Supplementary Material

# Supplementary Figures and Tables

## A graph showing different types of groups Description automatically generatedSupplementary Figures

**Supplementary Figure 1A.** Number of individual macrofauna from the primary taxonomic groups and total particulate material (TPM) flux standardized to maximum fish production plotted against distance to farm at Farm A.

**A graph of different colored lines

Description automatically generated with medium confidence**

**Supplementary Figure 1B.** Number of individual macrofauna from the primary taxonomic groups and total particulate material (TPM) flux standardized to maximum fish production plotted against distance to farm at Farm B.

**A graph of different types of plants

Description automatically generated**

**Supplementary Figure 1C.** Number of individual macrofauna from the primary taxonomic groups and total particulate material (TPM) flux standardized to maximum fish production plotted against distance to farm at Farm C.

**1.2. Supplementary Tables**

Supplementary Table 1. Survey details and associated environmental conditions of baited remote underwater video system and towed underwater camera surveys transects in a) Finnmark and b) Frøya.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Towed Underwater Camera (TUC) transects deployment details**  **a)** | | | | | | **Environmental Conditions** | |
| **Region** | **Farm** | **Survey Method** | **Date** | **Distance to farm** | **Position** | **Mean Depth (m)** | **Habitat\*** |
| Øksfjorden/ Finnmark | A | TUC | 08/10/2017 | Farm to 800 m | 70.21409, 22.27818 70.22097, 22.28176 | 79 | Boulders |
| Øksfjorden/ Finnmark | A | TUC | 08/10/2017 | Farm to 800 m | 70.21411, 22.27815 70.22098, 22.28232 | 80 | Boulder |
| Øksfjorden/ Finnmark | A | TUC | 08/10/2017 | Farm to 800 m | 70.21408, 22.28039 70.22093, 22.28327 | 112 | Boulder |
| Øksfjorden/ Finnmark | A | TUC | 08/10/2017 | Farm to 800 m | 70.21417, 22.28013 70.22118, 22.28305 | 110 | Boulder |
| Bekkarfjorden/ Vargsundet/ Finnmark | B | TUC | 13/10/2017 | Farm to 800 m | 70.34227, 23.40069 70.34645, 23.41864 | 77 | Gravelly Sand |
| Bekkarfjorden/ Vargsundet/ Finnmark | B | TUC | 13/10/2017 | Farm to 800 m | 70.34236, 23.40053 70.34614, 23.41865 | 71 | Gravelly Sand |
| Bekkarfjorden/ Vargsundet/ Finnmark | B | TUC | 13/10/2017 | Farm to 800 m | 70.34132, 23.40136 70.34552, 23.41908 | 105 | Gravelly Sand |
| Bekkarfjorden/ Vargsundet/ Finnmark | B | TUC | 13/10/2017 | Farm to 800 m | 70.34132, 23.40044 70.34487, 23.41878 | 102 | Gravelly Sand |
| Bekkarfjorden/ Vargsundet/ Finnmark | B | TUC | 13/10/2019 | Farm to 800 m | 70.34213, 23.39864 70.34416, 23.39995 | 67 | Gravelly Sand |
| Stor Lerresfjorden/ Vargsundet/ Finnmark | C | TUC | 12/10/2019 | Farm to 800 m | 70.28610, 23.40676 70.29016, 23.42376 | 64 | Gravelly Sand |
| Stor Lerresfjorden/ Vargsundet/ Finnmark | C | TUC | 12/10/2019 | Farm to 800 m | 70.28663, 23.40510 70.29005, 23.42243 | 66 | Gravelly Sand |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Baited Remote Underwater Video System (BRUVS) and Towed Underwater Camera (TUC) transects deployment details**  **b)** | | | | | | | **Environmental Conditions** | |
| **Region** | **Farm** | **Survey Method** | **Date** | **Time (local time)** | **Distance to farm** | **Position** | **Depth (m)** | **Habitat \*** |
| Frøya | D | BRUVS | 6/10/2019 | 13:30 - 14:30 | Farm | 63.77910, 8.51660 | 45 | Sand |
| Frøya | D | BRUVS | 6/10/2019 | 16:30 - 17:30 | Farm | 63.78310, 8.52870 | 23.5 | Shellsand |
| Frøya | D | BRUVS | 11/10/2019 | 16:00 - 17:00 | Intermediate | 63.78471, 8.52973 | 22.5 | Sand |
| Frøya | D | BRUVS | 11/10/2019 | 17:56 - 18:56 | Intermediate | 63.77770, 8.51695 | 25.5 | Shellsand |
| Frøya | D | BRUVS | 7/10/2019 | 14:54 - 15:54 | Reference | 63.77962, 8.49265 | 35 | Boulders and sand |
| Frøya | D | BRUVS | 7/10/2019 | 16:33 - 17:33 | Reference | 63.78705, 8.48358 | 49 | Shellsand |
| Frøya | D | TUC | 11/10/2019 | 14:28 - 15:21 | Farm to 800 m | 63.77277, 8.50114 - 63.77897, 8.51595 | 46 | Shellsand and boulders |
| Frøya | D | TUC | 11/10/2019 | 16:02 - 16:34 | Farm to 800 m | 63.77567, 8.50625 - 63.77925, 8.51629 | 46 | Shellsand and boulders |
| Frøya | E | BRUVS | 7/10/2019 | 09:10 - 10:10 | Farm | 63.76187, 8.44518 | 35.5 | Muddy sand |
| Frøya | E | BRUVS | 7/10/2019 | 11:50 - 12:50 | Farm | 63.75848, 8.45037 | 36 | Muddy sand |
| Frøya | E | BRUVS | 11/10/2019 | 10:04 - 11:04 | Intermediate | 63.75773, 8.45447 | 44 | Shellsand |
| Frøya | E | BRUVS | 11/10/2019 | 12:08 - 13:08 | Intermediate | 63.76750, 8.44920 | 44 | Shellsand |
| Frøya | E | BRUVS | 8/10/2019 | 08:47 - 09:47 | Reference | 63.78027, 8.45924 | 49 | Shellsand |
| Frøya | E | BRUVS | 8/10/2019 | 10:51 - 11:51 | Reference | 63.78463, 8.41192 | 46 | Shellsand |
| Frøya | E | TUC | 11/10/2019 | 08:15 - 08:29 | Farm to 800 m | 63.75749, 8.45104 - 63.75627, 8.45340 | 44 | Muddy sand / shellsand |
| Frøya | E | TUC | 11/10/2019 | 08:41 - 09:00 | Farm to 800 m | 63.75801, 8.45235 - 63.75643, 8.45559 | 44 | Muddy sand / shellsand |
| Frøya | E | TUC | 11/10/2019 | 10:21 - 11:06 | Farm to 800 m | 63.76410, 8.44618 - 63.76804, 8.45323 | 44 | Shellsand |
| Frøya | E | TUC | 11/10/2019 | 12:37 - 13:56 | Farm to 800 m | 63.76413, 8.44619 - 63.76814, 8.45495 | 44 | Shellsand |
| Frøya | F | BRUVS | 9/10/2019 | 11:07 - 12:07 | Farm | 63.80503, 8.44440 | 72 | Sand |
| Frøya | F | BRUVS | 9/10/2019 | 14:56 - 15:56 | Farm | 63.80430, 8.44140 | 76 | Sand |
| Frøya | F | BRUVS | 9/10/2019 | 16:53 - 17:53 | Reference | 63.81293, 8.42704 | 63 | Shellsand |
| Frøya | F | BRUVS | 10/10/2019 | 09:00 - 10:00 | Reference | 63.81623, 8.42383 | 53 | Sand |
| Frøya | F | TUC | 9/10/2019 | 10:14 - 11:18 | Farm to 800 m | 63.80515, 8.41208 - 63.80503, 8.43004 | 72 | Sand /bedrock |
| Frøya | F | TUC | 9/10/2019 | 13:09 - 13:58 | Farm to 800 m | 63.80573, 8.43603 - 63.81328, 8.42660 | 76 | Sand |
| Frøya | G | BRUVS | 10/10/2019 | 11:14 - 12:14 | Farm | 63.77008, 8.47603 | 56 | Muddy sand |
| Frøya | G | BRUVS | 10/10/2019 | 13:29 - 14:29 | Farm | 63.77178, 8.48315 | 65 | Muddy sand |
| Frøya | G | BRUVS | 10/10/2019 | 16:43 - 17:43 | Intermediate | 63.76774, 8.47576 | 63 | Muddy sand |
| Frøya | G | BRUVS | 10/10/2019 | 18:21 - 19:21 | Intermediate | 63.77017, 8.48322 | 53 | Sand |
| Frøya | G | BRUVS | 12/10/2019 | 08:50 - 09:50 | Reference | 63.77782, 8.45871 | 59 | Shellsand |
| Frøya | G | BRUVS | 12/10/2019 | 10:34 - 11:34 | Reference | 63.77847, 8.48987 | 39 | Shellsand |
| Frøya | G | TUC | 10/10/2019 | 10:02 - 10:49 | Farm to 800 m | 63.76998, 8.482909 - 63.77252, 8.49823 | 56 | Sand/ bedrock |
| Frøya | G | TUC | 10/10/2019 | 14:50 - 15:36 | Farm to 800 m | 63.77001, 8.48285 - 63.77252, 8.49841 | 65 | Muddy sand |
| Frøya | G | TUC | 10/10/2019 | 13:13 - 14:08 | Farm to 800 m | 63.76867, 8.47641 - 63.76084, 8.472911 | 56 | Muddy sand |
| Frøya | G | TUC | 10/10/2019 | 16:21 - 17:17 | Farm to 800 m | 63.77023, 8.48315 - 63.76166, 8.473226 | 65 | Muddy sand |

