea:** 115 cm and 20 kg

RANGE

- ▶ **North East Arctic saithe:** along the Norwegian coast from Stad to the Kola Peninsula
- ▶ **Saithe in the North Sea:**
Skagerrak/North Sea

SEASON

Entire year

FEEDS ON

Calanus finmarchicus, krill, other pelagic crustaceans, herring, sprat, whiting, Norway pout and haddock fry

NAMES IN OTHER LANGUAGES

- ▶ **Latin:** *Pollachius virens*
- ▶ **English:** Coalfish; Pollock
- ▶ **Norwegian:** Sei
- ▶ **French:** Lieu noir
- ▶ **German:** Köhler/Seelachs
- ▶ **Danish:** Sej
- ▶ **Spanish:** Palero
- ▶ **Finnish:** Seiti
- ▶ **Greek:** Bakaliaros
- ▶ **Italian:** Merluzzo nero
- ▶ **Icelandic:** Ufsi
- ▶ **Dutch:** Koolvis
- ▶ **Portuguese:** Escamudo
- ▶ **Polish:** Czarniak
- ▶ **Swedish:** Sej



The saithe stock is in good condition and is sustainably managed. The fisheries for North East Arctic saithe and saithe in the North Sea have the following certifications:

- **Marine Stewardship Council (MSC)** – MSC's fishery certification programme and environmental label for seafood certifies and rewards sustainable fishing.
- **KRAV** – The KRAV label is Sweden's best known environmental label for food, based on an organic basis with particularly high requirements for animal welfare, health, social responsibility and environmental impact.

Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. It is a system consisting of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Nutritional content

Saithe is a lean fish and is especially rich in:

- **Protein**, which builds and maintains all the cells in the body.
- **Vitamin D**, which is necessary for getting the right calcium balance in the body and which contributes to maintaining and strengthening the skeleton.
- **Vitamin B₁₂**, which is important for the body's production of new cells, including red blood cells, and which can contribute to preventing anaemia.
- **Selenium**, an important element in the enzymes that combat harmful chemical processes in the body.
- **Iodine**, which regulates the body's metabolism and is important for normal growth and development of the nervous system.

Applications/uses

The saithe's pearl grey flesh has a more characteristic taste than other white fish species. The more distinct taste goes well with strong flavours. The flesh has a firm structure which makes it well-suited for frying.

Saithe can be fried, boiled and grilled. It is well suited for processed fish, for example, fish burgers and saithe patties.

You can read more about saithe here:

http://www.imr.no/temasider/fisk/sei/nordostarktisk_sei/nb-no

NUTRITIONAL CONTENT

Nutritional content per 100 g saith (edible food):

Energy: 292 kJ / 69 kcal

Nutrients:

Protein:	16.5 g
Fat:	0.3 g
Saturated fatty acids:	0 g
Trans unsaturated fatty acids:	0 g
Cis-mono unsaturated fatty acids:	0.1 g
Cis-poly unsaturated fatty acids:	0.1 g
Omega-3:	0.1 g
Cholesterol:	49 mg

Vitamins:

Vitamin A:	2 RAE
Vitamin D:	0.8 µg
Riboflavin:	0.20 mg
Folate:	18 µg
Vitamin B ₁₂ :	4 µg

Minerals:

Iron:	0.1 mg
Selenium:	30 µg
Iodine:	93 µg

More information about nutritional content can be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/fisk-og-skalldyr-g4/sei-raa-04.029>

Clupea harengus – Herring

Norwegian herring are often referred to as the silver of the sea. The fish are world-renowned for their high quality and their beautiful, silvery colour. But the history of herring does not only involve food. It also involves coastal culture, traditional fishing, craftsmanship and knowledge of ingredients.



Biology

The herring has a silver-coloured, streamlined body. It is a pelagic fish, which means that it swims in open waters. In the case of the herring, it means that it swims in shoals, both along the coast and out at sea. There are several herring stocks in Norwegian waters, and the Norwegian spring-spawning herring and the North Sea herring are the most important. Norwegian spring-spawning herring, together with Icelandic spring-spawning herring and Icelandic summer-spawning herring, are a part of the Atlanto-Scandian herring population, which during the course of its life feeds in the Barents Sea and the Norwegian Sea.

Norwegian spring-spawning herring spawn in February–March. Their most important spawning area is off Møre, but they also spawn along the coast of Nordland and Vesterålen. The herring lay their eggs on the bottom, and after three weeks they hatch. The newly-hatched larvae drift northwards with the current along the coast before they drift into the Barents Sea early in the summer. In the Barents Sea, the herring grow until they become 3–4 years old, and then they swim westwards and mix with the spawning stock. When the herring have spawned, they leave for summer feeding grounds in the Norwegian Sea to eat zooplankton. In September/October, the herring gather off Troms and Finnmark and overwinter there. Then they migrate southwards again in January to spawn. Herring can be up to 25 years old.

Herring are very important for the ecosystems along the coast, both in the Norwegian Sea and in the Barents Sea. They feed on plankton and are themselves an important food source for predatory fish such as cod, saithe, other bottom fish, orcas and whales.

Fishery

Norwegian herring is at its best when it is full of fatty acids. Fishing takes place in the winter during the spawning influx along the Norwegian coast, as well as in summer and autumn. Summer is the best time to get good North Sea herring, while the Norwegian spring-spawning herring is best when it turns back to overwinter off Northern Norway. The herring fishery takes place along the Norwegian coast, in the Norwegian Sea, the North Sea and the strait of Skagerrak. The most common fishing gear is ring nets, pelagic trawls and gillnets.

SPECIES

- ▶ *Clupea harengus* – North Sea herring
- ▶ *Clupea harengus* L.
– Norwegian spring-spawning herring

FAMILY

Clupeidae

PRODUCTS

- ▶ **Fresh** (fillet and whole fish)
- ▶ **Frozen** (fillet, butterflies/flaps and whole fish)
- ▶ **Prepared:**
 - Smoked
 - Salted/cured
 - Marinated/pickled

SIZE

- ▶ **Norwegian spring-spawning herring:**
up to 40 cm and 500 grams
- ▶ **North Sea herring:** up to 35 cm and 400 grams

RANGE

- ▶ **Norwegian spring-spawning herring:**
North-east Atlantic
- ▶ **North Sea herring:**
North Sea, Skagerrak and Kattegat straits

SEASON

- ▶ **Norwegian spring-spawning herring:**
January–March and September–November
- ▶ **North Sea herring:**
May–June and August–December

FEEDS ON

Zooplankton

NAMES IN OTHER LANGUAGES

- ▶ **Latin:** *Clupea harengus*
- ▶ **English:** Atlantic herring
- ▶ **Norwegian:** Sild
- ▶ **French:** Hareng
- ▶ **German:** Hering
- ▶ **Danish:** Sild
- ▶ **Spanish:** Arenque
- ▶ **Icelandic:** Sild
- ▶ **Japanese:** Nishin
- ▶ **Dutch:** Haring
- ▶ **Portuguese:** Arenque
- ▶ **Polish:** Śledź
- ▶ **Swedish:** Sill
- ▶ **Turkish:** Ringa
- ▶ **Serbo-Croatian:** Heringa

Sustainability

Each year, Norwegian and international research provides a basis for advice on sustainable catch in the North-eastern Atlantic Ocean. Norway then conducts negotiations on quotas with other countries that fish for the same herring stocks. Based on the negotiations, the Norwegian Ministry of Trade, Industry and Fisheries allocates the Norwegian share to Norwegian fishers. It is the authorities who grant a licence to everyone who participates in the industry, and provisions regarding quota allocation and conduct of the fishery are determined through annual regulations for each individual type of fish (control regulations). It is not permitted to fish for Norwegian spring-spawning herring that are smaller than 25 cm, therefore the fishing is done mainly for adult fish.

According to the ICES, both Norwegian spring-spawning herring and North Sea herring have a good reproductive capacity, and the fishery is sustainable. The stock of Norwegian spring-spawning herring, however, is on the way down after having been at a high level for a time.

The North Sea herring and Norwegian spring-spawning herring fisheries are MSC certified. MSC is an independent environmental label which sets criteria for the requirements to be imposed for sustainable fishing, while it is independent certification bodies that assess whether the individual fisheries meet the requirements.

Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. It is a system consisting of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Nutritional content

The fat content in herring varies between 10 and 24 per cent, depending on the season. Norwegian spring-spawning herring have their highest fat content in autumn, while North sea herring have their highest fat content in summer. Herring is a winner when it comes to health, and it is rich in:

- ▶ **Vitamin D**, which is necessary for the right calcium balance in the body and which contributes to maintaining and strengthening the skeleton.
- ▶ **Protein**, which builds and maintains all the cells in the body.
- ▶ **Marine omega-3 fatty acids**, which prevent cardiovascular disease and are important for the development of the brain.
- ▶ **Selenium**, an important element in the enzymes that combat harmful chemical processes in the body.

