**Table 2.1. Abundance of macroplastics observed on beaches**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sea** | **Location** | **Year** | **Abundance (kg/km)**  if not defined differently | | **Abundance of fisheries waste (kg/km)** if not defined differently | **Method** | **Total length (km)** | **Beaches (no.)** | **Reference** |
| **Bering Sea and Subarctic North Pacific**  *(Aleutian Islands)* | Amchitka Island | 1972 | Total 121.64 *(or 193.2 n/km)* | | 119.835 *(or 128 n/km)* ( trawls 108.57 kg/km) | Visual observation **(herienafter - VO)** | 10 | 10 | ([Merrell, 1980](#_ENREF_55)) |
| 1973 | Total 156.42 *(or 283.9 n/km)* | | 154.607 *(or 176.6 n/km)* ( trawls 132.24 kg/km) |
| 1974 | Total 345.42 *(or 499.3 n/km)* | | 339.445 *(or 278.6 n/km)* (trawls 290 kg/km) |
| 1982 | Total 254.14 *(or 588.9 n/km)* | | 247.955 *(or 198 n/km)* (trawls  190.82 kg/km) | ([Merrell, 1984](#_ENREF_56)) |
| 1987 | ∽290 n/km | | ∽230 (litter from trawls) | VO | 10 | 10 | ([Johnson, 1990](#_ENREF_38)) |
| Attu, Agattu, Shemya, Buldir, Kiska, Little Kiska and Adak | 1988 | 852 n/km | | 595,95 n/km  89,19 n/km (netting) | VO. Sea level to high storm tide level | 3.7 | 25 | ([Manville, 1990](#_ENREF_52)) |
| **Chukchi Sea** | Cape Krusenstern National Monument | 2015 | 94.36 *(∽85% of total debris)* | 0.5± 0.31 kg/km h-1  *(plastic, rope/netting, foam)* | 0.16+-0.18 kg/km h-1 (rope/netting) | VO. Approximate vegetation line; wrack line | 22.23 | 3 | ([Polasek et al., 2017](#_ENREF_67)) |
| Bering Land Bridge National Preserve | 33.13 *(∽92% of total debris)* | VO. Approximate vegetation line | 15.49 | 2 |
| **Subarctic North Pacific** *(Gulf of Alaska)* | Kenai Fjords National Park | 4518.25 *(∽90% of total debris)* | 44.68± 51.74 kg/km h-1 | 5.96 ± 14.5 kg/km h-1 (rope/netting) | VO. Approx. vegetation line, Wet-dry line, Berm line, Wrack line, Beach center line | 14.84 | 13 |
| Wrangell-St. Elias National Park | 1924.91 *(∽76% of total debris)* | VO. Vegetation line, Berm line | 4.45 | 2 |
| Katmai National Park and Preserve | 1623.19 *(∽95.1% of total debris)* | VO. Beach center line | 28.68 | 8 |
| **North Atlantic Ocean** | Western Iceland | 2011 | 3,625 g/m2 *[ Total 59 items =261 g]* | | n.a. | VO | 72 m2 [36 quadrates (2x2m)] | 12 | ([Dippo, 2012](#_ENREF_22)) |
| **Greenland** | West Greenland | 2016-2017 | 120 (7–934) items/100 m | | n.a. | NS | NS | 13 | ([Strand and et al., in prep.](#_ENREF_81)) |
| East Greenland | 3 (0–272) items/100 m | | n.a. | NS | NS |
| **Mid-Atlantic Ridge** | Hornvík, Hornstrandir nature reserve, Westfjord, Iceland | 2012 | 850 items/km or 60 kg/km | Estimated for all 7 beaches:  506 items/km  Or  67 kg/km | 55-65% of total |  | Transect:  100x40  100x10  100x10  2000x2 | 7 | ([Kienitz, 2013](#_ENREF_41)) |
| Rekavík bak Höfn, Hornstrandir nature reserve, Westfjord, Iceland | 2012 | 6650 items/km  or 575 kg/km |  | Transect:  10x10  10x10 |
| Hlöðuvík, Hornstrandir nature reserve, Westfjord, Iceland | 2012 | 1692 items/km  or 146 kg/km |  | Transect:  100x10  100x10  20x20  20x20  20x20 |
| Hesteyrarfjörður, Hornstrandir nature reserve, Westfjord, Iceland | 2012 | 35 items/km  or 2 kg/km |  | Transect:  100x10  100x10  100x10  100x10 |
| Aðalvík, Hornstrandir nature reserve, Westfjord, Iceland | 2012 | 443 items/km or 55 kg/km |  | Transect:  100x10  100x10  100x20 |
| Rekavík, Hornstrandir nature reserve, Westfjord, Iceland | 2012 | 373 items/km or 131 kg/km |  | Transect:  100x10  100x10  100x10  100x10 |
| Fljótavík, Hornstrandir nature reserve, Westfjord, Iceland | 2012 | 113 items/km or 34 kg/km |  | Transect:  100x50  100x10  100x10  100x10 |
| **Greenland Sea** | Brucebukta | 2016 | 1610.1 kg/km | 9- 524 g m-2 (82-100% of overall litter mass) | 999.9 | VO. 20m to water | 1800 m2 | 1 (area of 90x20 m) | ([Bergmann et al., 2017a](#_ENREF_8)) |
| **Arctic Ocean**  *(Northern and North-western Svalbard)* | Reinstrandodden | 62841.6 kg/km | 62732.4 | VO. 0.2 m to water | 1680 m2 | 1 (area of 120x14) |
| Sørvika | 19.36 g m-2 | 13,13 g m-2 | VO. 0.5m to water | 2048 m2 | 1 |
| Isflakbukta | 1134.9 kg/km | 547.2 | VO. 0.5m to water | 1800 m2 | 1 (area of 90x20 m) |
| Crozierpynten | 794.7 kg/km | 440.1 | VO. 0.5-2m to water | 1845 m2 | 1 (area of 90x20,5 m) |
| Alpiniøya | 1280.9 kg/km | 1065.4 | VO. 5.7-7m to water | 2559 m2 | 1 (area of 100x52 m) |

**Table 2.2. Abundance of plastic observed in sea ice and seawater**

| **Depth Range** | **Location** | **Year** | **Density** | **Size fraction** | **Sampling method** | **Reference** |
| --- | --- | --- | --- | --- | --- | --- |
| **Sea ice** | Arctic basin *(88∘03.333′N, 58∘44.9′E)* | 2005 | ∽11 n/l | microplastics | Ice cores (sample depths: 252 and 347 cm)  *samples volumes examined were typically 50–100 cm3*  [FTIR microscopy] | ([Obbard et al., 2014](#_ENREF_61)) |
| Arctic basin *(84∘18.772′N, 149∘03.533′W)* | 2005 | ∽100 n/l | microplastics | Ice cores (sample depth 135 cm) [FTIR microscopy] |
| Arctic basin *(78∘17.493′N, 176∘40.739′W)* | 2005 | ∽28 n/l | microplastics | Ice cores (sample depths: 83 and 107 cm) [FTIR microscopy] |
| Arctic basin *(68∘18.19′N, 166∘58.86′W)* | 2010 | ∽40 n/l | microplastics | Ice cores (sample depths: 95, 105, and 115 cm) [FTIR microscopy] |
| Greenland Sea *(Fram Strait)* | n.a. | 2 x 1000000 n/m3 | microplastics | Pack ice cores | ([Bergmann et al., 2017b](#_ENREF_9)) |
| n.a. | 6 x 10000 n/m3 | microplastics | Land-locked ice cores |
| Fram Strait (78,27N 14,71W) | 2014 | 4.1± 2.0×106 n m−3 | microplastics | Land-fast ice [Imaging FTIR] | ([Peeken et al., 2018](#_ENREF_64)) |
| Fram Strait (79,75N 4,30E) | 2014 | 1.2±1.4×107 n m−3 | microplastics | Pack ice [Imaging FTIR] |
| North of Svalbard (81,94 13,57E) | 2015 | 2.9 ± 2.4×106 n m−3 | microplastics | Pack ice [Imaging FTIR] |
| North of Svalbard (81,24N 19,43E) | 2015 | 1.1±0.8×106 n m−3 | microplastics | Pack ice [Imaging FTIR] |
| Nansen Basin (85,09N 42,61E) | 2015 | 2.4±1.0×106 n m−3 | microplastics | Pack ice [Imaging FTIR] |
| **Surface** | Norwegian Sea *(Transect from Tromsø up to SW Svalbard (78.07°)* | 2014 | 0 – 1.31 (0.34±0.31 SD) or 0,028 n/m2 | microplastics | Manta net (top 10–16 cm of the water column) | ([Lusher et al., 2015](#_ENREF_48)) |
| Barents Sea and Greenland Sea *(Fram Strait)* | 2012 | 0 - 0.216 n /km1 | macroplastics | Visual observation from helicopter and vessel | ([Bergmann et al., 2016](#_ENREF_10)) |