Supplementary Table 2A. Similarity Percentage (SIMPER) analysis table of dissimilarity in average abundance of demersal fish and crustacean communities recorded by TUC surveys at Frøya farm surveys sites (D, E, F and G).

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farms D and E = 66.76** | | | | | | |
| **Species** | **Farm D**  **Av. Abund** | **Farm E**  **Av. Abund** | **Av. Diss** | **Diss/SD** | **Contrib. %**  **%** | **Cum. %**  **%** |
| *Trisopterus minutus* | 0.11 | 0.23 | 11.67 | 1.19 | 17.49 | 17.49 |
| *Gobiusculus flavescens* | 0.00 | 0.16 | 9.72 | 0.94 | 14.55 | 32.04 |
| *Pleuronectes platessa* | 0.01 | 0.17 | 8.11 | 2.06 | 12.15 | 44.19 |
| *Pollachius virens* | 0.12 | 0.04 | 5.69 | 0.80 | 8.53 | 52.72 |
| *Labrus mixtus* | 0.07 | 0.14 | 5.42 | 1.32 | 8.13 | 60.84 |
| *Gadus morhua* | 0.12 | 0.09 | 4.11 | 1.61 | 6.15 | 67.00 |
| *Cancer pagurus* | 0.08 | 0.08 | 3.33 | 1.24 | 4.98 | 71.98 |

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| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farms D and F = 83.65** | | | | | | |
| **Species** | **Farm D**  **Av. Abund** | **Farm F**  **Av. Abund** | **Av. Diss** | **Diss/SD** | **Contrib. %**  **%** | **Cum. %**  **%** |
| *Pollachius virens* | 0.12 | 0.07 | 11.68 | 0.96 | 13.96 | 13.96 |
| *Gadus morhua* | 0.12 | 0.04 | 11.48 | 1.36 | 13.72 | 27.69 |
| *Trisopterus minutus* | 0.11 | 0.02 | 11.24 | 0.84 | 13.44 | 41.12 |
| *Cancer pagurus* | 0.08 | 0.00 | 9.84 | 1.50 | 11.76 | 52.89 |
| *Labrus mixtus* | 0.07 | 0.00 | 8.19 | 1.00 | 9.80 | 62.68 |
| *Raja clavata* | 0.06 | 0.03 | 6.89 | 1.28 | 8.23 | 70.91 |