Applications/uses

Herring has a clean, delicate taste of the sea, and the flesh provides suitable chewing resistance. The silvery surface gives the herring a beautiful appearance.

Herring is very useful, and processed herring is found in many varieties. Herring can be salted, hot smoked, cold smoked and spiced fillets. In addition, it is used for various types of marinated herring toppings, such as pickled herring, herring in tomato sauce and herring in sour cream. Fresh herring is well-suited to bread and frying. It becomes crisp and golden and goes well with most accompaniments.

North Sea herring that is sexually mature but has not spawned is called Matjes herring or virgin herring. It is caught at its fattest in May-June and is a familiar delicacy in the Netherlands and Belgium.

You can read more about herring here:

<https://herring.fromnorway.com>

<http://www.imr.no/temasider/fisk/sild/nb-no>



NUTRITIONAL CONTENT

Nutritional content per 100 g winter herring (edible food):

Energy: 776 kJ / 187 kcal

Nutrients:

Protein:	15.2 g
Fat:	14 g
Saturated fatty acids:	2.9 g
Trans unsaturated fatty acids:	0 g
Cis-mono unsaturated fatty acids:	5.9 g
Cis-poly unsaturated fatty acids:	3.3 g
Omega-3:	2.8 g
Omega-6:	0.2 g
Cholesterol:	68 mg

Vitamins:

Vitamin A:	6 RAE
Vitamin D:	11.5 µg
Riboflavin:	0.3 mg
Vitamin B12:	12 µg

Minerals:

Iron:	1 mg
Selenium:	50 µg
Iodine:	38 µg

More information about nutritional content can be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/fisk-og-fiskeprodukter-g4.1/sild-storsild-vintersild-raa-04.032>

Anarhichas spp. – Wolffish

The wolffish lives on the bottom waiting for its prey and crushes its food with its powerful jaw. When the wolffish itself ends up on the plate, the flesh is firm and splendidly suited for frying.



Biology

The wolffish has a characteristic appearance with its long body, wide, round head and a large mouth with powerful teeth. The skin is tough and thick. It uses its powerful teeth to crush the shell of its food. In Norwegian waters, we have three different wolffish species: Atlantic wolffish, spotted wolffish and northern wolffish. The Barents Sea is the most important range for spotted wolffish and northern wolffish, while the Atlantic wolffish is distributed along the entire Norwegian coast and in the North Sea. The spotted wolffish and northern wolffish migrate several hundred kilometres to spawn. The Atlantic wolffish is more stationary. It lives near the coast and in shallower water than the other two species. The northern wolffish distinguishes itself by having a more pelagic lifestyle throughout its entire life.

The wolffish varies its diet from season to season because it replaces teeth in the period between October and May. The Atlantic wolffish replaces its teeth every year. It spawns in coastal areas and fjords at a depth of 50–150 metres, while the other two species spawn at a depth of up to 400 metres.

The eggs of the wolffish are large (6 mm) and hatch after 9–10 months. The female fish spawns a mass of fertilised eggs which form into a ball. The larvae float up towards the surface and are carried on with the ocean currents. When the larvae have reached a certain size, they find their way down to the bottom.

Spotted wolffish are being produced in farms. It is still at an early stage, but so far farming of spotted wolffish has yielded good results. The wolffish prefers high density. It is tame, grows well, has low mortality and a good feeding ratio. These are all good farming characteristics.

Fishery

The season is the entire year, and the fishing takes place along the Norwegian coast and in the Barents Sea. Bottom otter trawls, bottom-set longlines and bottom-set gillnets are the most common fishing gear.

Sustainability

No national control regulations have been established for the wolffish fishery. It is mostly taken as by-catch.

The Russian marine research institute PINRO monitors the three wolffish stocks in the Barents Sea. The stock of northern wolffish in the Barents Sea has declined since the first measurements in 1979 but has increased somewhat in recent years. The stocks of Atlantic wolffish and spotted wolffish in the Barents Sea are considered to be in good condition.

SPECIES

- ▶ *Anarhichas lupus* – Atlantic wolffish
- ▶ *Anarhichas minor* – Spotted wolffish
- ▶ *Anarhichas denticulatus* – Northern wolffish

FAMILY

Anarhichadidae

PRODUCTS

- ▶ **Fresh** (fillet and whole)
- ▶ **Frozen** (fillet and whole)

SIZE

- ▶ **Atlantic wolffish:**
maximum 125 cm and 20 kg
- ▶ **Spotted wolffish:**
maximum 180 cm and 26 kg
- ▶ **Northern wolffish:**
maximum 138 cm and 32 kg

RANGE

- ▶ **Atlantic wolffish:**
Barents Sea, Norwegian coast and the North Sea
- ▶ **Spotted wolffish:**
Barents Sea and spread southward to the North Sea
- ▶ **Northern wolffish:**
Barents Sea and spread in the North Sea

SEASON

Entire year

FEEDS ON

Echinoderms, mussels, snails and fish

NAMES IN OTHER LANGUAGES

- ▶ **Latin:** *Anarhichas spp.*
- ▶ **English:** Ocean Catfish
- ▶ **Norwegian:** Steinbit
- ▶ **French:** Loup de mer
- ▶ **German:** Katfisch, Seewolf



Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. It is a system consisting of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Nutritional content

Wolffish is a lean fish which is rich in:

- ▶ **Protein**, which builds and maintains all the cells in the body.
- ▶ **Vitamin D**, which is necessary for getting the right calcium balance in the body and contributes to maintaining and strengthening the skeleton.
- ▶ **Vitamin B₁₂**, which is important for the body's production of new cells, including red blood cells, and which can contribute to preventing anaemia.
- ▶ **Selenium**, an important element in an enzyme that combats harmful chemical processes in the body.
- ▶ **Iodine**, which regulates the body's metabolism and is important for normal growth and development of the nervous system.

Applications/uses

Wolffish is now also called ocean catfish. The flesh is white and firm, and with the right preparation the taste is good and mild.

The flesh is easy to handle and it is excellent for frying, both in a wok or on the grill, but it can also be boiled and baked. It tolerates being cut into strips and pieces.

You can read more about wolffish here:

<http://www.imr.no/temasider/fisk/steinbit/nb-no>

NUTRITIONAL CONTENT

Nutritional content per 100 g wolffish (edible food):

Energy: 409 kJ / 97 kcal

Nutrients:

Protein:	18.6 g
Fat:	2.5 g
Saturated fatty acids:	0.5 g
Cis-mono unsaturated fatty acids:	0.9 g
Cis-poly unsaturated fatty acids:	0.8 g
Omega-3:	0.1 g
Omega-6:	0.3 g
Cholesterol:	55 mg

Vitamins:

Vitamin A:	27 RAE
Vitamin D:	1.8 µg
Vitamin B ₁₂ :	2 µg
Riboflavin:	0.08 mg

Minerals:

Iron:	0.2 mg
Selenium:	50 µg
Iodine:	90 µg

More information about nutritional content will be found at:

www.nifes.no/en/prosjekt/seafood-data

<http://www.matvaretabellen.no/fisk-og-fiskeprodukter-g4.1/steinbit-raa-04.037>

Gadus morhua – Atlantic cod

Norway has the world's largest cod stock, and it has created a basis of existence for people along the coast for many thousands of years. The cod is still the most important resource for Norwegian fisheries, and it is just as apropos on the menu today as it was 5300 years ago.



Biology

The cod has an extended, pot-bellied body and a large head. The cod uses the obvious barbel its chin to find food. The cod has a brown speckled colour on the upper side and is light on the underside. The flesh is white. In Norwegian waters we distinguish between two main types of cod: the stationary coastal cod which lives on the bottom of shallow water along the coast, and the migrating Norwegian–Arctic cod which has its maturation area in the Barents Sea and then enters the Norwegian coast as sexually mature cod, better known as skrei.

The North East Arctic stock constitutes the majority of the total Norwegian cod stock. The coastal cod lives in the fjords and all the way out to the continental shelf break. It can have spawning areas which overlap with North East Arctic cod. Other stocks of cod are found along Iceland, the Faroe Islands, in the Baltic Sea, the North Sea, the Irish Sea, west of Scotland and in the North West Atlantic. In addition, there are local coastal and fjord stocks in Canada and the south coast of Greenland.

Fishery

Cod are fished year round but have a seasonal halt from January to April because of the skrei fishery. Large portions of the skrei (North East Arctic cod) are fished off the Lofoten Islands and the Vesterålen Islands, where the most important spawning grounds are located. The coastal cod is fished along the entire Norwegian coast. Cod are fished most often with bottom otter trawl, Danish seine, lines, gillnets, hand lines and pots.