| Barents Sea and Greenland Sea | 2013 | 0.063 n/m2 | microplastics | Manta net | ([Cózar et al., 2017](#_ENREF_17)) |
| Barents Sea | 2010-2016 | NS (plastic= 34.6±22.3% of all marine litter) | macroplastics | VO from vessel | ([Grøsvik et al., 2018](#_ENREF_32)) |
| Bering Sea | 1985 | 0,23±0,19 n/km-2 | macroplastics >2.5 cm | VO from vessel | ([Day and Shaw, 1987](#_ENREF_19)) |
| 1974-75 | 68 n/km-2 | micro- and mesoplastics (0.363mm-0.4 m) | Surface sampler | ([Shaw, 1977](#_ENREF_79)) |
| 1985 | 80±190 n/km-2 | micro- and mesoplastics (0.33mm-1.3 m) | Surface sampler | ([Day and Shaw, 1987](#_ENREF_19)) |
| 1985-88 | 100 n/km2 (600 SD) | micro- and mesoplastics (0.5mm- 0.5 m) | Surface sampler | ([Day et al., 1990](#_ENREF_20)) |
| 2006 | 0.017 (±0.010) | microplastics | Neuston nets ( 0.505 mm mesh, mouth opening of 30x50cm) | ([Doyle et al., 2011](#_ENREF_23)) |
| 2006 | 0.072 (±0.041) | microplastics |
| Subarctic North Pacific | 1984 | 0,15 n/km-2 | macroplastics | Visual observation from vessel | ([Dahlberg and Day, 1985 in Day and Shaw, 1987](#_ENREF_19)) |
| 1985 | 0,94±1,22 n/km-2 | macroplastics > 2.5 cm | Visual observation from vessel | ([Day and Shaw, 1987](#_ENREF_19)) |
| 1976 | 0 | micro- and mesoplastics (0.33mm-0.4 m) | Surface sampler | ([Shaw and Mapes, 1979](#_ENREF_80)) |
| 1985 | 3370±2380 items/km-2 | micro- and mesoplastics (0.33mm-1.3 m) | Surface sampler | ([Day and Shaw, 1987](#_ENREF_19)) |
| 1985-88 | 12,800 n/km2 (22 300SD) | micro- and mesoplastics (0.5mm- 0.5 m) | Surface sampler | ([Day et al., 1990](#_ENREF_20)) |
| Gulf of Alaska | 1974-75 | 132 n/km-2 | micro- and mesoplastics (0.363mm-0.4 m) | Surface sampler | ([Shaw, 1977](#_ENREF_79)) |
| **Sub surface** | Norwegian Sea *(Transect from Tromsø up to SW Svalbard (78.07°)* | 2014 | 0 – 11.5 (2.68±2.95 SD) | microplastics | On-board seawater pump, depth 6 m | ([Lusher et al., 2015](#_ENREF_48)) |
| Kongsfjorden, Svalbard | 2016 | 0 | microplastics | On-board seawater pump, depth 2 m | ([Sundet et al., 2017](#_ENREF_84)) |
| Adventfhorden, Svalbard | 2016 | 0 | microplastics |
| Isfjorden, Svalbard | 2016 | 1-2 n/1000 l | microplastics |
| Breibogen, Svalbard | 2016 | 1-2 n/1000 l | microplastics |
| Barents Sea | 2010-2016 | 0.011 mg m-3 | macroplastics | pelagic trawl haul (<60 m), mouth opening 20x20m; 2265 trawls | ([Grøsvik et al., 2018](#_ENREF_32)) |
| 2.9 kg km-2 | Bottom trawl haul (>60 m); 1860 trawls |
| Arctic Central Basin | 2016 | 0-7.5 (median 0.7) n m-3 | microplastics | On-board seawater pump, depth 8.5 m | ([Kanhai et al., 2018](#_ENREF_40)) |
| Polar Mixed Layer | 2016 | 0-375 (median 20.8) n m-3 | microplastics | CTD rosette sampler, depths 8–4369 m |
| *Including abundance in various layers:* | | | | |
| Polar Mixed Layer (depth 8-51 m) |  | 0-375 n m-3 |  | 15 depths sampled |
| Holocline (Atlantic or Pacific) (depth 56-166 m) |  | 0-83 n m-3 |  | 7 depths sampled |
| Atlantic water (depth 251-850 m) |  | 0-95 n m-3 |  | 10 depths sampled |
| Deep and bottom waters (depth 1001-4369 m) |  | 0-104 n m-3 |  | 16 depths sampled |
| **Vertical tow** | Greenland Sea | 2005 | 0.15 – 2.64 (0.99±0.62) | microplastics | WP-2; opening 0.25 m2 mesh 500µm, 50m to surface | ([Amelineau et al., 2016](#_ENREF_1)) |
| 2014 | 0.81 – 4.52 n/m3 (2.38±1.11) | microplastics |

**Table 2.3. Abundance of litter observed on seafloor**

| **Sea** | **Location** | **Year** | **Density (n/km2)** | **Mean depth (m)** | **Method (area sampled (km2))** | **Composition** | **Main Sources** | **Reference** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Greenland Sea | HAUSGARTEN N3 and HG IV | 2002 (only HG IV) | 3523 ± 1354 | 2500 | Photo (1.926) | 59% of total plastic; 66.6% of total medium size | n.a. | ([Bergmann and Klages, 2012](#_ENREF_7); [Tekman et al., 2017](#_ENREF_85)) |
| 2004 | 660 ± 337 | Photo (5.032) | n.a. |
| 2007 | 873 ± 376 | Photo (6.316) | n.a. |
| 2011 | 5061 ± 2130 | Photo (2.622) | correlation with increase of shipping (including tourism) in Svalbard |
| 2012 | 4891 ± 1141 | Photo (6.298) | 47% of total were plastic; 57% of total had small size | n.a. |
| 2013 (only N3) | 4731 ± 1642 | Photo (2.020) | n.a. | drift sea ice as a transport vehicle |
| 2014 | 6566 ± 1422 | Photo (3.948) | n.a. | n.a. |
| Barents Sea | Coast (119 locations) | 2006-2017 | 286 | <100-500 | Video (249.9) | Fishing gear is prevalent, followed by unspecified and plastic litters | Fisheries | ([Buhl-Mortensen and Buhl-Mortensen, 2017](#_ENREF_16)) |
| Offshore (1013 locations) | 209 | <100-2700 | Video (2,127.3) |
| Norwegian Sea | Coast (16 locations) | 2009-2015 | 2706 | <100-500 | Video (33.6) |
| Offshore (630 locations) | 171 | <100-2700 | Video (1,325.1) |
| Bering Sea | South Eastern Bering Sea | 1975 | 7.5% of total hauls contained debris | n.a. | Trawl (12.2m x ~3.25km) | 7.5% of total trawls had plastic | Fisheries | ([Feder et al., 1978](#_ENREF_25)) |
| 1976 | 41% of total hauls contained debris | n.a. | 6.6% of total trawls had plastic |
| Eastern Bering Sea | 1988 | 7.52 | n.a. | Trawl (26.6) | 51% plastic; 27% metal | 40% Galley wastes, 24% fisheries, 23% engineering and processing | ([June, 1990](#_ENREF_39)) |
| Norton Sound | 1.94 | n.a. | Trawl (4.2) | 49% metal, 12% plastic | 38% engineering and processing, 36% galley waste, 26% personal use items |
| Gulf of Alaska | Kodiak Island Inlets | 1994 | 58.475 | n.a. | Trawl (2.36) | plastic 26.3 n/km2; metal 23.7 n/km2 | fisheries 25 n/km2; | ([Hess et al., 1999](#_ENREF_36)) |
| 1995 | 62.397 | n.a. | Trawl (2.42) | plastic 31.5 n/km2; metal 21.1 n/km2 | fisheries 24.4 n/km2; |
| 1996 | 52.209 | n.a. | Trawl (2.49) | plastic 22.1 n/km2; metal 22.1 n/km2 | fisheries 20.1 n/km2; |
| Kodiak Island Open sea | 1994 | 10.417 | n.a. | Trawl (1.92) | plastic 7.8 n/km2; metal 2.1 n/km2 | fisheries 6.8 n/km2; |
| 1995 | 21.256 | n.a. | Trawl (2.07) | plastic 18.8 n/km2; metal 1.4 n/km2 | fisheries 11.1 n/km2; |
| 1996 | 13.004 | n.a. | Trawl (2.23) | plastic 8.5 n/km2; metal 2.7 n/km2 | fisheries 4.5 n/km2; |
| Greenland Sea (Continental slope) | Hausgarten | 1999-2011 | 13.6+-7.9 n/ha-1 | 2450 | ROV; Towed camera system (72.2 ha) | 60% Plastic | Fisheries; transported land-based waste | ([Pham et al., 2014](#_ENREF_65)) |