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| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farms D and G = 69.27** | | | | | | |
| **Species** | **Farm D**  **Av. Abund** | **Farm G**  **Av. Abund** | **Av. Diss** | **Diss/SD** | **Contrib. %**  **%** | **Cum. %**  **%** |
| *Trisopterus minutus* | 0.11 | 0.21 | 11.39 | 1.39 | 16.45 | 16.45 |
| *Pollachius virens* | 0.12 | 0.03 | 6.96 | 0.80 | 10.05 | 26.50 |
| *Gadus morhua* | 0.12 | 0.05 | 6.44 | 1.64 | 9.30 | 35.80 |
| *Pleuronectes platessa* | 0.01 | 0.09 | 5.65 | 0.99 | 8.16 | 43.96 |
| *Labrus mixtus* | 0.07 | 0.04 | 4.67 | 1.07 | 6.74 | 50.70 |
| *Microstomus kitt* | 0.03 | 0.07 | 4.13 | 0.97 | 5.96 | 56.65 |
| *Gobiusculus flavescens* | 0.00 | 0.09 | 4.04 | 0.48 | 5.84 | 62.49 |
| *Cancer pagurus* | 0.08 | 0.07 | 3.90 | 1.36 | 5.63 | 68.12 |
| *Pomatoschistus* spp. | 0.00 | 0.06 | 3.69 | 1.05 | 5.32 | 73.44 |

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| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farms E and F = 90.71** | | | | | | |
| **Species** | **Farm E**  **Av. Abund** | **Farm F**  **Av. Abund** | **Av. Diss** | **Diss/SD** | **Contrib. %**  **%** | **Cum. %**  **%** |
| *Trisopterus minutus* | 0.23 | 0.02 | 13.22 | 0.99 | 14.58 | 14.58 |
| *Gobiusculus flavescens* | 0.16 | 0.00 | 12.89 | 0.90 | 14.21 | 28.79 |
| *Pleuronectes platessa* | 0.17 | 0.00 | 10.65 | 2.24 | 11.74 | 40.53 |
| *Labrus mixtus* | 0.14 | 0.00 | 9.24 | 1.64 | 10.19 | 50.72 |
| *Gadus morhua* | 0.09 | 0.04 | 6.60 | 1.00 | 7.27 | 57.99 |
| *Cancer pagurus* | 0.08 | 0.00 | 5.04 | 1.34 | 5.55 | 63.54 |
| *Callionymus lyra* | 0.05 | 0.00 | 4.11 | 0.84 | 4.54 | 68.08 |
| *Pollachius virens* | 0.04 | 0.07 | 4.10 | 1.15 | 4.52 | 72.60 |

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| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farms E and G = 65.44** | | | | | | |
| **Species** | **Farm E**  **Av. Abund** | **Farm G**  **Av. Abund** | **Av. Diss** | **Diss/SD** | **Contrib. %**  **%** | **Cum. %**  **%** |
| *Trisopterus minutus* | 0.23 | 0.21 | 11.01 | 1.50 | 16.82 | 16.82 |
| *Gobiusculus flavescens* | 0.16 | 0.09 | 9.86 | 1.05 | 15.07 | 31.90 |
| *Labrus mixtus* | 0.14 | 0.04 | 5.65 | 1.43 | 8.64 | 40.53 |
| *Pleuronectes platessa* | 0.17 | 0.09 | 5.38 | 1.34 | 8.22 | 48.75 |
| *Gadus morhua* | 0.09 | 0.05 | 4.48 | 1.15 | 6.85 | 55.60 |
| *Microstomus kitt* | 0.04 | 0.07 | 3.47 | 1.15 | 5.30 | 60.91 |
| *Cancer pagurus* | 0.08 | 0.07 | 3.44 | 1.28 | 5.26 | 66.17 |
| *Pomatoschistus* spp. | 0.05 | 0.06 | 3.07 | 1.20 | 4.69 | 70.85 |

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| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farms G and F = 88.24** | | | | | | |
| **Species** | **Farm F**  **Av. Abund** | **Farm G**  **Av. Abund** | **Av. Diss** | **Diss/SD** | **Contrib. %**  **%** | **Cum. %**  **%** |
| *Trisopterus minutus* | 0.02 | 0.21 | 17.56 | 1.51 | 19.90 | 19.90 |
| *Pleuronectes platessa* | 0.00 | 0.09 | 8.68 | 0.77 | 9.83 | 29.73 |
| *Microstomus kitt* | 0.02 | 0.07 | 6.44 | 0.72 | 7.30 | 37.02 |
| *Gadus morhua* | 0.04 | 0.05 | 5.64 | 0.81 | 6.39 | 43.42 |
| *Cancer pagurus* | 0.00 | 0.07 | 5.55 | 1.09 | 6.29 | 49.71 |
| *Pomatoschistus spp.* | 0.00 | 0.06 | 4.92 | 1.00 | 5.57 | 55.29 |
| *Gobiusculus flavescens* | 0.00 | 0.09 | 4.85 | 0.47 | 5.50 | 60.79 |
| *Pollachius virens* | 0.07 | 0.03 | 4.78 | 1.07 | 5.41 | 66.20 |
| *Melanogrammus aeglefinus* | 0.02 | 0.05 | 4.58 | 0.84 | 5.20 | 71.40 |

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| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farms D and E = 52.04** | | | | | | |
| **Species** | **Farm D**  **Av. Abund** | **Farm E**  **Av. Abund** | **Av. Diss** | **Diss/SD** | **Contrib. %**  **%** | **Cum. %**  **%** |
| *Pollachius virens* | 2.68 | 1.12 | 8.97 | 1.01 | 17.23 | 17.23 |
| *Trisopterus minutus* | 2.06 | 1.47 | 8.09 | 1.23 | 15.55 | 32.79 |
| *Pomatoschistus s*pp. | 1.56 | 1.77 | 7.17 | 1.29 | 13.79 | 46.57 |
| *P. platessa* | 0.50 | 1.14 | 4.06 | 1.32 | 7.80 | 54.37 |
| *Cancer pagurus* | 0.97 | 1.40 | 3.74 | 1.30 | 7.19 | 61.56 |
| *Gadus morhua* | 0.93 | 0.57 | 3.35 | 1.15 | 6.45 | 68.01 |
| *Labrus mixtus* | 0.83 | 0.33 | 3.13 | 1.05 | 6.02 | 74.03 |

Supplementary Table 2B. Similarity Percentage (SIMPER) analysis table of dissimilarity between average abundance of demersal fish and crustacean communities recorded by BRUVS surveys at Frøya farm surveys sites (D, E, F and G).