Sustainability

Each year the total quota of cod is determined on a scientific basis and as a result of negotiations with other coastal states. The Norwegian Ministry of Trade, Industry and Fisheries allocates the quotas among fleet groups to those who have a right to participate in the cod fisheries.

The North East Arctic stock, which is the largest cod stock in the world, is considered to be in good condition, and it is managed sustainably. The stocks of coastal cod and cod from the strait of Skagerrak and the North Sea are in poor condition.

SPECIES

Gadus morhua – Atlantic cod

FAMILY

Gadidae – Cod family

PRODUCTS

- ▶ **Fresh** (fillet and whole)
- ▶ **Frozen** (fillet and whole)
- ▶ **Salted (pieces, fillet and whole)**
- ▶ **Salted and dried** (pieces, fillet and whole)
- ▶ **Dried** (pieces, fillet and whole)

SIZE

- ▶ **Coastal cod:** maximum 130 cm and 40 kg
- ▶ **North East Arctic cod:** maximum 169 cm and 55 kg

RANGE

- ▶ **Coastal cod:** fjords and coastal areas
- ▶ **North East Arctic cod:** feeding area in the Barents Sea, spawning area from Finnmark to Stad with the most important spawning grounds off Lofoten

SEASON

The fishery takes place the entire year but has a seasonal halt from January to April (Skrei fishery/Lofoten fishery).

FEEDS ON

Zooplankton, fish and bottom-dwelling organisms (crayfish etc.)

NAMES IN OTHER LANGUAGES

- ▶ **Latin:** *Gadus morhua*
- ▶ **Norwegian:** Torsk
- ▶ **French:** Cabillaud, Morue
- ▶ **German:** Dorsch, Kabeljau
- ▶ **Danish:** Torsk
- ▶ **Spanish:** Bacalao
- ▶ **Finnish:** Turska
- ▶ **Greek:** Gádos
- ▶ **Italian:** Merluzzo bianco
- ▶ **Icelandic:** þorskur
- ▶ **Japanese:** Tara
- ▶ **Dutch:** Kabeljauw
- ▶ **Portuguese:** Bacalhau
- ▶ **Polish:** Dorsz
- ▶ **Swedish:** Torsk
- ▶ **Turkish:** Morina
- ▶ **Serbo-Croatian:** Bakalar



The North East Arctic cod fishery is environmentally certified by:

- **Marine Stewardship Council (MSC)** – MSC's fishery certification programme and environmental label for seafood certifies and rewards sustainable fishing.
- **KRAV** – The KRAV label is Sweden's best known environmental label for food, based on an organic basis with particularly high requirements for animal welfare, health, social responsibility and environmental impact.

Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. It is a system consisting of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

A Norwegian Standard (NS 9406:13) has been developed related to the quality mark for Skrei. Quality-marked Skrei are sexually mature spawning cod which have been selected, handled and packaged according to specific requirements described in the quality standard.

Nutritional content

Cod is a lean fish and is rich in:

- **Protein**, which builds and maintains all the cells in the body.
- **Vitamin B₁₂**, which is important for the body's production of new cells, including red blood cells, and which can contribute to preventing anaemia.
- **Selenium**, an important element in the enzymes that combat harmful chemical processes in the body.
- **Iodine**, which regulates the body's metabolism and is important for normal growth and development of the nervous system.

Applications/uses

The cod has a mild, white colour to the flesh which handles many different types of accompaniments and spices. It can be strongly spiced as in a bacalao or lightly salted. Cod flakes easily and should therefore not be cut into pieces that are too small. It is very useful and can be grilled, fried, boiled or eaten raw in sushi.

The skrei has a great deal of muscle, good firmness and a white, delicate flesh. The by-products from skrei such as the roe, liver, tongue and jaw make the skrei product absolutely special.

You can read more about cod here:

<https://www.regjeringen.no/no/dokumenter/fiskekvoter---fastsetting-og-fordeling/id87879/>

http://www.imr.no/temasider/fisk/torsk/nordautarktisk_torsk_skrei/nar_skreien_gyt/nb-no

www.cod.fromnorway.com

NUTRITIONAL CONTENT

Nutritional content per 100 g wild cod (edible food):

Energy: 315 kJ / 75 kcal

Nutrients:

Protein: 17 g

Fat:

Saturated fat: 0.7 g

Cis-mono unsaturated fatty acids: 0.08 g

Cis-poly unsaturated fatty acids: 0.28 g

Omega-3: 0.24 g

Omega-6: 0.2 g

Cholesterol: 0 mg

Vitamins:

Vitamin A: 0 µg

Vitamin D: 1 µg

Riboflavin: 0.04 mg

Vitamin B₁₂: 0.8 µg

Minerals:

Iron: 0.2 g

Selenium: 27 µg

Iodine: 143 µg

More information about nutritional content can be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<https://cod.fromnorway.com/cod-essentials/nutrition/>

Sebastes spp. – Redfish

The redfish is a deepwater fish with a characteristic red colour. On the other hand, the flesh of the fish is white and very rich in taste. Redfish differ from other saltwater fish by giving birth to live fry.



Biology

Redfish can be recognised by the strong red colour and the large scales they have on the body. In Norwegian waters, we have three different redfish species: golden redfish (*Sebastes norvegicus*), deepwater redfish (*Sebastes mentella*) and Norway redfish (*Sebastes viviparus*), but only the first two species are sold. The deepwater redfish can be distinguished from the golden redfish by its lighter red colour and larger eyes. The redfish lives at depths from 100 to 500 metres but can also be found all the way down to 900 metres. It lives on the continental shelf, along the coast and in open waters. The three redfish species have different ranges but overlap each other.

The golden redfish gives birth to live fry which are 4–6 mm long in April–May. The matting itself takes place in autumn, and the female fish often swim in shoals in the spawning area in spring without the male fish. Redfish grow slowly and become sexually mature late. When the redfish are 11–12 years old and 30–35 cm in length, only half of them are sexually mature. The golden redfish spawns along the continental shelf break and the continental shelf from the Shetland Islands and northwards to Andøya, while the deepwater redfish spawns along the continental shelf break from the British zone to Bear Island.

In its first years of life, the redfish eats zooplankton, before it eventually switches to eating krill, capelin, herring and codfish. The deepwater redfish can be up to 70 years old, while the golden redfish can be up to 60 years old.

Fishery

Redfish are fished the entire year, and the fishing takes place in the Norwegian Sea, the Barents Sea and the North Sea. Usual fishing gear is trawls, gillnets and Danish seines.

Sustainability

Fishing for deepwater redfish is regulated with the aid of quotas, by-catch rules and closed areas. Direct fishing for deepwater redfish with floating trawls and bottom otter trawls, limited by season and closed areas. When fishing with trawls at other times and in other areas outside 12 nautical miles from the sea boundary, it is permitted to have 20 per cent by-catch of deepwater redfish in the individual catches and when landing. Within 12 nautical miles, 15 per cent by-catch is permitted. The direct fishing for deepwater redfish occurs north of 62°N.

SPECIES

- ▶ *Sebastes norvegicus*/(*marinus*)
– Golden redfish
- ▶ *Sebastes mentella* – Deepwater redfish

FAMILY

Sebastidae – Redfish family

PRODUCTS

- ▶ **Fresh fillet**
- ▶ **Salted** (fillet and whole)

SIZE

- ▶ **Golden redfish:**
up to 100 cm and more than 15 kg
- ▶ **Deepwater redfish:** up to 50 cm and 1.3 kg

RANGE

- ▶ **Golden redfish:** North Sea, Barents Sea and Norwegian fjords
- ▶ **Deepwater redfish:** Barents Sea, Svalbard and Norwegian Sea

SEASON

By-catch entire year

FEEDS ON

Plankton in the first years of life, then larger plankton and fish

NAMES IN OTHER LANGUAGES

- ▶ **Latin:** *Sebastes spp.*
- ▶ **English:** Rose fish
- ▶ **Norwegian:** Uer
- ▶ **French:** Sébaste
- ▶ **German:** Rotbarsch, Goldbarsch
- ▶ **Danish:** Rødfisk
- ▶ **Spanish:** Gallineta nórdica
- ▶ **Finnish:** Punasimppu
- ▶ **Greek:** Sebastós- Kokkinópsara
- ▶ **Italian:** Scorfano di Norvegia
- ▶ **Icelandic:** Karfi
- ▶ **Japanese:** Menuke
- ▶ **Dutch:** Roodbaars
- ▶ **Portuguese:** Cantarilho
- ▶ **Polish:** Karmazyn
- ▶ **Swedish:** Rødfisk
- ▶ **Turkish:** Kirmizi balık
- ▶ **Serbo-Croatian:** Bodecnjak mali



Currently, fishing for golden redfish is not permitted. The reason is that an effort is being made to build up the stock, which is classified as a strongly threatened species on the Norwegian list of endangered species. Measures to reduce by-catch have also been initiated. Outside 12 nautical miles, up to 20 per cent by-catch of golden redfish is permitted and within 12 nautical miles up to 10 per cent. Fishing for redfish with conventional gear is prohibited north of 62°N.