| Norwegian Sea (Continental slope) | North Faroe-Shetland Channel | 2006 | 0.3+-0.2 n/ha-1 | 657 | Towed camera system (2.3 ha) | 100% Fishing gear |
| North-East Faroe Shetland Channel | 2006 | 1.9+-1.0 n/ha-1 | 501 | Towed camera system (1.2 ha) | 100% Fishing gear |
| Norwegian Sea (Continental shelf) | Norwegian Margin | 2007 | 9.7+-3.8 n/ha-1 | 304 | Manned submersible (0.6 ha) | 80% Fishing gear; 20% Plastic | Fisheries; transported land-based waste |
| North-Eastern Atlantic  (Ocean Ridges) | Wyville-Thomson Ridge | 2006 | 10.9+-4.3 n/ha-1 | 670 | Towed camera system (1.2 ha) | 85.7% Fishing gear; 14.3% Metal | Fisheries |
| North Charlie Gibbs Fracture Zone | - | 0.4+-0.3 n/ha-1 | 2300 | ROV (2.4 ha) | 100% Metal |
| South Charlie Gibbs Fracture Zone | - | 2.9+-1.4 n/ha-1 | 2600 | ROV (2.4 ha) | 28.6% Plastic; 28.6% Glass; 28.6% Metal |
| North-Eastern Atlantic  (Seamounts, banks and mounds) | Anton Dohm Seamount | 2005-2009 | 1.9+-1.0 n/ha-1 | 992 | Towed camera system (2.2 ha) | 100% Metal | Fisheries |
| Darwin Mounds | 2011 | 9.7+-2.9 n/ha-1 | 1007 | ROV (1.8 ha) | 60% Plastic; 15% Metal; 10% Fishing gear |
| Hatton Bank | 2005-2011 | 1.9+-0.8 n/ha-1 | 706 | ROV; Towed camera system (4 ha) | 87.5% Fishing gear; 12.5% Metal |
| Rockhall Bank | 2005-2011 | 0.7+-0.5 n/ha-1 | 702 | ROV; Towed camera system (2.4 ha) | 33.3% Fishing gear; 66.7% Metal |
| Rosemary Bank | 2006 | 3.3+-2.3 n/ha-1 | 577 | Towed camera system (1.1 ha) | 66.7% Fishing gear; 33.3% Metal |

**Table 2.4 Abundance of microplastics observed in sediments**

| **Sampling site** | **Sea** | **Location** | **Year** | **Density (n/kg or n/l)** | **Width/ Depth (m)** | **Sampling method** | **Sample/ total leght** | **Replicates (n)** | **Reference** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Shore line | North Atlantic Ocean | Western Iceland | 2011 | 4.84 n/l (1307 items in total) | NS | Shovel (counted microplastics size5-1 mm) | 2x2m, top 2cm = 7.5 l | 36 (3 quandrates on 12 sites) | ([Dippo, 2012](#_ENREF_22)) |
| Sisimiut areas (impacted by urban and boat activities) | NS | 4600-15000 n/kg dw | NS | NS | NS | 8 | ([Strand and et al., in prep.](#_ENREF_81)) |
| Sisimiut area | 90-860 n/kg dw | NS | NS | NS |
| Greenland Sea | W Svalbard, Adventdalen | 2015 | 0 – 6.3 n/kg | Not given | Shovel | ~1 l | 3 | ([Sundet et al., 2016](#_ENREF_83)) |
| N Svalbard, Breibogen | 2016 | 111 n/l sediment | Above high tide mark | Shovel | ~2 l | 2 | ([Sundet et al., 2017](#_ENREF_84)) |
| 5-8 n/l sediment | Below high tide mark | Shovel | ~2 l | 2 |
| Bering Sea | Bering Land Bridge National Preserve | 2016 | 95 n/kg of dry sand (22.5 SE) | low tide along a 50-meter transect parallel with the shore between the high and low tide lines | Shovel | equivalent volume approx. 736 cm3 | 10 | ([Whitmire and Van Bloem, 2017](#_ENREF_92)) |
| Cape Krusenstern National Monument | 2015 | 123.8 n/kg of dry sand (24.6 SE) |
| Gulf of Alaska | Aniakchak National Monument & Preserve | 2016 | 51.3 n/kg of dry sand (10.5 SE) |
| Katmai National Park & Preserve | 2015 | 128.8 n/kg of dry sand (36.,1 SE) |
| Kenai Fjords National Park | 2015 | 43.8 n/kg of dry sand (5.2 SE) |
| Lake Clark National Park & Preserve | 2016 | 40 n/kg of dry sand (40 SE) |
| Wrangell St. Elias National Park & Preserve | 2015 | 97.5 n/kg of dry sand (25.3 SE) |
| Shallow water | Greenland Sea | W Svalbard, Adventfjorden | 2015 | 9.2 n/kg sediment | 40-70 | Van Veen grab | ~1 l | 3 | ([Sundet et al., 2016](#_ENREF_83)) |
| N Svalbard, Breibogen | 2016 | 2-10 n/l sediment | 40-60 | Van Veen grab | 0.50 l | 6 | ([Sundet et al., 2017](#_ENREF_84)) |
| Deep sea | Barents Sea | Stangnestind | 2017 | 2700 items/kg | 251 | Van Veen grab | Ø 0.15 m2 top 0-1 cm; 0,006 g | 1 | ([Moskeland et al., 2018](#_ENREF_57)) |
| Korpfjell | 2017 | 1400 items/kg | 242 | Van Veen grab | Ø 0.15 m2 top 0-1 cm; 0,0046 g | 1 |
| Scarecrow3 | 2017 | 3200 items/kg | 461 | Van Veen grab | Ø 0.15 m2 top 0-1 cm; 0,0075 g | 1 |
| Kråketind | 2017 | 830 items/kg | 440 | Van Veen grab | Ø 0.15 m2 top 0-1 cm; 0,0036 g | 1 |
| Gråspett | 2017 | 3900 items/kg | 508 | Van Veen grab | Ø 0.15 m2 top 0-1 cm; 0,0086 g | 1 |
| Norwegian Sea | SW Svalbard | 2010 | 200 n/l sediment | 1000 | Megacorer/ boxcorer | Ø=10 cm, top 1 cm | Not given | ([Woodall et al., 2014](#_ENREF_93)) |
| 2010 | 300 n/l sediment | 2000 |
| Greenland Sea *(Fram Starit)* | Hausgarten | 2015 | 44 - 3464 n/lsediment | 2300-5600 | Multicorer | Ø=10 cm, top 5 cm | 3 – 6 (depending on station) | ([Bergmann et al., 2017c](#_ENREF_11)) |

**Table 3.1. Plastic ingested by seabirds in the Arctic**

| **Species** | **Region** | **Location** | **Year of study** | **Sample size** | **Frequency of occurrence** | **Mass per individual** | **Item per individual** | **References** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Seabirds** |  |  |  |  |  |  |  |  |
| Northern fulmar (*Fulmarus glacialis)* | Svalbard and Jan Mayen | Svalbard | 1980 | 22 | 82.0% |  |  | Camphuysen & Franeker 1997 in ([O'Hanlon et al., 2017](#_ENREF_60)) |
| Svalbard | 1980 (regurgitates) | 13 | 8.0% |  |  | Camphuysen & Franeker 1997 in ([O'Hanlon et al., 2017](#_ENREF_60)) |
| Svalbard | 1982 | 14 | 36.0% |  |  | ([Mehlum and Giertz, 1984](#_ENREF_54)) |
| Bjørnøya, Svalbard | 1983 | 22 | 82.0% |  | 4.5 | ([van Franeker, 1985](#_ENREF_88)) |
| Jan Mayen | 1983 | 29 | 76.0% |  | 4.7 | ([van Franeker, 1985](#_ENREF_88)) |
| Eastern sea, Svalbard | 1984 | 8 | 50.0% |  |  | ([Gjertz et al., 1985](#_ENREF_31)) |
| Hornsund, Svalbard | 1984 | 20 | 15.0% |  |  | ([Lydersen et al., 1989](#_ENREF_49)) |
| Isfjord, Svalbard | 2013 | 40 | 87.5% | 0.08±0.02 g | 15.32 ± 5.51 | ([Trevail et al., 2014](#_ENREF_86); [Trevail et al., 2015](#_ENREF_87)) |
| Norway | Northern Norway, Barents Sea | 2012-2013 | 72 | 81.0% | 0.136 ± 0.176 g | 17.4 ± 26.8 g | ([Ask et al., 2016](#_ENREF_2); [Herzke et al., 2016](#_ENREF_35)) |
| Russia | Frans Josef Land | 1994 | 5 | 20.0% |  | 0.02 | ([Weslawski et al., 1994](#_ENREF_91)) |
| Alaska | Subarctic North Pacific | 1969-1977 | 38 | 58.0% |  | 2.8 | ([Day, 1980](#_ENREF_18)) |
| Subarctic North Pacific | 1988-1990 | 19 | 84.2% |  |  | ([Robards et al., 1995](#_ENREF_75)) |
| Central North Pacific | 1990-1991 | 42 | 88.0% |  |  | ([Robards et al., 1997](#_ENREF_74)) |
| Canada | Canadian Arcitc | 1978-1979 | 214 | 40.0% |  |  | M. S. V. Bradstreet unpub. in ([Day et al., 1985](#_ENREF_21)) |
