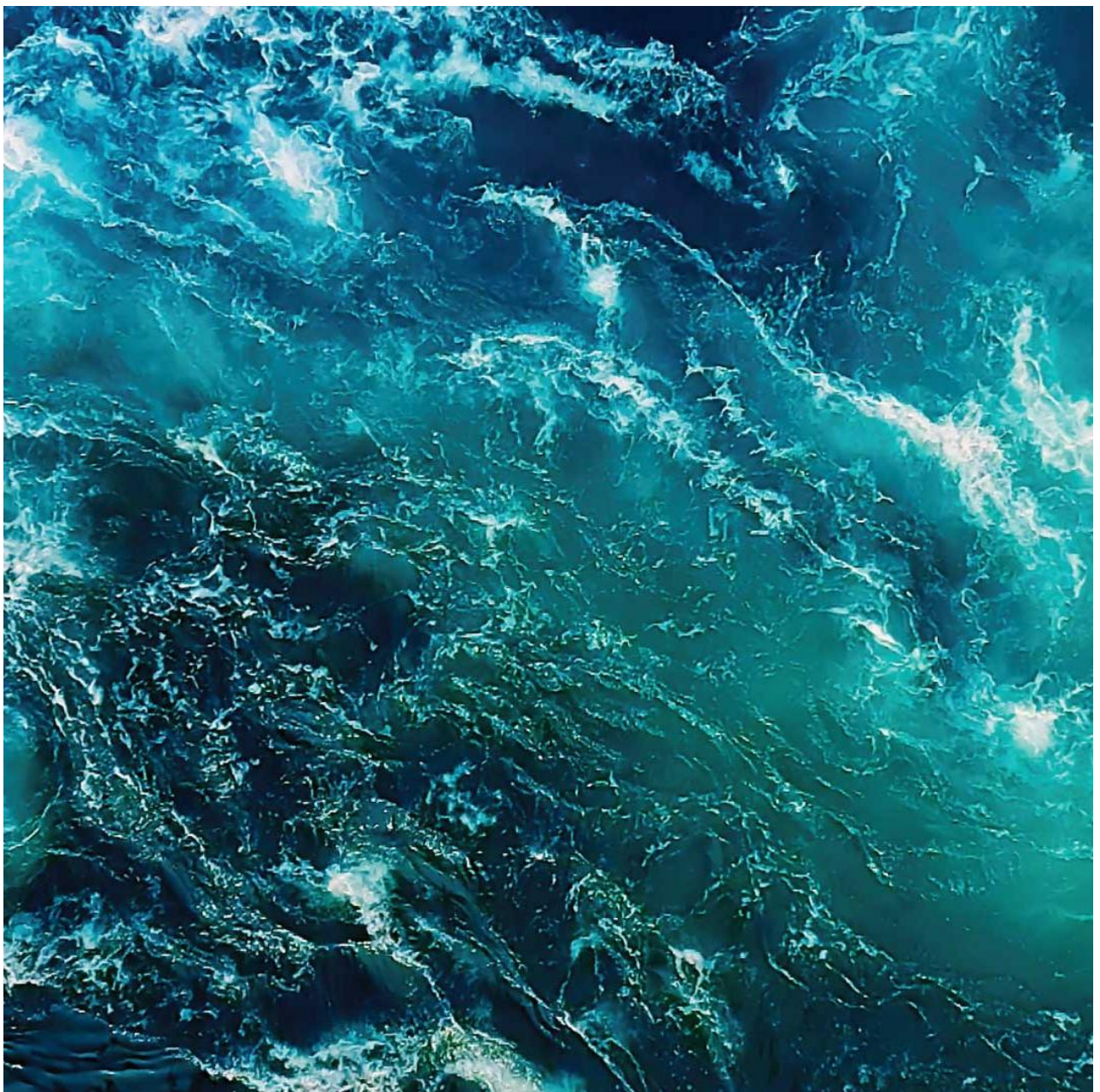


C-survey at Tjaldanes (max biomass), 2026

Arnarlax ehf

Akvaplan-niva AS Report: 2026 67226.01



Arnarlax ehf. C-Survey at Tjaldanes, 2026.

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Summary

The results from the monitoring at the farming site Tjaldanes in February 2026 showed that the sediment was somewhat loaded with organic carbon and the copper level in the sediment at C1 was somewhat elevated (55 mg/kg) and is categorized into environmental limit II or "low values". EMB concentration in the sediment at C4 was 480 ng/kg and thus exceeds the defined concentration of 272 ng/kg for stations outside the mixing zone. Accordingly, the station is not fulfilling the "good status standard". The bottom sediments grain size was moderately coarse to fine with a pelite ratio ranging from 42.1 to 86.6 %. The redox measurements (pH/Eh) gave point 0 acc. Appendix D in NS 9410:2016 for all the sampling stations. The oxygen saturation in February was very good in the whole water column with 89 % in the bottom water.

Load effect was recorded in the fauna at C1 and faunal index nEQR was 0.265 which indicates poor conditions. At the other stations, the nEQR values were between 0.4 and 0.6 indicating moderate faunal conditions at these stations. The diversity index H' was 1.24 at C1 and below 3 at the other stations which ranged from 2.78 and 2.89. The NS 9410:2016-assessment of the community in the local impact zone (C1) showed environmental condition 2 (Good). A pollution indicator species was found among the most dominant species at C1, but not at the other stations.

The results from the present survey in February 2026 compared to previous C survey at the Tjaldanes in September 2024 (Mannvik & Gunnarsson, 2024) show that the diversity index H' is at the same level at the four surveyed stations. A pollution indicator species was found among the top ten at C1 in both surveys, but not at the other stations. The faunal conditions were poor at C1 and moderate at the other stations in both surveys.

Approval



Project leader

Quality control

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Preface

Akvaplan-niva carried out a type C (NS 9410:2016) environmental survey at the Tjaldanes site. It includes pH/redox measurements (Eh), hydrography, geochemical analyses, and analyses of the bottom fauna from four stations at the fish farming site. The following personnel contributed:

Snorri Gunnarsson	Akvaplan-niva	Field work, report, project leader.
Hans-Petter Mannvik	Akvaplan-niva	Identification of bottom fauna (Echinodermata). Report, professional assessments, and interpretations.
Rune Palerud	Akvaplan-niva	Identification of bottom fauna (Crustaceans). Statistics. QA report, professional assessments, and interpretations.
Jesper Hansen	Akvaplan-niva	Identification of bottom fauna (Varia, Mollusca).
Andrey Sikorski	Akvaplan-niva	Identification of bottom fauna (Polychaeta).
Anne Tårånd Aasen	Akvaplan-niva	Hydrographical vertical profiles
Kristine H Sperre	Akvaplan-niva	Coordination of sorting of bottom fauna.
Lisa Torske	Akvaplan-niva	Coordination of geo-chemical analyses.

Akvaplan-niva would like to thank Arnarlax ehf and Kristian Leander Gillebo Sormo for good cooperation.

Accreditation information:

The survey was carried out by Akvaplan-niva AS with ALS Laboratory Group (Czech Republic) as a sub-contractor.



Akvaplan-niva AS is accredited under NS-EN ISO/IEC 17025 by Norwegian Accreditation for field sampling of sediments and fauna, analyses of TOC, TOM, TN, particle size and macrofauna, and for professional evaluations and interpretations. Our Accreditation number is TEST 079.

Czech Accreditation
Institute (Lab nr 1163)

ALS Laboratory Group is accredited by the Czech Accreditation
Institute (Lab nr 1163) for copper analyses.

Non-accredited services: Analyses of emamectin benzoate, hydrographical measurements and mapping of bottom topography (Olex).

1 Data Summary

Client information			
Report title:	C-Survey at Tjaldanes, 2026.		
Report nr.	2026 67226.01	Site:	Tjaldanes
Municipality:	Vesturbyggð	Map Coordinates (construction):	65°45,060 N 23°32,995 W
MTB permitted (estim. max biomass next generation):	2,110 tonn	Operations manager:	Kristian Leander Gillebo Sormo
Client:	Arnarlax ehf		

Biomass/production status at time of survey (05.02.2026)			
Fish group:	Salmon	Biomass on examination (t):	1,960
Feed input (t):	2,665	Tonnes of produced fish:	2,234
Type/time of survey			
Maximum biomass (t):	X	Follow up study:	
Fallow (resting period):		New location:	

Results from the C study /NS 9410 (2016) – Main results from soft bottom fauna			
Faunal index nEQR (Miljødirektoratet 2025)		Diversity index H' (Shannon-Wiener)	
Fauna C1 (impact zone)	0.265	Fauna C1 (impact zone)	1.25
Fauna C2	0.595	Fauna C2	2.86
Fauna C3	0.541	Fauna C3	2.78
Fauna C4 (deep area)	0.542	Fauna C4 (deep area)	2.89
Date fieldwork:	05.02.2026	Date of report:	16.04 2026
Notes to other results (sediment, pH/Eh, oxygen)			nTOC from 36.5 to 44.8 Copper 55 mg/kg at C1 Eh positive at all stations O ₂ -conditions were good throughout the water column.

2 Introduction

2.1 Background and aim of the study

On behalf of Arnarlax ehf, Akvaplan-niva completed a survey (type C) for a fish farming site at Tjaldanes (Figure 1). The survey fulfils the requirements of the Icelandic authorities for bottom surveys according to ISO 12878 and the requirements for environmental bottom surveys (according to Vöktunaráætlun). An environmental study was simultaneously undertaken, with reference to Chapter 5.0 in NS 9410:2016 which follows the methodology for C- study. A survey (type C) is aimed at studying the environmental conditions of the bottom sediments along a transect sector from the fish farm that extends from the local, to the intermediate and to the regional impact zones. The main emphasis is on the study of the soft bottom fauna which is conducted according to standards ISO 5567-19:2004 and ISO 16665:2014. The obligatory parameters that are included in the survey are described in NS 9410:2016.

A classification or threshold values for this type of survey have not been developed by Icelandic officials, so it is not possible to strictly apply the classification based on Norwegian threshold values to Icelandic conditions. We do however report the results with these same indexes with reference to Norwegian threshold values (national water type G/H 1-3; see chapter 7.1), but it should be emphasized that some of these (such as NSI) are developed according to Norwegian conditions. For further descriptions of these indexes see details in Appendix 1 and guidelines from Miljødirektoratet (2025).