Food safety and quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. It is a system consisting of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Nutritional content

Redfish is rich in:

- **Protein**, which builds and maintains all the cells in the body.
- **Vitamin B₁₂**, which is important for the body's production of new cells, including red blood cells, and which can contribute to preventing anaemia.
- **Selenium**, an important element in the enzymes that combat harmful chemical processes in the body.

Applications/uses

The flesh is white and extremely rich in taste. Fresh fillets of redfish can be fried and grilled. It is excellent in stir fries and handle chillies, garlic and soya sauce. Salted redfish are best suited to boiling with traditional accompaniments such as root vegetables and potatoes.

You can read more about redfish here:

http://www.imr.no/temasider/fisk/uer/vanlig__uer/nb-no

<http://www.matvaretabellen.no/fisk-og-skalldyr-g4/uer-raa-04.045>

NUTRITIONAL CONTENT

Nutritional content in 100 g raw redfish (edible food):

Energy:	394 kJ / 94 kcal
---------	------------------

Nutrients:

Protein:	17.1 g
Fat:	2.8 g
Saturated fatty acids:	0.5 g
Trans unsaturated fatty acids:	0 g
Mono unsaturated fatty acids:	1.2 g
Poly unsaturated fatty acids:	0.7 g
Cholesterol:	43 mg

Vitamins:

Vitamin A:	3 µg
Vitamin D:	0 µg
Riboflavin:	0.11 mg
Folate:	9 µg
Vitamin B ₁₂ :	1 µg

Minerals:

Iron:	0.2 mg
Selenium:	50 µg
Iodine:	-

More information about nutritional content can be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/fisk-og-skalldyr-g4/uer-raa-04.045>

Ostrea edulis – European flat oyster

European flat oysters have a long history in Norway. Written sources show that the European flat oyster from Norway has been a highly prized product as early as the 1500s. The Danish king sent his own boats here to bring the sought-after delicacy back to Denmark.



Biology

As the name indicates, the European flat oyster is flat and usually has a greyish shell with a wavy, slightly flaky structure. It is a thermophilic species that needs a water temperature of more than 16–18°C to become sexually mature. This means that it is found in areas where the water becomes warm enough in the summer, for example, in protected coves. The European flat oyster can switch between being female and male, and the sex change is dependent on the temperature. It lives attached to the substrate, usually on stones or mussel shells from just below the low tide mark to a depth of two metres. It is common in the Black Sea, the Mediterranean Sea, along the coast of Morocco and northwards along the European coasts north to Trøndelag.

The molluscs' diet consists of phytoplankton, micro-organisms, bacteria and dead organic material, and the phytoplankton is the most important nourishment. It is the water which transports the nourishment to the molluscs, and factors such as depth, tides and water movement affect the access of the molluscs to food. These factors, together with the production of phytoplankton, mean that both the quantity and quality of oysters vary.

European flat oysters spawn in the summer, when the water temperature is high. The fertilisation itself occurs inside the female's mantle cavity where the eggs are fertilised, and the larvae develop inside the mother for the first week. When they leave the mother, they live for one to two weeks in open waters before they migrate to the bottom and attach themselves.

Harvesting

Farming of flat oysters occurs in two phases, spat and edible oyster production. Traditionally the oyster spat are produced in protected coves heated by the sun. The brood stock oysters spawn freely in the water column and the spat are collected on various types of collectors. Today spat are also produced in hatcheries or by a combination of hatchery and constricted inlet. Then the oysters are further cultured in tray systems in the sea or in protected coves until they reach a marketable size. European flat oysters are picked by hand, and they can be harvested year round.

Commercial harvesting of European flat oysters is done today by a small number of operators. The species is also harvested for private use.

SPECIES

Ostrea edulis – European flat oyster

FAMILY

Ostreidae

PRODUCTS

European flat oysters are sold live, fresh and frozen.

SIZE

Up to 17 cm in length and a maximum weight of more than 800 grams

RANGE

Black Sea, Mediterranean Sea, along the coast of Morocco and northwards along Europe's coastline north to Trøndelag

SEASON

Entire year

FEEDS ON

Phytoplankton, micro-organisms, bacteria and dead organic material

OTHER OECD LANGUAGES

- ▶ **Latin:** *Ostrea edulis*
- ▶ **Norwegian:** Flatøsters
- ▶ **French:** Huître plate
- ▶ **German:** Auster
- ▶ **Danish:** Østers
- ▶ **Spanish:** Ostra
- ▶ **Finnish:** Osteri
- ▶ **Greek:** Strídia
- ▶ **Italian:** Ostrea europea piatta
- ▶ **Icelandic:** Ostra
- ▶ **Japanese:** Kaki
- ▶ **Dutch:** Oester
- ▶ **Portuguese:** Ostrea-plana-Europeia
- ▶ **Polish:** Ostryga zwyczajna
- ▶ **Swedish:** Ostron
- ▶ **Turkish:** Istiridy
- ▶ **Serbo-Croatian:** Kamenica



Sustainability

Commercial farming of oysters is primarily regulated by the Norwegian Aquaculture Act. The Act specifies that aquaculture is to be established, conducted and wound up in an environmentally-responsible manner. Aquaculture is supervised by a number of authorities, such as the Norwegian Food Safety Authority, the Norwegian Directorate of Fisheries, the Norwegian Coastal Administration, the Norwegian Water Resources and Energy Directorate and the County Governor.

Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. The control system consists of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Bivalves which are harvested for sale must be safe to eat. Commercial farming of molluscs may only be done in areas classified by the Norwegian Food Safety Authority. Molluscs which are harvested for direct consumption must be harvested from class A areas. If harvesting is done from B or C areas, the molluscs must be cleaned or heat-treated before sale.

The quality is best from autumn and through the winter when the molluscs have good access to nourishment, so that they have gathered up a great deal of stored food. The quality can be good in the spring, but sexual maturation and spawning reduce it somewhat.

Nutritional content

European flat oysters are rich in:

- ▶ **Protein**, which builds and maintains all the cells in the body.
- ▶ **Vitamin D**, which is important for the body's proper calcium balance, which maintains and strengthens the bones in the body.
- ▶ **Vitamin B12**, which is important for the body being able to produce new cells, including red blood cells, and can contribute to preventing anaemia.
- ▶ **Selenium**, an important element in the enzymes that combat harmful chemical processes in the body.
- ▶ **Iodine**, which is important for the body's production of hormones which play a role in regulating metabolism.

Applications/uses

European flat oysters are a sought-after ingredient with their fresh taste of algae, mixed with a unique sweet, mineral aftertaste. The entire shell meat of European flat oysters is served, and it is very sweet, rich and tasty. European flat oysters can be served raw or heat-treated, and a little lemon and pepper is usually added. They are often served as an appetiser.

You can read more about European flat oysters here:

<http://www.imr.no/temasider/skjell/osters/flatosters/nb-no>

NUTRITIONAL CONTENT

Nutritional content per 100 g raw oysters (edible food):

Energy:	247 kJ / 59 kcal
---------	------------------

Nutrients:

Protein:	9.3 g
Fat:	2.4 g
Saturated fatty acids:	0.5 g
Trans unsaturated fatty acids:	0 g
Cis-mono unsaturated fatty acids:	0.5 g
Cis-poly unsaturated fatty acids:	1 g
Omega-3:	0.6 g
Omega-6:	0.1 g
Cholesterol:	50 mg

Vitamins:

Vitamin A:	38 RAE
Vitamin D:	3.1 µg
Riboflavin:	0.15 mg
Vitamin B12:	14 µg

Minerals:

Iron:	3.1 mg
Selenium:	60 µg
Iodine:	60 µg

More information about nutritional content will be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/skalldyr-fiskeinnmat-g4.3/oesters-raa-04.058>

Psetta maxima – Turbot

The Romans called the turbot the “pheasant of the sea” or “water pheasant” because it was as highly valued as the pheasant. Turbot is a fish in high demand and is generally only served at exclusive restaurants.



Biology

The turbot is a flatfish that belongs to the turbot family. It is flat and almost completely circular in body shape. The turbot is left-eyed, so the eyes are found on the left side. The colour varies with the bottom conditions, so the fish is usually grey or brown with dark spots on the upper side. The turbot has no shell, but large, bony knots on the upper side. On the underside it is entirely white. The turbot occurs from the tide line down to about 80 metres in depth and is often partially buried in the sediment. The turbot is an active predatory fish which as an adult mainly lives off other fish. It lies quietly on the bottom and waits for the prey to swim past, before it attacks from behind. Turbot can become up to 1 metre long and weigh 25 kg.

