Distribution of Marine and Anadromous Fishes of Darnley Bay and the Anguniaqvia Niqiqiyuam Marine Protected Area, NT

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ABSTRACT

M[c]Nicholl, D.G., Dunmall, K.M., Majewski, A.R., Niemi A., Gallagher, C., Sawatzky, C., and Reist, J.D. 2020. Distribution of marine and anadromous fishes of Darnley Bay and the Anguniaqvia niqiqiyuam marine protected area, NT. Can. Tech. Rep. Fish. Aquat. Sci. 3394: x + 90 p.

Since the designation of the Anguniaqvia niqiqiyuam marine protected area in 2016, the distributions and occurrence list of anadromous and marine fish species have been compiled with most recent occurrences. In Darnley Bay, and habitats associated with the marine protected area, there have been 62 species identified comprising 23 genera in 18 families. These fishes have been grouped according to occurrences in generalized ecozones, which include areas within the marine protected area but also surrounding areas utilized by migratory species. In the coastal marine area there were 24 species found, relative to exclusively freshwater (12 species) or offshore shelf-basin fishes (26 species), found within the boundaries of 122 – 128°W and 69’00 – 70’30°N. The list includes commonly observed subsistence species (Salmonidae), rarer occurrences (i.e., Pholidae), those of possible relevance as species at risk (i.e., Anarhichadidae), and those found outside their normal range (*Oncorhynchus* spp.). Information presented provides summaries of habitat use, distribution and taxonomy relevant to monitoring and management in this region.

RÉSUMÉ

M[c]Nicholl, D.G., Dunmall, K.M., Majewski, A.R., Niemi A., Gallagher, C., Sawatzky, C., and Reist, J.D. 2020. Distribution of marine and anadromous fishes of Darnley Bay and the Anguniaqvia niqiqiyuam marine protected area, NT. Can. Tech. Rep. Fish. Aquat. Sci. 3394: x + 90 p.

Depuis la désignation de la zone de protection marine (ZPM) d’Anguniaqvia niqiqiyuam en 2016, on utilise les plus récentes données d’observation pour établir la liste et déterminer la répartition des espèces de poissons anadromes et de poissons marins présentes dans la zone. Soixante-deux espèces appartenant à 23 genres et à 18 familles ont été relevées dans la baie Darnley et dans les habitats associés à la zone de protection marine. On a regroupé ces poissons selon leur présence dans des écozones générales, qui comprennent des zones situées à l’intérieur de la ZPM ainsi que des zones avoisinantes utilisées par les espèces migratoires. Vingt-quatre espèces ont été observées dans les zones côtières maritimes, comparativement à 12 espèces dulcicoles et 26 espèces extracôtières du plateau/bassin, à l’intérieur des limites de la zone allant de 122° à 128° de longitude ouest et de 69° 00’ à 70° 30’ de latitude nord. Cette liste comprend des espèces de poissons de subsistance couramment observées (Salmonidés), des espèces plus rarement observées (Pholidés), des espèces potentiellement en péril (Anarhichadidés), et des espèces observées en dehors de leur aire de répartition habituelle (*Oncorhynchus* spp.). L’information présentée contient des sommaires de l’utilisation de l’habitat, de la répartition des espèces et de la taxinomie qui sont pertinents pour la surveillance et la gestion dans cette région.

INTRODUCTION

Arctic coastal embayments serve as critical foraging and rearing habitat for many species of fish. Fishes using coastal environments can be marine species generally tolerant of wide temperatures and salinities that characterize coastal systems, migratory anadromous (i.e., sea run) fishes that reproduce and overwinter in fresh water, but feed in the sea in the summer, or freshwater fishes that are tolerant of variable marine conditions (especially low salinities in estuaries or embayments fed by rivers). This is particularly the case in the summer months when freshwater lakes and rivers are connected to coastal areas by rivers or small creeks that may be frozen the rest of the year. Freshwater linkages allow anadromous fishes to migrate into the marine environment in summer where they can forage and restore energy reserves for the winter months. Coastal habitats also serve as critical rearing habitat for larval and juvenile fishes that live year-round in the marine environment. Thus, biodiversity of fishes tends to be greater in Arctic coastal regions during the summer where freshwater, coastal marine, and offshore associated species co-occur.

Darnley Bay and the Anguniaqvia niqiqiyuam Marine Protected Area (ANMPA) are found within the Inuvialuit Settlement Region (ISR), and support traditional harvest of subsistence fishes by community members of Paulatuk, NT. The fishes found here can be associated with three distinct aquatic habitat types: coastal marine, freshwater and offshore shelf-basin. The coastal marine zone includes habitat at the shoreline to a maximum of 20 m depth, where waters are generally less saline as a result of freshwater input during the summer months. The freshwater zone includes all rivers and lakes that form connections to the coast in the summer but may be isolated after freeze-up and before break-up. During summer the freshwater zone transitions through a mixed-salinity estuarine zone to the more marine areas of the coastal zone. The offshore shelf-basin zone includes depths greater than 20 m where cold-water, highly saline-tolerant species can be found and occasional anadromous species (McNicholl et al. 2017a). Considering that the coastal marine environment serves as a transitional zone between multiple environments, it is expected that this region holds the greatest biodiversity of fishes in Darnley Bay (Bond and Erickson 1989).

The aim of this report is to outline the biodiversity and general habitat associations of fishes documented to be present in Darnley Bay. These data are summarized with basic biological information for each species (specific to Darnley Bay individuals where possible), to aid in developing indicators for monitoring. This will also better assess biodiversity shifts in the future based on recent field programs. Information regarding fish species newly documented for the area is also provided.

