Analysis of nutrients and contaminants – the Norwegian seafood database

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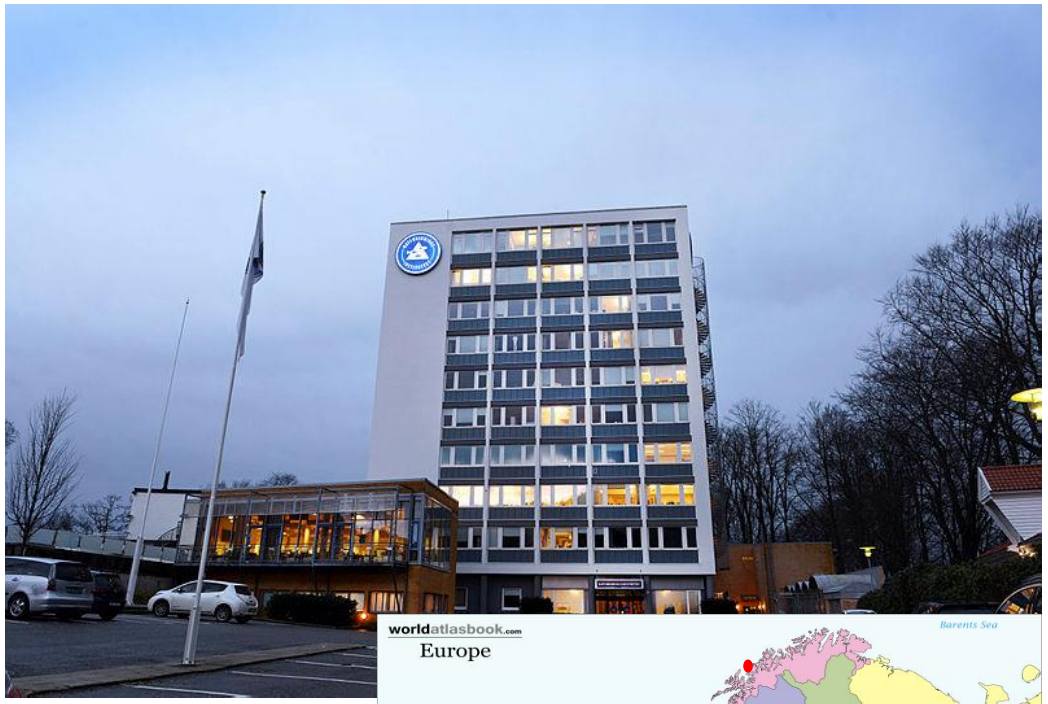
EuroFIR
European Food Information Resource

Institute of Marine Research (IMR)

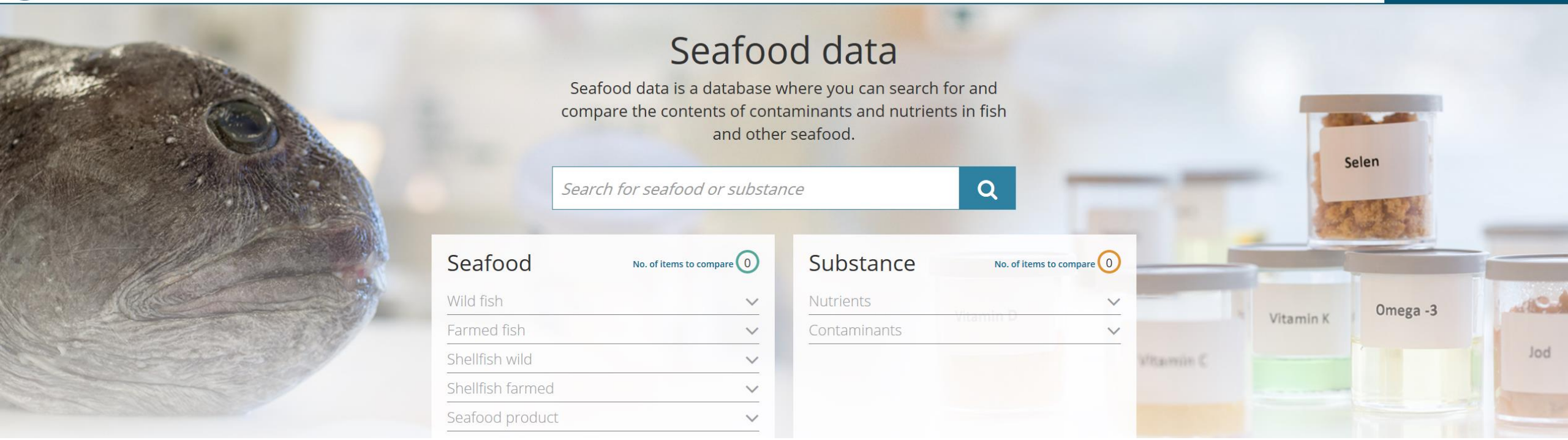
- Minestry of Trade and Fisheries
- 1000 employees
- Research
- Advisory work
- Monitoring