The spawning period for turbot is between May and July in the Atlantic Ocean, and then it migrates to shallower waters. When the larvae hatch, they have a common symmetrical body shape. Then the larvae will lie on the bottom, and the eye on the right side will gradually move to the left side. The body shape also changes during this phase. The females become larger than the males.

Fishery

Turbot are fished year round. Much of the turbot sold in Europe comes from farming, mainly from Southern Europe. Production is slight in Norway because the turbot is dependent on being supplied relatively warm water. The best fishing locations in the North Sea are on the fishing banks off the coast of Northern Jutland. Turbot are fished with Danish seines, bottom otter trawls and bottom-set gillnets.

Sustainability

No Norwegian quotas are set for the turbot fishery. According to the ICES, the turbot stock in the North Sea has had a negative trend in recent years but has now stabilised at a low level. The stock is considered vigorous.

Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. The control system consists of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

SPECIES

Psetta maxima – Turbot

FAMILY

Scophthalmidae – Turbot family

PRODUCTS

Fresh (steaks, fillets and whole fish)

SIZE

Up to 1 metre and 25 kg

RANGE

Black Sea, Mediterranean Sea and north along the Helgeland coast

SEASON

Entire year

FEEDS ON

Fish and crustaceans

NAMES IN OECD LANGUAGES

- ▶ **Latin:** *Psetta maximus*
- ▶ **Norwegian:** Piggvar
- ▶ **French:** Turbot
- ▶ **German:** Steinbutt
- ▶ **Danish:** Pighvarre
- ▶ **Spanish:** Rodaballo
- ▶ **Finnish:** Piikkikampela
- ▶ **Greek:** Rómbos-písci
- ▶ **Italian:** Rombo chiodat
- ▶ **Icelandic:** Sandhverfa
- ▶ **Dutch:** Tarbot
- ▶ **Portuguese:** Pregado
- ▶ **Polish:** Skarp
- ▶ **Swedish:** Piggvar
- ▶ **Turkish:** Kalkan balığı
- ▶ **Serbo-Croatian:** Plat



Nutritional content

Turbot contains nearly all the key nutrients the body needs. Turbot is especially rich in:

- ▶ **Protein**, which builds and maintains all the cells in the body.
- ▶ **Vitamin D**, which is necessary for getting the right calcium balance in the body and thus contributes to maintaining and strengthening the skeleton.
- ▶ **Vitamin B₁₂**, which is important for the body's production of new cells, including red blood cells, and can prevent anaemia.
- ▶ **Selenium**, an important element in an enzyme that combats harmful processes in the body.

Applications/uses

Turbot is an exclusive and very sought-after ingredient. Turbot is a large, rather thick flatfish, and there is therefore a great deal of food on it. Large flatfish are easy to fillet, and the turbot's skin is easily pulled off. Four firm, white fillets with a piquant taste can be obtained from each turbot.

It can be fried, boiled and grilled, and the meat has its best quality during September–April, when it is not in the spawning time.

You can read more about turbot here:

The information has been obtained from:

Pethon, P. (1998). Aschehougs store fiskebok. 4th edition Oslo: Aschehoug.

<http://www.fishbase.org/Summary/SpeciesSummary.php?ID=1348&AT=turbot>

NUTRITIONAL CONTENT

Nutritional content per 100 g raw turbot:

Energy:	359 kJ / 85 kcal
---------	------------------

Nutrients:

Protein:	15.9 g
Fat:	2.4 g
Saturated fatty acids:	0.5 g
Trans unsaturated fatty acids:	0 g
Cis-mono unsaturated fatty acids:	0.7 g
Cis-poly unsaturated fatty acids:	0.9 g
Omega-3 fatty acids:	0.7 g
Cholesterol:	54 mg

Vitamins:

Vitamin A:	4 RAE
Vitamin D:	1.7 µg
Riboflavin:	0.08 mg
Folate:	16 µg
Vitamin B ₁₂ :	0.8 µg

Minerals:

Iron:	0.2 mg
Selenium:	30 µg

More information about nutritional content will be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/fisk-og-skalldyr-g4/piggvar-raa-04.112>

Cyclopterus lumpus – Lumpfish

The lumpfish with its flat abdomen and fine colours has a distinctiveness which most people find fascinating. One seventh of the body weight of a spawning lumpfish consists of roe which is very rich in marine omega-3 fatty acids.



Biology

The lumpfish has a short, thick body with sucking discs under the body. The colour can vary from light blue to orange or brown. It is actually the female fish that is called a lumpfish ("rognkjeks") in Norwegian, while the male is called a "rognkall". The male lumpfish is blue-grey on the back with a lighter abdomen. The abdomen turns bright red-orange during the spawning season. The female lumpfish is grey-brown on the back, while the sides and the abdomen have a lighter, blue-grey colour. The female becomes larger than the male. Lumpfish swim freely in the ocean for large parts of their lives. In the winter they live in deeper water, and in spring they migrate into shallower water to spawn. The species is found in the entire eastern Atlantic Ocean, the North Sea, the Baltic Sea and the Barents Sea. In Norway, we can find it along the entire coast. Lumpfish live to be 7–8 years old.

When the eggs are fertilised, they become sticky and attach themselves to rocks or stones on the bottom. Several female lumpfish deposit their eggs at the same spawning location. There the eggs attach themselves to a larger clump, which is protected by the male lumpfish for two months while the eggs hatch. The small lumpfish mature in the kelp forest and seek cover by attaching themselves with the sucking disc to kelp leaves. When they are one year old and slightly larger than a golf ball, they swim out into the open ocean. There they feed on plankton for 2–4 years before they migrate back to the coast to spawn.

In recent years fry from farmed lumpfish have been used to pluck salmon lice in salmon farming. they can be used all over Norway because they tolerate low temperatures well.

Fishery

The fishing season for lumpfish is from April to June, when the female lumpfish come into the coast to spawn. Fishing is done between the Lofoten Islands and the Varanger Peninsula at depths of 10–40 metres in areas leading out towards the open ocean. The fishing gear that is used is bottom-set gillnets with a minimum mesh size of 267 mm.

Sustainability

Each year, Norwegian and international research provides a basis for advice on sustainable catch. Norway then conducts negotiations on quotas with other countries that fish for the same stocks. Based on the negotiations, the Norwegian Ministry of Trade, Industry and Fisheries allocates the Norwegian share to Norwegian fishers. It is the authorities who grant a licence to everyone who participates in the industry, and provisions regarding

SPECIES

Cyclopterus lumpus – Lumpfish

FAMILY

Cyclopteridae – Lumpfish and snailfish

PRODUCTS

- ▶ Roe
- ▶ Fillet

SIZE

Up to 63 cm and 5.5 kg

RANGE

Entire eastern Atlantic Ocean, North Sea, Baltic Sea and Barents Sea

SEASON

April–June

FEEDS ON

Plankton which live in open waters

NAMES IN OECD LANGUAGES

- ▶ **Latin:** *Cyclopterus lumpus*
- ▶ **English:** Lumpsucker, Lumpfish
- ▶ **French:** Cycloptère
- ▶ **German:** Seehase, Lumpfisch
- ▶ **Danish:** Stenbider
- ▶ **Finnish:** Rasvakala
- ▶ **Italian:** Ciclottero
- ▶ **Icelandic:** Hrognkelsi
- ▶ **Japanese:** Dango-uo
- ▶ **Dutch:** Snotdolf
- ▶ **Portuguese:** Peixe-lapa
- ▶ **Polish:** Tasza
- ▶ **Swedish:** Sjurbygg



quota allocation and conduct of the fishery are determined through annual regulations for each individual type of fish (control regulations).

The Norwegian Institute of Marine Research makes stock estimates of female lumpfish based on the quantity of female lumpfish in the Barents Sea. In recent years the female lumpfish stock in the Barents Sea has declined, but it is still regarded as vigorous.

A process has been started to get the female lumpfish fishery certified by the Marine Stewardship Council.

Food safety and quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. It is a system consisting of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Applications/uses

For the female lumpfish, it is the roe that has commercial value. The roe is pink but is often tinted black. The flesh of the female lumpfish is loose and gelatinous, but the flesh of the male lumpfish is firmer with a pink colour, and it is well-suited for consumption. Female lumpfish have a low proportion of fillet, and therefore the fillet is rarely used as food. However, the fillet on the male lumpfish is tasty and can be reminiscent of scallops. It is well-suited to frying.

Nutritional content

Female lumpfish is rich in:

- ▶ **Protein**, which builds and maintains all the cells in the body.
- ▶ **Marine omega-3** fatty acids, which prevent and retard cardiovascular disease and are important for the development of the brain.
- ▶ **Iodine**, which regulates the body's metabolism and is important for normal growth and development of the nervous system.

