Federal Agency of Fisheries

Russian Federal Research Institute of Fisheries and Oceanography (VNIRO)
Federal State Unitary Enterprise

Polar Research Institute of Fisheries and Oceanography (PINRO)
Federal State Unitary Enterprise

Directorate of Fisheries, Kingdom of Norway

JOINT NORWEGIAN-RUSSIAN TECHNICAL DESCRIPTIONS OF PRODUCTS OF COD AND HADDOCK IN THE BARENTS AND NORWEGIAN SEAS AND AGREED CONVERSION FACTORS

Moscow, Bergen
2009

FOREWORD

This joint Norwegian-Russian document is published as a guide for the fishing industry, the fisheries management and the controlling bodies in the Russian Federation and Norway in their work to achieve a rational and efficient utilization of aquatic biological resources.

This document is the result of Norwegian-Russian cooperation in the "Working Group on conversion factors of cod and haddock in the Barents and Norwegian Seas" between the following experts:

VNIRO (Moscow, Russian Federation):
Sytova M.V., Ph.D., Scientific Secretary of VNIRO
*Kharenko E.N.,*Dr.t.sc., Head of Laboratory of Rationing
Penkin M.A., Ph.D., Junior Scientist

PINRO (Murmansk, Russian Federation):
Stepanenko V.V., assistant of Head of Laboratory of biochemistry and technologies
Piskunovitch D.I., engineer of Laboratory of biochemistry and technologies

Norwegian Directorate of Fisheries (Bergen, Norway):
Blom, *Geir* Senior adviser (dr. scient.), Statistics Department
Kuhnle, *Grethe Aa.* Head of section, Statistics Department
Thorvik, *Thorbjørn* Senior adviser, Resource Department

Approved at the session of the Joint Norwegian-Russian Fisheries Commission (JRNFC) _____ 2009

CONTENTS

1.INTRODUCTION

This joint Norwegian-Russian document contains technical descriptions,and photos of products of cod and haddock and corresponding official conversion factors of products of cod, *Gadus morhua*, and haddock, *Melanogrammus aeglefinus*, in the Barents and Norwegian Seas.

The main objective of this joint Norwegian-Russian document is to support the identification of products of cod and haddock in the Barents and Norwegian Seas.

Another objective is to establish uniform technical descriptions of the processing of products of cod and haddock in the Barents and Norwegian Seas.

2. BACKGROUND

2.1. NOTIONS:

1) **conversion factor** - conversion factor for the raw material use;
2) **products** – processed fresh fish;
3) **manual** - manual processing of fish;
4) **machine** - processing of fish with various processing equipment and machines. Some processing modes allow for manual and machine operations (e.g., fillets are produced by a Baader machine, while bones and belly flaps are removed manually (trimming).

2.2. FISH SPECIES

Table 1 presents names of fish species in Russian, Norwegian, and English, as well as the scientific names of the fish species.

Table 1.

Fish species			
Russian Common name	**Norwegian common name**	**English common name**	**Scientific name**
Треска	torsk	Cod	*Gadus morhua*
Пикша	Hyse	Haddock	*Melanogrammus aeglefinus*

2.3. CONVERSION FACTORS

The official joint Norwegian-Russian conversion factors for different products of cod and haddock processed on board vessels in the Barents and Norwegian Seas are shown in Appendix table 1 in the document "Joint Norwegian-Russian Technical Descriptions of Products of Cod and Haddock in the Barents and Norwegian Seas and Agreed Conversion Factors – Appendix 1: Joint Official Conversion Factors".

3. TECHNICAL DESCRIPTION OF PROCESSING OF PRODUCTS OF COD AND HADDOCK IN THE BARENTS AND NORWEGIAN SEAS

3.1. PROCESSING OF COD

3.1.1. Product: Gutted Cod with Head, Manual

Technical description:

The production of gutted cod with head is done manually. The fish is slit, and cut along the mid-belly between the pectoral fins from the pharynx or the pelvic fins to the anal opening in such a way that the viscera are not damaged. All viscera are removed and the body cavity is properly cleaned from slime and blood. In large fish, particularly, the cut along the mid-belly may end up to 2 cm behind the anal opening towards the caudal fin.

Fig. 3.1.1.a Photo of the product gutted cod with head, processed manually, without cutting of the throat.

Fig. 3.1.1.b Photo of the product gutted cod with head, processed manually, with cutting of the throat.

3.1.2. Product: Gutted Cod without Head Round cut, Manual or Machine

Technical description:

The production of gutted cod without head (round cut) is done by manual gutting, and the head is removed manually or by a machine (e.g. Baader 415). The fish is slit, and cut along the mid-belly between the pectoral fins from the pharynx or the pelvic fins to the anal opening in such a way that the viscera are not damaged. All viscera are removed and the body cavity is properly cleaned from slime and blood. In large fish, particularly, the cut along the mid-belly may end up to 2 cm behind the anal opening towards the caudal fin. The head is removed with cuts along both sides of the gill cleft towards the front part of the neck. The neck is broken at the first neck vertebra, and the head is torn off. The neck meat, pectoral and pelvic fins are present on the body, and the gills present on the head.