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| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farms D and F = 62.50** | | | | | | |
| **Species** | **Farm D**  **Av. Abund** | **Farm F**  **Av. Abund** | **Av. Diss** | **Diss/SD** | **Contrib. %**  **%** | **Cum. %**  **%** |
| *Pollachius virens* | 2.68 | 0.68 | 9.77 | 0.99 | 15.62 | 15.62 |
| *Trisopterus minutus* | 2.06 | 1.31 | 7.52 | 1.34 | 12.02 | 27.65 |
| *Pomatoschistus s*pp. | 1.56 | 1.10 | 6.11 | 1.27 | 9.77 | 37.42 |
| *Squalus acanthias* | 0.00 | 1.00 | 4.50 | 5.98 | 7.20 | 44.62 |
| *Merlangius\_merlangus* | 0.00 | 1.12 | 4.50 | 0.56 | 7.20 | 51.82 |
| *Raja clavata* | 1.81 | 0.96 | 4.12 | 1.14 | 6.58 | 58.41 |
| *Pagurus bernhadus* | 0.37 | 0.71 | 3.96 | 0.69 | 6.34 | 64.75 |
| *Gadus morhua* | 0.93 | 0.25 | 3.82 | 1.18 | 6.11 | 70.86 |

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| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farms D and G = 60.37** | | | | | | |
| **Species** | **Farm D**  **Av. Abund** | **Farm G**  **Av. Abund** | **Av. Diss** | **Diss/SD** | **Contrib. %**  **%** | **Cum. %**  **%** |
| *Pollachius virens* | 2.68 | 0.50 | 9.42 | 0.94 | 15.61 | 15.61 |
| *Trisopterus minutus* | 2.06 | 0.75 | 8.16 | 1.53 | 13.51 | 29.12 |
| *Pomatoschistus s*pp. | 1.56 | 0.93 | 6.00 | 1.17 | 9.94 | 39.06 |
| *Squalus acanthias* | 0.00 | 1.12 | 4.81 | 1.55 | 7.96 | 47.02 |
| *Pagurus bernhadus* | 0.37 | 1.01 | 4.65 | 0.97 | 7.71 | 54.73 |
| *Raja clavata* | 1.81 | 1.06 | 4.35 | 1.67 | 7.21 | 61.94 |
| *Molva molva* | 0.50 | 0.79 | 3.59 | 1.26 | 5.94 | 67.88 |
| *Gadus morhua* | 0.93 | 0.50 | 3.42 | 1.27 | 5.67 | 73.56 |

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| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farms E and F = 64.39** | | | | | | |
| **Species** | **Farm E**  **Av. Abund** | **Farm F**  **Av. Abund** | **Av. Diss** | **Diss/SD** | **Contrib. %**  **%** | **Cum. %**  **%** |
| *Trisopterus minutus* | 1.47 | 1.31 | 7.48 | 1.46 | 11.62 | 11.62 |
| *Pomatoschistus s*pp. | 1.77 | 1.10 | 7.21 | 1.74 | 11.19 | 22.81 |
| *Merlangius merlangus* | 0.37 | 1.12 | 5.67 | 0.67 | 8.80 | 31.61 |
| *Cancer pagurus* | 1.40 | 0.50 | 5.22 | 1.38 | 8.11 | 39.72 |
| *Pollachius virens* | 1.12 | 0.68 | 5.17 | 1.01 | 8.03 | 47.75 |
| *Squalus acanthias* | 0.00 | 1.00 | 5.01 | 4.62 | 7.78 | 55.54 |
| *P. platessa* | 1.14 | 0.50 | 4.77 | 1.16 | 7.40 | 62.94 |
| *Pagurus bernhadus* | 0.37 | 0.71 | 4.65 | 0.71 | 7.22 | 70.16 |

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| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farms E and G = 62.89** | | | | | | |
| **Species** | **Farm E**  **Av. Abund** | **Farm G**  **Av. Abund** | **Av. Diss** | **Diss/SD** | **Contrib. %**  **%** | **Cum. %**  **%** |
| *Pomatoschistus s*pp. | 1.77 | 0.93 | 7.12 | 1.59 | 11.31 | 11.31 |
| *Trisopterus minutus* | 1.47 | 0.75 | 6.96 | 1.54 | 11.06 | 22.38 |
| *Squalus acanthias* | 0.00 | 1.12 | 5.31 | 1.52 | 8.44 | 30.82 |
| *Pagurus bernhadus* | 0.37 | 1.01 | 5.27 | 0.96 | 8.38 | 39.20 |
| *Raja clavata* | 1.48 | 1.06 | 4.78 | 1.58 | 7.60 | 46.80 |
| *Pollachius virens* | 1.12 | 0.50 | 4.72 | 0.95 | 7.50 | 54.31 |
| *Cancer Pagurus* | 1.40 | 0.85 | 4.66 | 1.21 | 7.41 | 61.72 |
| *P. platessa* | 1.14 | 0.75 | 4.33 | 1.42 | 6.88 | 68.60 |
| *Molva molva* | 0.00 | 0.79 | 4.08 | 0.93 | 6.48 | 75.08 |

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| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farms F and G = 54.77** | | | | | | |
| **Species** | **Farm F**  **Av. Abund** | **Farm G**  **Av. Abund** | **Av. Diss** | **Diss/SD** | **Contrib. %** | **Cum. %** |
| *Pagurus bernhadus* | 0.71 | 1.01 | 6.19 | 0.97 | 11.31 | 11.31 |
| *Merlangius\_merlangus* | 1.12 | 0.25 | 5.85 | 0.70 | 10.68 | 21.99 |
| *Trisopterus minutus* | 1.31 | 0.75 | 5.04 | 1.33 | 9.21 | 31.20 |
| *Molva molva* | 0.60 | 0.79 | 4.20 | 1.03 | 7.66 | 38.86 |
| *Raja Clavata* | 0.96 | 1.06 | 4.14 | 1.18 | 7.57 | 46.43 |
| *Pomatoschistus s*pp. | 1.10 | 0.93 | 3.93 | 1.32 | 7.18 | 53.61 |
| *Pollachius virens* | 0.68 | 0.50 | 3.42 | 1.12 | 6.24 | 59.85 |
| *Squalus acanthias* | 1.00 | 1.12 | 3.24 | 1.44 | 5.91 | 65.76 |
| *Melanogrammus aeglefinus* | 0.75 | 0.25 | 3.06 | 1.19 | 5.58 | 71.34 |