METHODS

Area

The area examined in this document is focused on Darnley Bay and adjacent water bodies (freshwaters, shelf and offshore basin) between 122 – 128°W and 69’00 – 70’30°N. A summary

of records is provided with corresponding point distribution maps to summarize species distributions and biodiversity relevant to the ANMPA.

It is important to note that the point occurrences shown are not necessarily nor likely to be the complete distribution of the species in the area. Rather, they are records of where the species has actually been documented to occur. These records may be heavily biased by a focus on areas where fishing can occur, where fishing has occurred in the past, where specific gear types (e.g., gill nets, angling, fyke nets) selective for different species have been used, and where uneven or episodic effort at fishing has occurred. Thus, the point distribution maps shown are biased by these operational limitations.

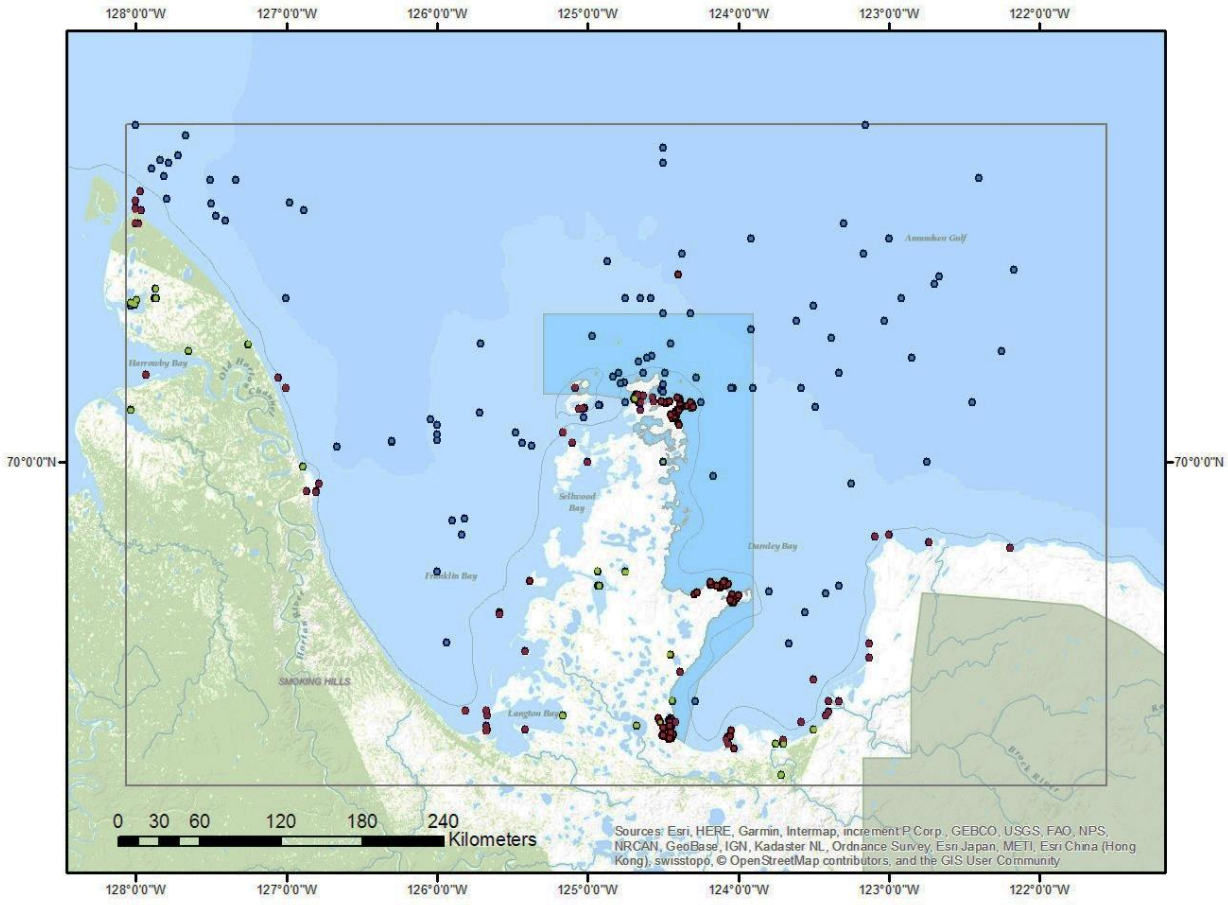

Figure 1. Map of Darnley Bay area, neighbouring Franklin Bay, and Amundsen Gulf, N.T. Nearshore habitat delineated by the 20 m isobath, and ANMPA is indicated in dark blue on the western side of the Bay. Occurrence points represent the presence of a species, and ecozones for each group are shown for offshore (blue), coastal (red), and fresh water (green).

Sources

The distribution maps of species occurrences found in this report are summarized from recent DFO-community and other field operations (Arctic Coast, Arctic Salmon (Dunmall and Reist

2018), Canadian Beaufort Sea – Marine Ecosystem Assessment (CBS-MEA), Beaufort Sea Regional Environmental Assessment – Marine Fishes Project (BREA-MFP), Char stock assessment (Gallagher et al. 2017) etc.), records held by the Canadian Museum of Nature, and literature records (Coad and Reist 2018). General habitat use information presented was summarized from environmental data gathered during field programs and generalized literature accounts for the species, combined with local knowledge obtained through community-based field work (Arctic Coast and CBS-MEA). Biological characteristics, including size are indicated on a world-wide basis (Coad and Reist 2004; Mecklenberg et al., 2002; Thorsteinson and Love 2016; Coad and Reist 2018) unless specifically identified for Darnley Bay.