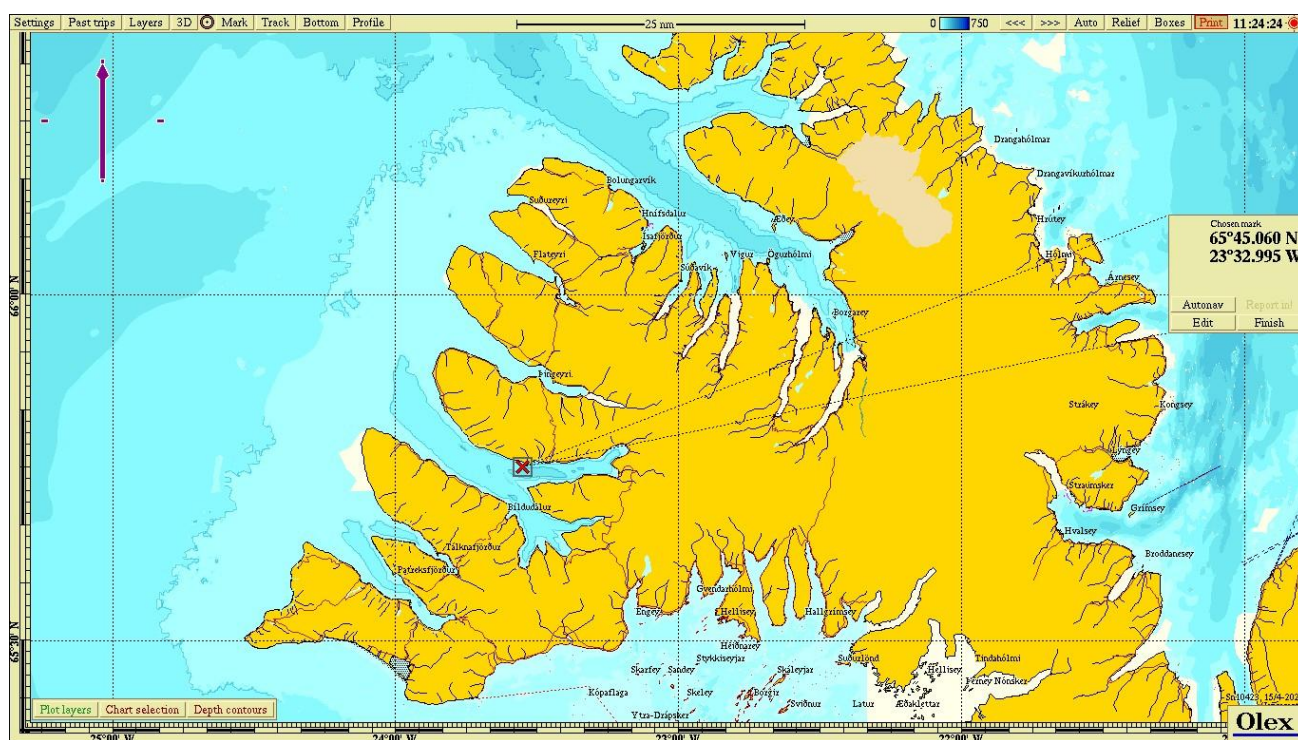


Figure 1 Overview of Vestfjords with the farming site Tjaldanes (red cross). The map coordinates for the midpoint of the farming site are given to the right.

2.2 Site operation and feed use

The Tjaldanes site is in Arnarfjörður, about 7.5 km north from town Bíldudalur. The cages are lined in a northerly direction towards land (21 degrees). The depth under cages ranges from about 60 - 104 m. The fish farm at the site is a 3x5 setup, total 15 cages each with 160 m circumference.

This is the third generation farmed salmon at the site and was started with smolt output fall 2024. At the time of the survey, the standing stock was approximately 1,960 tonnes of salmon (3rd generation) with an average weight of 3.5 kg per fish and total feed was 2,665 tonn (pers. comm. Per Gunnar Hallan).

In Iceland, the MTB (maximum allowed biomass) limit is not given a site level as in Norway. The MTB limit determines how much live fish the holder of the permit can have standing in the sea at any one time. In Iceland the allowed production is regulated at two levels, site level and company level. For this site the estimated maximal standing biomass for the current generation is 2,110 tonnes, used as MTB here (Per Gunnar Hallan, pers. comm).

2.3 Previous surveys

An overview of previous C-surveys carried out at Tjaldanes is shown in Table 1.

Table 1: Previous C-surveys at Tjaldanes.

Survey date	Report reference (author, year)	Production (tonnes)
01.09 2024	APN 66114.01, Mannvik and Gunnarsson (2024)	0
01.02 2023	APN 64661.03, Mannvik and Gunnarsson (2023)	8.816
04.06 2021	APN 63266.01, Szybor and Gunnarsson (2021)	0
15.07 2020	APN 62333.01, Mannvik and Gunnarsson (2020)	6.617
07.03 2019	APN 60976.01, Mannvik and Gunnarsson (2019)	0

3 Materials and methods

3.1 Survey program

The choice of study parameters, placement of sampling stations and other criteria for the study is based on descriptions in NS 9410 (C-surveys). An overview of the planned professional program is given in Table 2.

Akvaplan-niva is accredited for field work, analyses of samples and for the professional evaluation of results in accordance with applicable standards and guidelines ("Veiledere"). For implementation and follow through, the following standards and quality assurance systems were used:

- ISO 5667-19:2004: *Guidance on sampling of marine sediments*.
- ISO 16665:2014. *Water quality – Guidelines for quantitative sampling and sample processing of marine soft-bottom macro fauna*.
- NS 9410:2016. *Miljøovervåking av bunnpåvirkning fra marine oppdrettsanlegg*.
- Internal procedures. *Quality Manual for Akvaplan-niva*.
- Miljødirektoratet (2025). *Veileder for klassifisering av miljøtilstand i kyst- og ferskvann*.

Table 2: Survey program for the C-survey at Tjaldanes, 2026. TOC = total organic carbon. GSA = grain size analysis sediment. TOM = total organic material. TN = total nitrogen. Cu = Copper. P = phosphorous. EMB = emamectin benzoate. pH/Eh = acidity and redox potential.

Station	Type analyses/parameters
C1 (local impact zone)	Quantitative analyses of bottom fauna. TOC. GSA, TOM. TN. Cu. P. pH/Eh.
C2 (transition zone outer)	Quantitative analyses of bottom fauna. TOC. GSA, TOM. TN. P. pH/Eh.
C3 (transition zone)	Quantitative analyses of bottom fauna. TOC. GSA, TOM. TN. P. pH/Eh.
C4 (transition zone, deep area)	Quantitative analyses of bottom fauna. TOC. GSA, TOM. TN. P. EMB. Hydrography/O ₂ . pH/Eh.

Field work was completed on 05.02.2026.

Placement of stations and local conditions

The number of stations was calculated with reference to the sites estimated maximal standing biomass for the current generation which is 2,110 tonnes (used as MTB here). According to the standard four sampling stations should be examined. Depth and position of the stations are given in Table 3 and shown in Figure 2. The stations were placed in the direction of the main oceanic current direction at 60 m depth (Helgeland Havbruk, 2013).

Table 3: Depth, distance between the nearest frame of the fish farm and sampling stations and coordinates for C-stations at Tjaldanes, 2026.

Station	Depth, m	Distance from frame, m	Position	
			N	W
C1	99	25	65°45.044	23°32.668
C2	104	550	65°44.952	23°32.016
C3	102	170	65°45.016	23°32.493
C4	103	250	65°44.995	23°32.332

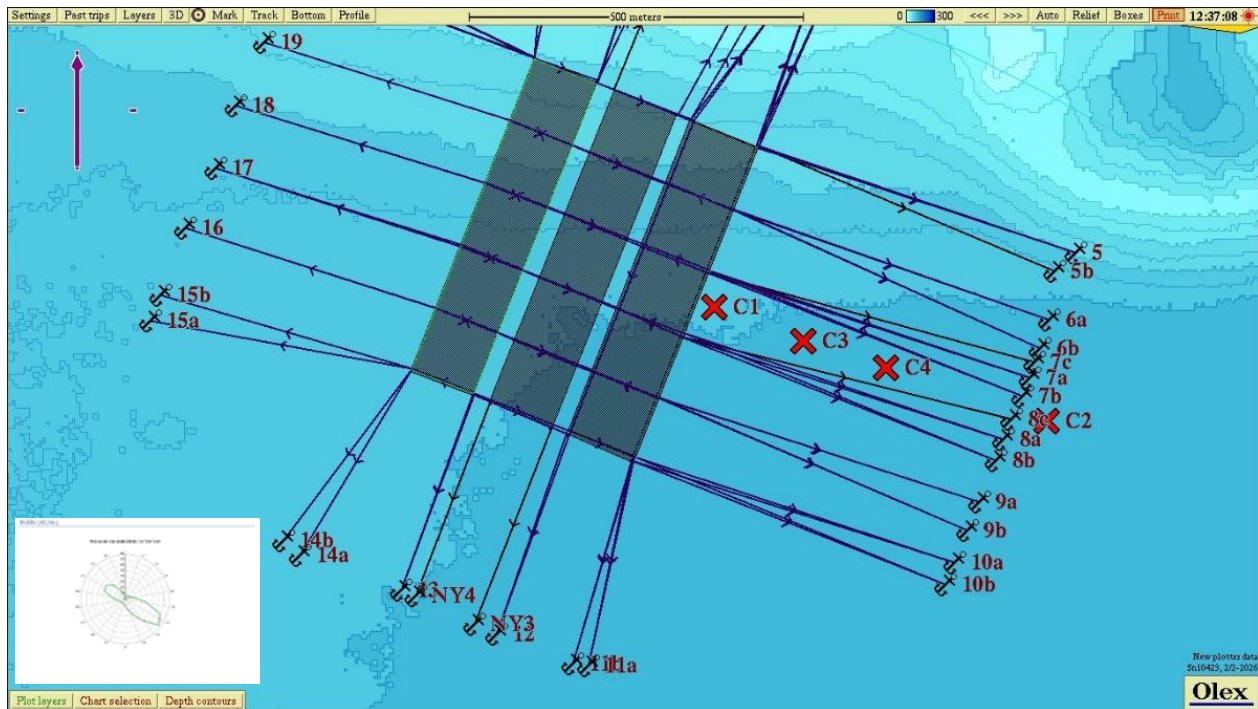


Figure 2. Map showing the sampling stations for the C-survey at Tjaldanes, 2026. Current measurements used were from 60 m depth (Helgeland Havbruk, 2013).

3.2 Hydrography and oxygen

At station C4, hydrographic measurements, salinity, temperature, density, and oxygen saturation were taken for vertical surface to bottom profiles using a Sensordata CTDO 204 probe.

3.3 Soft bottom sampling and analyses

3.3.1 Fieldwork

Sediment samples were collected with a 0.1 m² bottom grab (van Veen). The sample material was collected through inspection openings. Samples for TOC, TN and Cu were taken from the top 1 cm layer of the sediment and for TOM and grain size analyses from the top 5 cm using a hollow pipe. Only samples with an undisturbed surface were used. The samples were frozen prior to further processing in the laboratory.

3.3.2 Total organic material (TOM)

The amount of TOM in sediment was determined by weight loss after combustion at 495 °C. The percent weight loss was calculated. The reproducibility of the TOM analyses is checked during the analyses by using a standard sediment that contains TOM with a known level. Standard calcium carbonate was burned together with the samples as a control of the amount of carbonate that was not burned in the analyses process.