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| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farm and Reference Areas = 76.20** | | | | | | |
| **Species** | **Farm** | **Reference** | **Av. Diss** | **Diss/SD** | **Contrib %** | **Cum.%** |
| *Trisopterus minutus* | 0.21 | 0.12 | 12.49 | 1.28 | 16.40 | 16.40 |
| *Gobiusculus flavescens* | 0.11 | 0.08 | 8.29 | 0.77 | 10.88 | 27.27 |
| *P. platessa* | 0.12 | 0.02 | 6.94 | 0.95 | 9.10 | 36.38 |
| *Gadus morhua* | 0.08 | 0.08 | 5.94 | 1.02 | 7.80 | 44.18 |
| *Pollachius virens* | 0.07 | 0.06 | 5.71 | 0.74 | 7.49 | 51.67 |
| *Labrus mixtus* | 0.04 | 0.09 | 5.65 | 0.97 | 7.41 | 59.09 |
| *Microstomus kitt* | 0.06 | 0.02 | 4.53 | 0.79 | 5.94 | 65.03 |
| *Cancer pagurus* | 0.06 | 0.05 | 4.37 | 1.27 | 5.73 | 70.76 |

Supplementary Table 2C. Similarity Percentage (SIMPER) analysis table of dissimilarity between average abundance of demersal fish and crustacean communities recorded by TUC surveys at farm, intermediate and reference sites in Frøya.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farm and Intermediate Areas = 73.70** | | | | | | |
| **Species** | **Farm** | **Intermediate** | **Av. Diss** | **Diss/SD** | **Contrib %** | **Cum.%** |
| *Trisopterus minutus* | 0.21 | 0.15 | 13.08 | 1.19 | 17.75 | 17.75 |
| *P. platessa* | 0.12 | 0.08 | 7.19 | 1.02 | 9.75 | 27.51 |
| *Gobiusculus flavescens* | 0.11 | 0.03 | 6.35 | 0.65 | 8.62 | 36.13 |
| *Gadus morhua* | 0.08 | 0.06 | 5.76 | 0.98 | 7.81 | 43.94 |
| *Pollachius virens* | 0.07 | 0.04 | 5.09 | 0.65 | 6.90 | 50.84 |
| *Microstomus kitt* | 0.06 | 0.04 | 4.85 | 0.93 | 6.58 | 57.42 |
| *Cancer pagurus* | 0.06 | 0.07 | 4.80 | 1.09 | 6.51 | 63.94 |
| *Labrus mixtus* | 0.04 | 0.06 | 4.00 | 1.09 | 5.43 | 69.37 |
| *Raja clavata* | 0.01 | 0.05 | 3.37 | 1.13 | 4.57 | 73.93 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Intermediate and Reference Areas = 69.68** | | | | | | |
| **Species** | **Intermediate** | **Referencce** | **Av. Diss** | **Diss/SD** | **Contrib %** | **Cum.%** |
| *Trisopterus minutus* | 0.15 | 0.12 | 10.04 | 1.19 | 14.41 | 14.41 |
| *Labrus mixtus* | 0.06 | 0.09 | 6.27 | 1.17 | 8.99 | 23.40 |
| *Gobiusculus flavescens* | 0.03 | 0.08 | 5.72 | 0.06 | 8.22 | 31.62 |
| *Gadus morhua* | 0.06 | 0.08 | 5.41 | 1.04 | 7.76 | 39.38 |
| *P. platessa* | 0.08 | 0.02 | 4.33 | 1.11 | 6.22 | 45.60 |
| *Cancer pagurus* | 0.07 | 0.05 | 4.15 | 1.03 | 5.96 | 51.56 |
| *Pollachius virens* | 0.04 | 0.06 | 3.96 | 0.97 | 5.69 | 57.24 |
| *Raja clavata* | 0.05 | 0.02 | 3.49 | 1.11 | 5.01 | 62.26 |
| *Callionymus lyra* | 0.05 | 0.01 | 3.16 | 0.75 | 4.53 | 66.79 |
| *Pomatoschistus* spp. | 0.04 | 0.03 | 3.03 | 0.86 | 4.35 | 71.14 |

Supplementary Table 2D. Similarity Percentage (SIMPER) analysis table of dissimilarity between demersal fish and crustacean communities recorded by BRUVS surveys at farm, intermediate and reference sites in Frøya.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farm and Intermediate Areas = 54.60** | | | | | | |
| **Species** | **Farm**  **Av. Abund** | **Intermediate**  **Av. Abund** | **Av. Diss** | **Diss/SD** | **Contrib %** | **Cum. %** |
| *Pollachius virens* | 3.12 | 0.74 | 10.37 | 1.13 | 19.00 | 19.00 |
| *Pomatoschistus spp* | 1.05 | 2.33 | 7.68 | 1.53 | 14.07 | 33.08 |
| *Trisopterus minutus* | 0.83 | 1.43 | 5.60 | 1.33 | 10.26 | 43.34 |
| *Merlangius merlangus* | 0.75 | 0.54 | 4.60 | 0.67 | 8.43 | 51.76 |
| *Cancer pagurus* | 0.86 | 1.18 | 4.47 | 1.33 | 8.18 | 59.94 |
| *Gadus morhua* | 0.64 | 0.86 | 3.22 | 1.17 | 5.89 | 65.83 |
| *Molva molva* | 0.57 | 0.29 | 2.97 | 1.01 | 5.43 | 71.27 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farm and Reference Areas = 66.08** | | | | | | |
| **Species** | **Farm** | **Reference** | **Av. Diss** | **Diss/SD** | **Contrib %** | **Cum. %** |
| *Pollachius virens* | 3.12 | 0.55 | 11.53 | 1.22 | 17.44 | 17.44 |
| *Trisopterus minutus* | 0.83 | 1.97 | 7.50 | 1.28 | 11.35 | 28.80 |
| *Pagurus bernhadus* | 0.00 | 1.42 | 6.21 | 1.17 | 9.40 | 38.20 |
| *Pomatoschistus* spp | 1.05 | 0.98 | 5.34 | 1.37 | 8.08 | 46.28 |
| *P. platessa* | 1.07 | 0.13 | 4.69 | 1.24 | 7.10 | 53.38 |
| *Cancer pagurus* | 0.86 | 0.93 | 4.07 | 1.55 | 6.16 | 59.54 |
| *Raja clavata* | 1.69 | 1.15 | 3.72 | 1.10 | 5.63 | 65.17 |
| *Merlangius merlangus* | 0.75 | 0.00 | 3.40 | 0.44 | 5.14 | 70.32 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Reference and Intermediate Areas = 60.26** | | | | | | |
| **Species** | **Reference** | **Intermediate** | **Av. Diss** | **Diss/SD** | **Contrib %** | **Cum. %** |
| *Trisopterus minutus* | 1.97 | 1.43 | 8.28 | 1.35 | 13.74 | 13.74 |
| *Pomatoschistus spp* | 0.98 | 2.33 | 7.96 | 1.48 | 13.21 | 26.95 |
| *Pagurus bernhadus* | 1.42 | 0.00 | 6.74 | 1.15 | 11.19 | 38.14 |
| *Pleuronectes platessa* | 0.13 | 1.24 | 5.36 | 2.39 | 8.89 | 47.03 |
| *Raja clavata* | 1.15 | 1.41 | 4.25 | 1.19 | 7.05 | 54.08 |
| *Gadus morhua* | 0.38 | 0.86 | 3.59 | 1.14 | 5.96 | 60.04 |
| *Squalus acanthias* | 0.68 | 0.17 | 3.38 | 0.99 | 5.62 | 65.66 |
| *Labrus mixtus* | 0.75 | 0.17 | 3.37 | 1.06 | 5.60 | 71.26 |