Areas of fish occurrence (i.e., generalized ecozones) were delineated generally by depth, temperature, salinity and the presence or absence of particular species (i.e., anadromous fishes). Fishes were grouped into these ecozones based on their presence and use of these areas, particularly in the summer months. The freshwater zone includes low salinity habitats that are isolated during the winter months due to freeze-up, such as land-locked lakes or smaller rivers that do not flow year round. The coastal marine zone is delineated as nearshore areas to a maximum depth of 20 m, that are heavily used as migratory foraging corridors by anadromous fishes in addition to being relevant for inshore marine fishes. Much of the ANMPA encompasses the coastal marine habitats of Darnley Bay, in which the southern end of the bay is generally warmer and less saline due to greater freshwater input during the summer. Coastal sites at the north end of the ANMPA are generally more saline and colder due to fewer adjacent freshwater connections and are influenced to a greater degree by the Amundsen Gulf (McNicholl et al. 2017a). North of Bennett Point and at depths greater than 20 m, waters are generally more saline and colder relative to inshore areas. In these offshore, shelf areas (defined herein as between 20 and ~200m water depths), different assemblages of marine species are observed.

RESULTS

Overall fish biodiversity in the ANMPA is summarized in Table 1, families are represented among freshwater, coastal and offshore areas.

Table 1. Families and numbers of species found in the ANMPA and adjacent freshwater and marine areas, based on records summarized in this report.

Family	Number of species	Presence in the ANMPA	Presence in adjacent coastal areas	Presence in adjacent offshore areas	Presence in adjacent freshwater
Agonidae	2	•	•	•	
Ammodytidae	1	•	•		
Anarhichadidae	1	•	•		
Clupeidae	1	•	•	•	
Cottidae	10	•	•	•	•
Catostomidae	1	•			•
Cyclopteridae	2	•		•	
Gadidae	5	•	•	•	•
Gasterosteidae	1	•	•		•
Myctophidae	1	•		•	
Liparidae	4	•		•	
Osmeridae	3	•	•	•	•
Pholidae	1	•	•		
Pleuronectidae	3	•	•	•	
Rajidae	1			•	
Salmonidae	15	•	•	•	•
Stichaeidae	5	•	•	•	
Zoarcidae	5	•		•	

The following descriptions of fish species, size, ecology and relevance (i.e., cultural importance and ecological) are organized by overarching habitat associations delineated earlier (i.e., Coastal Marine Species, Marine Species of the Shelf and Offshore Basin, and Freshwater Species). Accordingly, species are associated with their primary or overarching habitats and families of fishes may be split into separate sections.

Coastal Marine Species

Ammodytidae
(sandlances, lançon)

Pacific Sandlance *Ammodytes hexapterus* Pallas, 1814 (A1-page 31)
Pacific Sandlance are small forage fish that live in the sediments of coastal areas and serve as important prey for many marine mammals, sea birds and piscivorous fishes. Generally, sandlance are elusive to directed sampling efforts in the western Arctic thus their occurrence is under-reported, although they are typically observed in the stomach contents of their predators, such as beluga whales *Delphinapterus leucas* (Loseto et al. 2018) or piscivorous fishes such as Arctic Char. Historic observations of this species in the Beaufort Sea have occurred in Franklin Bay (Coad and Reist 2018), and more recently in Sachs Harbour (McNicholl et al. 2019) and Ulukhaktok (Loseto et al. 2018).

Maximum total length: 280 mm
Ecology: Pacific Sandlance are found in soft-bottomed, sandy benthic environments and will bury themselves into the sediment to avoid predators. This behaviour has made them difficult to collect relative to other forage fishes who are less successful at evading seine and gill nets. However, in Darnley Bay Pacific Sandlance are commonly observed in the stomach contents of Arctic Char at the southern end of the bay and have been observed in nearshore habitats at the northern end of Cape Parry (McNicholl unpublished data).
Cultural Importance: Sandlance are not used by the community members for subsistence. They are sometimes referred to as "cigar fish" similar to smelt species also found in the area. In Sallirmiutun they are known as Iqaluaqat, which also includes Rainbow Smelt.

Anarhichadidae
(wollffishes, poissons-loups)

Bering Wolffish *Anarhichas orientalis* Pallas, 1814 (A2 – page 32)
Wolffishes, including the Bering Wolffish, are protected in Canadian waters and are typically found in cold, coastal habitats. Members of this family are more commonly observed in Atlantic waters, however, Bering Wolffish are found in the North Pacific Ocean and Coronation Gulf. The first record of this species in the Beaufort Sea is from the Darnley Bay ANMPA in 2019 (McNicholl unpublished data). Although this is a new record for this area, it is within the distributional range of this species (i.e., records are known from areas further east (Bathurst Inlet) and coastal Alaska to the west). Accordingly, the species also likely occurs in other coastal areas of the Beaufort Sea but is not well documented perhaps due to habitat specificity.

Maximum total length: 1240 mm
Ecology: Wolffish are benthic species, found in soft-bottomed habitats, consistent with Argo Bay where the individual was found in 2019. They forage on crustaceans and bivalves. Since there is only one record of this species in Darnley Bay, it is uncertain how this species interacts with other coastal fishes.

Cultural Importance: The 2019 record of this species is the first observed by community members of Paulatuk, therefore there is no established cultural significance nor local name in this region.

Clupeidae
(herring, harengs)

Pacific Herring *Clupea pallasii* Valenciennes, 1847 (A3 – page 33)
Pacific Herring are a pelagic fish found throughout the coastal Beaufort Sea, and to a lesser extent, in parts of western Nunavut. Pacific Herring are common throughout coastal sites of the Mackenzie Delta and coastal communities of the Inuvialuit Settlement Region. They are found throughout Darnley Bay, from the northern end of Cape Parry to the southern reaches of the bay, in deeper water off Bennett Point, and at the mouth of the Hornaday River.