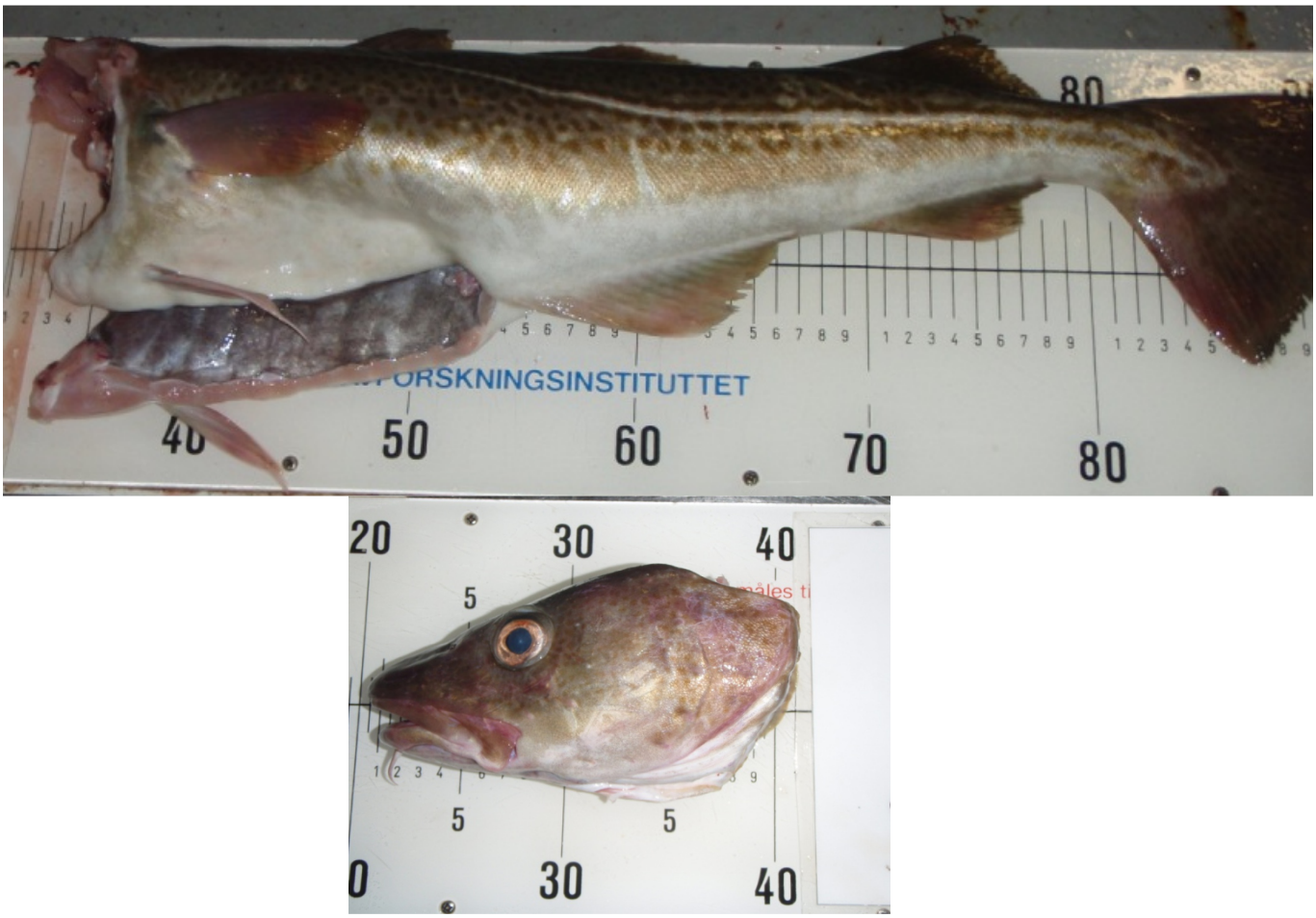

Fig.3.1.2. Photo of the product gutted cod without head (round cut), processed manually or by machine.

3.1.3. Product: Gutted Cod without Head, Right Cut, Manual

Technical description:

The production of gutted cod without head (right cut) is done by manual gutting, and the head is removed manually. The fish is slit, and cut along the mid-belly between the pectoral fins from the pharynx or the pelvic fins to the anal opening in such a way that the viscera are not damaged. All viscera are removed and the body cavity is properly cleaned from slime and blood. In large fish, particularly, the cut along the mid-belly may end up to 2 cm behind the anal opening towards the caudal fin. The head is removed with a transverse cut (perpendicular to the length direction of the body) from the neck to the belly in such a way that the pectoral and pelvic fins remain on the head.

Fig.3.1.3. Photo of the product gutted cod without head (right cut), processed manually.

3.1.4. Product: Gutted Cod without Head and Earbones, Machine

Technical description:

The production of gutted cod without head and earbones is done by a machine (e.g. Baader 424, Baader 417 etc.) which removes the head together with the pectoral and pelvic fins with a bevel cut. The bevel cut goes from the occipital bone to the belly of the fish. All viscera are removed and the body cavity is properly cleaned from slime and blood.