3.3.3 Total nitrogen (TN)

After drying the samples at 40°C, the amount of total nitrogen (TN) was quantified by electrochemical determination using Akvaplan-niva internal method that is based on NS-EN 16168:2012.

3.3.4 Total organic carbon (TOC) and grain size

The proportion of fine material, the fraction less than 63 µm, was determined gravimetrically after wet sieving of the samples. The results are presented as proportion of each fraction on a dry weight basis (Bale & Kenny, 2005).

After drying the samples at 40 °C, the content of total organic carbon (TOC) was determined by NDIR-detection in accordance with NS EN 17505:2022. To classify the environmental conditions based on the content of TOC, the measured concentrations are normalized for the proportion of fine substance (nTOC) using the equation: $nTOC = TOC + 18(1 - F)$, where TOC and F represent a measured TOC value and the proportion of fine substance (%) in the sample (Aure *et al.*, 1993).

3.3.5 Metal analysis - copper (Cu)

The samples for metal analysis were freeze-dried before being placed in a microwave oven in a sealed Teflon container with concentrated ultrapure nitric acid and hydrogen peroxide. The concentration of copper (Cu) was determined by means of ICP-SFMS. The levels of copper are classified in accordance with Icelandic regulation 769/1999.

3.3.6 Emamectin benzoate (EMB)

The sediments were lyophilized prior to solvent extraction. The actual quantification was determined by high-resolution liquid chromatography coupled to tandem mass spectroscopy (HPLC-MS/MS). The LOD and LOQ are determined in accordance with the guidelines of the EU's reference laboratories for pesticide analyses, SANTE/2020/12830, 24/02/2021. The results are evaluated according to the Scottish Environmental Protection Agency (SEPA) standards (SEPA, 2022 & 2023).

3.3.7 Phosphorus (P)

Following a pre-treatment, the samples were quantified according to ČSN 720116-1 (720116) where phosphorus pentoxide, P_2O_5 forms a phosphorus molybden-vanadium complex. The samples for metal analysis were freeze-dried before being placed in a microwave oven in a sealed Teflon container with concentrated ultrapure nitric acid and hydrogen peroxide.

3.3.8 Redox- and pH measurements

At all the stations, a quantitative chemical examination of the sediment was carried out. Acidity (pH) and redox potential (Eh) were measured using electrodes and the YSI Professional Plus instrument. In accordance with the manual of the instrument, 200 mV was added to the measured ORP (the Oxidation Reduction Potential) value.

3.4 Soft bottom fauna investigation

3.4.1 About effect of organic material on bottom fauna

The emission of organic material from fish farms can contribute to the deterioration of conditions for many of the organisms living in the bottom sediment. Negative effects in the bottom fauna can best be assessed through quantitative bottom fauna analyses. Many soft bottom species have low mobility, and the fauna composition will largely reflect the local environmental conditions. Changes in the bottom fauna communities are a good indication of unwanted organic loads. Under natural conditions, the communities typically consist of many species. High number of species (diversity) is, amongst other things, that is dependent on favourable conditions for the fauna. However, moderate increases in organic load can stimulate the fauna and result in an increased number of species found. Larger organic loads can result in less favourable conditions where opportunistic species increase their individual numbers, while the species not suited are knocked out resulting in a reduced diversity of species. Changes in species diversity near emission points of feed and faecal matter can, to a large degree, be attributed to changes in organic content (from the feed and faecal matter) in the sediment.

3.4.2 Sampling and fixation

All the bottom fauna samples were taken with a 0.1 m² van Veen grab. Only grab samples where the grab was completely closed and the surface undisturbed were approved. The contents were washed through a 1 mm sieve and the remaining material fixed with 4 % formalin with Bengal Rose dye added and then neutralized with borax. In the laboratory, the animals were sorted from the remaining sediment.

3.4.3 Quantitative bottom fauna analysis

At all stations, two samples (replicates) were collected in accordance with guidelines in NS 9410 (2016). After sorting the sample material was processed quantitatively. The bottom fauna was identified to the lowest taxonomic level possible and quantified by specialists (taxonomists). The quantitative lists of species were statistically analysed. See Appendix 1 for description of analysis methods. The following statistical methods were used to describe community structure and to assess the similarity between different communities:

- Shannon-Wiener diversity index (H')
- Hurlberts diversity index (ES_{100}) – expected number of species pr. 100 individuals
- Pielou's evenness index (J)
- Sensitivities index (Ømfintlighet) (ISI_{2018}), unsuitable at low individual/species number
- Sensitivity index (NSI_{2018})
- Composite index for diversity of species and sensitivity (NQI1)
- Sensitivities index which is included in NQI1 (AMBI)
- Normalized EQR (nEQR)
- Number of species plotted against the number of individuals in geometric classes
- Cluster analyses
- The ten most dominant taxa per station (top-ten)

For the classification of fauna see Appendix 7.2.

4 Results

4.1 Hydrography and oxygen

The hydrographical profile for the deep station C4 in February 2026 is presented in Figure 3.

Temperature was around 3 °C throughout the whole water column. Oxygen saturation was 91 % in the upper layer and very good with 89 % in the bottom layer.

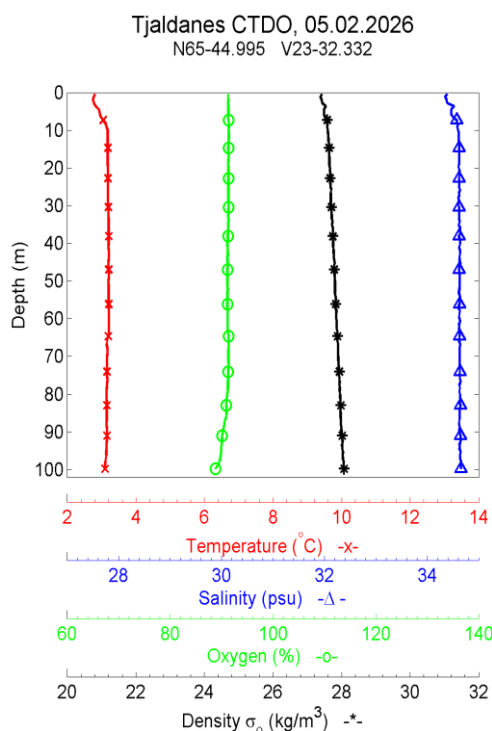


Figure 3. Vertical profiles. Temperature, salinity, density, and oxygen at C4 at Tjaldanes, 2026.

4.2 Sediment

4.2.1 TOC, TOM, TN, C/N, grain size and pH/Eh

Levels of total organic material (TOM), total organic carbon (TOC), total nitrogen (TN), C/N-relationship, grain size distribution in sediment (pelite) and pH/Eh in the sediment are presented in Table 4.

TOM-levels varied from 7.8 to 13.4 %. TN-levels were low (3.1 – 3.5 mg/g) as was the C/N-ratio. TOC was rather high at all stations and nTOC varied from 36.5 to 44.8. The bottom sediments grain size was moderately coarse to fine with a pelite ratio ranging from 42.1 to 86.6 %.

Redox measurements (pH/Eh) gave a point of 0 for all the sampling stations according to Appendix D in NS 9410:2016.

Table 4. Sediment description, TOM (%), TOC (mg/g), TN (mg/g), C/N, grain size distribution (pelite ratio % <0,063 mm) and pH/Eh. Tjaldanes, 2026.

St.	Sediment description	TOM	TOC	nTOC	TN	C/N	Pelite	pH/Eh
C1	Olive green mud.	7.8	34	44.8	3.1	11.3	42.1	7.7/255
C2	Olive green mud/silt.	13.4	40	42.3	3.2	12.3	86.6	7.8/235
C3	Olive green mud (some black organic material in the sediment surface layer).	9.7	29	36.5	3.5	8.3	60.1	7.6/295
C4	Olive green mud.	13.0	41	43.6	3.3	12.2	83.9	7.9/282

4.2.2 Copper

Levels of copper in bottom sediment at C1 are shown in Table 5. The level of copper was 55 mg/kg or low (limit II) according to environmental limits in Icelandic regulation nr. 796/199 (Regulation on prevention of water pollution nr. 796/1999).

Table 5. Copper (Cu), mg/kg DS. Tjaldanes, 2026.

St.	Cu
C1	55

4.2.3 Emamectin benzoate

Concentration of emamectin benzoate in sediment at C4 is presented in Table 6. Station C4 is located 250 m from the cage edge and is thus placed outside the mixing zone (SEPA 2022).

EMB concentration was 480 ng/kg and thus exceeds the defined concentration of 272 ng/kg for stations outside the mixing zone. Accordingly, the station is not fulfilling the "good status standard".

Table 6. Emamectin benzoate in the sediment at C4, ng/kg. Tjaldanes, 2026.

St.	Emamectin benzoate
C4	480

4.2.4 Phosphorus

Levels of phosphorus in bottom sediments at Tjaldanes are shown in Table 7. The level of phosphorus varied from 1400 mg/kg (C2) to 2200 mg/kg (C1).

Table 7. Phosphorus (P), mg/kg DS. Tjaldanes, 2026.

St.	P
C1	2200
C2	1400
C3	1400
C4	1500

4.3 Soft-bottom fauna

4.3.1 Faunal indices

Results from the quantitative soft bottom faunal analyses at the C-stations are presented in Table 8.

The number of individuals varied from 304 (C2) to 803 (C3) and number of species from 17 (C1) to 30 (C2). The diversity H' varied from 1.24 to 2.89. At C1 the index of nEQR was lower than 0.4, while at the other stations between 0.4 and 0.6. The nEQR values indicate poor faunal condition at C1 and moderate conditions at the other stations. The AMBI-value varied from 2.886 to 5.524.

J (Pielous evenness index) is a measure of how equally individuals are divided between species and will vary between 0 and 1. A station with low value has a "crooked" individual distribution between the species, indicating a disturbed bottom fauna community. The index varied from 0.33 to 0.67 which indicates an uneven distribution at C1 and more even distribution at the other stations.

Table 8. Number of species and individuals pr. 0,2 m². H' = Shannon-Wiener's diversity index. ES_{100} = Hurlberts diversity index. NQI_1 = overall index (diversity and sensitivity). ISI_{2018} = sensitivity index. NSI = sensitivity index. J = Pielous evenness index. $AMBI$ = AZTI marine biotic index (part of NQI_1). $nEQR$ = normalized EQR. C-stations at Tjaldanes, 2026.