Maximum total length: 387 mm in Darnley Bay (McNicholl et al. 2017a)
Ecology: Pacific Herring are most commonly observed in the summer in Darnley Bay, and can be found spawning closer to shore in less saline water near Paulatuk Harbour (McNicholl unpublished data). This species is pelagic and planktivorous and serves as prey for marine mammals. They can be observed at depths < 2 meters and in deeper water within the bay and offshore of Cape Parry. They are also considered to be euryhaline, given that they are found in both nearshore estuarine and deeper offshore marine water of varying salinities.
Cultural Importance: Pacific Herring are not targeted for subsistence by fishers from the community of Paulatuk. They are described locally as “blue herring” or Piqquaqtitaq in Inuvialuktun-Sallirmiutun.

Cottidae
(sculpins, chabots)

Hamecon *Artediellus scaber* Knipowitsch, 1907 (A4 - page 34)
Hamecon is typically associated with coastal or brackish waters, at depths < 100 meters. It is not commonly found in the ANMPA.

Maximum total length: 89 mm
Ecology: This species is associated with brackish waters with mud, sand or gravel bottoms. Similar to other cottids, Hamecon is a benthic species and preys upon crustaceans, amphipods and other benthic epifauna.
Cultural Importance: Hamecon are not often captured by local harvesters from Paulatuk, and therefore have minimal cultural significance.

Fourhorn Sculpin *Myoxocephalus quadricornis* (Linnaeus, 1758) (A5- page 35)
Fourhorn Sculpin are commonly found in coastal, benthic habitats of the Canadian Arctic, and commonly occur near to coastal Inuvialuit Settlement Region communities. They are common in Darnley Bay and are found in both nearshore and shelf habitats.

Maximum total length: 349 mm in Darnley Bay (McNicholl et al. 2017a)

Ecology: Fourhorn Sculpin are commonly found in Darnley Bay at depths < 14.5 meters in soft-bottom, bedrock or kelp-dense habitats. They are generalist benthic feeders in Darnley Bay and can be found in nearshore areas in both summer and winter. In the ANMPA they can be found at a wide range of temperatures (3.0°C to 10.2°C) and salinities (13.9 to 26.1 PSU) (McNicholl unpublished data).
Cultural Importance: Sculpins are known locally as Kanayuq (Inuvialuktun-Sallirmiutun), and they are commonly referred to as "devil fish".

Shorthorn Sculpin *Myoxocephalus scorpius* (Linnaeus, 1758) (A6 - page 36)
Shorthorn Sculpin is a common coastal species found throughout the Canadian Arctic, and is ubiquitous throughout the coastal communities of the Inuvialuit Settlement Region. They are common in nearshore areas and embayments, and can be found in deeper waters off the continental shelf (Majewski et al. 2017).

Maximum total length: 430 mm in Darnley Bay (McNicholl et al. 2017a)
Ecology: In Darnley Bay, Shorthorn Sculpin are generalist, benthic fishes found throughout the bay in soft-bottom, bedrock or dense kelp habitats. Juvenile individuals can be found in coastal lagoons, and serve as a common prey source for other predatory fishes, such as Arctic Char and Greenland Cod. In Darnley Bay they can be found in nearshore habitats where they typically prefer cooler (0.4°C to 9.1°C) water but are euryhaline in their salinity preferences (18.6 to 30.4 PSU) (McNicholl unpublished data).
Cultural Importance: Locally, Shorthorn Sculpin, among other sculpin species, are known as Kanayuq (Inuvialuktun-Sallirmiutun) or "devil fish". They are not harvested for subsistence.

Gadidae
(cods; morues)

Saffron Cod *Eleginus gracilis* (Tilesius, 1810) (A7 – page 37)
Saffron Cod are typically found in coastal waters (< 60 m depth (Coad and Reist 2004)), and occur in both brackish and marine water.

Maximum total length: 461 mm in Darnley Bay (McNicholl et al. 2017a)
Ecology: Saffron Cod are frequently caught in the ANMPA, although they are generally more common at the southern end of the bay where the substrate is soft-bottomed or sandy. They commonly occur in nets of fishers targeting Arctic Char, and are considered generalist benthopelagic feeders. In the ANMPA, Saffron Cod are typically found at depths < 11.2 m in warmer (5°C to 11.4°C) and less saline (< 19.3 PSU) water. Juvenile Saffron Cod have been found in the inshore areas of Argo Bay, which likely serves as important rearing habitat for this species (McNicholl unpublished data). During the winter months, Saffron Cod are also found in Argo Bay, foraging under the ice.
Cultural Importance: Saffron Cod are typically not harvested by the fishers from Paulatuk for consumption. Locally they are known as Tom Cod or Uugaq (Inuvialuktun-Sallirmiutun).

Greenland Cod *Gadus ogac* Richardson, 1836 (A8 – page 38)
Greenland Cod are distributed throughout the Canadian Arctic and are generally found in nearshore (< 20 m depth) areas. They are relatively common in coastal communities of the

Inuvialuit Settlement Region, and are occasionally found in estuaries, however, they are more commonly found in coastal marine waters. They are common in Darnley Bay, particularly on the northern end of the Cape Parry peninsula and are regularly observed in the ANMPA.

Maximum total length: 500 mm in Darnley Bay (McNicholl et al. 2017a)
Ecology: Greenland Cod are benthopelagic and forage on a wide range of prey. They are found in soft bottom and bedrock habitats in the ANMPA, and inshore at depths < 12.2 meters during the summer (McNicholl et al. 2017a), as well as under the ice in the winter. In the ANMPA Greenland Cod have been observed in waters between 1.2°C and 11.4°C, that are relatively high in salinity (> 25 PSU) (McNicholl et al. 2017a).
Cultural Importance: Locally, they are known as Rock Cod or Uugavik (Inuvialuktun-Sallirmiutun) by the fishers of Paulatuk. Although they are commonly found in the coastal fishing sites of Darnley Bay, Greenland Cod are not often targeted for subsistence.