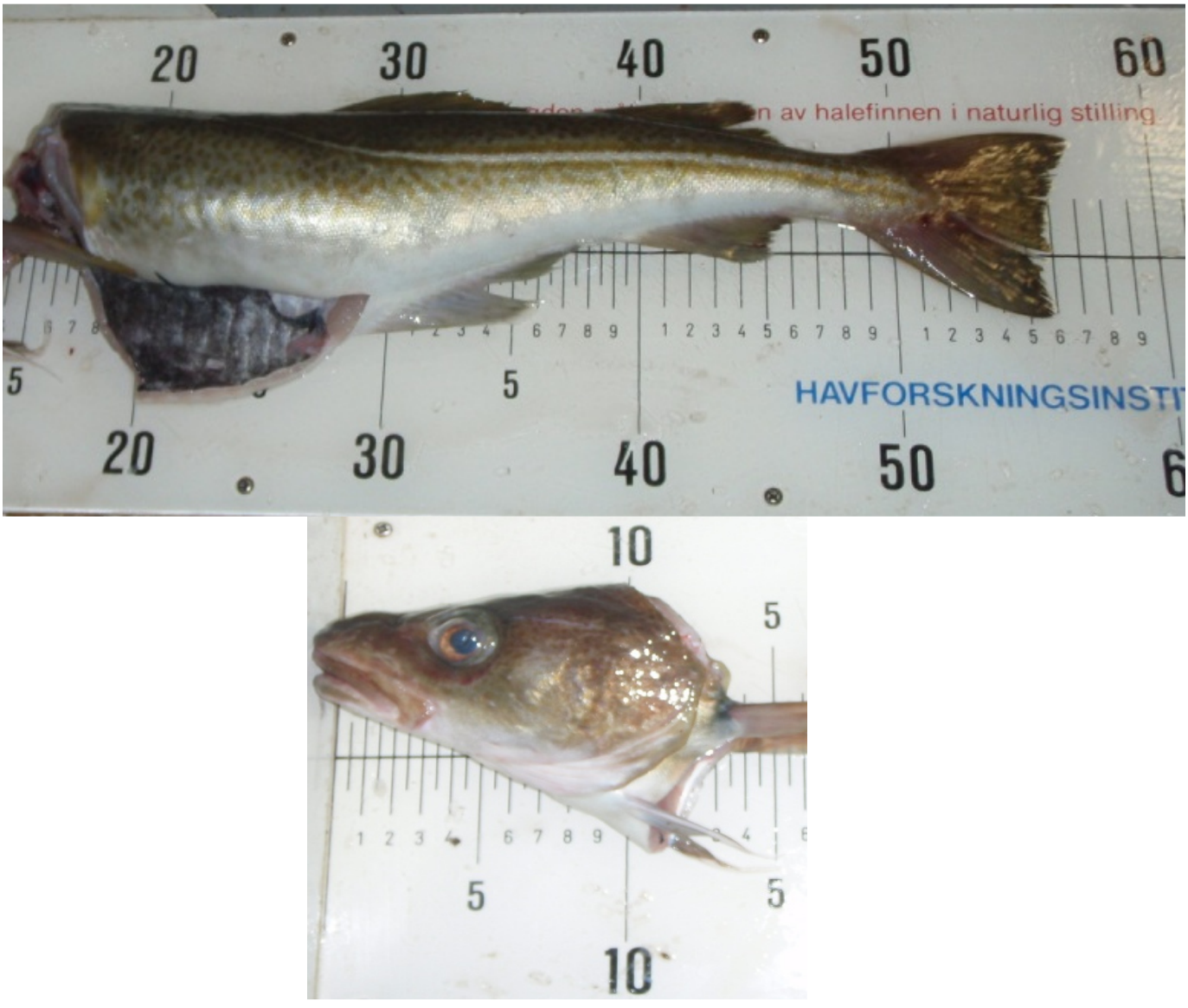

Fig.3.1.4. Photo of the product gutted cod without head and earbones, processed by machine.

3.1.5. Product: Cod Fillet with Skin and Bones, Machine

Technical description:

The production of cod fillets with skin and pin bones in is done with filleting machines (e.g. Baader 188, Baader 190, Baader 201) where the backbone and fins are removed. The fish body without head, earbones and viscera is filleted lengthwise in 2 halves where fins, other large bones, peritoneum, and small parts of the belly flaps are removed. Skin, pin bones (11-17 pin bones) are present in the fillets. Parts of the fins may be present before final manual trimming.

Fig. 3.1.5. Photo of the product cod fillets with skin and bones (pin bones in), processed by machine.

3.1.6. Product: Cod Fillet Skinless, with Bones, Machine

Technical description:

The production of skinless cod fillets, with pin bones in is done with filleting machines (e.g. Baader 188, Baader 190, Baader 201) where the backbone and fins are removed. The fish body without head, earbones and viscera is filleted lengthwise in 2 halves where fins, other large bones, peritoneum, and small parts of the belly flaps are removed. Skins are removed by a skinning machine (e.g. Baader 51) in such a way that no flesh is present on the skins. Pin bones (11-17 pin bones) are present in the fillets. Parts of the fins may be present before final manual trimming.