St.	C1	C2	C3	C4
Ant. ind.	624	304	803	422
Ant. arter	17	30	29	24
H'	1.24	2.86	2.78	2.89
ES_{100}	8.2	18.4	14.3	15.8
NQI_1	0.373	0.607	0.616	0.602
ISI_{2018}	4.07	6.42	5.67	5.57
NSI	8.23	17.14	18.65	18.09
nEQR	0.265	0.595	0.541	0.542
AMBI	5.524	3.336	2.886	3.126
Pielou	0.33	0.64	0.62	0.67

*) Colour marking according to Norwegian national water type G/H 1-3 (Miljødirektoratet, 2025).

4.3.2 NS 9410 Evaluation of the bottom fauna at station C1 (local impact zone).

According to NS 9410 the classification of the environmental status in the local impact zone can also be evaluated based on the number of species and their dominance in the bottom faunal community (see Chapter 8.6.2 in NS 9410:2016).

The soft bottom communities were classified to environmental condition 2 "Good". The criteria for condition 1 are that there are at least 20 species/0.2 m² and that none of these are in numbers exceeding 65 % of the individuals (Table 9).

Table 9. Classification of the environmental status of the soft bottom fauna at station C1 at the Tjaldanes site 2026.

Station	Site name	Num. species	Dominating taxa	Environmental condition-NS 9410
C1	Tjaldanes	17	Capitella capitata – 77 %	2 - Good

4.3.3 Geometric classes

Figure 4 shows the number of species plotted against the number of individuals, where the number of individuals is divided into geometric classes. For an explanation of the concept of geometric classes is given in Appendix 1.

All curves started relatively low (≤ 13 species) and stretched out in varying degrees towards higher classes. These indicate some uneven faunal conditions at the stations.

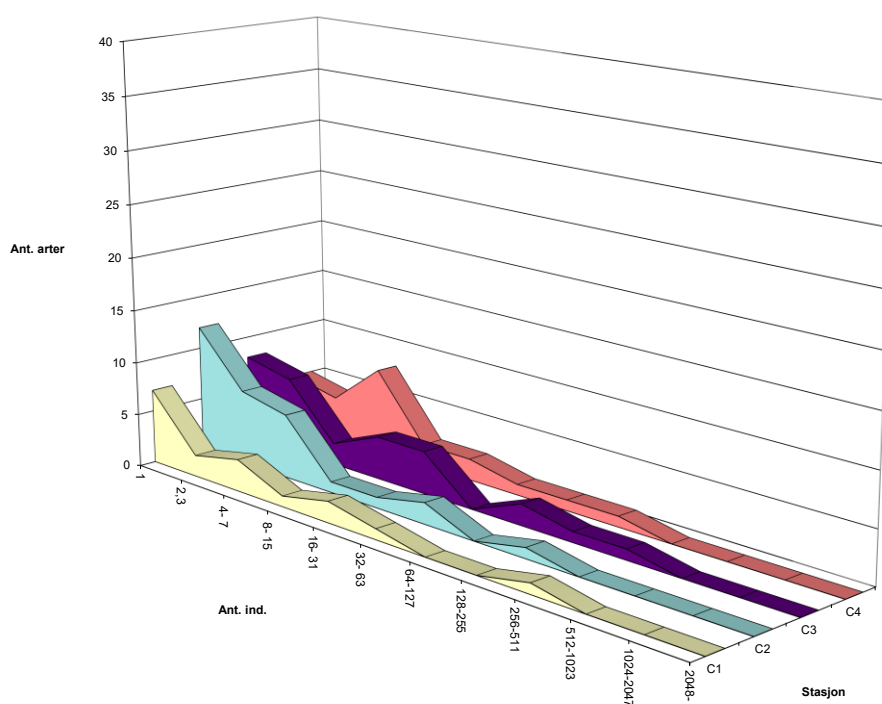


Figure 4. The soft bottom fauna shown as number of species against number of individuals pr. species in geometric classes. Tjaldanes, 2026.

4.3.4 Cluster analyses

To investigate the similarity of the faunal composition between the sampling stations, the multivariate technique cluster analysis was used. The results of this are presented in dendrogram in Figure 5.

The fauna composition was more than 67 % similar for three stations while C1 was 48 % similar to these stations. C1 had the most affected faunal conditions.

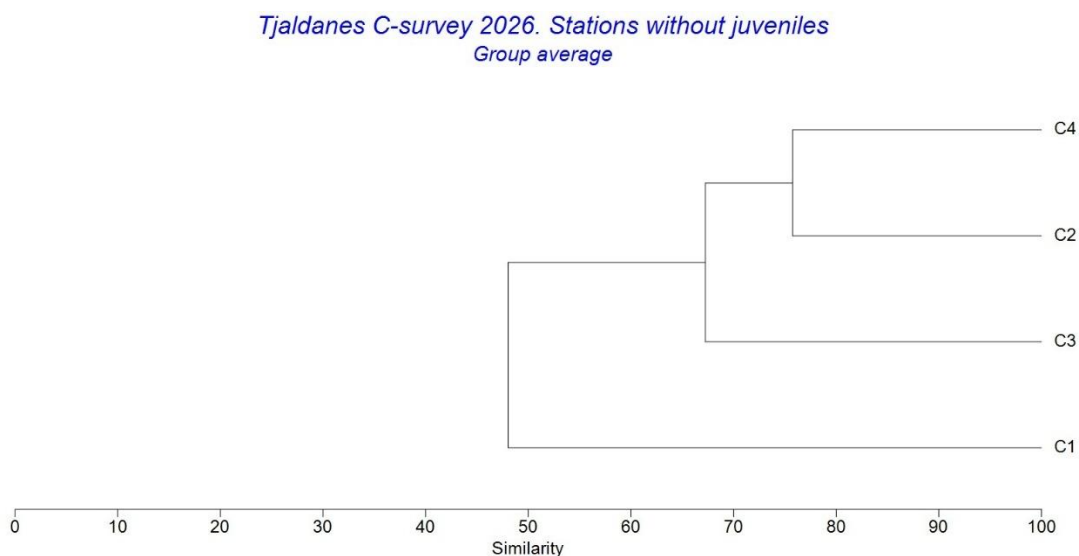


Figure 5. Cluster diagram for the soft bottom fauna at the C-stations at Tjaldanes, 2026.

4.3.5 Species composition

The main features of the species composition are shown in the form of a top ten species list from each station in Table 10.

In Borgersen *et al.* (2020) the species are divided into five ecological groups (EG) based on the value of the sensitivity index. These groups run from sensitive species (EG I) to pollution indicators (EG V).

The fauna at C1 was dominated by the pollution indicator species *Capitella capitata* with 77 % of the individuals. The other most dominant species at the stations were a mixture of tolerant and opportunistic species.

The fauna at C2 was dominated by the opportunistic polychaete *Prionospio steenstrupii* with 44 % of the individuals. The other most dominant species at the stations were a mixture of tolerant and opportunistic species.

The fauna at C3 and C4 were dominated by the opportunistic bivalve *Thyasira sarsii* with 42 and 32 %, respectively, of the individuals. The other most dominant species at the stations were a mixture of tolerant and opportunistic species together with one sensitive species at C4.

Table 10. Number of individuals, cumulative percentage, and ecological group* for the ten most dominant species at the C stations. Tjaldanes, 2026.

C1	EG	Ant. ind.	Kum.
Capitella capitata	V	506	77 %
Mytilus edulis juv.	Ik	35	82 %
Thyasira sarsii	IV	32	87 %
Heteromastus filiformis	IV	26	91 %
Chaetozone sp.	III	25	94 %
Ophryotrocha sp.	IV	9	96 %
Ophelina acuminata	III	6	97 %
Ampharete borealis	IV	4	97 %
Eteone flava/longa	III	4	98 %
Prionospio steenstrupi	IV	3	98 %

C2	EG	Ant. ind.	Kum.
Prionospio steenstrupi	IV	134	44 %
Thyasira sarsii	IV	44	58 %
Ophelina acuminata	III	37	70 %
Ennucula tenuis	III	17	75 %
Chaetozone sp.	III	12	79 %
Ampharete borealis	IV	6	81 %
Cistenides hyperborea	III	6	83 %
Nephtys ciliata	III	5	85 %
Galathowenia oculata	III	4	86 %
Lumbrineris sp.	III	4	87 %

C3	EG	Ant. ind.	Kum.
Thyasira sarsii	IV	343	42 %
Prionospio steenstrupi	IV	157	62 %
Ampharete borealis	IV	83	72 %
Ophelina acuminata	III	65	80 %
Macoma calcarea	III	27	83 %
Galathowenia oculata	III	19	85 %
Eteone flava/longa	III	18	88 %
Chaetozone sp.	III	16	90 %
Ennucula tenuis	III	12	91 %
Nephtys ciliata	III	10	92 %

C4	EG	Ant. ind.	Kum.
Thyasira sarsii	IV	139	32 %
Prionospio steenstrupi	IV	120	60 %
Ophelina acuminata	III	32	67 %
Ampharete borealis	IV	31	74 %
Chaetozone sp.	III	25	80 %
Ennucula tenuis	III	12	83 %
Mytilus edulis juv.	Ik	11	85 %
Nephtys ciliata	III	8	87 %
Heteromastus filiformis	IV	6	88 %
Nuculana pernula	I	6	90 %

*Ecological groups: EG I = sensitive species. EG II = neutral species. EG III = tolerant species. EG IV = opportunistic species. EG V = pollution indicator species. From Borgersen et al., 2020. Ik = ecological group unknown.

5 Summary

The results from the monitoring at the farming site Tjaldanes in February 2026 showed that the sediment was somewhat loaded with organic carbon and the copper level in the sediment at C1 was somewhat elevated (55 mg/kg) and is categorized into environmental limit II or "low values". EMB concentration in the sediment at C4 was 480 ng/kg and thus exceeds the defined concentration of 272 ng/kg for stations outside the mixing zone. Accordingly, the station is not fulfilling the "good status standard". The bottom sediments grain size was moderately coarse to fine with a pelite ratio ranging from 42.1 to 86.6 %.

The redox measurements (pH/Eh) gave point 0 acc. Appendix D in NS 9410:2016 for all the sampling stations. The oxygen saturation in February was very good in the whole water column with 89 % in the bottom water.

Load effect was recorded in the fauna at C1 and faunal index nEQR was 0.265 which indicates poor conditions. At the other stations, the nEQR values were between 0.4 and 0.6 indicating moderate faunal conditions at these stations. The diversity index H' was 1.24 at C1 and below 3 at the other stations which ranged from 2.78 and 2.89. The NS 9410:2016-assessment of the community in the local impact zone (C1) showed environmental condition 2 (Good). A pollution indicator species was found among the most dominant species at C1, but not at the other stations.

5.1 Comparison with previous survey

The results from the present survey in February 2026 compared to previous C survey at the Tjaldanes in September 2024 (Mannvik & Gunnarsson, 2024) show that the diversity index H' is at the same level at the four surveyed stations. A pollution indicator species was found among the top ten at C1 in both surveys, but not at the other stations. The faunal conditions were poor at C1 and moderate at the other stations in both surveys.