Leading supplier of knowledge relating to the sustainable management of the resources in our marine ecosystems and the whole food chain from the sea to the table

SEAFOOD DATA https://www.sjomatdata.hi.no

Help aaa Norsk Comparison 0 0



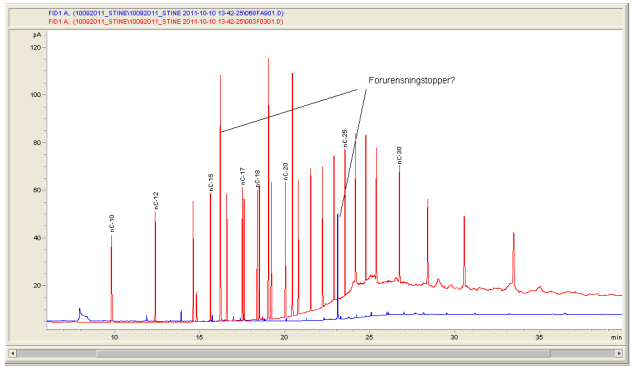
- Launched 2017
- Data from 2006 until 2019
- 100% analytical values
- English and Norwegian
- No user cost

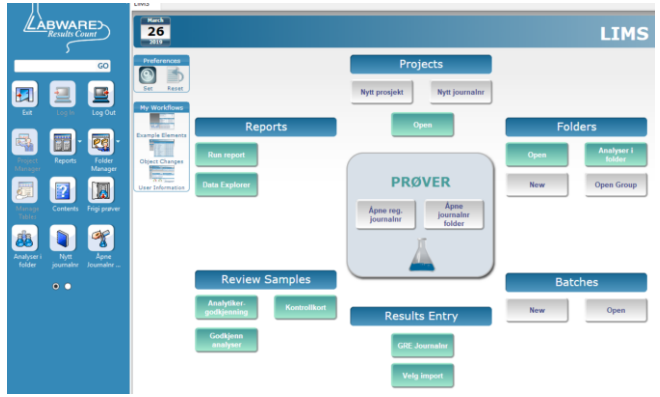

30 fish species, 25 different shellfish and almost 40 seafood products
~ 70 nutrients and ~ 70 contaminants
INSTITUTE OF MARINE RESEARCH

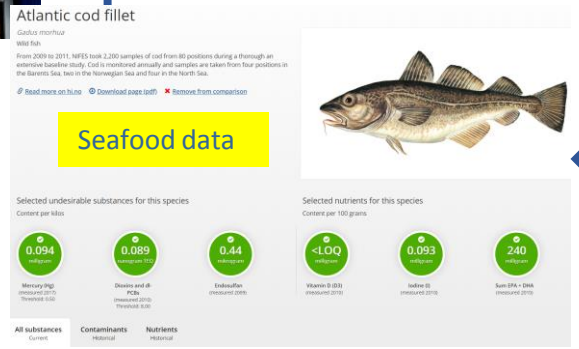
Quality assurance and laboratory facilities

- National Reference Laboratory
- ~ 60 methods are NS-EN ISO/IEC 17025 accredited
- Quality assurance:
  - Certified reference material
  - Proficiency tests
  - Validation
- Monitoring nutrients in seafood
  - Food Security and Nutrition
- The Norwegian Food Safety Authorities
- Directorate of Health