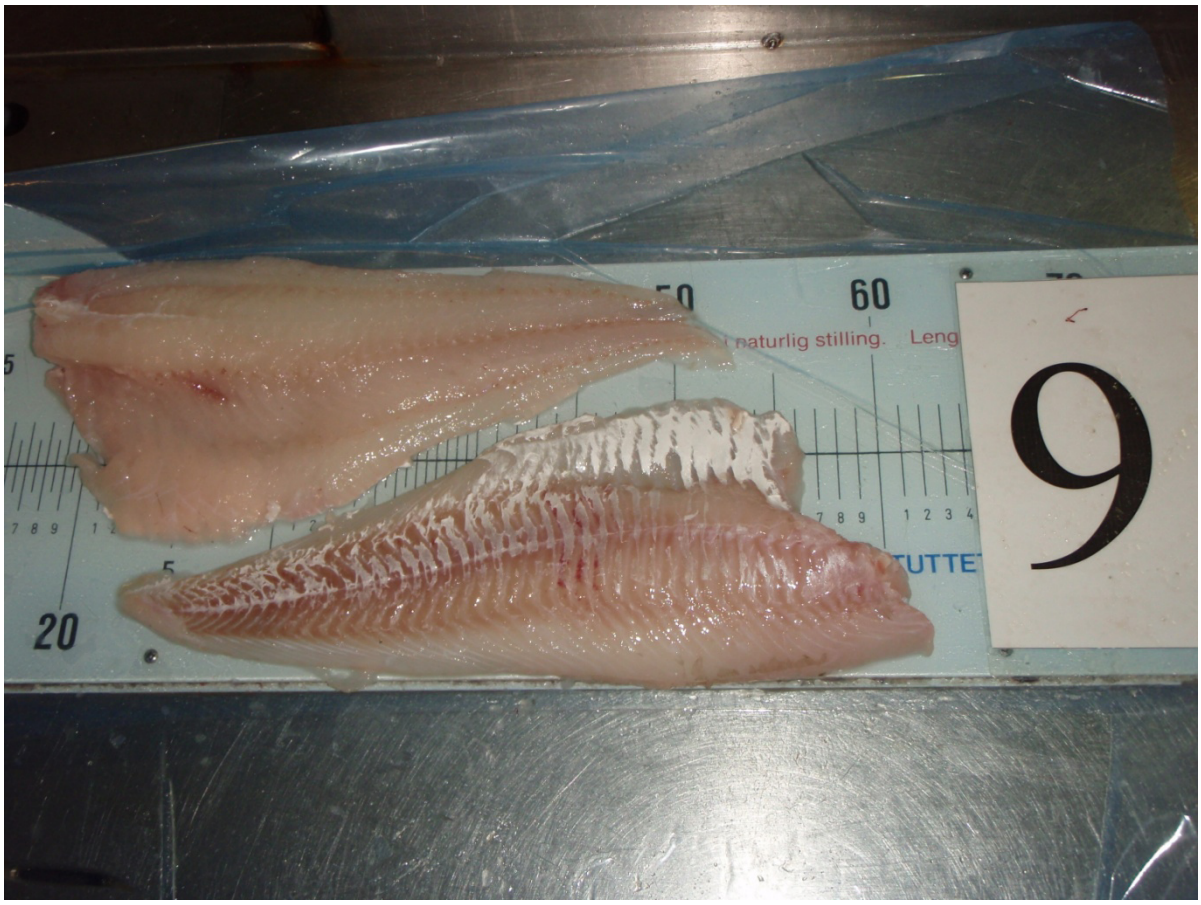

Fig. 3.1.6. Photo of the product skinless cod fillets with bones (pin bones in), processed by machine.

3.1.7. Product: Cod Fillet, with Skin, Boneless, Machine (or by Machine and Manual operation)

Technical description:

The production of boneless cod fillets with skin on is done with filleting machines (e.g. Baader 188, Baader 190, Baader 201) where the backbone and fins are removed. The fish body without head, ear bones and viscera is filleted lengthwise in 2 halves where fins, other large bones, peritoneum, and small parts of the belly flaps are removed. Pin bones (11-17 pin bones) are removed manually with a narrow V-shaped cut covering the length of the body cavity. Parts of the fins may be present before final manual trimming.

Fig.3.1.7. Photo of the product boneless cod fillets with skin, processed by machine (or by machine and manual operation).

3.1.8. Product: Cod Fillet, Skinless, Boneless, Machine (or by Machine and Manual operation)

Technical description:

The production of boneless and skinless cod fillets is done with filleting machines (e.g. Baader 188, Baader 190, Baader 201) where the backbone and fins are removed. The fish body without head, earbones and viscera is filleted lengthwise in 2 halves where fins, other large bones, peritoneum, and small parts of the belly flaps are removed. Skins are removed by a skinning machine (e.g. Baader 51) in such a way that no flesh is present on the skins. Pin bones (11-17 pin bones) are removed manually with a narrow V-shaped cut covering the length of the body cavity. Parts of the fins may be present before final manual trimming.

Fig. 3.1.8.Photo of the product skinless cod fillets, processed by machine (or by machine and manual operation).

3.1.9. Product: Cod Fillet, with Skin, Boneless, without Belly flaps, Machine (or by Machine and Manual operation)

Technical description:

The production of boneless cod fillets, with skin and without bellyflaps is done with filleting machines (e.g. Baader 190 with a pin bone cutter installed) where the backbone, fins, pin bones and belly flaps are removed. The fish body without head, ear bones and viscera is filleted lengthwise in 2 halves where fins, other large bones, peritoneum, and small parts of the belly flaps are removed. Pin bones (11-17 pin bones) and belly flaps are removed with a filleting machine with a pin bone cutter installed using a J-shaped cut. The product can also be produced by other filleting machines with manual removal of pin bones and belly flaps using a wide V-shaped or J-shaped cut. Parts of the fins may be present before final manual trimming.