Osmeridae
(smelts, éperlans, cigar-fish)

Capelin *Mallotus villosus* (Müller, 1776) (A9 – page 39)
Capelin is a forage fish that is ubiquitous throughout the northern hemisphere, and is typically associated with temperate waters. It is a mid-trophic level species which primarily feeds on zooplankton. Capelin serves as an important prey source for marine mammals, sea birds, and predatory fish including Arctic Char in Darnley Bay. Established populations of Capelin are present in Darnley Bay (McNicholl et al. 2017b) and other parts of the coastal Inuvialuit Settlement Region, including Ulukhaktok (Lea personal comm.).

Maximum total length: 185 mm in Darnley Bay (McNicholl et al. 2017a)
Ecology: Capelin are often found spawning, or forming spawning shoals in nearshore areas of Darnley Bay between late June and early August. Local fishers have observed seals, sea birds, whales and char foraging on Capelin when these aggregations appear along the coast (McNicholl et al. 2017b). Once spawning is complete, adults die and serve as a food source for many coastal species during the summer months. Juveniles can be found in deeper water within the bay where they co-occur with other pelagic forage fishes, such as Arctic Cod (McNicholl et al. 2016). It remains unknown where this species overwinters and where it develops during its larval stage.
Cultural Importance: Locally, Capelin are often known as “cigar fish” after their size and shape or Iqalugaq (Inuvialuktun-Sallirmiutun) by the community members of Paulatuk. Although Capelin are generally not targeted for consumption, some community elders have reported pickling them or using them as dog food (McNicholl et al. 2017b).

Rainbow Smelt *Osmerus mordax* (Mitchill, 1814) (A10 – page 40)
Rainbow Smelt are generally less common than other coastal forage fishes, but are found in the Mackenzie Delta area, coastal marine Inuvialuit Settlement Region and into western Nunavut. In Darnley Bay, there are few records of this species, however, juveniles have been found nearshore in Argo Bay during the summer (McNicholl unpublished data).

Maximum total length: 356 mm

Ecology: Rainbow Smelt are not commonly found in Darnley Bay, however, like Capelin they may serve as a prey source for coastal predators such as sea birds, marine mammals and predatory fishes. The only available records of this species in the ANMPA are juveniles that were collected in nearshore, sandy habitats during the summer. It is unclear what habitats adults occupy in this area.
Cultural Importance: It is known in the Inuvialuit Settlement region as "stink fish" due to the distinct cucumber smell (a characteristic of all species in the family) or as Iqaluaqat (Inuvialuktun-Sallirmiutun) which is also used to describe sand lances.

Pholidae
(gunnels, sigouines)

Banded Gunnel *Pholis fasciata* (Bloch and Schneider, 1801) (A11 – page 41)
Banded Gunnel is a coastal, eel-like species found in nearshore habitats in the North Pacific and North Atlantic with records in the high Arctic of Nunavut and in Hudson Bay. The only record for the Beaufort Sea was found in Darnley Bay (McNicholl unpublished data).

Maximum total length: 300 mm
Ecology: There is only one record of this species in Darnley Bay, at Bennett Point in the ANMPA (McNicholl unpublished data), therefore information is limited on this species habitat use in the region. Generally, this species is associated with rocky, kelp-dense habitats, consistent with those found at Bennett Point. Since this species is found in both Pacific and high Arctic waters is it not unexpected that it occurs in Darnley Bay. Given that this species is associated with kelp habitats, direct sampling has been difficult, and it is likely under represented relative to other coastal fishes found in the area. It is uncertain how this species interacts with co-occurring species.
Cultural Importance: Banded Gunnel are rarely observed by the members of the community of Paulatuk and are not used for subsistence.

Pleuronectidae
(righteye flounders, plies)

Starry Flounder *Platichthys stellatus* (Pallas, 1788) (A12 – page 42)
Starry Flounder is a coastal species, ubiquitous throughout the Pacific and Arctic oceans, and common throughout the coastal Beaufort Sea (Bond 1982; Bond and Erickson 1992). In Darnley Bay, Starry Flounder were only collected in Argo Bay where they were most abundant and at Bennett Point, but were not observed at Brown's Harbour.

Maximum total length: 415 mm in Darnley Bay (McNicholl et al. 2017a)
Ecology: Starry Flounder are a common coastal fish found at the southern end of Darnley Bay in nearshore, soft-bottomed habitats. They are typically less common in hard-bottomed habitats and are found in warmer (5.9°C to 10.4°C), less saline waters (< 22.0 PSU) at depths < 11 meters (McNicholl et al. 2017a).
Cultural Importance: In Darnley Bay, Paulatuk fishers avoid catching Starry Flounder and do not target them for subsistence. They are generally known as "flat fish", a term used to describe all local flounders.

Arctic Flounder *Pleuronectes glacialis* Pallas, 1776 (A13 – page 43)
Arctic Flounder are a common species found throughout the coastal Beaufort Sea in estuarine environments (Bond 1982) and nearshore embayments. They overwinter offshore and return to inshore, coastal regions following the breakup of sea ice in the spring and are abundant in close proximity to rivers (Bond and Erickson 1992). In Darnley Bay, Arctic Flounder were observed at Argo Bay and Bennett Point but, as with Starry Flounder, were not observed at Brown's Harbour.