You can read more about female lumpfish here:

http://www.imr.no/temasider/fisk/rognkjeks_-kall/nb-no

<http://www.fishbase.org/Summary/speciesSummary.php?ID=62&AT=rognkjeks>

NUTRITIONAL CONTENT

Nutritional content in 100 g raw female lumpfish:

Energy: 697 kJ /167 kcal

Nutrients:

Protein:	9.8 g
Fat:	14.2 g
Saturated fatty acids:	3.01 g
Trans unsaturated fatty acids:	0 g
Cis-mono unsaturated fatty acids:	7.73 g
Cis-poly unsaturated fatty acids:	2.35 g
Omega-3:	2.13 g

Vitamins:

Vitamin A:	11 RAE
Vitamin D:	3.90 µg
Riboflavin:	0.080 mg

Minerals:

Iron:	0.500 mg
Selenium:	16.5 µg
Iodine:	50.0 µg

Source:

<http://frida.fooddata.dk/ShowFood.php?foodid=737>

Nephrops norvegicus – Norway lobster

The Norway lobster is a close relative of the lobster. The species also goes by several other names, such as Dublin Bay prawn, langoustine or scampi. It is splendidly suited to the grille and in other seafood dishes, for example, in casseroles and pasta.



Biology

The Norway lobster has a pale orange colour and the same body shape as a lobster, but the Norway lobster is smaller and narrower. The Norway lobster has five pairs of legs, and the three in the front have claws. The leading pair has the largest claws. The Norway lobster lives at depths of 20–800 metres, usually on soft bottoms of sandy mud or clay. It digs a hole into the sediment on the soft bottom of 20–30 cm to conceal itself. The kidney-shaped eyes, which have also given the Norway lobster its Latin name (*Nephrops norvegicus*), are extremely sensitive to light. Therefore it spends a great deal of time in the hole, and is out of the hole mostly at night or in the daytime at great depths where there is little light. At night it hunts food, while in the daytime it hides itself in the hole. The Norway lobster is omnivorous and eats crustaceans, chaetopods, molluscs and carrion. The adult Norway lobsters are territorial and can be up to 15 years old.

The female spawns in the summer and bears the 1000–5000 eggs under her chin for 8–9 months. The egg-bearing females rarely leave their holes during this period. When the eggs hatch, the larvae drift freely in the ocean for up to 60 days before they migrate down to the bottom.

Norway lobster are common in the western Mediterranean sea, in the North East Atlantic from Morocco to Troms and around Iceland and Great Britain. Norway lobster in the Norwegian Trough west of Lillesnes and in the Skagerrak and Kattegat straits are regarded as two separate stocks.

Fishery

Norway lobster are fished year round along the Norwegian coast north to the Lofoten Islands, in the North Sea and in the strait of Skagerrak. The largest share of the catch comes from the strait of Skagerrak. The fishing gear is mainly pots, in addition to some being taken as by-catch in shrimp trawls. Pot fishing for Norway lobster is popular among recreational fishers.

Sustainability

The Norwegian fishery for Norway lobster is regulated by the licensing and methods regulations. In Norway no special quotas are set for the Norway lobster fishery, but an EU quota is set in the Norwegian zone in the North Sea. The minimum length is set at 13 cm, and in the North Sea bottom otter trawls must have a mesh width of 120 mm. In the strait

SPECIES

Nephrops norvegicus – Norway lobster

FAMILY

Nephropidae – Lobster family

PRODUCTS

- ▶ Live
- ▶ Cooked, frozen
- ▶ Cooked, fresh

SIZE

Maximum 24–25 cm in length

RANGE

The western Mediterranean sea and the North East Atlantic from Morocco to Troms, around Iceland and Great Britain

SEASON

Entire year

FEEDS ON

Crustaceans, chaetopods, molluscs and carrion

OTHER OECD LANGUAGES

- ▶ **Latin:** *Nephrops norvegicus*
- ▶ **English:** Norway lobster
- ▶ **French:** Langoustine
- ▶ **German:** Kaisergranat
- ▶ **Danish:** Jomfruhummer
- ▶ **Spanish:** Cigala
- ▶ **Finnish:** Keisarihummeri
- ▶ **Greek:** Karavida
- ▶ **Italian:** Scampi
- ▶ **Icelandic:** Letturhumar
- ▶ **Japanese:** Akazaebi
- ▶ **Dutch:** Langoestine
- ▶ **Portuguese:** Lagostim
- ▶ **Polish:** Homarzec
- ▶ **Swedish:** Havskräfta
- ▶ **Turkish:** Nefrops
- ▶ **Serbo-Croatian:** škamp



of Skagerrak, a mesh width of 70 mm may be used if a sorting grate is used in the trawl and square meshes in the bunt. For fishing inside 4 nautical miles, sorting grates are not required as long as square meshes are used. Recreational fishers may only fish with up to 20 pots.

The ICES monitors the Norway lobster stocks in the Norwegian Trough and in the straits of Skagerrak and Kattegat, and the researchers have concluded that the stocks are vigorous and sustainably managed.

Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. The control system consists of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Norway lobster must be cooked immediately after being killed to avoid deterioration in quality.

Nutritional content

Norway lobster is especially rich in

- **Protein**, which builds and maintains all the cells in the body.
- **Vitamin B₁₂**, which is important for producing new cells, including red blood cells, and which can prevent anaemia.
- **Selenium**, an important element in the enzymes that combat harmful chemical processes in the body.
- **Iodine**, which regulates the body's metabolism and is important for normal growth and development of the nervous system.

Applications/uses

Norway lobster has a sweet, mild taste and a firm, delicate flesh that is white. It can be grilled and boiled, and it is well-suited to a shellfish dish together with shrimps and king crab, for example.

You can read more about Norway lobster here:

<http://www.imr.no/temasider/skalldyr/sjokreps/nb-no>

NUTRITIONAL CONTENT

Nutritional content per 100 g raw Norway lobster:

Energy:	393 kJ/94 kcal
---------	----------------

Nutrients:

Protein:	19.6 g
Fat:	1.3 g
Saturated fatty acids:	0.199 g
Trans unsaturated fatty acids:	0 g
Cis-mono unsaturated fatty acids:	0.321 g
Cis-poly unsaturated fatty acids:	0.483 g
Omega-3:	0.438 g
Omega-6:	0.045g
Cholesterol:	95 mg

Vitamins:

Vitamin A:	0 RAE
Vitamin D:	0 µg
Riboflavin:	0.010 mg
Vitamin B ₁₂ :	0.900 µg
Folate:	17.0 µg

Minerals:

Iron:	2.00 mg
Selenium:	55.0 µg
Iodine:	240 µg

Source:

<http://frida.fooddata.dk/ShowFood.php?foodid=655>

Chionoecetes opilio – Snow crab

The snow crab is the king crab's little sister. It is smaller, lighter in colour on the shell and has a sweeter taste to the crabmeat.



Biology

The crab is extremely sensitive to temperatures and prefers to live in water temperatures below 3 degrees Celsius. This results in the depth distribution being dependent on the season. It has a round, brownish red pattern on its shell. The crab has four pairs of legs and one pair with claws. The male crab grows to become considerably larger (up to 16.5 cm in shell size) than the female crab (up to 10.0 cm in shell size).

The small crabs live for the most part in shallow areas, while the larger crabs stay in deeper areas. Snow crabs live on various bottom types such as clay, sand and hard bottoms.

The crabs mate late in the winter or early in the spring, and the females carry external roe (roe which lies outside the body, like on a prawn) up until hatching, right before the next mating. In the first three months, the larvae live in pelagic waters, before they eventually settle on the bottom. The temperature conditions determine whether the females spawn each year or every other year.

It takes eight to nine years before the crab has grown to commercial size. Crabs grow slowly by moulting. The small crabs moult once a year, while the large crabs moult every other year. When the crab has moulted for the last time, growth stops and the crab has then become sexually mature. Snow crabs live about 15 years.

Snow crabs are common in the north western Atlantic Ocean, in a large area in the North Pacific and in the Barents Sea. It is a new species in Norwegian areas. Even though both the number of records and the number of snow crabs in total are increasing in the Norwegian zone, most of the stock is found for the time being in the Russian zone. Genetic studies show that the crabs are related to snow crabs along the eastern coast of Canada. Instances of snow crabs being found in the stretch between the Barents Sea and the Bering Strait provide a basis for supposing that the crab has immigrated from the east.

Fishery

The snow crab fishery takes place year round in the north eastern Barents Sea and in the Svalbard zone. Snow crab are fished with pots, which are placed on the seabed for a few days before they are brought up.