6 References

- Aure, J., Dahl, E., Green, N., Magnusson, J., Moy, F., Pedersen, A., Rygg, B. og Walday, M., 1993. Langtidsovervåking av trofiutviklingen i kystvannet langs Sør-Norge. Årsrapport 1990 og samlerapport 1990-91. Statlig program for forurensningsovervåking. *Rapport 510/93*.
- Bale, A.J. & A.J. Kenny, 2005. Sediment analysis and seabed characterisation. In: Eleftheriou, A.; McIntyre, A.D. "Methods for the study of marine benthos". 3rd edition. Blackwell Science. Oxford, UK. ISBN 0-632-05488-3. pp. 43-86.
- Borgersen, G., M. Hektoen, F. Melsom & C. Todt, 2020. Uttesting av sensitivitetsindeksene ISI2018 og NSI2018 og en revidert artsliste med sensitivitetsverdier for bløtbunnfauna. NIVA-rapport 7494-2020.
- ČSN 72 0116-1 (720116) Základní postup rozboru silikátů - Stanovení oxidu fosforečného fotometricky vytvořením fosfomolybdenovanadiového komplexu
- Helgeland Havbruksstasjon AS. 2013. Current investigation. Tjaldaneseyrar. In Vestur Barðastrandarsýsla County. November 2013. Unnið fyrir Arnarlax.
- ISO 12878:2012 Environmental monitoring of the impacts from marine finfish farms on soft bottom
- ISO 16665:2014. Water quality – Guidelines for quantitative sampling and sample processing of marine soft-bottom macrofauna.
- ISO 5667-19:2004. Guidance on sampling of marine sediments.
- Mannvik, H.-P. & S. Gunnarsson, 2024. C-survey at Tjaldanes (fallow period), 2024. APn-report 66114.01.
- Mannvik, H-P. and Gunnarsson, S. 2019. C-survey, Tjaldanes 2019. APN report 60976.01. 39 s.
- Mannvik, H-P. and Gunnarsson, S. 2020. Arnarlax hf. ASC- and C-survey, Tjaldanes 2020. APN report 62333.01. 37 s.
- Mannvik, H-P. and Gunnarsson, S. 2023. Arnarlax ehf. C-survey at Tjaldanes, 2023. APN report 64661.03. 39 s.
- Miljødirektoratet (2025,06.10). Veilederen for klassifisering av miljøtilstand i kyst- og ferskvann. [Veileder for klassifisering av miljøtilstand i kyst- og ferskvann.](#)
- NS 9410, 2016. Norsk standard for miljøovervåking av bunnpåvirkning fra marine akvakulturanlegg.
- NS-EN 16168:2012. Sludge, treated biowaste and soil – Determination of total nitrogen using dry combustion method.
- NS-EN 17505:2023. Soil and waste characterization - Temperature dependent differentiation of total carbon (TOC400, ROC, TIC900).
- Regulation on prevention of water pollution nr. 796/1999.
- SANTE/2020/12830, Rev.1, Guidance Document on Pesticide Methods for Risk Assessment and Post-approval Control and Monitoring Purposes, 24.02.2021.

SEPA, 2022. Marine finfish farm regulation. Seabed mixing zone limit. Compliance assessment methodology.

SEPA, 2023. Environmental Standards. Protecting the seabed.

<https://www.sepa.org.uk/regulations/water/aquaculture/environmental-standards/> . Accessed 15.09.2023

Sztybor, K. and Gunnarsson, S. 2021. Arnarlax, C-survey at Tjaldanes (fallow period), June 2021. APN report 63266.01. 35 s.

Pers. comm. Per Gunnar Hallan, Biological controller, Arnarlax ehf.

7 Appendix (in Norwegian)

7.1 Bunndyrsindekser og artslister

Diversitetsmål

Diversitet er et begrep som uttrykker mangfoldet i dyre- og plantesamfunnet på en lokalitet. Det finnes en rekke ulike mål for diversitet. Noen tar mest hensyn til artsrikheten (mål for artsrikheten), andre legger mer vekt på individfordelingen mellom artene (mål for jevnhet og dominans). Ulike mål uttrykker derved forskjellige sider ved dyresamfunnet. Diversitetsmål er "klassiske" i forurensningsundersøkelser fordi miljøforstyrrelser typisk påvirker samfunnets sammensetning. Svakheten ved diversitetsmålene er at de ikke alltid fanger opp endringer i samfunnsstrukturen. Dersom en art blir erstattet med like mange individer av en ny art, vil ikke det gjøre noe utslag på diversitetsindeksene.

Shannon-Wieners indeks (Shannon & Weaver, 1949) er gitt ved formelen:

$$H' = - \sum_{i=1}^s \frac{n_i}{N} \log_2 \left(\frac{n_i}{N} \right)$$

der n_i = antall individer av art i i prøven

N = total antall individer

s = antall arter

Indeksen tar hensyn både til antall arter og mengdefordelingen mellom artene, men det synes som indekseen er mest følsom for individfordelingen. En lav verdi indikerer et artsfattig samfunn og/eller et samfunn som er dominert av en eller få arter. En høy verdi indikerer et artsrikt samfunn.

Pielous mål for jevnhet (Pielou, 1966)

har følgende formel, der symbolene er som i Shannon-Wieners indeks

$$J = \frac{H'}{\log_2 s}$$

Hurlberts diversitetskurver

Grafisk kan diversiteten uttrykkes i form av antall arter som funksjon av antall individer. Med utgangspunkt i total antall arter og individer i en prøve søker man å beregne hvor mange arter man ville vente å finne i delprøver med færre individer. Diversitetsmålet blir derved uavhengig av prøvestørrelsen og gjør at lokaliteter med ulik individtetthet kan sammenlignes direkte. Hurlbert (1971) har gitt en metode for å beregne slike diversitetskurver basert på sannsynlighetsberegning.

ES_n er forventet antall arter i en delprøve på n tilfeldig valgte individer fra en prøve som inneholder total N individer og s arter og har følgende formel:

$$ES_n = \sum_{i=1}^s \left[1 - \frac{\binom{N-N_i}{n}}{\binom{N}{n}} \right]$$

der N = total antall individ i prøven
 N_i = antall individ av art i
 n = antall individ i en gitt delprøve (av de N)
 s = total antall arter i prøven

Plott av antall arter i forhold til antall individer

Artene deles inn i grupper/klasser etter hvor mange individer som er registrert i en prøve. Det vanlige er å sette klasse I = 1 individ pr. art, klasse II = 2-3 individer, klasse III = 4-7 individer, klasse IV = 8-15 individer, osv., slik at de nedre klassegrensene danner en følge av ledd på formen 2^x , $x=0,1,2, \dots$. En slik følge kalles en geometrisk følge, derfor kalles klassene for geometriske klasser. Hvis antall arter innenfor hver klasse plottes mot klasseverdien på en lineær skala, vil det fremkomme en kurve som uttrykker individfordelingen mellom artene i samfunnet. Det har vist seg at i prøver fra upåvirkede samfunn vil det være mange arter med lavt individantall og få arter med høyt individantall, slik at vi får en entoppet, asymmetrisk kurve med lang "hale" mot høye klasseverdier. Denne kurven vil være godt tilpasset en log-normal fordelingskurve.

Ved moderat forurensing forsvinner en del av de individfattige artene, mens noen som blir begunstiget, øker i antall. Slik flater kurven ut, og strekker seg mot høyere klasser eller den får ekstra topper. Under slike forhold mister kurven enhver likhet med den statistiske log-normalfordelingen. Derfor kan avvik fra log-normalfordelingen tolkes som et resultat av en påvirkning/forurensing. Det har vist seg at denne metoden tidlig gir utslag ved miljøforstyrrelse. Ved sterk forurensning blir det bare noen få, men ofte svært tallrike arter tilbake. Log-normalfordelingskurven vil da ofte gjenoppstå, men med en lavere topp og spredt over flere klasser enn for uforstyrrede samfunn.

Faunaens fordelingsmønster (Clusteranalyse)

Variasjoner i faunaens fordelingsmønster over området beskrives ved å sammenligne faunasamfunnet på hver stasjon. Til dette brukes multivariate klassifikasjons- og ordinasjons-analyser.

Analysene i denne undersøkelsen ble utført ved hjelp av programpakken PRIMER. Inngangsdata er individantall pr. art, pr. prøve. Prøvene kan være replikater eller stasjoner. Det tas ikke hensyn til hvilke arter som opptrer. Forut for klassifikasjons- og ordinasjonsanalysene ble artslistene dobbelt kvadratrot-transformert. Dette ble gjort for å redusere avviket mellom høye og lave tetthetsverdier og dermed redusere eventuelle effekter av tallmessig dominans hos noen få arter i datasettet.

For å sammenligne prøvene ble Bray-Curtis ulikhetsindeks benyttet (Bray & Curtis, 1957):

$$d_{ij} = \frac{\sum_{k=1}^n |X_{ki} - X_{kj}|}{\sum_{k=1}^n (X_{ki} + X_{kj})}$$

der n = antall arter sammenlignet
 X_{ki} = antall individ av art k i prøve nr. i
 X_{kj} = antall individ av art k i prøve nr. j

Indeksen avtar med økende likhet. Vi får verdien 1 hvis prøvene er helt ulike, dvs. ikke har noen felles arter. Identiske arts- og individtall vil gi verdien 0. Prøver blir gruppert sammen etter graden av likhet ved å bruke "group-average linkage". Forholdsvis like prøver danner en gruppe (cluster). Resultatet presenteres i et tredigram (dendrogram).

Sensitivitet og tetthet

NSI (Norwegian Sensitivity Index; Rygg og Norling 2013) er utviklet med basis i norske faunadata og innført i 2012 og oppdatert i 2018 (Borgersen *m. fl.*, 2019). Hver art av i alt 583 arter er tilordnet en sensitivitetsverdi). En prøves NSI-verdi beregnes ved gjennomsnittet av sensitivitetsverdiene av alle individene i prøven. Formelen for utregning er gitt ved:

$$NSI = \sum_i^s \left[\frac{N_i * NSI_i}{N_{NSI}} \right]$$

ISI₂₀₁₈ (Indicator Species Index; Rygg og Norling 2013) en sensitivitetsindeks. Grunnlaget for beregningen av ISI (Rygg 2002) ble utvidet og artsnomenklaturen standardisert i 2012 og oppdatert i 2018 (Borgersen *m. fl.*, 2019). Hver art er tilordnet en ømfintlighetsverdi. ISI er en kvalitativ indeks som tar hensyn til hvilke arter som er til stede, men ikke individtallet av dem. En prøves ISI-verdi beregnes ved gjennomsnittet av sensitivitetsverdiene av artene i prøven hvor ISI_i er ISI₂₀₁₈ verdien for arten i og S_{ISI} er antall arter tilordnet sensitivitetsverdier.

$$ISI = \sum_i^s \left[\frac{ISI_i}{S_{ISI}} \right]$$

AMBI (Azti Marine Biotic Index; Borja *m.fl.* 2000) er en sensitivitetsindeks (egentlig en toleranseindeks) der artene tilordnes en toleranseklasse (økologisk gruppe, EG). EG I = sensitive arter, EG II = "indifferente" arter, EG III = tolerante arter, EG IV = opportunistiske arter, EG V = forurensningsindikerende arter. I Norge brukes AMBI bare i kombinasjonsindeksen NQI1 og har derfor ingen egen klassifisering. AMBI er en kvantitativ indeks som tar hensyn til individtallet av artene.