Maximum total length: 340 mm in Darnley Bay (McNicholl et al. 2017a)
Ecology: Arctic Flounder are one of the most common coastal fish species found at the southern end of Darnley Bay, particularly in soft-bottomed areas. This benthic flounder primarily feeds on bivalves but may forage on other prey opportunistically. Generally, flounder are not preyed upon by other predatory fishes in Darnley Bay, but as juveniles they may be preyed upon in low-lying lagoons. Arctic Flounder in Darnley Bay have been observed at a range of temperatures (4.9°C to 10.4°C) in low salinity waters (< 22.0 PSU), and less than 10 meters in depth (McNicholl et al. 2017a).
Cultural Importance: In Darnley Bay, the fishers of Paulatuk prefer to avoid catching species of flounder in their nets and do not target them for subsistence. They are generally known as "flat fish", a term used to describe all local flounders.

Salmonidae
(chars, whitefishes, salmons, iqalukpik)

Arctic Cisco *Coregonus autumnalis* (Pallas, 1776) (A14 – page 44)
Arctic Cisco occupy a wide variety of inshore habitats of the Beaufort Sea (Bond 1982) and appear to tolerate a wider range of salinities than do other coregonines (Galbraith and Hunter 1975). However, there have been few studies of this species in the Canadian Beaufort Sea outside the Mackenzie Delta estuary. In Darnley Bay, during the summer, Arctic Cisco are commonly observed at the northern and southern ends of the ANMPA.

Maximum total length: 482 mm in Darnley Bay (McNicholl et al. 2017a)
Ecology: Arctic Cisco are a common coastal fish found throughout Darnley Bay and the ANMPA. Typically occupying pelagic waters they have been observed at depths of up to 7 m, but are commonly observed at depths < 3 m. In Darnley Bay this species is typically found in water temperatures between 5°C and 10°C and salinities below 25 PSU (McNicholl et al. 2017a).
Cultural Importance: Locally Arctic Cisco is known as 'herring' or Qaaqtaq (Inuvialuktun-Sallirmiutun). It is commonly harvested during the summer by the fishers of Paulatuk. Although Arctic Char and Broad Whitefish are the target species, Arctic Cisco is a popular species used to make dry-fish (pipsii).

Broad Whitefish *Coregonus nasus* (Pallas, 1776) (A15 – page 45)
Broad Whitefish is an ecologically important species throughout the Mackenzie Delta and Beaufort Sea coast (Reist and Bond 1988). This species has been extensively studied in estuarine environments (i.e., the Mackenzie Delta), however, there is little knowledge of life history and habitat use of this anadromous species in the marine environment. Similarly, other than general

occurrence information there is limited knowledge for this species in Darnley Bay or the ANMPA.

Maximum total length: 646 mm in Darnley Bay (McNicholl unpublished data)
Ecology: Broad Whitefish migrate from freshwater habitats in the spring, and forage in the marine environment until returning to fresh water before freeze-up. In Darnley Bay, they are typically found in the nearshore marine environment at depths < 4 meters, in waters that are between 6° and 11.5°C, and in relatively freshened water that is <22 PSU (McNicholl unpublished data). In the ANMPA Broad Whitefish are more commonly observed at the southern end of the bay (Argo Bay). There are no known observations of this species at the northern end of Cape Parry.
Cultural Importance: Locally, Broad Whitefish are known as "whitefish" or Aanaarliq (Inuvialuktun-Sallirmiutun). They are also important in subsistence fisheries throughout the western Arctic including those in the Darnley Bay area and Paulatuk. Next to Arctic Char, Broad Whitefish are one of the more desired fishes for consumption by local people and are frozen as fillets or made into dry-fish (pipsii). This species is most commonly caught in the summer season while it is foraging in the marine environment.

Pink Salmon *Oncorhynchus gorbuscha* (Walbaum, 1792)
There have been fewer observations of Pink Salmon by the community members of Paulatuk than of Sockeye and Chum salmons, however, this species has been observed in the area. In Pacific waters, Pink Salmon reach reproductive maturity at two years, after which they migrate from the marine environment to spawn in fresh water.

Maximum total length: 760 mm
Ecology: Given the few observations of this species in the Brock and Hornaday rivers, its habitat preferences, interactions with endemic fishes and success at spawning remain uncertain.
Cultural Importance: Pink Salmon are not targeted by the local fishers of Paulatuk, and are typically reported as bycatch while harvesters are fishing for Arctic Char in the late summer and fall. This species is relatively uncommon during the fall harvest.

Chum Salmon *Oncorhynchus keta* (Walbaum, 1792) (A16 – page 46)
Chum Salmon have become more abundant in Darnley Bay in recent years, and are the most common species of Pacific salmon found in this region. Like other Pacific salmon species, Chum Salmon rear in freshwater habitats and migrate to the marine environment where they spend the majority of their life (5-7 years) until they reach sexual maturity. When they are ready to spawn they migrate into rivers in the late summer and fall, and die after they reproduce.

Maximum total length: 1090 mm
Ecology: Chum Salmon have been increasingly observed in recent years by the fishers of Paulatuk, and many knowledge gaps exist concerning their interactions, habitat use and spawning ecology with respect to other fishes in Darnley Bay. It is uncertain if they reproduce in the area, but are known to do so in the upper reaches of the Mackenzie River (Dunmall and Reist 2018).
Cultural Importance: Unlike Arctic Char and Broad Whitefish, Chum Salmon are generally not targeted for subsistence by the fishers from Paulatuk.

Sockeye Salmon *Oncorhynchus nerka* (Walbaum, 1792) (A17 – page 47)
Relative to Chum Salmon, there have been few records of Sockeye Salmon in Darnley Bay, however, they have been captured in the fall by fishers, who were targeting Arctic Char. Sockeye Salmon spend the majority of their life in the marine environment, until they reach reproductive maturity, and return to fresh water in the late summer or fall to spawn. Similar to other members of the genus *Oncorhynchus*, Sockeye Salmon perish after reproduction.