| Davis Strait, Nunavut | 2002 | 42 | 36.0% | 0.02–0.31 g | 1.3 ± 2.3 | ([Mallory et al., 2006](#_ENREF_51)) |
| Cape Vera, Northern Devon Island, Nunavut | 2003-2004 | 102 | 31.0% |  | 7.4 ± 2.1SE (of affected) | ([Mallory, 2008](#_ENREF_50)) |
| Prince Leopold Island, Nunavut | 2008 | 10 | 80.0% | 0.050 g (SD 0.099) | 2.5 (SD 3.5) | ([Provencher et al., 2009](#_ENREF_72)) |
| Cape Searle, Eastern Baffin Island, Nunavut | 2008 | 15 | 87.0% | 0.124 g (SD 0.162) | 7.6 (SD 6.6) | ([Provencher et al., 2009](#_ENREF_72)) |
| Prince Leopold Island, Nunavut | 2013 | 9 | 89.0% | 0.025+-0.025 | 3.4+-3.1 | ([Poon et al., 2017](#_ENREF_68)) |
| Labrador Sea | 2014 | 39 | 64.0% | 114+-0.202 g | 5.9+-10.8 | ([Avery-Gomm et al., 2017](#_ENREF_3)) |
| 2015 | 31 | 97.0% | 0.198+-0.311 | 18.7+-28.9 | ([Avery-Gomm et al., 2017](#_ENREF_3)) |
| Greenland | West Greenland | 2000 | NS | 54.2% (EcoQO 4.2%) | NS | NS | ([Strand and et al., in prep.](#_ENREF_81)) |
| 2016 | NS | 85.7% (EcoQO 34.9%) | NS | NS |
| Iceland | Westfjord, Iceland | 2011 | 58 | 79.0% | 0.13+-0.04 | 6.0+-0.99 | ([Kuhn and van Franeker, 2012](#_ENREF_44)) |
| Faeroe Islands | Faeroe Islands | 1997 | 35 | 51.0% |  |  | Durinck unpub. in ([Provencher et al., 2014a](#_ENREF_70)) |
| Faeroe Islands | 2002-2006 (fulmars with >0.1 g plastic) | NS | 43.0% | 0.09g |  | ([OSPAR Commission, 2009](#_ENREF_62)) |
| Faeroe Islands | 2007-2010 | 699 | 91.0% | 0.15 ± 0.01 g | 11.3 ± 0.6 | ([van Franeker and The SNS Fulmar Study Group, 2013](#_ENREF_89)) |
| Faeroe Islands | 2011 | 27 | 33.3% | 0.23 ± 0.35 g | 13.9 ± 29.9 | Trevail 2014; van Franeker et al. 2013 in ([Ask et al., 2016](#_ENREF_2)) |
| Brünnich’s guillemot/ Thick-billed murre (*Uria lomvia)* | Svalbard | Svalbard | 1982 | 1 | 0.0% | - | - | ([Mehlum and Giertz, 1984](#_ENREF_54)) |
| Eastern sea, Svalbard | 1984 | 3 | 0.0% | - | - | ([Gjertz et al., 1985](#_ENREF_31)) |
| Hornsund, Svalbard | 1984 | 21 | 24.0% |  |  | ([Lydersen et al., 1989](#_ENREF_49)) |
| Alaska | Alaska | 1969-1977 | 138 | 1.4% |  |  | ([Day et al., 1985](#_ENREF_21)) |
| Alaska | 1988-1990 | 92 | 0.0% | - | - | ([Robards et al., 1995](#_ENREF_75)) |
| Central North Pacific | 1990-1991 | 1 | 100.0% |  |  | ([Robards et al., 1997](#_ENREF_74)) |
| Canada | Canadian Arcitc | 1978-1979 | 283 | 1.0% |  | 7 | M. S. V. Bradstreet unpub. in ([Day et al., 1985](#_ENREF_21)) |
| Northeast Newfoundland | 1985-1986 | 1249 | 7.7% | 0.005+-0.041 g | 0.14+-0.70 | Elliot et al. 1990 unpub, Heneman 1988 in ([Bond et al., 2013](#_ENREF_14)) |
| Northeast Newfoundland | 1996-1997 | 310 | 4.8% |  |  | Rowe et al. 2000 in ([Bond et al., 2013](#_ENREF_14)) |
| Harbour Breton, Newfoundland | 2005 | 7 | 0.0% | - | - | Muzzafar unpub. in ([Provencher et al., 2014a](#_ENREF_70)) |
| St. Mary’s Bay, Newfoundland | 2005 | 4 | 0.0% | - | - | Muzzafar unpub. in ([Provencher et al., 2014a](#_ENREF_70)) |
| Gannet Islands, Newfoundland | 2006 | 15 | 0.0% | - | - | Muzzafar 2000 in ([Provencher et al., 2014a](#_ENREF_70)) |
| Coats Island, Nunavut | 2006 | 16 | 0.0% | - | - | Muzzafar 2000 in ([Provencher et al., 2014a](#_ENREF_70)) |
| Coats Island, Eastern Canadian Arctic | 2007 | 25 | 4.0% | 0.0032 g | 0.04 (SD 0.20) | ([Provencher et al., 2010](#_ENREF_73)) |
| The Minarets, Eastern Canadian Arctic | 2007- 2008 | 50 | 6.0% | 0.0003g | 0.06 (SD0.26) | ([Provencher et al., 2010](#_ENREF_73)) |
| Akpatok Island, Eastern Canadian Arctic | 2008 | 31 | 23.0% | 0.0025 g | 0.29 (SD 0.64) | ([Provencher et al., 2010](#_ENREF_73)) |
| Digges Sound, Eastern Canadian Arctic | 2008 | 30 | 12.0% | 0.0015 g | 0.27 (SD 0.69) | ([Provencher et al., 2010](#_ENREF_73)) |
| Prince Leopold Island, Eastern Canadian Arctic | 2008 | 50 | 8.0% | 0.0017g | 0.30 (SD 1.39) | ([Provencher et al., 2010](#_ENREF_73)) |
| Twillingate, St. Mary’s Bay, Conception Bay, Newfoundland, Canada | 2011-2012 | 32 | 14.3% | 0.0203 ± 0.0162 g (with one common murre) | 0.091 ± 0.291 (with one common murre) | ([Bond et al., 2013](#_ENREF_14)) |
| Prince Leopold Is. East Arctic Canada. | 2013 | 10 | 0.0% | - | - | ([Poon et al., 2017](#_ENREF_68)) |
| Greenland | Southwest Greenland | 1988- 1999 | 202 | 6.0% |  | 0.09, 0 (0-3) | ([Falk and Durinck, 1993](#_ENREF_24)) |
| Haklyut Island | 1997 | 40 | 0.0% | - | - | Falk unpub in ([Provencher et al., 2014a](#_ENREF_70)) |
| Nuuk | 2006 | 15 | 0.0% | - | - | Muzzafar 2000 in ([Provencher et al., 2014a](#_ENREF_70)) |
| Common murre/guillemot *(Uria aalge)* | Alaska | Alaska | 1969-1977 | 191 | 0.0% | - | - | Day 1980 |
| Alaska | 1988-1990 | 134 | 0.8% |  |  | ([Robards et al., 1995](#_ENREF_75)) |
| Canada | Northeast Newfoundland | 1996-1997 | 60 | 1.7% |  | 0.02 ± 0.02 | Rowe et al. 2000 in ([Bond et al., 2013](#_ENREF_14)) |
| St. Mary’s Bay, Newfoundland | 2006 | 15 | 0.0% | - | - | Muzaffar unpub data in ([Provencher et al., 2014a](#_ENREF_70)) |
| Gannet Islands, Newfoundland | 2006 | 15 | 0.0% | - | - | Muzzafar (2000) in ([Provencher et al., 2014a](#_ENREF_70)) |
| Renews, Newfoundland | 2006 | 13 | 0.0% | - | - | Muzzafar (2000) in ([Provencher et al., 2014a](#_ENREF_70)) |
| Twillingate, St. Mary’s Bay, Conception Bay, Newfoundland, Canada | 2011-2012 | 32 | 9.1% |  | 0.09 ± 0.09 | ([Bond et al., 2013](#_ENREF_14)) |
| Little auk/dovekie (*Alle alle)* | Svalbard | Svalbard | 1982- 1984 | 29 | 0.0% | - | - | ([Mehlum and Giertz, 1984](#_ENREF_54); [Gjertz et al., 1985](#_ENREF_31)) |
| Eastern sea, Svalbard | 1984 | 3 | 0.0% | - | - | ([Gjertz et al., 1985](#_ENREF_31)) |
| Hornsund, Svalbard | 1984 | 11 | 45.0% |  |  | ([Lydersen et al., 1989](#_ENREF_49)) |
| Canada | Canadian Arcitc | 1978-1979 | 303 | "present" |  |  | ([Day, 1980](#_ENREF_18)) |
| Cape Shore, Newfoundland | 2003 | 73 | 1.4% |  |  | Robertson et al. 2006 unpub. In ([Avery-Gomm et al., 2016](#_ENREF_4)) |
| Placentia Bay, NL | 2011 | 21 | 0.0% | - | - | ([Rosing-Asvid et al., 2013](#_ENREF_76)) |
| White Bay, Newfoundland | 2013 | 65 | 13.8% | 0.0183±0.0205 g | 0.1538+-0.4043 | ([Fife et al., 2015](#_ENREF_26)) |
| Holyrood, NL | 2013 | 171 | 30.4% | 0.0049+-0.0280 g | 0.8070+-3.910 | ([Avery-Gomm et al., 2016](#_ENREF_4)) |
| Greenland | Nuuk | 1988-1989 | 19 | 0.0% | - | - | Falk and Durinck unpub. in ([Provencher et al., 2014a](#_ENREF_70)) |
| Hakluyt Island | 1997-1998 | 104 | 8.7% |  |  | ([Pedersen and Falk, 2001](#_ENREF_63)) |