Life cycle of analytical values







Example of number of analysis

Table. Example from seafood data showing *number of analysis* accounting for data

sufficient
insufficient
inadequate

Species*	Total Fat	Total Protein	Marine fatty acids	Vitamin D	Vitamin A	Vitamin B12	Iodine	Selenium
Cod	194	35	50	42	32	43	20	3267
Farmed Atlantic salmon	746	310	620	603	10	249	591	2383
Saith	40	30	40	40	30	40	10	2136
Atlantic herring	2037	10	225	326	10	223	216	1989
Cusk	237	43	43	43	43	0	43	1614
Atlantic mackerel	1647	10	365	464	10	365	365	1174
Common ling	282	50	50	50	50	50	50	1024
Haddock	38	0	0	0	0	0	0	214
Wild Atlantic salmon	125	122	114	27	27	27	47	126
Pollock	55	0	50	50	0	0	50	100
Blue ling	9	10	10	10	10	10	0	47
European sprat^	27	0	0	0	0	0	3	32
Spotted wolffish	2	0	0	0	0	0	0	12
Northern wolffish	2	0	0	0	0	0	0	12

*fillet
^whole fish

Undesirable substances in seafood -farmed fish

- Reporting to EFSA
  - Council Directive 96/23/EC (animal protein foods)
  - Regulation (EC) No 396/2005 (pesticides)
  - Commission Regulation (EC) No 333/2007 (heavy metals)
- Must be below the maximum limits of each substance

- Arsenic (As)
- BHA
- BHT
- Brominated flame retardants
- Cadmium (Cd)
- Dioxins, furans and dioxin-like PCBs
- Ethoxyquin (EQ)
- Lead (Pb)
- Mercury (Hg)

Undesirable substances in seafood -wild fish

- No strict requirements
- Must be below the maximum limits of each substance
- Used to be spot-sampling
- Now:
  - → thorough baseline study
  - → smaller follow-up study
  - → spot-sampling