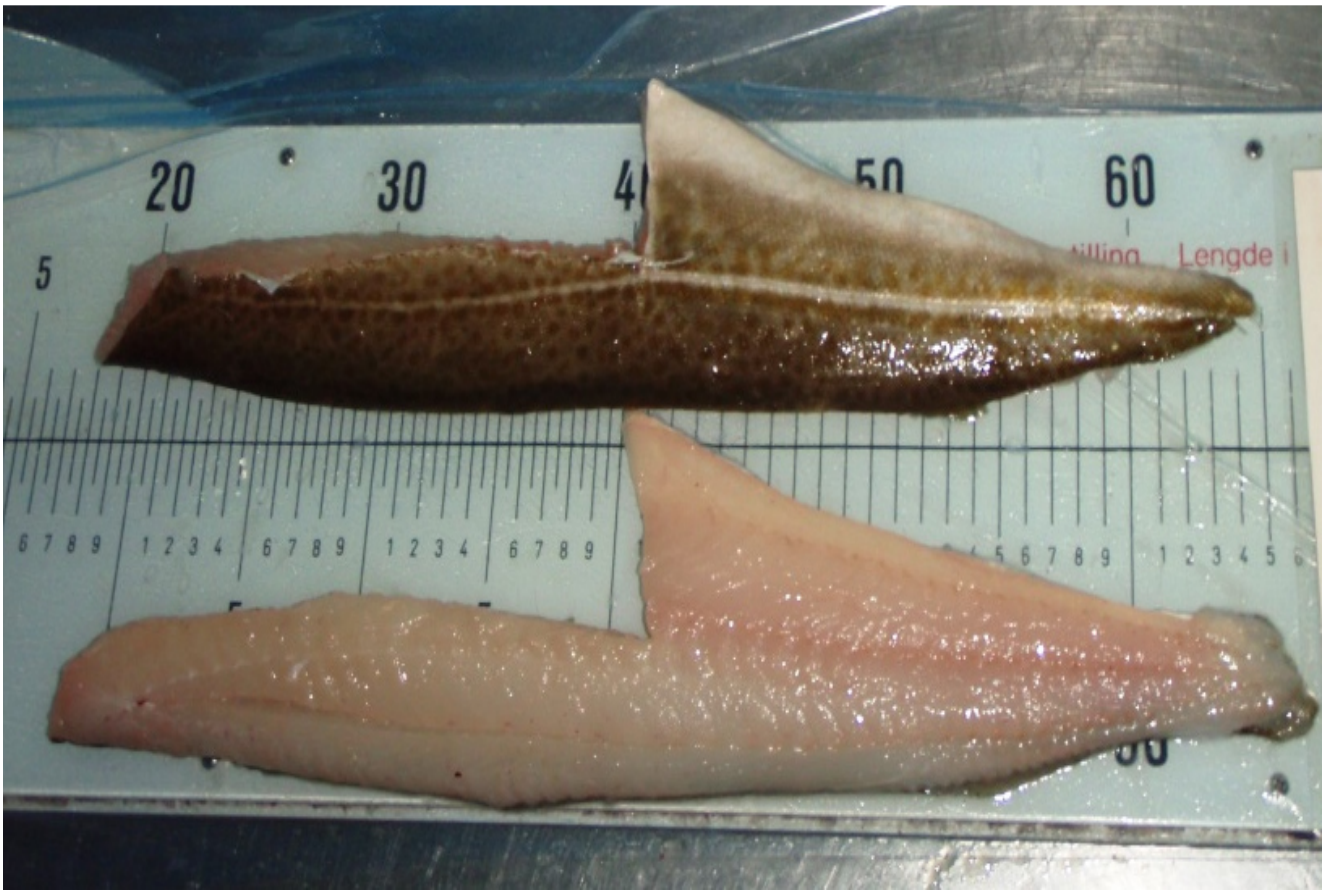

Fig.3.1.9. Photo of the product boneless cod fillets with skin and without belly flaps, processed by machine (or by machine and manual operation).

3.1.10. Product: Cod Fillet, Skinless, Boneless, without Belly flaps, Machine (or by Machine and Manual operation)

Technical description:

The production of skinless, boneless and without belly flaps cod fillets is done with filleting machines (e.g. Baader 190 with a pin bone cutter installed) where the backbone, fins, pin bones and belly flaps are removed. The fish body without head, ear bones and viscera is filleted lengthwise in 2 halves where fins, other large bones, peritoneum, and small parts of the belly flaps are removed. Skins are removed by a skinning machine (e.g. Baader 51) in such a way that no flesh is present on the skins. Pin bones (11-17 pin bones) and belly flaps are removed with a filleting machine with a pin bone cutter installed using a J-shaped cut. The product can also be produced by other filleting machines with manual removal of pin bones and belly flaps using a wide V-shaped or J-shaped cut. Parts of the fins may be present before final manual trimming.

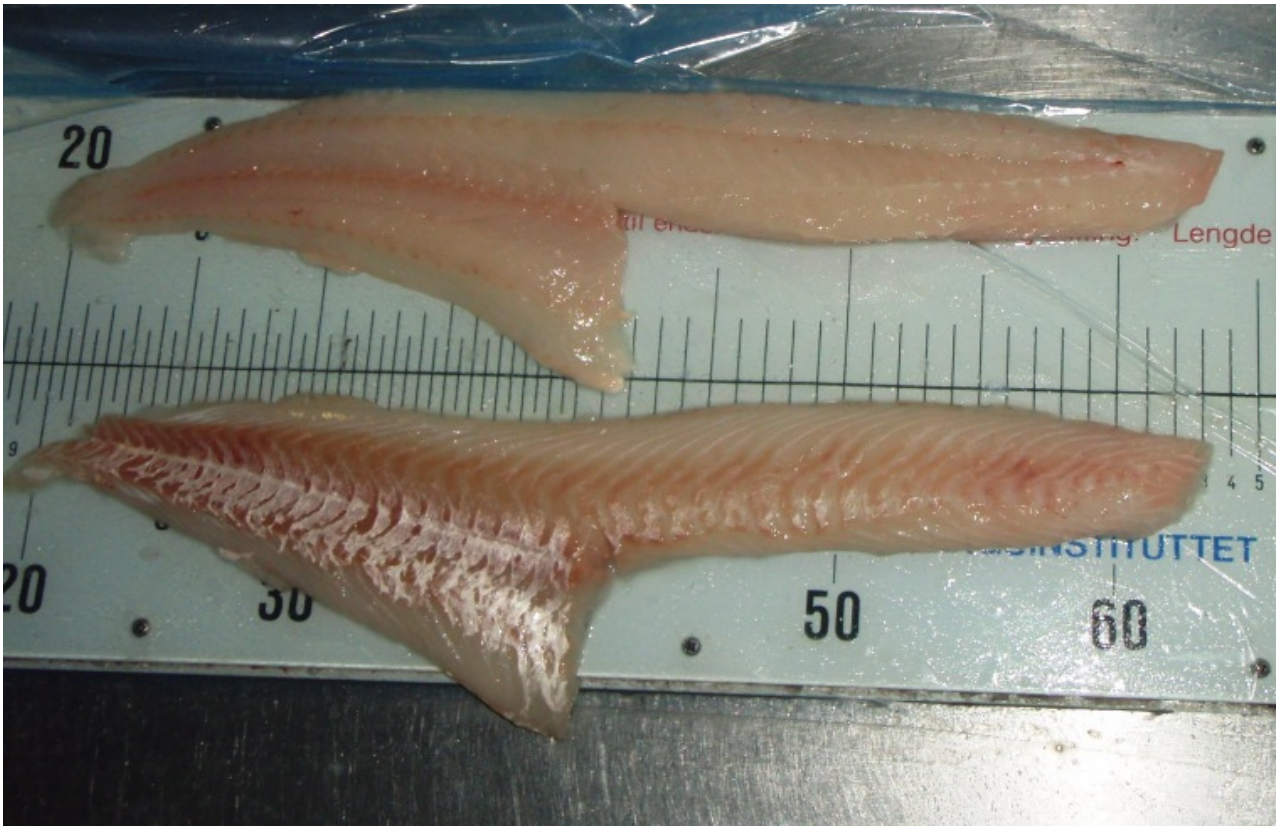

Fig.3.1.10. Photo of the product boneless skinless and without belly flaps cod fillets, processed by machine (or by machine and manual operation).