Supplementary Table 2E. Similarity Percentage (SIMPER) analysis table of dissimilarity between demersal fish and crustacean communities recorded by TUC surveys at farms (A, B, and C) in Finnmark.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farms A and B = 60.62** | | | | | | |
| **Species** | **Group A**  **Av. Abund** | **Group B**  **Av. Abund** | **Av. Diss** | **Diss/SD** | **Contrib %** | **Cum. %** |
| *Melanogrammus aeglefinus* | 0.04 | 0.18 | 14.28 | 1.24 | 23.56 | 23.56 |
| *Trisopterus minutus* | 0.06 | 0.19 | 13.95 | 1.10 | 23.01 | 46.57 |
| *Sebastes spp.* | 0.17 | 0.11 | 10.67 | 1.16 | 17.59 | 64.16 |
| *Gadus morhua* | 0.04 | 0.09 | 8.04 | 1.17 | 13.26 | 77.42 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farms A and C = 61.14** | | | | | | |
| **Species** | **Group A**  **Av. Abund** | **Group C**  **Av. Abund** | **Av. Diss** | **Diss/SD** | **Contrib %** | **Cum. %** |
| *Melanogrammus aeglefinus* | 0.07 | 0.18 | 13.35 | 1.32 | 21.84 | 21.84 |
| *Trisopterus minutus* | 0.12 | 0.19 | 12.96 | 1.11 | 21.20 | 43.04 |
| *Sebastes spp.* | 0.02 | 0.11 | 9.26 | 1.63 | 15.14 | 58.18 |
| *Gadus morhua* | 0.01 | 0.09 | 8.77 | 1.15 | 14.34 | 72.52 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farms B and C = 70.02** | | | | | | |
| **Species** | **Group B**  **Av. Abund** | **Group C**  **Av. Abund** | **Av. Diss** | **Diss/SD** | **Contrib %** | **Cum. %** |
| *Sebastes spp.* | 0.02 | 0.17 | 24.29 | 1.54 | 34.69 | 34.69 |
| *Trisopterus minutus* | 0.12 | 0.06 | 15.10 | 1.20 | 21.56 | 56.26 |
| *Melanogrammus aeglefinus* | 0.07 | 0.04 | 10.43 | 0.97 | 14.90 | 71.16 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farm and Intermediate Areas = 62.21** | | | | | | |
| **Species** | **Farm**  **Av. Abund** | **Intermediate**  **Av. Abund** | **Av. Diss** | **Diss/SD** | **Contrib %** | **Cum. %** |
| *Trisopterus minutus* | 0.16 | 0.11 | 14.67 | 1.29 | 23.58 | 23.58 |
| *Sebastes spp.* | 0.14 | 0.09 | 12.67 | 0.94 | 20.37 | 43.94 |
| *Melanogrammus aeglefinus* | 0.10 | 0.10 | 12.50 | 1.18 | 20.09 | 64.04 |
| *Gadus morhua* | 0.05 | 0.08 | 8.23 | 1.22 | 13.23 | 77.27 |

Supplementary Table 2F. Similarity Percentage (SIMPER) analysis table of dissimilarity between demersal fish and crustacean communities recorded by TUC surveys at farm, intermediate and reference sites in Finnmark.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Farm and Reference Areas = 62.31** | | | | | | |
| **Species** | **Farm**  **Av. Abund** | **Reference**  **Av. Abund** | **Av. Diss** | **Diss/SD** | **Contrib. %**  **%** | **Cum. %**  **%** |
| *Trisopterus minutus* | 0.16 | 0.09 | 15.32 | 1.27 | 24.59 | 24.59 |
| *Sebastes spp.* | 0.14 | 0.12 | 15.21 | 0.98 | 24.41 | 49.00 |
| *Melanogrammus aeglefinus* | 0.10 | 0.09 | 13.43 | 1.19 | 21.55 | 70.56 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Average dissimilarity between Intermediate and Reference Areas = 51.81** | | | | | | |
| **Species** | **Intermediate** | **Reference** | **Av. Diss** | **Diss/SD** | **Contrib %** | **Cum. %** |
| *Sebastes spp.* | 0.09 | 0.12 | 11.06 | 1.29 | 21.35 | 21.35 |
| *Melanogrammus aeglefinus* | 0.10 | 0.09 | 10.41 | 1.42 | 20.09 | 41.44 |
| *Gadus morhua* | 0.08 | 0.03 | 8.39 | 1.27 | 16.20 | 57.64 |
| *Trisopterus minutus* | 0.11 | 0.09 | 7.97 | 1.19 | 15.39 | 73.03 |