| Eastern Greenland | 2005 (Gular pouches) | 26 | Fragments – 50%; filaments – 100% |  | 9.99 | ([Amelineau et al., 2016](#_ENREF_1)) |
| Cape Farewell | 2010-2011 | 90 | 0.0% | - | - | ([Rosing-Asvid et al., 2013](#_ENREF_76)) |
| Nuuk | 2010-2011 | 94 | 0.0% | - | - | ([Rosing-Asvid et al., 2013](#_ENREF_76)) |
| Eastern Greenland | 2014 (Gular pouches) | 18 | Fragments – 50%; filaments – 100% |  | 8.99 | ([Amelineau et al., 2016](#_ENREF_1)) |
| Black-legged kittivake (*Rissa tridactyla*) | Svalbard | Svalbard | 1982 | 27 | 0.0% |  |  | ([Mehlum and Giertz, 1984](#_ENREF_54)) |
| Eastern sea, Svalbard | 1984 | 18 | 0.0% |  |  | ([Gjertz et al., 1985](#_ENREF_31)) |
| Hornsund, Svalbard | 1984 | 20 | 5.0% |  |  | ([Lydersen et al., 1989](#_ENREF_49)) |
| Alaska | Alaska | 1969-1977 | 188 | 4.8% |  | 0.1 | ([Day, 1980](#_ENREF_18)) |
| 1988-1990 | 256 | 7.8% |  |  | ([Robards et al., 1995](#_ENREF_75)) |
| Central North Pacific | 1990-1991 | 5 | 0.0% |  |  | ([Robards et al., 1997](#_ENREF_74)) |
| Canada | Canadian Arcitc | 1978-1979 | 50 | 12.0% |  |  | M. S. V. Bradstreet unpub. in ([Day et al., 1985](#_ENREF_21)) |
| Prince Leopold Is. East Arctic Canada. | 2013 | 11 | 9.0% | 0.003+-0.009 | 0.18+-0.6 | ([Poon et al., 2017](#_ENREF_68)) |
| Red-legged kittivake (*Rissa brevirostris*) | Alaska | Alaska | 1969-1977 | 46 | 13.0% |  | 0.2 | ([Day, 1980](#_ENREF_18)) |
| 1988-1990 | 15 | 26.7% |  |  | ([Robards et al., 1995](#_ENREF_75)) |
| Short-tailed shearwater (*Ardenna tenuirostris*) | Alaska | Alaska | 1969-1977 | 200 | 83.5% |  | 5.4 | ([Day, 1980](#_ENREF_18)) |
| 1988-1990 | 5 | 80.0% |  |  | ([Robards et al., 1995](#_ENREF_75)) |
| Central North Pacific | 1990-1991 | 200 | 88.0% |  |  | ([Robards et al., 1997](#_ENREF_74)) |
| Southeastern Bering Sea; Aleutian Islands | 1997-1999, 2001 | 330 | 83.9% | 114+-7.8 mg | 5.8+-0.4 | ([Vlietstra and Parga, 2002](#_ENREF_90)) |
| North Pacific Ocean, Bering Sea | 2003 | 87 | NS | 0.218 (SD 0.187) | 13.4 (SD 9.6) | ([Yamashita et al., 2011](#_ENREF_94)) |
| 2005 | 12 | NS | 0.289 (SD 0.163) | 21.7 (SD 25.6) | ([Yamashita et al., 2011](#_ENREF_94)) |
| Sooty shearwater *(Ardenna grisea)* | Canada | Placentia Bay, NL | 1978 | 5 | 0.2% |  |  | Brown et al. 1981 in ([Bond et al., 2014](#_ENREF_13)) |
| Alaska | Alaska | 1969-1977 | 76 | 43.0% |  | 1.1 | ([Day, 1980](#_ENREF_18)) |
| Alaska | Central North Pacific | 1990-1991 | 543 | 85.0% |  |  | ([Robards et al., 1997](#_ENREF_74)) |
| Leach's stormptrel *(Oceanodroma leucorhoa)* | Alaska | Pacific Alaska | 1969-1977 | 4 | 25.0% |  | 3 | ([Day, 1980](#_ENREF_18)) |
| Pacific Alaska | 1988-1990 | 64 | 48.4% |  |  | ([Robards et al., 1995](#_ENREF_75)) |
| Central North Pacific | 1990-1991 | 3 | 67.0% |  |  | ([Robards et al., 1997](#_ENREF_74)) |
| Canada | Eastern Newfoundland | 1987-1988 | 749 | 5.0% |  |  | Hedd et al. 2009 in ([Provencher et al., 2014a](#_ENREF_70)) |
| Eastern Newfoundland | 2002-2006 | 224 | 6.0% |  |  | Hedd and Montevecchi 2006 in ([Provencher et al., 2014a](#_ENREF_70)) |
| Gull Island, Newfoundland | 2012 | 63 | 48.0% | 3.1+-2.5mg | 1.9+-3.4 | ([Bond and Lavers, 2013](#_ENREF_12)) |
| Fork-tailed storm petrel *(Oceanodroma furcata)* | Alaska | Alaska | 1969-1977 | 8 | 100.0% |  | 6.2 | ([Day, 1980](#_ENREF_18)) |
| 1988-1990 | 21 | 85.7% |  |  | ([Robards et al., 1995](#_ENREF_75)) |
| 1990-1991 | 12 | 100.0% |  |  | ([Robards et al., 1997](#_ENREF_74)) |
| Common eider (*Somateria mollissima)* | Svalbard | Svalbard | 1982 | 1 | 0.0% | - | - | ([Mehlum and Giertz, 1984](#_ENREF_54)) |
| Hornsund | 1984 | 20 | 0.0% | - | - | ([Lydersen et al., 1989](#_ENREF_49)) |
| Russia | Frans Josef Land | 1994 | 5 | 0.0% | - | - | ([Weslawski et al., 1994](#_ENREF_91)) |
| Greenland | Nuuk | 1999-2002 | 241 | 0.0% | - | - | Jamieson at al. 2006 in ([Provencher et al., 2014a](#_ENREF_70)) |
| Nuuk | 2012 | 135 | 0.0% | - | - | Merkel unpub. in ([Provencher et al., 2014a](#_ENREF_70)) |
| Canada | Belcher Is, Nunavut | 1998-2003 | 388 | 0.0% | - | - | Jamieson unpubl. in ([Provencher et al., 2014a](#_ENREF_70)) |
| Cape Dorset, Nunavut | 2000-2002 | 108 | 0.0% | - | - | Jamieson unpub. in ([Provencher et al., 2014a](#_ENREF_70)) |
| Cape Dorset, Nunavut | 2011 | 100 | 1.0% |  |  | Provencher et al. 2013 in ([Provencher et al., 2014a](#_ENREF_70)) |
| Little Fogo Islands, Newfoundland, Canada | n.a. | 40 | 2.5% |  | 0.02 ± 0.16 | ([Holland et al., 2016](#_ENREF_37)) |
| Atlantic Puffin (*Fratercula arctica*) | Norway | Hordaland, Norway | 1970 | 9 | 22.0% |  |  | Berland 1971 in ([O'Hanlon et al., 2017](#_ENREF_60)) |
| Svalbard | Hornsund, Svalbard | 1984 | 14 | 0.0% | - | - | ([Lydersen et al., 1989](#_ENREF_49)) |
| Faeroe Islands | Faeroe Islands/Norwegian Sea | 1987-1988 | 36 | 0.0% | - | - | Falk et al. (1992) in ([Provencher et al., 2014a](#_ENREF_70)) |
| Canada | Gull Island, Witless Bay, Newfoundland | 1999 | 2 | 0.0% | - | - | Muzaffar unpub. in ([Provencher et al., 2014a](#_ENREF_70)) |
| Bay of Exploits, Newfoundland | 2004 | 14 | 7.0% |  |  | Muzaffar unpub. in ([Provencher et al., 2014a](#_ENREF_70)) |
| Tufted Puffin*(Fratercula cirrhata)* | Alaska | Gulf of Alaska | 1969-1977 | 190 | 10.5% |  | 0.2+-0.8 | ([Day, 1980](#_ENREF_18)) |
| Aleutian Islands | 1969-1977 | 122 | 20.5% |  | 0.7+-2.1 | ([Day, 1980](#_ENREF_18)) |
| Bering and Chukchi Seas | 1969-1977 | 35 | 14.3% |  | 0.6+-2.9 | ([Day, 1980](#_ENREF_18)) |
| Alaska | 1988-1990 | 489 | 24.5% |  |  | ([Robards et al., 1995](#_ENREF_75)) |
| Central North Pacific | 1990-1991 | 8 | 88.0% |  |  | ([Robards et al., 1997](#_ENREF_74)) |
| Horned Puffin (*Fratercula corniculata)* | Alaska | Gulf of Alaska | 1969-1977 | 41 | 26.8% |  | 0.8+-1.7 | ([Day, 1980](#_ENREF_18)) |
| Aleutian Islands | 1969-1977 | 74 | 50.0% |  | 1.0+-1.5 | ([Day, 1980](#_ENREF_18)) |
| Bering and Chukchi Seas | 1969-1977 | 50 | 30.0% |  | 0.6+-1.7 | ([Day, 1980](#_ENREF_18)) |
| Alaska | 1988-1990 | 120 | 36.7% |  |  | ([Robards et al., 1995](#_ENREF_75)) |
| Central North Pacific | 1990-1991 | 28 | 57.0% |  |  | ([Robards et al., 1997](#_ENREF_74)) |
| Parakeet auklet (*Aethia psittacula*) | Alaska | Gulf of Alaska | 1969-1977 | 13 | 84.6% |  | 21.1+-22.6 | ([Day, 1980](#_ENREF_18)) |
| Aleutian Islands | 1969-1977 | 55 | 90.9% |  | 21.3+-22.8 | ([Day, 1980](#_ENREF_18)) |