3.1.11. Product: Cod Loins, Skinless, Boneless, Machine (or by Machine and Manual operation)

Technical description:

The basis of this product is the production of cod fillets, skinless, boneless and without belly flaps (see 3.1.10). The loin is the front part of a skinless and boneless fillet without belly flaps, cut in two by a transversal cut (see the sketch below).

Fig. 3.1.11. The product cod fillets, skinless, boneless and without belly flaps is the basis product for further production of loins. The photo shows cod loins individually packed.

3.2. PROCESSING OF HADDOCK

3.2.1. Product: Gutted Haddock with Head, Manual

Technical description:

The production of gutted haddock with head is done manually. The fish is slit, and cut along the mid-belly between the pectoral fins from the pharynx or the pelvic fins to the anal opening in such a way that the viscera are not damaged. All viscera are removed and the body cavity is properly cleaned from slime and blood. In large fish, particularly, the cut along the mid-belly may end up to 2 cm behind the anal opening towards the caudal fin.

Fig. 3.2.1.a Photo of the product gutted haddock with head, processed manually, without cutting of the throat.

Fig. 3.2.1.b Photo of the product gutted haddock with head, processed manually, with cutting of the throat.

3.2.2. Product: Gutted Haddock, without Head, Round Cut, Manual or Machine

Technical description:

The production of gutted haddock without head (round cut) is done by manual gutting, and the head is removed manually or by a machine (e.g. Baader 415). The fish is slit, and cut along the mid-belly between the pectoral fins from the pharynx or the pelvic fins to the anal opening in such a way that the viscera are not damaged. All viscera are removed and the body cavity is properly cleaned from slime and blood. In large fish, particularly, the cut along the mid-belly may end up to 2 cm behind the anal opening towards the caudal fin. The head is removed with cuts along both sides of the gill cleft towards the front part of the neck. The neck is broken at the first neck vertebra, and the head is torn off. The neck meat, pectoral and pelvic fins are present on the body, and the gills present on the head.

Fig.3.2.2. Photo of the product gutted haddock, without head, round cut, processed manually or by machine.

3.2.3. Product: Gutted Haddock without Head, Right Cut , Manual

Currently (2009) this product is not processed.

Technical description:

The production of gutted haddock without head (right cut) is done by manual gutting, and the head is removed manually. The fish is slit, and cut along the mid-belly between the pectoral fins from the pharynx or the pelvic fins to the anal opening in such a way that the viscera are not damaged. All viscera are removed and the body cavity is properly cleaned from slime and blood. In large fish, particularly, the cut along the mid-belly may end up to 2 cm behind the anal opening towards the caudal fin. The head is removed with a transverse cut (perpendicular to the length direction of the body) from the neck to the belly in such a way that the pectoral and pelvic fins remain on the body.

3.2.4. Product: Gutted Haddock, without Head, without Earbones, Machine

Technical description:

The production of gutted haddock without head and earbones is done by a machine (e.g. Baader 424, Baader 417 etc.) which removes the head together with the pectoral and pelvic fins with a bevel cut. The bevel cut goes from the occipital bone to the belly of the fish. All viscera are removed and the body cavity is properly cleaned from slime and blood.