SPECIES

Chionoecetes opilio

- ▶ Snow crab

FAMILY

Majidae

PRODUCTS

- ▶ Whole crab, live
- ▶ Whole crab, frozen raw or cooked
- ▶ Cluster, fresh and frozen

SIZE

Varies from area to area

- ▶ Male: 5.8–16.5 cm
- ▶ Female: 5.0–10.0 cm

RANGE

North western Atlantic Ocean and the North Pacific

SEASON

Entire year

FEEDS ON

Bottom-dwelling animals such as crustaceans, mussels and brittle stars

OTHER OECD LANGUAGES

- ▶ **Latin:** *Chionoecetes opilio*
- ▶ **English:** Queen crab
- ▶ **Norwegian:** Snøkrabbe
- ▶ **French:** Crabe des neiges
- ▶ **German:** Arktische Seespinnen
Schneekrabbe
- ▶ **Spanish:** Cangrejos de las nieves
- ▶ **Danish:** Krabbe-slægt
- ▶ **French:** Crabes des neiges du Pacifique
- ▶ **Italian:** Grancevole artiche
- ▶ **Dutch:** Pacifische sneeuwkrabben
- ▶ **Portuguese:** Caranguejos das neves do Pacífico
- ▶ **Finnish:** Ravut
- ▶ **Swedish:** Maskeringskrabbor



Sustainability

With regard to management, the snow crab is defined as a sedentary species. Sedentary means that it does not move much/tends to stay in one place and the management is determined by the ownership of the continental shelf. The majority of snow crabs are on the Russian part of the Loop Hole and are thus under Russian continental shelf jurisdiction. In 2016 permission was granted to the parties' fishing vessels to fish for snow crab on open waters in the Barents Sea on their parts of the continental shelf. The boats must have a licence which is granted under certain conditions.

Minimum size of snow crab pots is 10 cm. This means that only the largest crabs are fished, while female crabs and small crabs are protected. At the same time, the male crab will spawn one or two times before it becomes large enough to be caught. In this way, overfishing of snow crab is avoided.

Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. The control system consists of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Regardless of which form snow crab are sold, the colour in raw condition must be evenly brown on the upper side and white or cream-coloured on the underside. The crab must be alive and in good condition when caught and during production and packing, as well as having abundant flesh and not having wounds and/or discolouration or scrapes on any parts of the shell, whether it involves the back shield, legs or claws. The crab must lack entire legs and claws or parts of these.

Nutritional content

Snow crab is rich in

- **Protein**, which builds and maintains all the cells in the body.
- **Marine omega-3** fatty acids, which prevent cardiovascular disease and are important for the development of the brain.
- **Selenium**, which is an important element in the enzymes that combat harmful chemical processes in the body.

Applications/uses

The snow crab is very reminiscent of the king crab, but it has a slightly sweeter and more succulent flesh.

There is good, firm flesh in the legs which is suited for rapid heating. It can be served au naturel, gratinated, grilled or used in a wok. The meat in the shoulders on the legs is stringier, which is splendidly suited to salads.

You can find more information about snow crab here:

<http://www.imr.no/temasider/skalldyr/snokrabbe/nn-no>

NUTRITIONAL CONTENT

Nutritional content in 100 g (claws):

Nutrients:

Protein:	20 g
Fat:	1 g
Saturated fatty acids:	0.1 g
Mono unsaturated fatty acids:	0.17 g
Poly unsaturated fatty acids:	0.5 g
Omega-3:	0.4 g
Omega-6:	0.05 g
Cholesterol:	40.3 mg

Vitamins:

Vitamin A:	0 µg
Vitamin B12:	0.5 µg
Folate:	6.9 µg
Riboflavin:	0.05 mg

Minerals:

Selenium:	95 µg
-----------	-------

More information about nutritional content will be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

NIFES

Crassostrea gigas – Pacific cupped oyster

The Pacific cupped oyster is a new species in Norwegian waters, and it has spread rapidly. It originally comes from Asia but was introduced to Europe at the end of the 1960s to replace the original stock of European flat oysters that was dying out. In Norway it is harvested by divers who pick the oysters by hand.



Biology

The Pacific cupped oyster were first observed in Norwegian waters at the beginning of the 2000s, and since then it has spread rapidly. It has several similarities to the European flat oyster, but the species are nevertheless different in shape and shell structure. The European flat oyster is rounder and quite flat, while the Pacific cupped oyster has a longer, narrower shape, deeper lower shell and a heavy, wavy upper surface with a coarse flaky structure. The shell on the Pacific cupped oyster is whitish, with purple longitudinal stripes. The Pacific cupped oyster is robust against dryness and cold: It tolerates being dried out for several hours in sunlight, and in the winter it tolerates being frozen in ice for several weeks. The oyster lives in temperatures from 4 °C to 35 °C, but it can survive temperatures from –22 °C to nearly 40 °C.

The Pacific cupped oyster lives attached to the substrate, usually on stones or mussel shells from just below the low tide mark to a couple of metres deep. It spawns in the summer (July–August) and depends on a high water temperature (18–20 °C) in order to spawn. The fertilisation occurs freely in the water, and each individual can produce 50–200 million eggs. When the eggs hatch, they live freely in the ocean before they eventually migrate down to the bottom and attach themselves. The Pacific cupped oyster is hermaphroditic and can change sex depending on the environmental conditions. It becomes sexually mature after one year and can be up to 30 years old. The species has been found along the entire Skagerrak coast, in Rogaland County and in Hordaland County. The Pacific cupped oyster was already naturally common in Japan and Korea. It has come to Europe through cultivation and then spread.

Harvesting

Pacific cupped oysters are harvested year round. The catch method for Pacific cupped oysters in Norway is diving, and each mollusc is hand picked according to size.

Sustainability

The Pacific cupped oyster is an undesirable species in Norwegian waters. It spreads rapidly and can threaten local species such as the European flat oyster and the blue mussel. The Norwegian Environment Agency has prepared an action plan against the Pacific cupped oyster which is intended to prevent dispersal of the species.

SPECIES

Crassostrea gigas – Pacific cupped oyster

FAMILY

Ostreidae – True oysters

PRODUCTS

Pacific cupped oyster are sold in the following forms:

- Raw, whole shell

SIZE

Average size of adult mollusc is 15–20 cm.

RANGE

Occurs naturally in the North Pacific from Japan to the Bering Strait.

SEASON

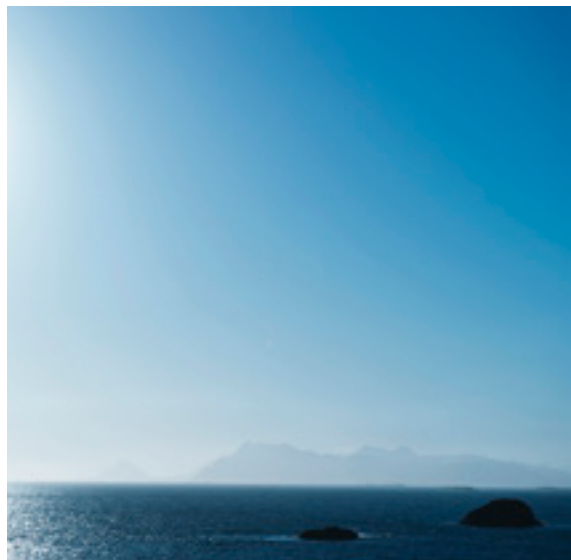
Year round, but best in April–May, autumn, winter and spring.

FEEDS ON

Phytoplankton, bacteria, other micro-organisms and dead organic material

OTHER OECD LANGUAGES

- **Latin:** *Crassostrea gigas*
- **English:** Japanese oyster
- **Norwegian:** Stillehavsøsters
- **French:** L'Huître creuse japonaise du Pacifique
- **German:** Pazifische felsenauster
- **Spanish:** Ostión del Pacífico
- **Danish:** Stillehavsøsters
- **Italian:** Ostrica giapponese
- **Dutch:** Japanese oester
- **Portuguese:** Ostra Portuguesa
- **Finnish:** Tyynenmerenosteri
- **Swedish:** Japanskt jätteostron



The Norwegian Institute of Marine Research monitors the spread of the Pacific cupped oyster in Norwegian waters. A tenfold increase in density in one year has been documented at several places. They are proposing to use harvesting and sales as a method of holding the dispersal under control.

Harvesting of the Pacific cupped oyster is not regulated by any quota, and everyone can harvest it. Farming of Pacific cupped oysters is not permitted in Norway.

Food safety / Quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. The control system consists of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

Pacific cupped oysters which are sold commercially must be safe to eat. The producers may only harvest molluscs from classified areas, and the molluscs must be tested for contamination to ensure the safety of food for the consumer. Molluscs which are harvested for direct consumption must be harvested from class A areas. If harvesting is done from B or C areas, the molluscs must be put out again, cleaned or heat-treated before sale.

The Norwegian Food Safety Authority recommends against eating self-picked molluscs that have not been tested for algal toxins, bacteria and environmental toxins. Older molluscs in particular can have a tendency to collect environmental toxins. The age of the molluscs can be estimated by looking at the number of rings on the shell.