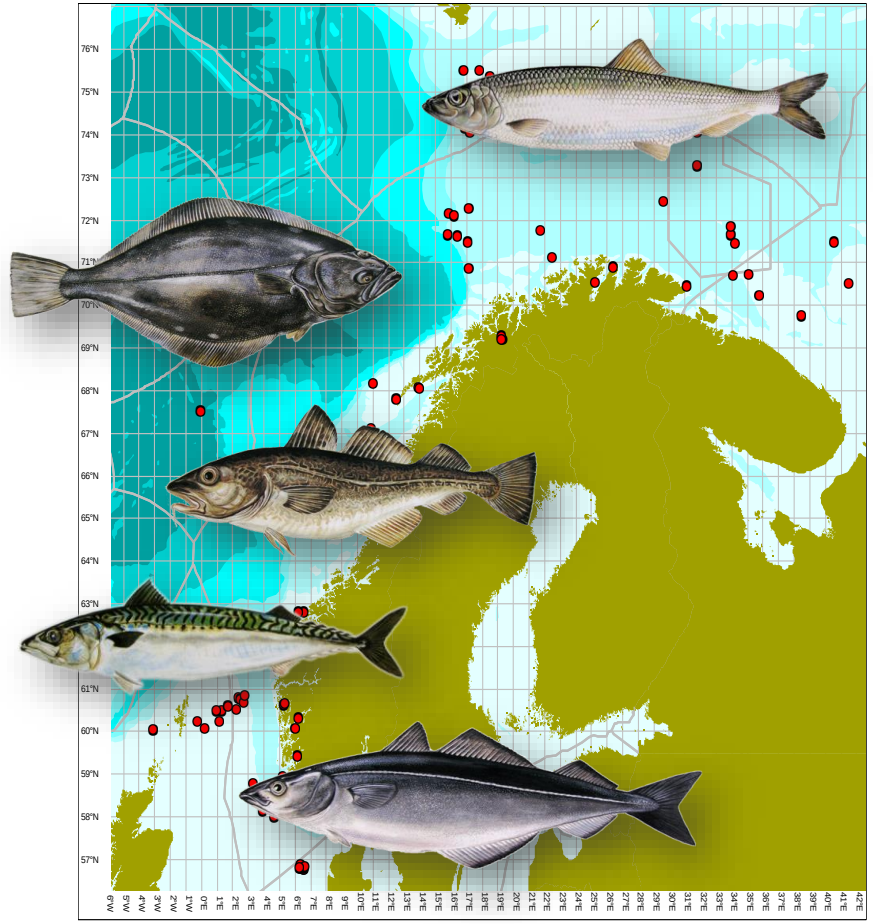
Atlantic herring

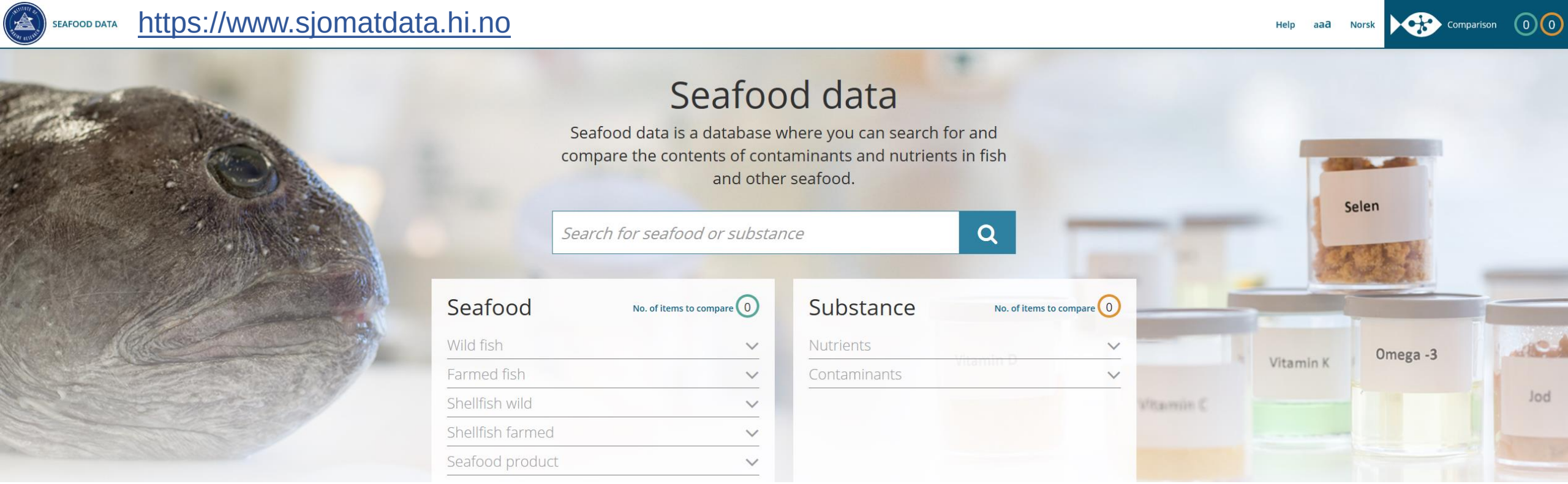
Blue Halibut

Cod

Atlantic mackerel

Saith





Examples of functions..

Atlantic mackerel fillet

Scomber scombrus

Wild fish

NIFES has mapped undesirable substances in mackerel through thorough surveillance studies known as baseline studies. In the period 2007–2009, 1166 samples of individual mackerel were taken from 42 different positions, mostly in the North Sea, but also some from Skagerrak, the Norwegian Sea and the area west of Scotland. Monitoring of undesirable substances in mackerel is now conducted in the North Sea every third year during the mackerel fishing season in autumn. Annual mackerel samples are taken in the Skagerrak.