Maximum total length: 840 mm
Ecology: Sockeye Salmon have only been observed in Darnley Bay, namely the Hornaday River in recent years by fishers who were targeting Arctic Char. Interactions with endemic coastal fishes, habitat usage in the area, and if successful spawning has occurred in local river systems remain unknown.
Cultural Importance: Sockeye Salmon are not targeted by the local fishers of Paulatuk. It is typically reported as bycatch while harvesters are fishing for Arctic Char in the late summer and fall.

Chinook Salmon *Oncorhynchus tshawytscha* (Walbaum, 1792)
Chinook Salmon are the least common to be found in Darnley Bay, with the exception of Coho Salmon, that have not been recorded. Chinook Salmon, like other Pacific salmon, reproduce in fresh water and spend the majority of their life in the marine environment until they reach reproductive maturity between age three and nine. Similar to other *Oncorhynchus* species, Chinook Salmon are semelparous and perish after reproduction.

Maximum total length: 1600 mm
Ecology: Chinook Salmon are rare in the Darnley Bay area and it remains uncertain how this species interacts with local fishes, its habitat preferences, and if it is successfully spawning in freshwater sites associated with Darnley Bay.
Cultural Importance: Chinook salmon are not targeted by the local fishers of Paulatuk, and are rarely reported as bycatch in Arctic Char fisheries.

Arctic Char *Salvelinus alpinus* (Linnaeus, 1758) (A18 – page 48)
Arctic Char exhibit both anadromous and lacustrine life histories, and are harvested as a subsistence fish throughout Nunavut and in the Northwest Territories, east of the Mackenzie River (Scott and Crossman 1973). In the summer, char migrate from the freshwater environment to forage in the marine system (Johnson 1980; Harwood 2009). The stocks of char in Darnley Bay are dominated by the Hornaday River population, although mixing does occur with the smaller, Brock River population (Harris et al. 2016).

Maximum Length (fork): 835 mm in Darnley Bay (Gallagher et al.2017)
Ecology: Arctic Char are an important predator found throughout nearshore waters of the ANMPA, foraging on marine invertebrates (e.g., amphipods) and forage fishes (e.g., sandlance, Capelin, juvenile fishes) during the summer. The anadromous individuals enter the marine environment in the spring and return to adjacent freshwater sites in the fall, serving as an important linkage between ecozones. In Darnley Bay, Arctic Char are typically captured at

depths greater than 7 m, but occur in water temperatures between 5 – 10°C, and in salinities below 25 PSU (McNicholl et al. 2017a).
Cultural Importance: This species is locally known as Iqalukpik (Inuvialuktun-Sallirmiutun). It is culturally important for the community of Paulatuk, as a target subsistence species in the coastal marine habitat in the summer, and in lakes during the spring before breakup and in local rivers (Brock and Hornaday) during their fall migration. Among subsistence species found in the area, Arctic Char are the most sought after. Local fishers refer to a different char in the area as "blue char" which are considered to be larger and more blue in colour relative to Arctic Char (KAVIK-AXYS Inc. 2012), however, many knowledge gaps remain with respect to the genetic makeup of "blue char".

Dolly Varden *Salvelinus malma* (Walbaum, 1792) (A19 – page 49)
Dolly Varden are an anadromous char, typically found west of the Mackenzie Delta and north of the Alaskan Peninsula (Armstrong and Morrow 1980). However, this species has been observed as far east as the Coronation Gulf and has been confirmed as occurring in Darnley Bay (Gallagher and Dunmall, unpublished data). Similar to Arctic Char, Dolly Varden is a piscivorous species that forages in the marine environment during the summer and migrates back into rivers to overwinter and reproduce.

Maximum total length: 820 mm (Gallagher and Dunmall, unpublished data)
Ecology: There have only been suspected occurrences of Dolly Varden in the ANMPA. This species, although rare and sporadically observed, has primarily been found in association with the Hornaday River. There is limited knowledge of the specific depths, temperature and salinities used by Dolly Varden in Darnley Bay, however, this species has been observed to forage in nearshore and offshore waters of the Mackenzie Shelf (Courtney et al. 2018).
Cultural Importance: The occurrences of Dolly Varden have been rare and infrequent in Darnley Bay. It is considered to be uncommon by the community members of Paulatuk.

Stichaeidae
(pricklebacks, sichées, blennies, shannies)

Fourline Snakeblenny *Eumesogrammus praecisus* (Krøyer, 1837) (A20 – page 50)
There have been few occurrences of Fourline Snakeblenny in the Beaufort Sea and Amundsen Gulf, only one of which was found in the ANMPA. The distribution and abundance of this species in Canadian coastal environments is unknown.

Maximum total length: 230 mm (Coad and Reist 2018)
Ecology: There is limited knowledge on the habitat use of this species, however, it has been observed in a variety of bottom sediment types (mud, sand and rock) and is associated with macroalgae. This species is generally not found at depths greater than 33 m.
Cultural Importance: This species has not been observed by the community members from Paulatuk.

Slender Eelblenny *Lumpenus fabricii* Valenciennes, 1836 (A21 – page 51)
The Slender Eelblenny is a demersal species that is generally associated with nearshore areas, however, it can be found at greater depths within the Beaufort Sea (Majewski et al. 2017). There

are few records of this species in Darnley Bay, however, it has been observed off Cape Parry and in Argo Bay, generally associated with sandy or soft-bottomed habitats.