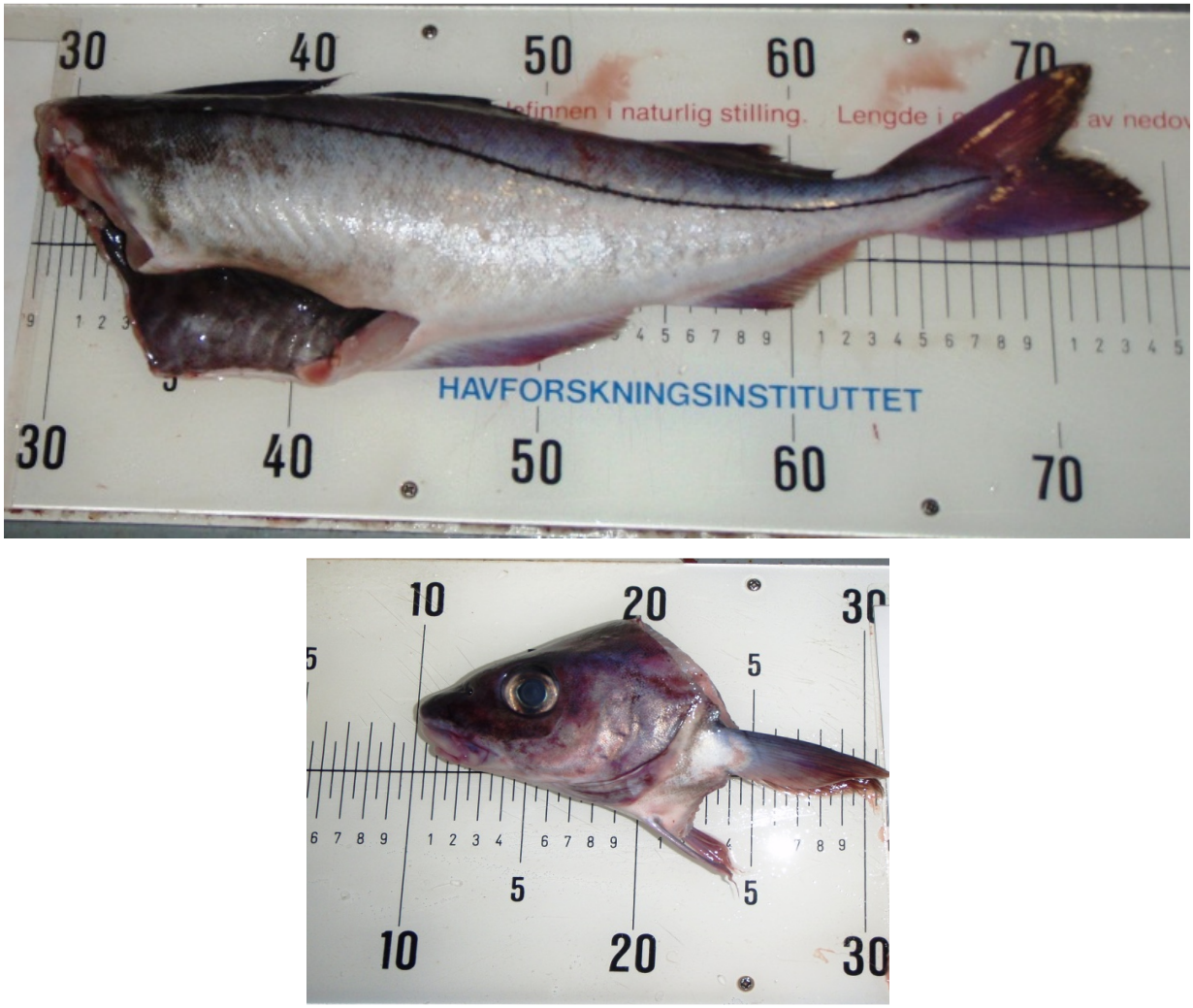

Fig.3.2.4. Photo of the product gutted haddock, without head and earbones (curved section), machine.

3.2.5. Product: Haddock Fillet, with Skin, with Bones, Machine

Technical description:

The production of haddock fillets with skin and pin bones in is done with filleting machines (e.g. Baader 188, Baader 190, Baader 201) where the backbone and fins are removed. The fish body without head, earbones and viscera is filleted lengthwise in 2 halves where fins, other large bones, peritoneum, and small parts of the belly flaps are removed. Skin, pin bones (< 11 pin bones) are present in the fillets. Parts of the fins may be present before final manual trimming.

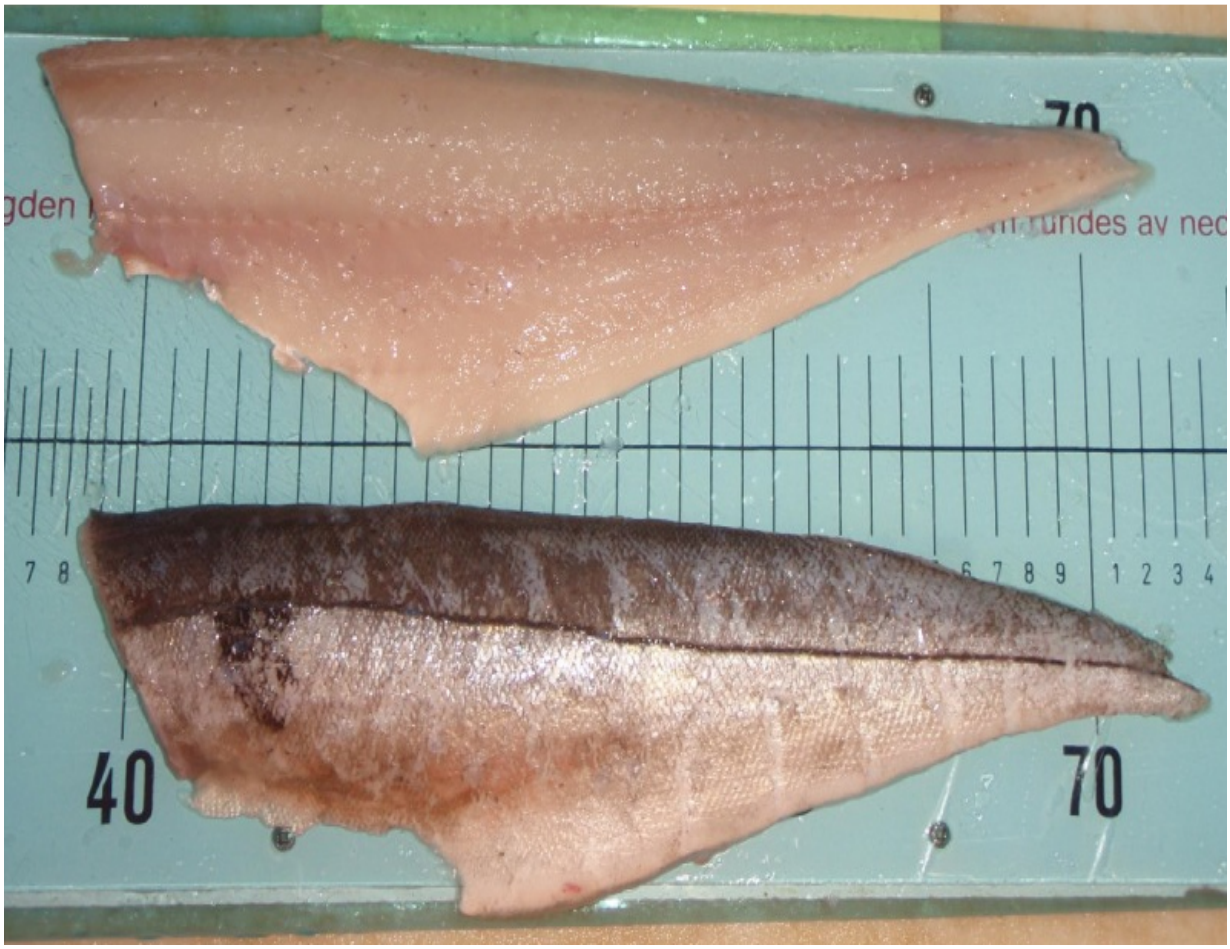

Fig. 3.2.5. Photo of the product haddock fillets with skin and bones (pin bones in), processed by machine.