| Bering and Chukchi Seas | 1969-1977 | 45 | 53.3% |  | 2.6+-4.0 | ([Day, 1980](#_ENREF_18)) |
| Pacific Alaska | 1988-1990 | 208 | 93.8% |  | 17.1 | ([Robards et al., 1995](#_ENREF_75)) |
| Central North Pacific | 1988-1990 | 3 | 33.3% |  |  | ([Robards et al., 1997](#_ENREF_74)) |
| Least auklet *(Aethia pusilla)* | Alaska | Alaska | 1969-1977 | 89 | 1.1% |  |  | ([Day, 1980](#_ENREF_18)) |
| 1988-1990 | 13 | 0.0% | - | - | ([Robards et al., 1995](#_ENREF_75)) |
| Crested auklet (*Aethia cristatella*) | Alaska | Alaska | 1969-1977 | 85 | 0.0% | - | - | ([Day, 1980](#_ENREF_18)) |
| 1988-1990 | 40 | 2.5% |  |  | ([Robards et al., 1995](#_ENREF_75)) |
| Cassin's auklet *(Ptychoramphus aleuticus)* | Alaska | Alaska | 1969-1977 | 10 | 40.0% |  | 3.8 | ([Day, 1980](#_ENREF_18)) |
| 1988-1990 | 35 | 11.4% |  |  | ([Robards et al., 1995](#_ENREF_75)) |
| Rinoceros auklet *(Cerorhinca monocerata)* | Alaska | Alaska | 1969-1977 | 20 | 0.0% |  |  | ([Day, 1980](#_ENREF_18)) |
| Alaska | 1988-1990 | 1 | 0.0% | - | - | ([Robards et al., 1995](#_ENREF_75)) |
| Central North Pacific | 1990-1991 | 9 | 44.0% |  |  | ([Robards et al., 1997](#_ENREF_74)) |
| Pigeon guillemot *(Cepphus columba)* | Alaska | Alaska | 1969-1977 | 18 | 0.0% | - | - | ([Day, 1980](#_ENREF_18)) |
| 1988-1990 | 43 | 2.6% |  |  | ([Robards et al., 1995](#_ENREF_75)) |
| Mew gull *(Larus canus*) | Norway | Hardangervidda | 1980-1982 (pellets) | 259 | 1.0% |  |  | Byrkjedal et al. 1986 in ([O'Hanlon et al., 2017](#_ENREF_60)) |
| Alaska | Pacific Alaska | 1969-1977 | 10 | 0.0% | - | - | ([Day, 1980](#_ENREF_18)) |
| 1988-1990 | 4 | 25.0% |  |  | ([Robards et al., 1995](#_ENREF_75)) |
| Glaucous gull (*Larus hyperboreus*) | Alaska | Alaska | 1969-1977 | 33 | 3.0% |  |  | ([Day, 1980](#_ENREF_18)) |
| Russia | Frans Josef Land | 1994 | 5 | 0.0% | - | - | ([Weslawski et al., 1994](#_ENREF_91)) |
| Svalbard | Svalbard | 1982 | 2 | 0.0% | - | - | ([Mehlum and Giertz, 1984](#_ENREF_54)) |
| Hornsund, Svalbard | 1984 | 18 | 0.0% | - | - | ([Lydersen et al., 1989](#_ENREF_49)) |
| Great skua *(Stercorarius skua)* | Norway | Bjørnøya, Norway | 2008-2009 (pellets) | 350 | 2.0% |  |  | Knutsen 2010 in ([O'Hanlon et al., 2017](#_ENREF_60)) |
| Faeroe Islands | Skúvoy breeding colony | 2013 (pellets) | 165 | 6.0% | 0.0066 g (SD 0.00597) |  | ([Hammer et al., 2016](#_ENREF_34)) |
| Pelagic cormorant *(Phalacrocorax pelagicus)* | Alaska | Alaska | 1969-1977 | 3 | 0.0% | - | - | ([Day, 1980](#_ENREF_18)) |
| Alaska | Alaska | 1988-1990 | 10 | 20.0% |  |  | ([Robards et al., 1995](#_ENREF_75)) |
| Red-necked phalarope *(Phalaropus lobatus)* | Alaska | Alaska | 1969-1977 | 3 | 67.0% | 1 |  | ([Day, 1980](#_ENREF_18)) |
| Long-tailed jaeger/skua (*Stercorarius longicaudus*) | Svalbard | Svalbard | 1982 | 1 | 0.0% | - | - | ([Mehlum and Giertz, 1984](#_ENREF_54)) |
| Alaska | Central North Pacific | 1990-1991 | 2 | 0.0% | - | - | ([Robards et al., 1997](#_ENREF_74)) |
| Pomarine jaeger/skua (*Stercorarius pomarinus*) | Svalbard | Svalbard | 1984 | 3 | 0.0% | - | - | ([Gjertz et al., 1985](#_ENREF_31)) |
| Alaska | Central North Pacific | 1990-1991 | 1 | 0.0% | - | - | ([Robards et al., 1997](#_ENREF_74)) |
| Parasitic jager/ Arctic skua *(Stercorarius parasiticus)* | Alaska | Alaska | 1969-1977 | 1 | 0.0% | - | - | ([Day, 1980](#_ENREF_18)) |
| Ivory gull (*Pagophila eburnea*) | Alaska | Alaska | 1969-1977 | 1 | 0.0% | - | - | ([Day, 1980](#_ENREF_18)) |
| Svalbard | Svalbard | 1982 | 6 | 0.0% | - | - | ([Mehlum and Giertz, 1984](#_ENREF_54)) |
| Eastern sea, Svalbard | 1984 | 4 | 0.0% | - | - | ([Gjertz et al., 1985](#_ENREF_31)) |
| Glaucous-winged gull *(Larus glaucescens)* | Alaska | Alaska | 1969-1977 | 63 | 0.0% | - | - | ([Day, 1980](#_ENREF_18)) |
| Alaska | 1988-1990 | 21 | 0.0% | - | - | ([Robards et al., 1995](#_ENREF_75)) |
| Bonaparte's gull *(Chroicocephalus philadelphia)* | Alaska | Alaska | 1969-1977 | 4 | 0.0% | - | - | ([Day, 1980](#_ENREF_18)) |
| Arctic tern (*Sterna paradisaea*) | Alaska | Alaska | 1969-1977 | 21 | 0.0% | - | - | ([Day, 1980](#_ENREF_18)) |
| Russia | Frans Josef Land | 1994 | 5 | 0.0% | - | - | ([Weslawski et al., 1994](#_ENREF_91)) |
| Canada | Nasaruvaalik Island, Nunavut | 2007 | 41 | 0.0% | - | - | ([Provencher et al., 2014a](#_ENREF_70)) |
| Aleutian tern *(Onychoprion aleuticus)* | Alaska | Alaska | 1969-1977 | 8 | 0.0% | - | - | ([Day, 1980](#_ENREF_18)) |
| Double crested cormorant *(Phalacrocorax auritus)* | Alaska | Alaska | 1969-1977 | 4 | 0.0% | - | - | ([Day, 1980](#_ENREF_18)) |
| Red faced cormorant *(Phalacrocorax urile)* | Alaska | Alaska | 1969-1977 | 2 | 0.0% | - | - | ([Day, 1980](#_ENREF_18)) |
| Alaska | Alaska | 1988-1990 | 16 | 0.0% | - | - | ([Robards et al., 1995](#_ENREF_75)) |
| Marbled murrelet *(Brachyramphus marmoratus)* | Alaska | Alaska | 1969-1977 | 61 | 0.0% | - | - | ([Day, 1980](#_ENREF_18)) |
| Alaska | 1988-1990 | 96 | 0.0% | - | - | ([Robards et al., 1995](#_ENREF_75)) |
| Kittlitz's murrelet *(Brachyramphus brevirostris)* | Alaska | Alaska | 1969-1977 | 5 | 0.0% | - | - | ([Day, 1980](#_ENREF_18)) |
| Alaska | 1988-1990 | 17 | 0.0% | - | - | ([Robards et al., 1995](#_ENREF_75)) |
| Ancient murrelet *(Synthliboramphus antiquus)* | Alaska | Alaska | 1969-1977 | 16 | 0.0% | - | - | ([Day, 1980](#_ENREF_18)) |
| Alaska | 1988-1990 | 68 | 0.0% | - | - | ([Robards et al., 1995](#_ENREF_75)) |
| Whiskered auklet *(Aethia pygmaea)* | Alaska | Alaska | 1969-1977 | 5 | 0.0% | - | - | ([Day, 1980](#_ENREF_18)) |
| Alaska | 1988-1990 | 22 | 0.0% | - | - | ([Robards et al., 1995](#_ENREF_75)) |
| Black guillemot (*Cepphus grylle*) | Svalbard | Svalbard | 1982 | 8 | 0.0% | - | - | ([Mehlum and Giertz, 1984](#_ENREF_54)) |
| Eastern sea, Svalbard | 1984 | 2 | 0.0% | - | - | ([Gjertz et al., 1985](#_ENREF_31)) |
| Hornsund, Svalbard | 1984 | 20 | 0.0% | - | - | ([Lydersen et al., 1989](#_ENREF_49)) |
| Russia | Frans Josef Land | 1994 | 5 | 0.0% | - | - | ([Weslawski et al., 1994](#_ENREF_91)) |
| Canada | Prince Leopold Island | 2013 | 3 | 0.0% | - | - | ([Poon et al., 2017](#_ENREF_68)) |
| King eider *(Somateria spectabilis)* | Greenland | Nuuk | 2000-2002 | 41 | 0.0% | - | - | Jamieson unpub. in ([Provencher et al., 2014a](#_ENREF_70)) |
| Canada | Cape Dorset, Nunavut | 2001 | 3 | 0.0% | - | - | Jamieson unpub. in ([Provencher et al., 2014a](#_ENREF_70)) |