Supplementary Table 3a. Generalized linear models (GLM) examining the effect of distance to farm category (Cage, Int and Ref), Sites (Farm A, B, C and D), habitat and interactions on fish and crustacean MaxN recorded in BRUVS in Frøya.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Pollachius virens -* GLM poisson distribution | | | | | |
|  | Df | Estimate | Std. error | z-value | Pr(>F) |
| Distance to Farm | 3 | -3.292 | 0.506 | -6.504 | 7.84e-11\*\*\* |
| Site | 4 | -2.458 | 0.390 | -6.304 | 2.90e-10\*\*\* |
| Distance to Farm\*Site | 12 | 0.868 | 0.232 | 3.748 | 0.0002\*\*\* |
| Null deviance | 275.973 on 19 df |  |  |  |  |
| Residual deviance | 38.866 on 16 df |  |  |  |  |
| *Gadus morhua -* Zero-inflated GLM | | | | | |
| Distance to Farm | 3 | 0.596 | 1.082 | 0.551 | 0.582 |
| Site | 4 | -1.707 | 1.280 | -1.334 | 0.182 |
| Distance to Farm \* Site | 12 | 0.439 | 0.503 | 0.873 | 0.382 |
| Null deviance | 23.54 on 19 df |  |  |  |  |
| Residual deviance | 17.33 on 14 df |  |  |  |  |
| *Trisopterus* spp. - Zero-inflated GLM | | | | | |
| Distance to Farm | 3 | 1.592 | 0.368 | 4.327 | 1.51e-5\*\*\* |
| Site | 4 | 0.564 | 0.454 | 1.243 | 0.214 |
| Distance to Farm \* Site | 12 | -0.485 | 0.180 | -2.709 | 0.006\*\* |
| Null deviance | 130.78 on 19 df |  |  |  |  |
| Residual deviance | 69.82 on 16 df |  |  |  |  |
| *Labrus mixtus -* GLM Negative Binomial | | | | | |
| Distance to Farm | 3 | 1.000 | 0.463 | 2.160 | 0.031\* |
| Site | 4 | -0.755 | 0.344 | -2.196 | 0.028\* |
| Null deviance | 23.99 on 19 df |  |  |  |  |
| Residual deviance | 13.29 on 17 df |  |  |  |  |
| *Pleuronectes platessa -* Zero-inflated GLM | | | | | |
| Distance to Farm | 3 | -7.305 | 1.501 | -4.868 | 1.13e-06\*\*\* |
| Site | 4 | -2.829 | 0.901 | -3.139 | 0.002\*\* |
| Distance to Farm \* Site | 12 | 2.562 | 0.517 | 4.957 | 7.16e-7\*\*\* |
| Log-likelihood | -430.7 on 19 df |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Pagurus bernhadus -* GLM Negative Binomial | | | | | |
|  | Df | Estimate | Std. error | z-value | Pr(>F) |
| Distance to Farm | 3 | 2.4404 | 0.780 | 3.131 | 0.002\* |
| Null deviance | 39.51 on 19 df |  |  |  |  |
| Residual deviance | 18.74 on 18 df |  |  |  |  |
| *Raja clavata -* GLM poisson distribution | | | | | |
| Distance to Farm | 3 | -0.524 | 0.595 | -0.881 | 0.379 |
| Site | 4 | -1.292 | 0.688 | -1.878 | 0.060 |
| Distance to farm \* Site | 12 | 0.428 | 0.268 | 1.596 | 0.110 |
| Null deviance | 301.92 on 19 df | 24.96 on 19 df |  |  |  |
| Residual deviance | 294.93 on 14 df | 16.72 on 14 df |  |  |  |
| *Cancer pagurus -* GLM poisson distribution | | | | | |
| Distance to Farm | 3 | 0.570 | 0.821 | 0.695 | 0.487 |
| Site | 4 | -0.768 | 0.798 | -0.963 | 0.336 |
| Distance to Farm \* Site | 12 | 0.206 | 0.317 | 0.649 | 0.516 |
| Null deviance | 30.954 on 19 df |  |  |  |  |
| Residual deviance | 27.060 on 14 df |  |  |  |  |

Supplementary Table 3b. Generalized linear models (GLM) examining the effect of distance to farm category (Cage, Int and Ref), Sites (Farm A, B, C and D) and interactions on fish density (individuals m-2) recorded in TUC surveys in Frøya.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Pollachius virens -* Zero-inflated GLM | | | | | |
|  | Df | Estimate | Std. error | z-value | Pr(>F) |
| Distance to Farm | 3 | -2.127 | 0.502 | -4.234 | 2.29e-05\*\*\* |
| Log-likelihood | -309.9 on 6df |  |  |  |  |
| *Gadus morhua -* Zero-inflated GLM | | | | | |
| Distance to Farm | 3 | 1.278 | 0.669 | 1.911 | 0.056\* |
| Site | 4 | 1.661 | 0.669 | 2.482 | 0.013\* |
| Distance to Farm \* Site | 12 | -0.535 | 0.254 | -2.105 | 0.035\* |
| Log-likelihood | -471.1 on 8 df |  |  |  |  |
| *Trisopterus* spp.- Zero-inflated GLM | | | | | |
| Distance to Farm | 3 | 2.239 | 0.352 | 6.363 | 1.98e-10 \*\*\* |
| Site | 4 | 0.972 | 0.208 | 2.681 | 2.86e-06\*\*\* |
| Distance to Farm \* Site | 12 | -0.696 | 0.106 | -6.583 | 4.61e-11\*\*\* |
| Log-likelihood | -1321 on 8 df |  |  |  |  |
| *Labrus mixtus -* GLM Negative Binomial | | | | | |
| Distance to Farm | 3 | 1.0957 | 0.429 | 2.558 | 0.011\* |
| Site | 4 | -0.004 | 0.414 | -0.010 | 0.992 |
| Distance to Farm \* Site | 12 | -0.203 | 0.161 | -1.260 | 0.208 |
| Null deviance | 436.44 on 8 df |  |  |  |  |
| Residual deviance | 396.01 on 8 df |  |  |  |  |
| *Pleuronectes platessa -* Zero-inflated GLM | | | | | |
| Distance to Farm | 3 | -4.315 | 1.001 | -4.008 | 1.10e-06\*\*\* |
| Site | 4 | -2.429 | 0.867 | -2.129 | 0.003\*\* |
| Distance to Farm \* Site | 12 | 2.862 | 0.535 | 4.007 | 6.15e-7\*\*\* |
| Log-likelihood | -445.9 on 8 df |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Pagurus bernhadus -* GLM Negative Binomial | | | | | |
|  | Df | Estimate | Std. error | z-value | Pr(>F) |
| Distance to Farm | 3 | 2.006 | 1.030 | 1.948 | 0.05\* |
| Null deviance | 99.79 on 8 df |  |  |  |  |
| Residual deviance | 92.93 on 8 df |  |  |  |  |
| *Raja clavate -* GLM Negative Binomial | | | | | |
| Distance to Farm | 3 | -0.122 | 0.638 | -0.192 | 0.848 |
| Site | 4 | -0.867 | 0.669 | -1.296 | 0.195 |
| Distance to farm \* Site | 12 | 0.197 | 0.260 | 0.758 | 0.449 |
| Null deviance | 301.92 on 8 df |  |  |  |  |
| Residual deviance | 294.93 on 8 df |  |  |  |  |
| *Cancer pagurus -* Zero-inflated GLM | | | | | |
| Distance to Farm | 3 | 4.188 | 1.687 | 2.482 | 0.013\* |
| Site | 4 | 3.646 | 0.957 | 3.813 | 0.0001\*\*\* |
| Distance to Farm \* Site | 12 | -1.411 | 0.501 | -2.817 | 0.005\*\* |
| Log-Liklihood | -358.9 on 8 df |  |  |  |  |
| *Microstomus kitt* - GLM Negative Binomial | | | | | |
| Distance to Farm | 3 | -1.149 | 0.249 | -4.612 | 3.99e-06\*\*\* |
| Null deviance | 271.55 on 8 df |  |  |  |  |
| Residual deviance | 248.06 on 8 df |  |  |  |  |
| *Melanogrammus aeglefinus-* GLM Negative Binomial | | | | | |
| Distance to Farm | 3 | -1.606 | 2.140 | -0.750 | 0.453 |
| Site | 4 | 0.144 | 1.266 | 0.114 | 0.909 |
| Distance to farm \* Site | 12 | 0.636 | 0.559 | 1.139 | 0.255 |
| Null deviance | 280.72 on 8 df |  |  |  |  |
| Residual deviance | 226.52 on 8 df |  |  |  |  |