Read more on nifes.no Download page (pdf)

+ Add to comparison

Selected undesirable substances for this species

Content per kilos

0.030 milligram	0.83 nanogram TEQ	1.09 mikrogram
Mercury (Hg) (measured 2016) Threshold: 0.50	**Dioxins and dl-PCBs** (measured 2016) Threshold: 6.50	**Endosulfan** (measured 2006)

Selected nutrients for this species

Content per 100 grams

0.0046 milligram	0.020 milligram	3550 milligram
Vitamin D (D3) (measured 2012)	**Iodine (I)** (measured 2012)	**Sum EPA + DHA** (measured 2012)

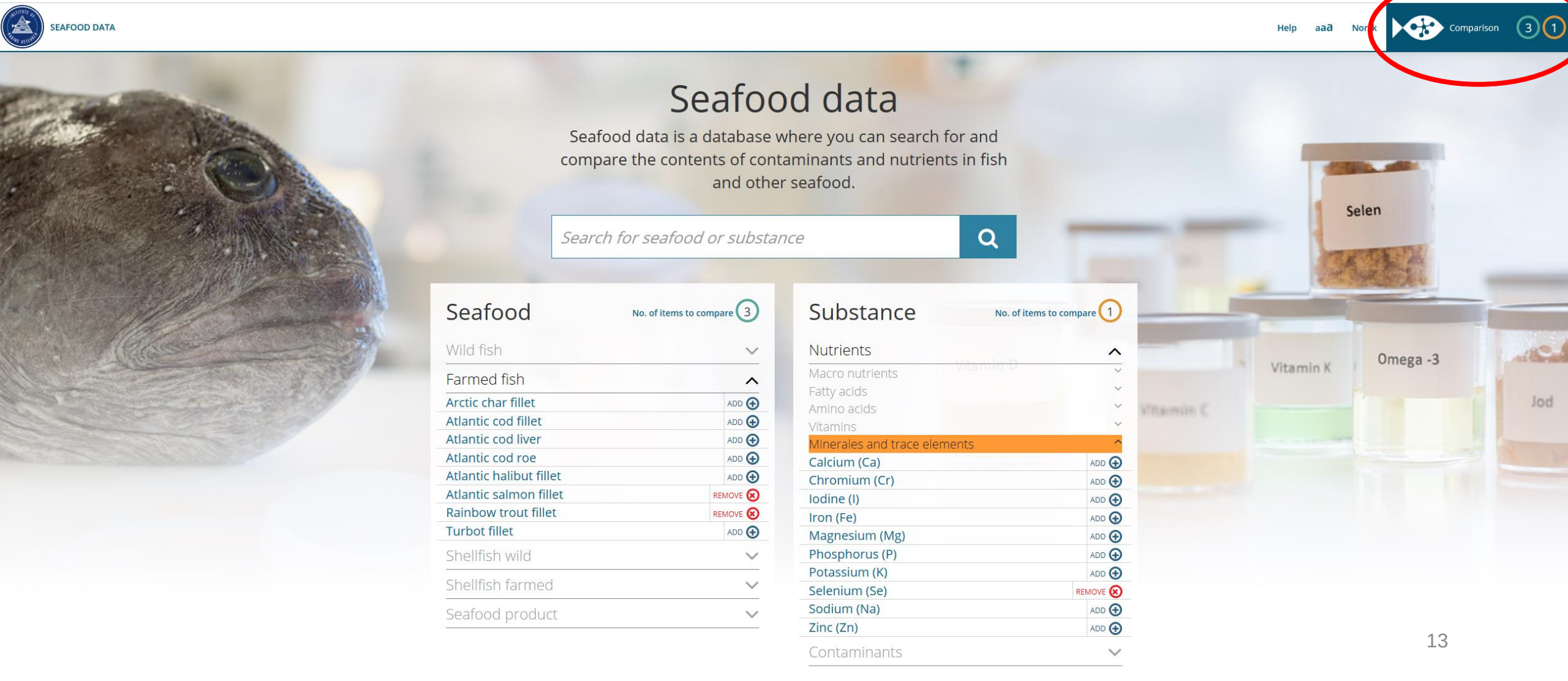