| 2011 | 10 | 0.0% | - | - | Provencher et al. 2013 in ([Provencher et al., 2014b](#_ENREF_71)) |
| Long-tailed duck *(Clangula hyemalis)* | Canada | Belcher Is, Nunavut | 1998-1999 | 27 | 0.0% | - | - | Jamieson et al. 2001 in ([Provencher et al., 2014a](#_ENREF_70)) |
| Razorbill *(Alca torda)* | Canada | Bay of Exploits, Newfoundland | 2004 | 2 | 0.0% | - | - | Muzaffar unpub. in ([Provencher et al., 2014a](#_ENREF_70)) |
| Notre Dame Bay, Newfoundland | 2011-2012 | 8 | 0.0% | - | - | Bond unpub. in ([Provencher et al., 2014a](#_ENREF_70)) |
| Surf scoter (*Melanitta perspicillata)* | Canada | Nain, Newfoundland | 2006 | 38 | 0.0% | - | - | Muzaffar unpub. in ([Provencher et al., 2014a](#_ENREF_70)) |

**Table 3.2. Average plastic ingestion by seabirds in the Arctic (species and foraging strategies)**

| **Primary feeding mode / Species** | **Number of studies** | **Years of studies** | **Number of samples** | **Frequency of occurrence** |
| --- | --- | --- | --- | --- |
| **Surface foragers** | **61** | - | **3850** | **24.2%** |
| Northern fulmar (Fulmarus glacialis) | 26 | 1969-**2016** | 1625 | 63.7% |
| Mew gull (Larus canus) | 2 | 1969-1990 | 273 | 8.7% |
| Glaucous gull (Larus hyperboreus) | 4 | 1969-1994 | 58 | 0.8% |
| Red-necked phalarope (Phalaropus lobatus) | 1 | 1969-1977 | 3 | 67.0% |
| Glaucous-winged gull (Larus glaucescens) | 2 | 1969-1990 | 84 | 0.0% |
| Bonaparte's gull (Chroicocephalus philadelphia) | 1 | 1969-1977 | 4 | 0.0% |
| Black-legged kittiwake (Rissa tridactyla) | 8 | 1969-**2013** | 575 | 4.8% |
| Red-legged kittiwake (Rissa brevirostris) | 2 | 1969-1990 | 61 | 19.9% |
| Leach's storm petrel (Oceanodroma leucorhoa) | 6 | 1969-**2012** | 1107 | 33.2% |
| Fork-tailed storm petrel (Oceanodroma furcata) | 3 | 1969-1991 | 41 | 95.2% |
| Ivory gull (Pagophila eburnea) | 3 | 1969-1984 | 11 | 0.0% |
| Aleutian tern (Onychoprion aleuticus) | 1 | 1969-1977 | 8 | 0.0% |
| **Plunging** | **3** | - | **67** | **0.0%** |
| Arctic tern (Sterna paradisaea) | 3 | 1969-2007 | 67 | 0.0% |
| **Pursuit-diving** | **118** | - | **9019** | **13.1%** |
| Brünnich’s guillemot/ Thick-billed murre (Uria lomvia) | 23 | 1969-**2013** | 2625 | 9.2% |
| Common murre/guillemot (Uria aalge) | 7 | 1969-**2012** | 460 | 1.7% |
| Little auk/dovekie (Alle alle) | 14 | 1978-**2014** | 1027 | 14.0% |
| Short-tailed shearwater (Ardenna tenuirostris) | 6 | 1969-2005 | 834 | 83.9% |
| Sooty shearwater (Ardenna grisea) | 3 | 1969-1991 | 624 | 42.7% |
| Common eider (Somateria mollissima) | 9 | 1982-**2012** | 1038 | 0.4% |
| Atlantic Puffin (Fratercula arctica) | 5 | 1970-2004 | 75 | 5.8% |
| Tufted Puffin (Fratercula cirrhata) 8 | 5 | 1969-1991 | 844 | 31.6% |
| Horned Puffin (Fratercula corniculata) | 5 | 1969-1991 | 313 | 40.1% |
| Parakeet auklet (Aethia psittacula) | 5 | 1969-1990 | 324 | 71.1% |
| Least auklet (Aethia pusilla) | 2 | 1969-1990 | 102 | 0.6% |
| Crested auklet (Aethia cristatella) | 2 | 1969-1990 | 125 | 1.3% |
| Cassin's auklet (Ptychoramphus aleuticus) | 2 | 1969-1990 | 45 | 25.7% |
| Rinoceros auklet (Cerorhinca monocerata) | 3 | 1969-1991 | 30 | 14.7% |
| Pigeon guillemot (Cepphus columba) | 2 | 1969-1990 | 61 | 1.3% |
| Pelagic cormorant (Phalacrocorax pelagicus) | 2 | 1969-1990 | 13 | 10.0% |
| Double crested cormorant (Phalacrocorax auritus) | 1 | 1969-1977 | 4 | 0.0% |
| Red-faced cormorant (Phalacrocorax urile) | 2 | 1969-1990 | 18 | 0.0% |
| Marbled murrelet (Brachyramphus marmoratus) | 2 | 1969-1990 | 157 | 0.0% |
| Kittlitz's murrelet (Brachyramphus brevirostris) | 2 | 1969-1990 | 22 | 0.0% |
| Ancient murrelet (Synthliboramphus antiquus) | 2 | 1969-1990 | 84 | 0.0% |
| Whiskered auklet (Aethia pygmaea) | 2 | 1969-1990 | 27 | 0.0% |
| Black guillemot (Cepphus grylle) | 5 | 1982-**2013** | 38 | 0.0% |
| King eider (Somateria spectabilis) | 3 | 2000-**2011** | 54 | 0.0% |
| Long-tailed duck (Clangula hyemalis) | 1 | 1998-1999 | 27 | 0.0% |
| Razorbill (Alca torda) | 2 | 2004-**2012** | 10 | 0.0% |
| Surf scoter (Melanitta perspicillata) | 1 | 2006 | 38 | 0.0% |
| **Piracy/Carnivore** | **7** | - | **523** | **1.0%** |
| Great skua (Stercorarius skua) | 2 | 2008-**2013** | 515 | 4.0% |
| Long-tailed jaeger/skua (Stercorarius longicaudus) | 2 | 1982-1991 | 3 | 0.0% |
| Pomarine jaeger/skua (Stercorarius pomarinus) | 2 | 1984-1991 | 4 | 0.0% |
| Parasitic jager/ Arctic skua (Stercorarius parasiticus) | 1 | 1969-1977 | 1 | 0.0% |

**Table 3.3. Plastic ingested by other organisms in the Arctic**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Species** | **Location** | **Year of study** | **Sample size / number of individuals with debris** | **Incidents of ingestion (%)** | **References** |
| **Cetaceans** | | | | | |
| Bowhead whale *(Balaena mysticetus)* | Baffin Bay, Canada |  |  |  | ([Finley, 2001](#_ENREF_27)) |
| Beaufort Sea, Alaska |  |  |  | ([Lowry, 1993](#_ENREF_47)) |
| Fin whale *(Balaenoptera physalus)* | Hvalfjordur, Iceland | 1985 | 82 / 6 | 7.3% | ([Sadove and Morreale, 1990](#_ENREF_77)) |
| Sperm whale (*Physeter microcephalus)* | Between Iceland and Greenland, 62-67˚N 24-30˚W | 1977- 1981 |  | <10% | ([Martin and Clarke, 1986](#_ENREF_53)) |
| **Fish and invertebrates** | | | | | |
| Greenland shark *(Somniosus microcephalus)* | South Greenland, 59-76˚N | 2012 |  | 8.3% (fishing gear) | ([Nielsen et al., 2013](#_ENREF_59)) |
| Svalbard | 2008-2009 |  | 3% (a piece of metal and fishing line) | ([Leclerc et al., 2012](#_ENREF_46)) |
| Bull-rout *(Myoxocephalus scorpius)* | Hornsund, Svalbard | 1984 | 17 / 0 | 0.0% | ([Lydersen et al., 1989](#_ENREF_49)) |
| Common seasnail *(Liparis liparis)* | Hornsund, Svalbard | 1984 | 3 / 0 | 0.0% | ([Lydersen et al., 1989](#_ENREF_49)) |
| Atlantic cod *(Gadus morhua)* | Svolvær, Lofoten and Varangerfjorder, Northern Norway | NS | 144 / 0 | 0.0% | ([Bråte et al., 2016](#_ENREF_15)) |
| Atlantic cod *(Gadus morhua)* | Barents Sea | 2013 | 1 | n.a. | ([Prokhorova, 2013](#_ENREF_69)) |
| Atlantic wolfish *(Anarhichas lupus)* | Barents Sea | 2013 | 1 | n.a. | ([Prokhorova, 2013](#_ENREF_69)) |
| Polar cod  (*Boreogadus saida*) | Fram Strait, Svalbard | 2017 | 72 / 2 | 2.8% | ([Kühn et al., 2018](#_ENREF_43)) |
| Iceland cockle *(Clinocardium ciliatum)* | Svalbard, Norway | 2015 | NS | 0% (only fibers) | ([Sundet et al., 2016](#_ENREF_83)) |