Supplementary Table 3c. Generalized linear model examining the effect of distance to farm category (Cage, Int and Ref), Sites (Farm A, B, C and D) and habitat and interactions on mean fish density (individuals m-2) in TUC surveys from Finnmark.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Melanogrammus aeglefinus* - Zero-inflated GLM | | | | | |
|  | Df | Estimate | Std. error | z-value | Pr(>F) |
| Distance to Farm | 3 | -4.472 | 1.265 | -3.535 | 0.0004\*\*\* |
| Site | 3 | -5.363 | 0.943 | -5.685 | 1.30e-08\*\*\* |
| Habitat | 8 | -0.215 | 0.689 | -0.312 | 0.755 |
| Distance to Farm \* Site | 9 | 1.763 | 0.414 | 4.261 | 2.03e-05\*\*\* |
| Distance to Farm \* Habitat | 24 | 0.146 | 0.271 | 0.541 | 0.589 |
| Log-likelihood | -455.6 on 12 df |  |  |  |  |
| *Gadus morhua - Z*ero-inflated GLM | | | | | |
| Distance to Farm | 3 | 4.365 | 2.276 | 1.918 | 0.06\* |
| Site | 3 | 2.656 | 1.821 | 1.458 | 0.145 |
| Habitat | 8 | 0.452 | 0.650 | 0.694 | 0.487 |
| Distance to Farm \* Site | 9 | -1.393 | 0.923 | -1.508 | 0.132 |
| Distance to Farm \* Habitat | 24 | -0.353 | 0.482 | -0.732 | 0.464 |
| Log-likelihood | -219.1 on 12 df |  |  |  |  |
| *Trisopterus* spp. - Zero-inflated GLM | | | | | |
| Distance to Farm | 3 | -2.726 | 1.074 | -2.539 | 0.011\* |
| Site | 3 | -1.959 | 0.650 | -3.015 | 0.003\*\* |
| Habitat | 8 | -0.206 | 0.249 | -0.828 | 0.408 |
| Distance to Farm \* Site | 9 | 0.995 | 0.374 | 2.659 | 0.008\*\* |
| Distance to Farm \* Habitat | 24 | 0.125 | 0.127 | 0.980 | 0.327 |
| Log-likelihood | -537 on 12 df |  |  |  |  |
| *Microstomus kitt -* Zero-inflated GLM | | | | | |
| Distance to Farm | 3 | 91.708 | 82.486 | 1.112 | 0.266 |
| Site | 3 | -0.220 | 45.025 | -0.005 | 0.996 |
| Habitat | 8 | 41.677 | 44.035 | 0.946 | 0.344 |
| Distance to Farm \* Site | 9 | -9.064 | 19.871 | -0.456 | 0.648 |
| Distance to Farm \* Habitat | 24 | -16.409 | 16.633 | -0.987 | 0.324 |
| Log-likelihood | -142 on 12 df |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Sebastes viviparus* - Zero-inflated GLM | | | | | |
| Distance to Farm | 3 | 0.121 | 1.021 | 0.118 | 0.906 |
| Site | 3 | -0.543 | 0.865 | -0.627 | 0.531 |
| Habitat | 8 | -0.328 | 0.264 | -1.240 | 0.215 |
| Distance to Farm \* Site | 9 | -0.223 | 0.476 | -0.470 | 0.639 |
| Distance to Farm \* Habitat | 24 | 0.071 | 0.115 | 0.616 | 0.538 |
| Log-likelihood | -489.4 on 12 df |  |  |  |  |
| *Brosme brosme -* GLM Negative Binomial | | | | | |
| Distance to Farm | 3 | 0.601 | 0.009 | 0.000 | 1.000 |
| Site | 3 | 0.195 | 0.007 | 0.003 | 0.998 |
| Habitat | 8 | -0.156 | 0.837 | -0.187 | 0.852 |
| Distance to Farm \* Site | 9 | -0.212 | 0.003 | 0.000 | 1.000 |
| Distance to Farm \* Habitat | 24 | 0.034 | 0.391 | -0.088 | 0.930 |
| Null deviance | 119.85 on 10 df |  |  |  |  |
| Residual deviance | 92.069 on 10 df |  |  |  |  |