Select group

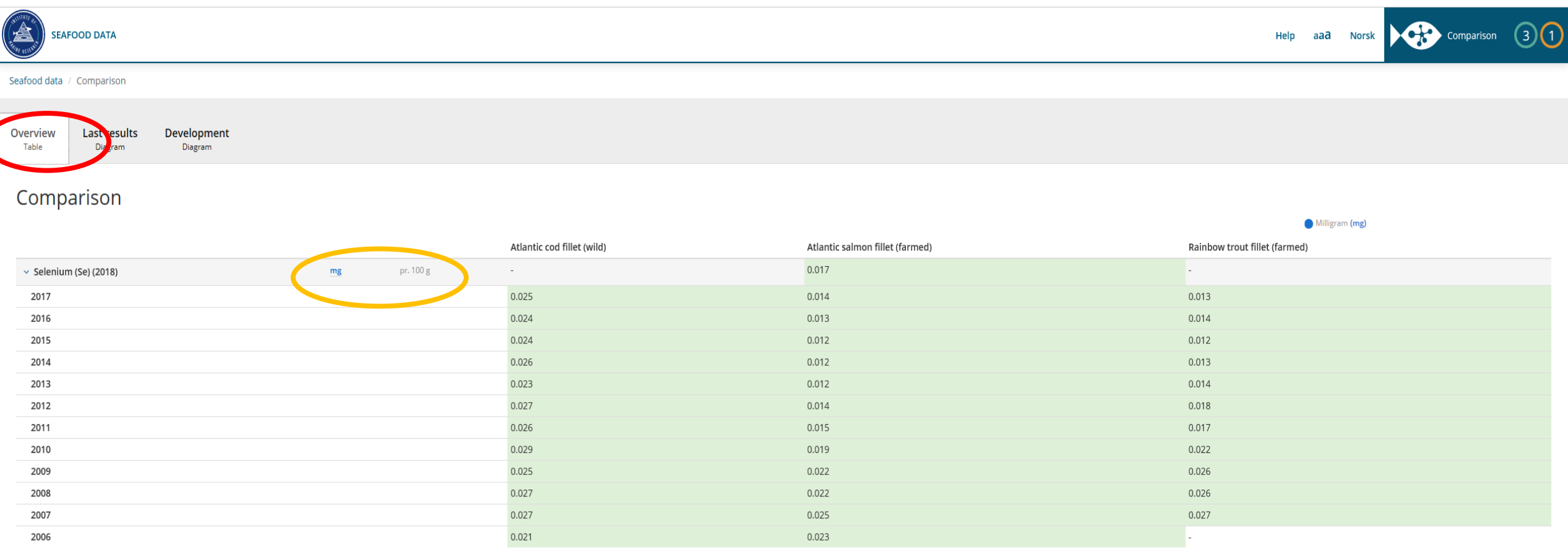
Contaminants

Current results for contaminants per kg

Substance	Measured	Unit	Maximum level	Mean	Min	Max	Median	Analyses	Below LOQ
Alpha-HCH	2012	mikrogram	-	-	<0.13	0.19	<0.16	50	48
Arsenic (As)	2017	milligram	-	2.14	0.88	3.30	2.20	72	0
Beta-HCH	2012	mikrogram	-	-	<0.13	0.63	<0.19	50	26
Cadmium (Cd)	2017	milligram	0.10	0.010	<0.0040	0.023	0.0090	72	3
Chlordan	2006	mikrogram	-	2.63	2.46	3.16	2.60	25	0
Dioxin-like PCBs	2017	nanogram TEQ	-	0.40	0.20	0.66	0.39	11	0