AMBI = (0 * EG I) + (1,5 * EG II) + (3 * EG III) + (4,5 * EG IV) + (6 * EG V) hvor EGI er andelen av individer som tilhører gruppe I, etc. Tallene angir toleranseverdiene.

Formelen for beregning av en prøves AMBI-verdi er gitt ved:

$$AMBI = \sum_i^s \left[\frac{N_i * AMBI_i}{N_{AMBI}} \right]$$

Sammensatt indeks

NQI1 (Norwegian Quality Index; Rygg 2006) inneholder indikatorer som omfatter sensitivitet (AMBI), og artsmangfold (S = antall, N = antall individer) i en prøve. NQI1 er interkalibrert mellom alle land som tilhører NEAGIG. NQI1 er gitt ved formelen:

$$NQI1 = \left[\left(0,5 * \left(1 - \frac{AMBI}{7} \right) + 0,5 * \left(\frac{\left[\frac{\ln(S)}{\ln(\ln(N))} \right]}{2,7} \right) * \left(\frac{N}{N+5} \right) \right) \right]$$

References

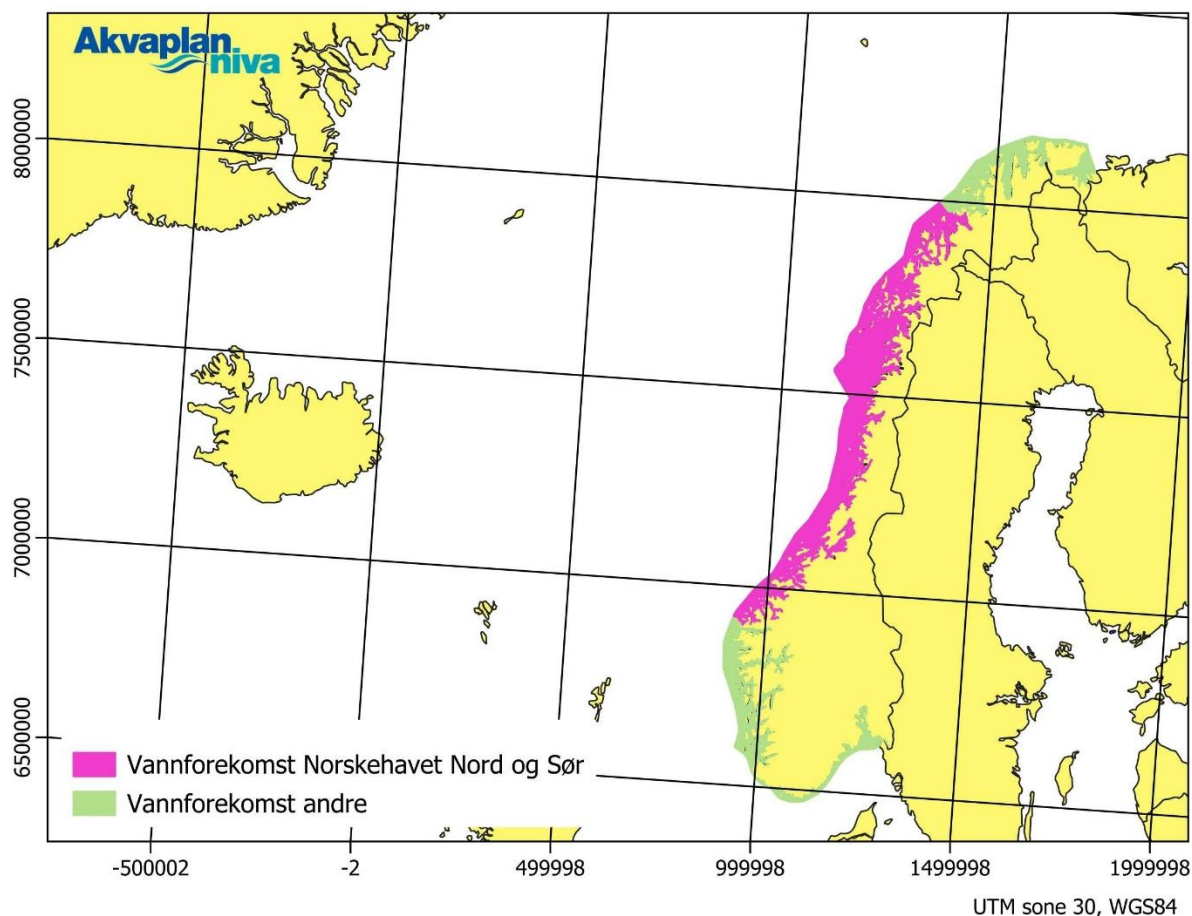
- Borgersen, G., M. Hektoen, F. Melsom & C. Todt, 2020. Uttesting av sensitivitetsindeksene ISI2018 og NSI2018 og en revidert artsliste med sensitivitetsverdier for bløtbunnfauna. NIVA-rapport 7494-2020.
- Borgersen, H. C. Trannum, H. Gundersen & J. Vedal, 2019. Oppdatering av bløtbunnartenes sensitivitetsverdier. NIVA-rapport 7366-2019.
- Borja, A., J. Franco, V. Pérez, 2000. A marine biotic index to establish the ecological quality of soft bottom benthos within European estuarine and coastal environments. *Marine Pollution Bulletin*, 40(12): 1100-1114
- Bray, R.T. & J.T. Curtis, 1957. An ordination of the upland forest communities of southern Wisconsin. *Ecol. Monogr.*, 27:325-349.
- Hurlbert, S.N., 1971. The non-concept of the species diversity: A critique and alternative parameters. *Ecology* 52:577-586.
- Pielou, E. C., 1966. Species-diversity and pattern-diversity in the study of ecological succession. *Journal of Theoretical Biology* 10, 370-383.
- Rygg, B. & K. Norling, 2013. Norwegian Sensitive Index (NSI) for marine macro invertebrates, and an update of Indicator Species Index (ISI). NIVA report SNO 6475-2013. 48 p.
- Rygg, B. 2006. Developing indices for quality-status classification of marine soft-bottom fauna in Norway. NIVA-rapport 5208-2006. 33 s.
- Rygg, B., 2002. Indicator species index for assessing benthic ecological quality in marine water of Norway. NIVA report SNO 4548-2002. 32 p.
- Shannon, C.E. & W. Weaver, 1949. *The Mathematical Theory of Communication*. Univ Illinois Press, Urbana 117 s

7.2 Klassifisering av faunaindeksler Island

Det er valgt å legge inn klassifisering av faunaindeksler ved å bruke grenseverdier for Norskehavet Nord (vanntype G 1-3) og Norskehavet Sør (vanntype H 1-3).

Økologisk tilstandsklassifisering basert på observert verdi av indeks (Veileder fra Miljødirektoratet (2025), vanntype G/H 1-3).

Indeks	I Svært god "Very good"	II God "Good"	III Moderat "Moderate"	IV Dårlig "Poor"	V Svært dårlig "Bad"
NQI1	0,9-0,72	0,72-0,63	0,63-0,49	0,49-0,31	0,31-0
H'	5,5 - 3,7	3,7 - 2,9	2,9 - 1,8	1,8 - 0,9	0,9 - 0
ES ₁₀₀	46 - 23	23 - 16	16-9	9-5	5 - 0
ISI ₂₀₁₈	10,2 - 6,6	6,6 - 6	6 - 4,9	4,9 - 3,6	3,6 - 0
NSI ₂₀₁₈	34 - 29	29 - 23	23 - 17	17 - 11	11 - 0
nEQR	1,0 - 0,8	0,8 - 0,6	0,6 - 0,4	0,4 - 0,2	0,2 - 0,0



Kart som viser Island og Norge med vannforekomstene Norskehavet Nord og Norskehavet Sør.

7.3 Statistical results Tjaldanes, 2026

Benthos indices per replicate

st.nr.	C1_01	C1_02	C2_01	C2_02	C3_01	C3_02	C4_01	C4_02
no. ind.	357	267	152	152	508	295	264	158
no. spe.	12	14	24	21	27	20	23	18
Shannon-Wiener:	1,1	1,4	3,1	2,7	2,8	2,8	3,1	2,7
Pielou	0,29	0,37	0,67	0,60	0,58	0,65	0,68	0,66
ES100	7	9	20	17	15	14	17	15
SN	1,40	1,53	1,97	1,89	1,80	1,72	1,82	1,78
ISI-2018	2,90	5,24	6,90	5,93	5,59	5,76	5,90	5,24
AMBI	5,672	5,376	3,248	3,424	2,905	2,868	3,177	3,076
NQI1	0,35	0,39	0,62	0,59	0,62	0,61	0,60	0,60
NSI-2018	7,6	8,9	17,5	16,7	18,4	18,9	17,9	18,3

Geometrical classes

int.	C1	C2	C3	C4
1	7	12	8	5
2,3	2	7	7	4
4-7	3	6	2	8
8-15	1	1	4	2
16-31	2	1	4	2
32-63	1	2	0	1
64-127	0	0	2	1
128-255	0	1	1	1
256-511	1	0	1	0
512-1023	0	0	0	0
1024-2047	0	0	0	0
2048-	0	0	0	0

7.4 Species lists

Artsliste pr stasjon

Tjaldanes ASC-C-survey 2026

Rekke	Klasse	Orden	Art/Taxa	Replikat:	01	02	-	Sum		
Stasjonsnr.: C1										
ECHIURIDA										
ANNELIDA	Polychaeta	Spionida	Echiurus echiurus			1	-	1		
			Chaetozone sp.	13	12	-	25			
		Capitellida	Prionospio steenstrupi	1	2	-	3			
			Capitella capitata	301	205	-	506			
		Opheliida	Heteromastus filiformis	17	9	-	26			
			Ophelina acuminata	4	2	-	6			
		Phyllodocida	Bylgides sarsi			1	-	1		
			Eteone flava/longa	1	3	-	4			
			Pholoe inornata	1		-	1			
		Eunicida	Ophryotrocha sp.	8	1	-	9			
			Schistomeringos sp.			1	-	1		
		Oweniida	Galathowenia oculata	1		-	1			
		Terebellida	Ampharete borealis			4	-	4		
			Cistenides hyperborea			1	-	1		
		CRUSTACEA								
			Malacostraca	Amphipoda	Gammaridea indet.	1		-		1
		MOLLUSCA								
	Bivalvia	Mytiloidea	Mytilus edulis juv.	23	12	-		35		
	Veneroidea	Macoma calcarea	1	1	-		2			
		Thyasira sarsii	8	24	-		32			
ECHINODERMATA										
	Ophiuroidea	Ophiuroidea indet. juv.		2		-		2		
				Maksverdi:	301	205		506		
				Antall arter/taxa:	14	15		19		
				Sum antall individ:				661		