Nutritional content

Lack information.

Applications/uses

The Pacific cupped oyster has a mild, full taste that is somewhat sweeter than in the European flat oyster. It can be eaten raw but is also well-suited to quick steaming, grating or grilling.

You can read more about Pacific cupped oysters here:

<http://www.imr.no/temasider/skjell/osters/stillehavsosters/nb-no>

The information has been obtained from:

Moen, F. E. and Svensen, E. (2014). *Dyrelivet i havet* (Marine fish & invertebrates of Northern Europe). 6th edition Kristiansund: Kom forlag.

NUTRITIONAL CONTENT

Nutritional content per 100 g raw Pacific cupped oyster:

Energy: 339 kJ / 81 kcal

Nutrients:

Protein:	9.45 g
Fat:	2.30 g
Saturated fatty acids:	0.510 g
Trans unsaturated fatty acids:	0 g
Cis-mono unsaturated fatty acids:	0.358 g
Cis-poly unsaturated fatty acids:	0.894 g
Omega-3:	0.49 g
Cholesterol:	50 mg

Vitamins:

Vitamin A:	81 RAE
Vitamin D:	0 µg
Riboflavin:	0.233 mg
Folate:	10 µg
Vitamin B12:	16 µg

Minerals:

Iron:	5.11 mg
Selenium:	77 µg

Source:

<https://ndb.nal.usda.gov/ndb/foods/show/4649?n1=%7Bn1%3DQv%2C+Qv%3D1%7D&fgcd=&man=&facet=&count=&max=50&sort=default&qlookup=pacific+oyster&offset=&format=Full&new=&measureby=&Qv=1>
Orban et al. 2004. Growth, nutritional quality and safety of oysters (*Crassostrea gigas*) cultured in the lagoon of Venice (Italy)), *Journal of the Science of Food and Agriculture*.

Cancer pagurus – Edible crab

The edible crab is the most common crab in Norway. It is often served au naturel with white bread and lemon. Sexually mature crabs moult in autumn, and the meat content depends on how long it has been since the moult. A hard shell and good weight indicates that the crab has a high content of meat.



Biology

The edible crab has a red-brown shell on the back and five walking legs in which one pair constitutes the claws. In order to distinguish between the sexes, the underside of the carapace must be examined. The females have a broader tail flap than the males and have four pairs of tail feet. The crab moults in order to grow. Sexually mature crabs moult in autumn, and at higher temperatures they grow more quickly and become sexually mature faster.

The crab lives in saltwater and not in areas with brackish water. It likes hard bottoms best but may migrate out onto shellsand and clay bottoms. The crab is found from the surface and down to 400 metres but is most common in areas shallower than 40 metres. The young crabs live in shallow areas, while the older ones live at greater depths. The edible crab can be up to 20 years old. In Norway the crab is common from Troms and south along the coast. It is also found in the Black Sea, the Mediterranean Sea and North Africa.

Edible crabs are nocturnal and act as both predators and scavengers. They use their claws, mouth parts and stomach to divide up their food. The crabs are omnivorous and help themselves to whatever is available at any time where they happen to be. As cold-blooded animals, the crabs can go for long periods without food.

Mating occurs right after the crabs moult, and the females take care of the sperm for more than a year before they fertilise the eggs. The eggs are attached under the "tail" and hatch after eight months. The crab larvae move freely in the water column for about two months and moult seven times. When they become 2.5 mm in size, they settle on the bottom. The crabs become sexually mature when they are 4–5 years old.

Fishery

Edible crab are fished year round, but the main season is from August to November. The crab fishery occurs from Troms and south along the Norwegian coast. Edible crab are fished with pots, and it is usually vessels 10–15 metres in length which participate in this fishery.

Sustainability

The crab fishery is not regulated by quotas, and there are no limitations on the number of pots for commercial fishers. Recreational fishers may only use up to 20 pots each. North of Rogaland County, a minimum size has been set of 13 cm shell width, while from Rogaland County to Sweden the minimum size is 11 cm in shell width.

SPECIES

Cancer pagurus – Edible crab

FAMILY

Cancridae

PRODUCTS

- ▶ Live crab
- ▶ Whole crab, cooked (fresh and frozen)
- ▶ Crab claws, cooked (fresh and frozen)
- ▶ Filled shells

SIZE

Approximately 26 cm shell width (male) and approximately 22 cm (female)

RANGE

Coastal waters from the Black Sea, Mediterranean Sea and North Africa to Finnmark. The most important areas in Europe are around Great Britain and Ireland.

SEASON

Year round, but it is at its best in autumn.

FEEDS ON

Most bottom-dwelling animals

OTHER OECD LANGUAGES

- ▶ **Latin:** *Cancer pagarus*
- ▶ **Norwegian:** Taskekrabbe
- ▶ **French:** Tourteau
- ▶ **German:** Taschenkrebse
- ▶ **Danish:** Taskekrabbe
- ▶ **Spanish:** Buey
- ▶ **Finnish:** Isotaskurapu
- ▶ **Italian:** Granciporro
- ▶ **Icelandic:** Töskukrabbi
- ▶ **Dutch:** Noordzeekrab
- ▶ **Portuguese:** Sapateira
- ▶ **Polish:** Krab kieszeniec
- ▶ **Swedish:** Krabbtaska
- ▶ **Turkish:** Asil pavyrya



During the period while the lobster fishery takes place (from 1 October to 31 December), it is forbidden to set or pull pots from the Swedish border to and including Vest-Agder County, from midnight on Saturday to midnight on Sunday, inclusive. This is called Sunday protection.

From the Swedish border to Varnes Lighthouse on Lista, from 1 December to 1 October, 8 a.m., crab pots, or other gear intended to catch crabs, must be set at a depth of at least 25 metres. In the rest of Norway, there is no minimum depth.

The edible crab stock is monitored through landings from the fishery. The catches have been at a stable level since the monitoring started in 2001, which indicates that the stock of edible crab is being managed well.

Food safety/quality control

The Norwegian seafood industry is subject to stringent requirements in order to ensure food safety. The control system consists of several bodies which jointly examine and monitor compliance with the requirements in all stages of the production chain. The bodies which supervise food are the Norwegian Food Safety Authority, the Norwegian National Institute of Nutrition and Seafood Research (NIFES), the Norwegian Directorate of Fisheries and the Norwegian Ministry of Trade, Industry and Fisheries.

All crab is sorted by the fisher on board. Male crabs are sorted out, and female crabs are sorted into the categories consumption crab and production crab. Crabs which go for consumption are female crabs full of meat with roe. They have an attractive appearance, both claws intact and a minimum of six walking legs. Crabs that are under minimum size that have roe on the exterior, or that have recently moulted, must be put back into the sea.

Nutritional content

Edible crab are rich in:

- **Protein**, which builds and maintains all the cells in the body.
- **Vitamin B₁₂**, which is important for the body's production of new cells, including red blood cells. Vitamin B₁₂ can contribute to preventing anaemia.
- **Vitamin E**, which protects the fat in the body against harmful decomposition.
- **Selenium**, an important element in the enzymes that combat harmful chemical processes in the body.

Applications/uses

The edible crab has white meat in the claws and parts of the body. The offal is brown and has a strong taste. In the body the meat is stringier, while in the claws it is somewhat firmer. Edible crab has a sweet, fresh taste of the sea.

Cooked edible crab is used au naturel, but it can also be prepared in its own dishes or as an ingredient for other seafood dishes.

You can find more information about edible crab here:

<http://www.imr.no/temasider/skalldyr/taskekrabbe/nb-no>

<http://www.rafisklaget.no/portal/page/portal/RafisklagetDokumenter/Nettbutikk/Taskekrabben.pdf>

NUTRITIONAL CONTENT

Nutritional content in 100 g crab, cooked (edible portion):

Energy:	456 kJ / 108 kJ
---------	-----------------

Nutrients:

Protein:	22.9 g
Fat:	1.8 g
Saturated fatty acids:	0.3 g
Trans unsaturated fatty acids:	0 g
Cis-mono unsaturated fatty acids:	0.2 g
Cis-poly unsaturated fatty acids:	0.5 g
Omega-3:	0.4 g
Cholesterol:	142 mg

Vitamins:

Vitamin A:	4 RAE
Vitamin E:	4.7 alpha-TE
Riboflavin:	0.4 mg
Vitamin B ₁₂ :	13.5 µg

Minerals:

Iron:	1.8 mg
Selenium:	200 µg
Iodine:	218 µg

More information about nutritional content will be found at:

www.nifes.no/en/prosjekt/seafood-data

Source:

<http://www.matvaretabellen.no/skalldyr-fiskeinnmat-g4.3/krabbe-kokt-04.055>