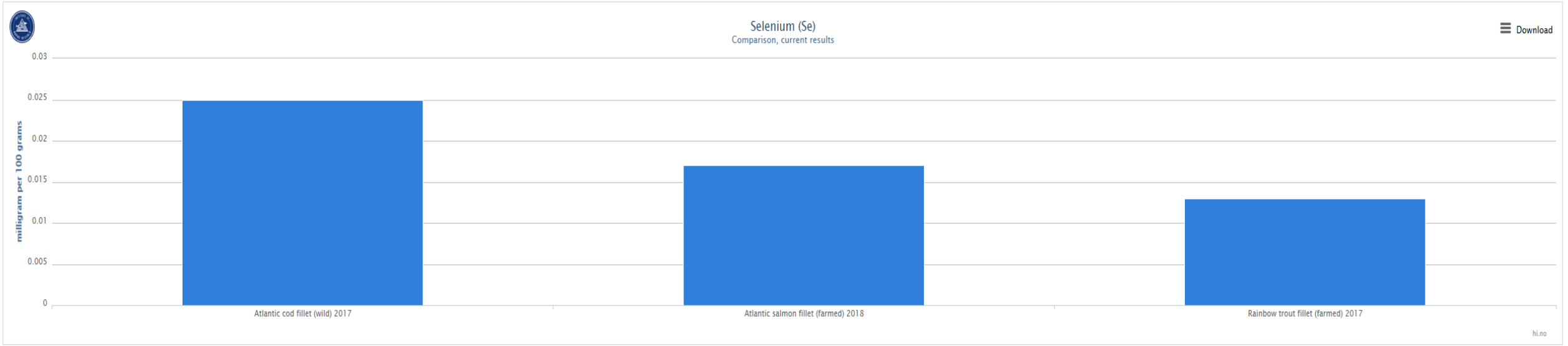
Compairing Selenium in cod (*Cadus morhua*), salmon (*Salmo salar*) and rainbow trouth (*Oncorhynchus mykiss*) (mg/100g)