Stasjonsnr.: C2

NEMERTINI

ANNELIDA	Polychaeta	Spionida	Nemertea indet.			1	-	1
			Chaetozone sp.	8	4	-	12	
		Capitellida	Prionospio steenstrupi	61	73	-	134	
			Heteromastus filiformis	2	1	-	3	
		Opheliida	Praxillella gracilis	2	2	-	4	
			Ophelina acuminata	6	31	-	37	
		Phyllodocida	Eteone flava/longa	2	1	-	3	
			Nephtys ciliata	4	1	-	5	
			Nephtys paradoxa	1		-	1	
		Eunicida	Lumbrineris sp.	4		-	4	
			Schistomeringos sp.	1	1	-	2	

Rekke	Klasse	Orden	Art/Taxa	Replikat:	01	02	-	Sum
		Oweniida	Galathowenia oculata		3	1	-	4
		Flabelligerida	Saphobranchia longisetosa		1		-	1
		Terebellida	Ampharete borealis		2	4	-	6
			Ampharete finmarchica		2	1	-	3
			Ampharete petersenae		1		-	1
			Cistenides hyperborea		1	5	-	6
			Lanassa venusta		1		-	1
			Laphania boeckii		2		-	2
			Melinna cristata			3	-	3
		Sabellida	Euchone papillosa			1	-	1
CRUSTACEA								
	Malacostraca							
		Cumacea	Leucon sp.			1	-	1
		Amphipoda	Bathymedon obtusifrons		1		-	1
			Caprellidae indet.			1	-	1
MOLLUSCA								
	Bivalvia							
		Nuculoida	Ennucula tenuis		11	6	-	17
			Nuculana pernula		2	1	-	3
			Yoldia hyperborea		1		-	1
		Mytiloida	Mytilus edulis juv.		1	2	-	3
		Veneroida	Macoma calcarea		1		-	1
			Thyasira gouldii			1	-	1
			Thyasira sarsii		32	12	-	44
ECHINODERMATA								
	Echinoidea							
		Echinoidea	Echinidea indet. juv.			1	-	1
				Maksverdi:	61	73		134
				Antall arter/taxa:	25	23		32
				Sum antall individ:				308
Stasjonsnr.:	C3							
ANNELIDA								
	Polychaeta							
		Spionida	Chaetozone sp.		10	6	-	16
			Prionospio steenstrupi		101	56	-	157
		Capitellida	Heteromastus filiformis		2		-	2
		Opheliida	Ophelina acuminata		26	39	-	65
		Phyllodocida	Bylgides sarsi		2		-	2
			Eteone barbata		1		-	1
			Eteone flava/longa		12	6	-	18
			Nephtys ciliata		7	3	-	10
			Pholoe assimilis		5	1	-	6
			Pholoe inornata		1	2	-	3
		Eunicida	Ophryotrocha sp.		2		-	2
			Schistomeringos sp.		1	1	-	2
		Oweniida	Galathowenia oculata		16	3	-	19
		Flabelligerida	Bradabyssa sp.		1		-	1
		Terebellida	Ampharete borealis		50	33	-	83
			Ampharete finmarchica		4	2	-	6
			Cistenides hyperborea		5	3	-	8
CRUSTACEA								
	Malacostraca							
		Cumacea	Leucon sp.			1	-	1
		Amphipoda	Caprellidae indet.			1	-	1
			Metopa sp.		1		-	1
			Oedicerotidae indet.		1		-	1
			Rhachotropis sp.		1		-	1

Rekke	Klasse	Orden	Art/Taxa	Replikat:	01	02	-	Sum
MOLLUSCA	Prosobranchia	Neogastropoda	Curtitoma trevelliiana		1		-	1
	Opisthobranchia	Nudibranchia	Onchidoris muricata		1	1	-	2
	Bivalvia	Nuculoidea	Ennucula tenuis		9	3	-	12
			Nuculana pernula		1	1	-	2
			Yoldia hyperborea		4	6	-	10
		Mytiloidea	Mytilus edulis juv.		5	3	-	8
		Veneroidea	Macoma calcarea		14	13	-	27
			Thyasira sarsii		229	114	-	343
ECHINODERMATA	Ophiuroidea		Ophiuroidea indet. juv.				1 -	1
				Maksverdi:	229	114		343
				Antall arter/taxa:	28	22		31
				Sum antall individ:				812

Stasjonsnr.: C4

Rekke	Klasse	Orden	Art/Taxa	Replikat:	01	02	-	Sum
ANNELIDA	Polychaeta	Spionida	Chaetozone sp.		16	9	-	25
			Prionospio steenstrupi		80	40	-	120
		Capitellida	Euclymeninae indet.		1		-	1
			Heteromastus filiformis		5	1	-	6
			Praxillella gracilis		2		-	2
		Opheliida	Ophelina acuminata		21	11	-	32
		Phyllodocida	Bylgides sarsi		1		-	1
			Eteone flava/longa		4	1	-	5
			Nephtys ciliata		5	3	-	8
		Eunicida	Lumbrineris sp.		4	1	-	5
			Schistomeringos sp.			3	-	3
		Oweniida	Galathowenia oculata		1	2	-	3
		Flabelligerida	Saphobranchia hirsuta		1		-	1
		Terebellida	Ampharete borealis		19	12	-	31
			Ampharete finmarchica		1		-	1
			Cistenides hyperborea		2	2	-	4
			Melinna cristata		2	1	-	3
CRUSTACEA	Malacostraca	Amphipoda	Caprellidae indet.		1		-	1
MOLLUSCA	Prosobranchia	Neogastropoda	Curtitoma trevelliiana		3	1	-	4
	Bivalvia	Nuculoidea	Ennucula tenuis		11	1	-	12
			Nuculana pernula		3	3	-	6
			Yoldia hyperborea		2	3	-	5
		Mytiloidea	Mytilus edulis juv.		3	8	-	11
		Veneroidea	Macoma calcarea		3	1	-	4
			Thyasira sarsii		76	63	-	139

Rekke	Klasse	Orden	Art/Taxa	Replikat:	01	02	-	Sum
ECHINODERMATA	Ophiuroidea							
			Ophiuroidea indet. juv.		1	-		1
				Maksverdi:	80	63		139
				Antall arter/taxa:	25	19		26
				Sum antall individ:				434

7.5 Analytical report

ANALYSERAPPORT

Kunde:	Arnarlax	Rapport nr.:	P260028
Kundemerking:	Tjaldanes	Revisjon:	2
Kontaktperson:		Rapportdato:	2026-04-13
Prosjektnr.:	67226	Ankomst dato:	2026-02-09

Lab-id. P260028-04

Objekt	Prøvestasjon/ID	ASC-stasjon	FU-stasjon	Prosjektnr. og prosjektnavn	Notering	Mottatt lab
Sediment		ASCref		67226 - Tjaldanes ASC C and B survey max biomass 2026		2026-02-09

Analyseresultat						
Parameter	Resultat	Enhet	Analysedato start	Analysedato slutt	Standard	Måleusikkerhet
Kobber (Cu) ^a	46 42	mg/kg TS	2026-02-12	2026-02-12	Intern metode	

^a Prøvingen er utført av eksternt laboratorium, ALS Laboratory Group

Lab-id. P260028-07

Objekt	Prøvestasjon/ID	ASC-stasjon	FU-stasjon	Prosjektnr. og prosjektnavn	Notering	Mottatt lab
Sediment	C1			67226 - Tjaldanes ASC C and B survey max biomass 2026		2026-02-09

Analyseresultat						
Parameter	Resultat	Enhet	Analysedato start	Analysedato slutt	Standard	Måleusikkerhet
TOC	34	mg/g TS	2026-02-16	2026-02-17	Intern metode (NS-EN 17505:2023)	±3.4
TNb	3.1	mg/g TS	2026-02-16	2026-02-17	Intern metode (NS-EN 16168:2012)	±0.67
nTOC	44.8		2026-03-09	2026-03-09	Miljødirektoratet 2025	
C/N - forhold	*11.3		2026-02-20	2026-02-20	Beregning TOC:TN	
TOM	7.8	% TS	2026-02-17	2026-02-19	Vekttap ved forbrenning. Intern metode basert på NS 4764 (1980)	±0.15
Vekt% ≥2 mm	0.1	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.0
Vekt% 1 mm - <2 mm	0.3	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.0
Vekt% 0.500 mm - <1 mm	1.2	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.0
Vekt% 0.250 mm - <0.500 mm	10.1	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.3
Vekt% 0.125 mm - <0.250 mm	14.4	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.6

Tabellen fortsetter på neste side...

* = Ikke akkreditert resultat

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Analysereporten er digitalt undertegnet av:
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Side 1 av 7

Kunde: Arnarlax
Kundemerking: Tjaldanes
Kontaktperson:
Prosjektnr.: 67226

Rapport nr.: P260028
Revisjon: 2
Rapportdato: 2026-04-13
Ankomst dato: 2026-02-09

Fortsettelse av tabell fra forrige side.

Parameter	Resultat	Enhet	Analysedato start	Analysedato slutt	Standard	Målesikkerhet
Vekt% 0.063 mm - <0.125 mm	31.9	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±1.8
Vekt% <0.063 mm	42.1	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±5.0
Pelitt	*42.1	wt% TS	2026-02-17	2026-02-24	Fraksjonen <0.063 mm	±5.0
Sand	*57.8	wt% TS	2026-02-17	2026-02-24	Summering av fraksjonene mellom 0.063 mm opptil 2 mm	±2.4
Grus	*0.1	wt% TS	2026-02-17	2026-02-24	Fraksjonen ≥2 mm	±0.0
Kobber (Cu) ^a	55	mg/kg TS	2026-02-12	2026-02-12	Intern metode	
P (Fosfor) ^a	2200	mg/kg TS	2026-02-12	2026-02-12	Intern metode	

^a Prøvingen er utført av eksternt laboratorium, ALS Laboratory Group

Lab-id. P260028-10

Objekt	Prøvestasjon/ID	ASC-stasjon	FU-stasjon	Prosjektnr. og prosjektnavn	Notering	Mottatt lab
Sediment	C2	ASC2		67226 - Tjaldanes ASC C and B survey max biomass 2026		2026-02-09

Analyseresultat						
Parameter	Resultat	Enhet	Analysedato start	Analysedato slutt	Standard	Målesikkerhet
TOC	40	mg/g TS	2026-02-16	2026-02-17	Intern metode (NS-EN 17505:2023)	±4.0
TN _b	3.2	mg/g TS	2026-02-16	2026-02-17	Intern metode (NS-EN 16168:2012)	±0.71
nTOC	42.3		2026-03-09	2026-03-09	Miljødirektoratet 2025	
C/N - forhold	*12.3		2026-02-20	2026-02-20	Beregning TOC:TN	
TOM	13.4	% TS	2026-02-17	2026-02-19	Vekttap ved forbrenning. Intern metode basert på NS 4764 (1980)	±0.15
Vekt% ≥2 mm	2.3	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.3
Vekt% 1 mm - <2 mm	2.9	wl% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.1

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Side 2 av 7

Kunde: Arnarlax
 Kundemerking: Tjaldanes
 Kontaktperson:
 Prosjektnr.: 67226

Rapport nr.: P260028
 Revisjon: 2
 Rapportdato: 2026-04-13
 Ankomst dato: 2026-02-09

Fortsettelse av tabell fra forrige side.