3.2.6. Product: Haddock Fillet, Skinless, with Bones, Machine

Technical description:

The production of skinless haddock fillets, with pin bones in is done with filleting machines (e.g. Baader 188, Baader 190, Baader 201) where the backbone and fins are removed. The fish body without head, ear bones and viscera is filleted lengthwise in 2 halves where fins, other large bones, peritoneum, and small parts of the belly flaps are removed. Skins are removed by a skinning machine (e.g. Baader 51) in such a way that no flesh is present on the skins. Pin bones (< 11 pin bones) are present in the fillets. Parts of the fins may be present before final manual trimming.

Fig.3.2.6. Photo of the product skinless haddock fillets with bones (pin bones in), processed by machine.

3.2.7. Product: Haddock Fillet, with Skin, Boneless, Machine (or by Machine and Manual operation)

Technical description:

The production of boneless haddock fillets, with skin on is done with filleting machines (e.g. Baader 188, Baader 190, Baader 201) where the backbone and fins are removed. The fish body without head, ear bones and viscera is filleted lengthwise in 2 halves where fins, other large bones, peritoneum, and small parts of the belly flaps are removed. Pin bones (< 11 pin bones) are removed manually with a narrow V-shaped cut covering up to half of the length of the body cavity. Parts of the fins may be present before final manual trimming.

Fig.3.2.7. Photo of the product boneless haddock fillets with skin, processed by machine (or by machine and manual operation).

.

3.2.8. Product: Haddock Fillet, Skinless, Boneless, Machine (or by Machine and Manual operation)

Technical description:

The production of boneless and skinless haddock fillets is done with filleting machines (e.g. Baader 188, Baader 190, Baader 201) where the backbone and fins are removed. The fish body without head, ear bones and viscera is filleted lengthwise in 2 halves where fins, other large bones, peritoneum, and small parts of the belly flaps are removed. Skins are removed by a skinning machine (e.g. Baader 51) in such a way that no flesh is present on the skins. Pin bones (< 11 pin bones) are removed manually with a narrow V-shaped cut covering up to half of the length of the body cavity. Parts of the fins may be present before final manual trimming.

Fig.3.2.8. Photo of the product skinless and boneless haddock fillets, processed by machine (or by machine and manual operation).

.

3.2.9. Product: Haddock Fillet, with Skin, Boneless, without Belly flaps, Machine (or by Machine and Manual operation)

Technical description:

The production of boneless haddock fillets, with skin and without belly flaps is done with filleting machines (e.g. Baader 190 with a pin bone cutter installed) where the backbone, fins, pin bones and belly flaps are removed. The fish body without head, ear bones and viscera is filleted lengthwise in 2 halves where fins, other large bones, peritoneum, and small parts of the belly flaps are removed. Pin bones (< 11 pin bones) and belly flaps are removed with a filleting machine with a pin bone cutter installed using a J-shaped cut. The product can also be produced by other filleting machines with manual removal of pin bones and belly flaps using a wide V-shaped or J-shaped cut. Parts of the fins may be present before final manual trimming.

Fig.3.2.9. Photo of the product boneless haddock fillets with skin and without belly flaps, processed by machine (or by machine and manual operation).

3.2.10. Product: Haddock Fillet, Skinless, Boneless, without Bellyflaps, Machine (or by Machine and Manual operation)

Technical description:

The production of skinless, boneless and without belly flaps haddock fillets is done with filleting machines (e.g. Baader 190 with a pin bone cutter installed) where the backbone, fins, pin bones and belly flaps are removed. The fish body without head, ear bones and viscera is filleted lengthwise in 2 halves where fins, other large bones, peritoneum, and small parts of the belly flaps are removed. Skins are removed by a skinning machine (e.g. Baader 51) in such a way that no flesh is present on the skins. Pin bones (< 11 pin bones) and belly flaps are removed with a filleting machine with a pin bone cutter installed using a J-shaped cut. The product can also be produced by other filleting machines with manual removal of pin bones and belly flaps using a wide V-shaped or J-shaped cut. Parts of the fins may be present before final manual trimming.

Fig.3.2.10. Photo of the product skinless and boneless haddock fillets without belly flaps, processed by machine (or by machine and manual operation).

3.2.11. Product: Haddock Loins, Skinless, Boneless, Machine (or by Machine and Manual operation)

Technical description:

The basis of this product is the production of haddock fillets, skinless, boneless and without belly flaps (see 3.2.10). The loin is the front part of a skinless and boneless fillet without belly flaps, cut in two by a transversal cut (see the sketch below).

Fig. 3.2.11. The product haddock fillets, skinless, boneless and without belly flaps is the basis product for further production of loins. The photo shows cod loins individually packed.

4. References

1. Ignatenko O.S. Applied English-Russian Dictionary on Technology and Marketing of Fish Products.- Dal'rybtechnika Research Center.- Vladivostok, 2006.- 306 p.
2. Collection of Technology Guides to Fish Processing. Vol. 1. Guide to Processing and Washing No.7. - Moscow.: Kolos, 1992. pp. 55-72. (in Russian)
3. Proceedings of the 37th session of the Joint Russian-Norwegian Fisheries Commission (Bergen, October 13 - 16 , 2008), App. 7.