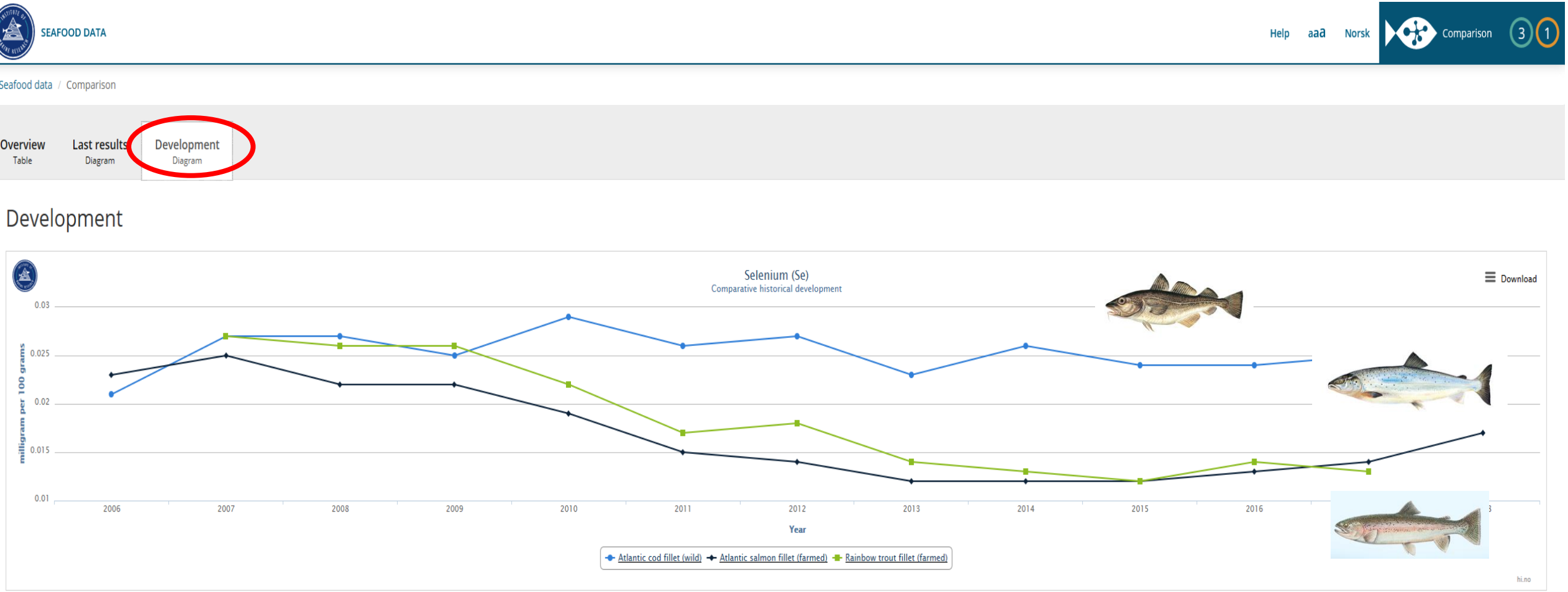


Overview of average values each year

Last results



Most recent average values



Development of average values

food & nutrition research

2018, 62: 1291
DOI: https://doi.org/10.29219/fnr.v62.1291

ORIGINAL ARTICLE

Iodine content of six fish species, Norwegian dairy products and hen's egg

Ive Nerhus, Maria Wik Markhus, Bente M. Nilsen, Jannike Øyen, Amund Maage, Elisabeth Rasmussen Ødegård, Lisa Kolden Midtbø, Sylvia Frantzen, Tanja Kögel, Ingvild Eide Graff, Øyvind Lie, Lisbeth Dahl* and Marian Kjellevold

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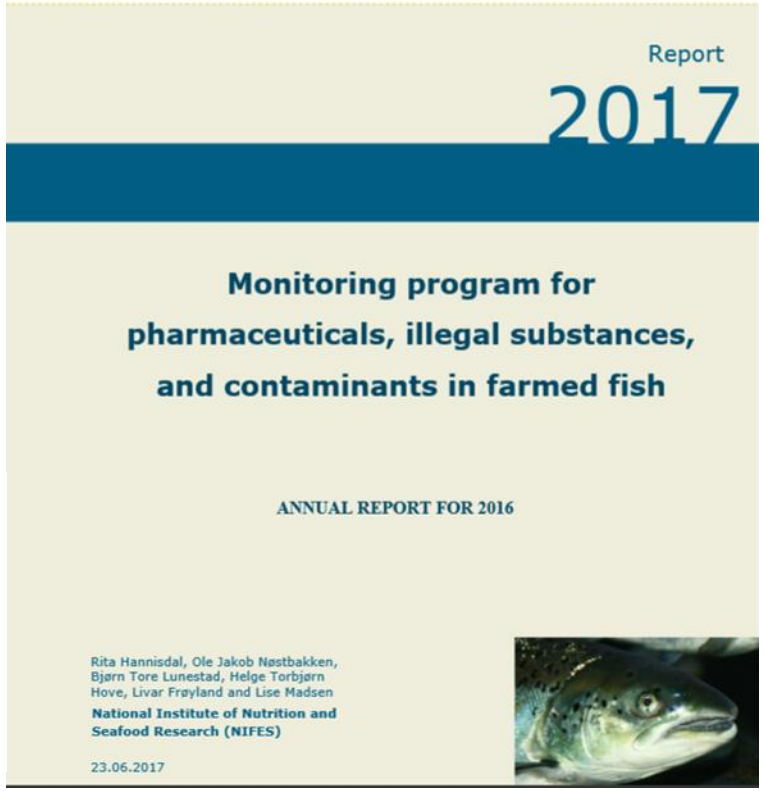

Nutrient·composition·in·seafood·products·available·for·Norwegian·consumers¶

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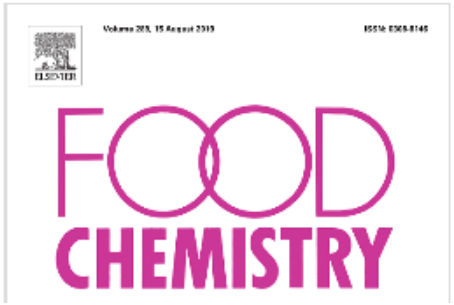

Thank you for your attention!

We'll continue our work on sampling, analyzing and give public access to seafood data

Acknowledgement to collogues at Food Security and Nutrition, and Seafood in Model Systems at the Institute of Marine Research

Marian Kjellevold, Inger Aakre, Rita Hanisdal, Synnøve Næss, Astrid Elise Hasselberg, Anita Røyneberg Alvheim