Parameter	Resultat	Enhet	Analysedato start	Analysedato slutt	Standard	Målesikkerhet
Vekt% 0.500 mm - <1 mm	3.1	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.250 mm - <0.500 mm	1.7	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.125 mm - <0.250 mm	0.6	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.0
Vekt% 0.063 mm - <0.125 mm	2.8	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.2
Vekt% <0.063 mm	86.6	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±10.4
Pelitt	*86.6	wt% TS	2026-02-17	2026-02-24	Fraksjonen <0.063 mm	±10.4
Sand	*11.1	wt% TS	2026-02-17	2026-02-24	Summering av fraksjonene mellom 0.063 mm opptil 2 mm	±0.5
Grus	*2.3	w1% TS	2026-02-17	2026-02-24	Fraksjonen ≥2 mm	±0.3
Kobber (Cu) ^a	45 58	mg/kg TS	2026-02-12	2026-02-12	Intern metode	
P (Fosfor) ^a	1400	mg/kg TS	2026-02-12	2026-02-12	Intern metode	

^a Prøvingen er utført av eksternt laboratorium, ALS Laboratory Group

Lab-id. P260028-13

Objekt	Provestasjon/ID	ASC-stasjon	FU-stasjon	Prosjektnr. og prosjektnavn	Notering	Mottatt lab
Sediment	C3	ASC3		67226 - Tjaldanes ASC C and B survey max biomass 2026		2026-02-09

Analyseresultat						
Parameter	Resultat	Enhet	Analyse dato start	Analysedato slutt	Standard	Målesikkerhet
TOC	29	mg/g TS	2026-02-16	2026-02-17	Intern metode (NS-EN 17505:2023)	±2.9
TNb	3.5	mg/g TS	2026-02-16	2026-02-17	Intern metode (NS-EN 16168:2012)	±0.77
nTOC	36.5		2026-03-09	2026-03-09	Miljødirektoratet 2025	
C/N - forhold	*8.3		2026-02-20	2026-02-20	Beregning TOC:TN	

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Side 3 av 7

ANALYSERAPPORT

Kunde: Arnarlax
 Kundemerking: Tjaldanes
 Kontaktperson:
 Prosjektnr.: 67226

Rapport nr.: P260028
 Revisjon: 2
 Rapportdato: 2026-04-13
 Ankomst dato: 2026-02-09

Fortsettelse av tabell fra forrige side.

Parameter	Resultat	Enhet	Analysedato start	Analysedato slutt	Standard	Målesikkerhet
TOM	9.7	% TS	2026-02-17	2026-02-19	Vekttap ved forbrenning. Intern metode basert på NS 4764 (1980)	±0.15
Vekt% ≥2 mm	0.6	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 1 mm - <2 mm	1.4	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.500 mm - <1 mm	3.4	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.250 mm - <0.500 mm	7.9	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.3
Vekt% 0.125 mm - <0.250 mm	7.4	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.3
Vekt% 0.063 mm - <0.125 mm	19.3	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±1.1
Vekt% <0.063 mm	60.1	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±7.2
Pelitt	*60.1	wt% TS	2026-02-17	2026-02-24	Fraksjonen <0.063 mm	±7.2
Sand	*39.3	wt% TS	2026-02-17	2026-02-24	Summering av fraksjonene mellom 0.063 mm opptil 2 mm	±1.6
Grus	*0.6	wt% TS	2026-02-17	2026-02-24	Fraksjonen ≥2 mm	±0.1
P (Fosfor) ^a	1400	mg/kg TS	2026-02-12	2026-02-12	Intern metode	

^a Prøvingen er utført av eksternt laboratorium, ALS Laboratory Group

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Side 4 av 7

ANALYSERAPPORT

Kunde: Arnarlax
Kundemerking: Tjaldanes
Kontaktperson:
Prosjektnr.: 67226

Rapport nr.: P260028
Revisjon: 2
Rapportdato: 2026-04-13
Ankomst dato: 2026-02-09

Lab-id. P260028-16

Objekt	Prøvestasjon/ID	ASC-stasjon	FU-stasjon	Prosjektnr. og prosjektnavn	Notering	Mottatt lab
Sediment	C4	ASC4		67226 - Tjaldanes ASC C and B survey max biomass 2026		2026-02-09

Analyseresultat						
Parameter	Resultat	Enhet	Analysedato start	Analysedato slutt	Standard	Målesikkerhet
TOC	41	mg/g TS	2026-02-16	2026-02-17	Intern metode (NS-EN 17505:2023)	+4.1
TNb	3.3	mg/g TS	2026-02-16	2026-02-17	Intern metode (NS-EN 16168:2012)	±0.73
nTOC	43.6		2026-03-09	2026-03-09	Miljødirektoratet 2025	
C/N - forhold	+12.2		2026-02-20	2026-02-20	Beregning TOC:TN	
TOM	13.0	% TS	2026-02-17	2026-02-19	Vekttap ved forbrenning. Intern metode basert på NS 4764 (1980)	±0.15
Vekt% ≥2 mm	2.4	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.3
Vekt% 1 mm - <2 mm	2.6	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.500 mm - <1 mm	3.2	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.1
Vekt% 0.250 mm - <0.500 mm	1.5	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.0
Vekt% 0.125 mm - <0.250 mm	1.2	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.0
Vekt% 0.063 mm - <0.125 mm	5.1	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±0.3
Vekt% <0.063 mm	83.9	wt% TS	2026-02-17	2026-02-24	Intern metode (Bale/Kenny 2005)	±10.1
Pelitt	+83.9	wt% TS	2026-02-17	2026-02-24	Fraksjonen <0.063 mm	±10.1
Sand	+13.6	wt% TS	2026-02-17	2026-02-24	Summering av fraksjonene mellom 0.063 mm opptil 2 mm	±0.6
Grus	+2.4	wt% TS	2026-02-17	2026-02-24	Fraksjonen ≥2 mm	±0.3
Kobber (Cu) ^a	56 60	mg/kg TS	2026-02-12	2026-02-12	Intern metode	
P (Fosfor) ^a	1500	mg/kg TS	2026-02-12	2026-02-12	Intern metode	

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^a = Ikke akkreditert resultat

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Side 5 av 7

ANALYSERAPPORT

Kunde: Arnarlax
 Kundemerking: Tjaldanes
 Kontaktperson:
 Prosjektnr.: 67226

Rapport nr.: P260028
 Revisjon: 2
 Rapportdato: 2026-04-13
 Ankomst dato: 2026-02-09

Fortsettelse av tabell fra forrige side.

Parameter	Resultat	Enhet	Analysedato start	Analysedato slutt	Standard	Målesikkerhet
Emamectinbenzoat ^b	+480	ng/kg TS	2026-04-07	2026-04-07	Intern metode	

^a Prøvingen er utført av eksternt laboratorium, ALS Laboratory Group

^b Prøvingen er utført av eksternt laboratorium, NIVA

Lab-id. P260028-19

Objekt	Prøvestasjon/ID	ASC-stasjon	FU-stasjon	Prosjektnr. og prosjektnavn	Notering	Mottatt lab
Sediment		Cu ref 1		67226 - Tjaldanes ASC C and B survey max biomass 2026		2026-02-09

Analyseresultat						
Parameter	Resultat	Enhet	Analysedato start	Analysedato slutt	Standard	Målesikkerhet
Kobber (Cu) ^a	46 48	mg/kg TS	2026-02-12	2026-02-12	Intern metode	

^a Prøvingen er utført av eksternt laboratorium, ALS Laboratory Group

Lab-id. P260028-20

Objekt	Prøvestasjon/ID	ASC-stasjon	FU-stasjon	Prosjektnr. og prosjektnavn	Notering	Mottatt lab
Sediment		Cu ref 2		67226 - Tjaldanes ASC C and B survey max biomass 2026		2026-02-09

Analyseresultat						
Parameter	Resultat	Enhet	Analysedato start	Analysedato slutt	Standard	Målesikkerhet
Kobber (Cu) ^a	46 41	mg/kg TS	2026-02-12	2026-02-12	Intern metode	

^a Prøvingen er utført av eksternt laboratorium, ALS Laboratory Group

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Analysereporten er digitalt undertegnet av:
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Side 6 av 7

ANALYSERAPPORT

Kunde: Arnarlax
 Kundemerking: Tjaldanes
 Kontaktperson:
 Prosjektnr.: 67226

Rapport nr.: P260028
 Revisjon: 2
 Rapportdato: 2026-04-13
 Ankomst dato: 2026-02-09

Lab-id. P260028-21

Objekt	Prøvestasjon/ID	ASC-stasjon	FU-stasjon	Prosjektnr. og prosjektnavn	Notering	Mottatt lab
Sediment		Cu ref 3		67226 - Tjaldanes ASC C and B survey max biomass 2026		2026-02-09

Analyseresultat							
Parameter	Resultat		Enhet	Analysedato start	Analysedato slutt	Standard	Målesikkerhet
Kobber (Cu) ^a	41	42	mg/kg TS	2026-02-12	2026-02-12	Intern metode	

^a Prøvingen er utført av eksternt laboratorium, ALS Laboratory Group

Analyseansvarlig:

Oda Sofie Bye Wilhelmsen

Signatur:

Oda Sofie Bye Wilhelmsen

Katrin Bluhm

Underskriftsberettiget:

Signatur:

Katrin Bluhm

Analysene gjelder bare for de prøver som er testet. De oppgitte analyseresultat omfatter ikke feil som måtte følge av prøvetagningen, inhomogenitet eller andre forhold som kan ha påvirket prøven før den ble mottatt av laboratoriet. Rapporten får kun kopieres i sin helhet og uten noen form for endringer. En eventuell klage skal leveres laboratoriet senest en måned etter mottak av analyseresultat. Nærmere informasjon om analysemetodene (målesikkerhet, metodeprinsipp etc.) fås ved henvendelse til Akvaplan-Niva AS

* = Ikke akkreditert resultat

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