| Blue mussel *(Mytilus edulis)* | Svalbard, Norway | 2015 | NS | 90% or 9.5 item/individual (only fibers) | ([Sundet et al., 2016](#_ENREF_83)) |
| Snow crab *(Chionoecetes opilio)* | Barents Sea | n.a. | NS | 20% | ([Sundet, 2014 unpub.](#_ENREF_82)) in ([Hallanger and Gabrielsen, 2018](#_ENREF_33)) |
| **Pinnipeds** | | | | | |
| Ringed seals *(Phoca hispida)* | Hornsund, Svalbard | 1984 | 5 / 0 | 0% | ([Lydersen et al., 1989](#_ENREF_49)) |
| Bearded seals *(Erignathus barbatus)* | Hornsund, Svalbard | 1984 | 2 / 0 | 0% | ([Lydersen et al., 1989](#_ENREF_49)) |

**Table 3.4. Entanglements of biota in plastic debris in the Arctic**

| **Species** | **Location** | **Year of study** | **Sample size (n)** | **Number entangled (n)** | **Percent entangled (%)** | **References** |
| --- | --- | --- | --- | --- | --- | --- |
| **Pinnipeds** | | | | | | |
| Northern Fur Seals *(Callorhinus ursinus)* | Western and Northern North Pacific | 1967-1986 | NS | 31 (13 dead) | NS | ([Scordino, 1985](#_ENREF_78)) and data of National Marine Mammal Laboratory in ([Fowler, 1987](#_ENREF_28)) |
| Eastern Bering Sea | NS | NS | 2 | NS | Yoshida and Baba 1985 in ([Fowler, 1987](#_ENREF_28)) |
| Western and Northern North Pacific | NS | NS | 0 | NS | Jones and Ferrero 1985 in ([Fowler, 1987](#_ENREF_28)) |
| Pribilof Islands, Eastern Bering Sea, Alaska | 1984 | 9 | 0 | NS | ([Baba et al., 1990](#_ENREF_5)) |
| 1985 | 345 | 1 (dead) | NS |
| 1988 | 343 | 0 | NS |
| Juvenile Male Northern Fur Seals *(Callorhinus ursinus)* | (unspecified) Pribilov Islands  /  St. Paul Island Pribilov Islands | 1967 | NS | 75 / NS | 0.17 / 0.15 | ([Merrell, 1980](#_ENREF_55)) / ([Fowler et al., 1993](#_ENREF_29)) |
| 1968 | NS | 75 / NS | 0.21 / 0.16 |
| 1969 | NS | 67 / NS | 0.21 / 0.2 |
| 1970 | NS | 122 / NS | 0.29 / 0.28 |
| 1971 | NS | 143 / NS | 0.45 / 0.41 |
| 1972 | NS | 156 / NS | 0.42 / 0.41 |
| 1973 | NS | 135 / NS | 0.47 / 0.48 |
| 1974 | NS | 211 / NS | 0.64 / 0.58 |
| 1975 | NS | 268 / NS | 0.92 / 0.81 |
| 1976 | NS | 102 / NS | 0.44 / 0.42 |
| 1977 | NS | 327 / NS | 1.55 / 0.35 |
| St. Paul Island, Pribilof Islands | 1978 | NS | NS | 0.46 | ([Fowler et al., 1993](#_ENREF_29)) |
| 1979 | NS | NS | 0.4 |
| 1980 | NS | NS | 0.49 |
| 1981 | NS | 102 | 0.43 | ([Fowler, 1987](#_ENREF_28); [Fowler et al., 1990](#_ENREF_30)) |
| 1982 | NS | 102 | 0.41 |
| 1983 | NS | 112 | 0.43 |
| 1984 | NS | 87 | 0.39 |
| 1985 | NS | 76 | 0.51 |
| 1986 | NS | 70 | 0.42 |
| 1988 | NS | 53 | 0.28 |
| 1989 | NS | 47 | 0.29 | ([Fowler et al., 1993](#_ENREF_29)) |
| 1990 | NS | 71 | 0.32 |
| 1991 | NS | 38 | 0.21 |
| 1992 | 17630 | 40 | 0.29 |
| Commander Island, Western Pacific | 1975 | 1730 | 30 | 1.73 | ([Kuzin, 1990](#_ENREF_45)) |
| 1976 | 2768 | 68 | 2.46 |
| 1977 | 2766 | 66 | 2.39 |
| 1978 | 3032 | 32 | 1.06 |
| 1979 | 2524 | 13 | 0.52 |
| 1980 | 2544 | 44 | 1.73 |
| 1981 | 5117 | 35 | 0.76 |
| 1982 | 5075 | 75 | 1.48 |
| 1983 | 5717 | 34 | 0.59 |
| 1984 | 5294 | 37 | 0.7 |
| 1985 | 5097 | 47 | 0.92 |
| Female Northern Fur Seals *(Callorhinus ursinus)* | Zapadni rookery, St. Paul Island | 1991-1999 | 53190 | 5 (entangled) / 16 (scarred) | 0.009 (entangled) / 0.03 (scarred) | ([Kiyota and Baba, 2001](#_ENREF_42)) |
| Tolstoi rookery, St. Paul Island | 1991-1999 | 32541 | 3 / 10 | 0.009 / 0.031 |
| Reef rookery, St. Paul Island | 1991-1999 | 61574 | 8 / 21 | 0.013 / 0.034 |
| Lukanin-Kitovi rookery, St. Paul Island | 1991-1999 | 17723 | 0 / 0 | 0 / 0 |
| Polovina rookery, St. Paul Island | 1991-1999 | 31164 | 5 / 9 | 0.016 / 0.029 |
| Northeast point rookery, St. Paul Island | 1991-1999 | 48033 | 10 / 16 | 0.021 / 0.033 |
| Bearded seals *(Erignathus barbatus)* | Hornsund/Bellsund area, Svalbard | 2017 | n.a. | 1 | n.a. | ([Bergmann et al., 2017a](#_ENREF_8)) |
| Harbour seal (*Phoca vitulina*) | Svalbard | 2017 | n.a. | 1 | n.a. | ([Bergmann et al., 2017a](#_ENREF_8)) |
| **Cetaceans** | | | | | | |
| Bowhead whale (Balaena mysticetus) | Northwest Greenland | 1980 | n.a. | 1 | n.a. | Kapel 1985 in ([Finley, 2001](#_ENREF_27)) |
| Kaktovik, Alaska | 1982 | n.a. | 1 | n.a. | Reeves et al., 1983 in [Philo et al. (1992)](#_ENREF_66) |
| Wainwright, Alaska | 1978 | n.a. | 1 | n.a. | ([Philo et al., 1992](#_ENREF_66)) |
| Kaktovik, Alaska | 1986 | n.a. | 1 | n.a. |
| Barrow, Alaska | 1989 | n.a. | 1 | n.a. |
| 50 km south of Gambell, Alaska | 1989 | n.a. | 1 | n.a. |
| Barrow, Alaska | 1990 | n.a. | 1 | n.a. |
| Fin whale *(Balaenoptera physalus)* | Hvalfjordur, Iceland | 1985 | 95 | 5 (previous entanglement) | 5.26 | ([Sadove and Morreale, 1990](#_ENREF_77)) |
| Humpback whale *(Megaptera novaeangliae)* | Glacier Bay, Icy Strait, Frederick Sound, lower Lynn Canal, Chatham Strait, Seymour Canal, Peril Strait and Sitka Sound **in** Southeast Alaska | 2003 | 152 | conditional scarring 55 (scarring 72) | conditional scarring 71% (scarring 54-78%) | ([Neilson et al., 2009](#_ENREF_58)) |
| 2004 | 224 | conditional scarring 104 (scarring 137) | conditional scarring 70% (scarring 53-77%) |
| **Crustacea** | | | | | | |
| Tanner crab *(Chionoecetes opilio)* | Eastern Bering Sea | 1988 | n.a. | 1 | n.a. | ([June, 1990](#_ENREF_39)) |
| Unidentified hermit crab *(Paguridae)* | 1988 | n.a. | 1 | n.a. |
| **Fish** | | | | | | |
| Atlantic cod  (*Gadus morhua*) | Barents Sea | 2013 | n.a. | 1 | n.a. | ([Prokhorova, 2013](#_ENREF_69)) |
| **Sponges** | | | | | | |
| *Cladorhiza gelida* | Fram Strait | 2002-2014 | n.a. | n.a. | n.a. | ([Bergmann and Klages, 2012](#_ENREF_7); [Tekman et al., 2017](#_ENREF_85)) |
| *Caulophacus arcticus* | Fram Strait | 2002-2014 | n.a. | n.a. | n.a. | ([Bergmann and Klages, 2012](#_ENREF_7); [Tekman et al., 2017](#_ENREF_85)) |
| *Amphianthus* sp. | Fram Strait | 2002-2014 | n.a. | n.a. | n.a. | ([Bergmann and Klages, 2012](#_ENREF_7); [Tekman et al., 2017](#_ENREF_85)) |
| **Terrestrial species** | | | | | | |
| Reindeer *(Rangifer tarandus)* | Kubakov Bay, Arka Island, Alaska | 1975 | n.a. | 1 | n.a. | ([Beach et al., 1976](#_ENREF_6)) |
| Chermsideøya (Nordaustlandet) | 2017 | n.a. | 3 | n.a. | ([Bergmann et al., 2017a](#_ENREF_8)) |
| Polar bear  (*Ursus maritimus*) | Raudfjord area,  Svalbard | 2017 | n.a. | 1 |  | ([Bergmann et al., 2017a](#_ENREF_8)) |
| **Sea birds** | | | | | | |
| Arctic tern (*Sterna paradisaea*) | Svalbard | 2017 | n.a. | 1 | n.a. | ([Bergmann et al., 2017a](#_ENREF_8)) |

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