Maximum total length: 224 mm in Darnley Bay (McNicholl et al. 2017a)
Ecology: There have been very few observations of Slender Eelblenny in Darnley Bay and therefore interactions with co-occurring species and specific habitat preferences are unknown.
Cultural Importance: Slender Eelblenny is rarely observed by the community members from Paulatuk and it is not used for subsistence.

Arctic Shanny *Stichaeus punctatus* (Fabricius, 1780) (A22 – page 52)
The Arctic Shanny is a circumpolar, demersal, marine species and is found in some regions of the North Pacific (Farwell et al. 1976). It is a small species that is most often associated with dense kelp habitats. There are few observations of Arctic Shanny in the coastal Beaufort Sea, however, they have been observed at Cape Parry, Bennett Point and Argo Bay in the ANMPA.

Maximum total length: 77 mm in Darnley Bay (McNicholl et al. 2017a)
Ecology: In Darnley Bay, Arctic Shanny have only been observed in the ANMPA. Their habitat use and interactions with co-occurring fishes is relatively unknown. They are typically associated with demersal habitats, and kelp beds and are likely under-represented among coastal surveys due to the limitations of sampling gear in these habitats.
Cultural Importance: Arctic Shanny is rarely observed by the community members of Paulatuk and is not used for subsistence.

Marine Species of the Shelf and Offshore Basin

The following species are primarily found in marine water on the shelf and offshore basin. Records of these species were collected during offshore surveys, on a vessel capable of sampling offshore habitats (> 20 meter depth). Due to limitations with sampling these areas, there is minimal cultural significance identified by the community, given that these species do not generally interact with local fishers.

Agonidae
(poachers, poisson-alligator)

Arctic Alligatorfish *Aspidophoroides olrikii* Lütken, 1877 (A23 – page 53)
The Arctic Alligatorfish is a benthic species found in the Beaufort Sea, Hudson Bay, and North Atlantic waters. In the Beaufort Sea, this species is not typically observed in nearshore areas, but has occurred in offshore waters of the Mackenzie Shelf (Majewski et al. 2017). In Darnley Bay, this species is found in deeper waters (>20 m depths) and has not been observed nearshore.

Maximum total length: 86 mm
Ecology: Arctic Alligatorfish prey upon both benthic and pelagic molluscs, and are generally associated with mud or clay substrates. There are few records of this species in the Darnley Bay ANMPA, therefore their interactions with co-occurring fishes are largely unknown.

Atlantic Poacher *Leptagonus decagonus* (Bloch & Schneider, 1801) (A24 – page 54)
Atlantic Poachers are benthic species found more frequently in the North Atlantic, however, there are also limited records of this species in the Beaufort Sea. This species can be found in nearshore areas, however in Darnley Bay, this species has only been observed in deep, shelf habitats off Cape Parry.

Maximum total length: 250 mm
Ecology: In other regions, Atlantic Poachers are associated with mud or clay substrates where they forage on benthic invertebrates such as crustaceans, bivalves or polychaete worms (Coad and Reist 2004). Given the limited number of records of this species in the ANMPA, their interactions with co-occurring deep-water fishes are largely unknown.

Cottidae
(sculpins, chabot)

Arctic Staghorn Sculpin *Gymnocanthus tricuspis* (Reinhardt, 1830) (A25 – page 55)
Arctic Staghorn Sculpin is an abundant and widespread species found throughout the Arctic, and commonly found in Darnley Bay. They are found in nearshore areas but are generally exhibit higher abundances offshore (Majewski et al. 2017) in the western Canadian Arctic.

Maximum total length: 340 mm in Darnley Bay (McNicholl et al. 2017a)
Ecology: Arctic Staghorn Sculpin are a benthic, generalist foraging species that occurs in nearshore areas of the ANMPA and deeper waters of the continental shelf off Cape Parry. Generally, this species prefers colder waters but has been found in warmer waters in Argo Bay (10.2°C) to colder waters off Cape Parry (-1.4°C) (McNicholl et al. 2017a). Similarly, this species can tolerate a range of salinities (18.7 to 30.4 PSU in the ANMPA; McNicholl et al. 2017a).

Twohorn Sculpin *Icelus bicornis* (Reinhardt, 1840) (A26 – page 56)
Twohorn Sculpin is a cottid species found throughout the Canadian Arctic, typically associated with offshore waters. In the Beaufort Sea, this species is found in deeper waters of embayments such as Franklin Bay, within Darnley Bay, and on the slope off Cape Parry. This species has been recorded nearshore at Brown's Harbour, however, it is more abundant in deeper water.

Maximum total length: 157 mm
Ecology: This species typically prefers offshore, benthic mud habitat foraging on invertebrates such as amphipods or other small crustaceans. It is a cold-tolerant species, and generally occurs in higher salinity waters rather than those of the Mackenzie Shelf. In Darnley Bay, this species is more common in deeper water.

Spatulate Sculpin *Icelus spatula* Gilbert & Burke, 1912 (A27 – page 57)
The Spatulate Sculpin is found throughout the Canadian Arctic, in the North Atlantic, and in the Beaufort Sea. Generally, this species is associated with deeper, colder water but can be found in nearshore habitats. In Darnley Bay, this species has only been observed offshore of Cape Parry and off Pearce Point.

Maximum total length: 210 mm
Ecology: Spatulate Sculpins are associated with a variety of benthic habitats including mud, sand and occasionally rocky substrates. In Darnley Bay, this species has not been observed in the nearshore environment.

Arctic Sculpin *Myoxocephalus scorpioides* (Fabricius, 1780) (A28 – page 58)
This species is commonly found throughout the eastern Canadian Arctic and coastal Beaufort Sea. Although less frequent in Darnley Bay, several records exist off the Cape Parry coast. This is a species associated with the tidal zone, however, it can reach depths up to 280 meters (Coad and Reist 2018).

Maximum total length: 300 mm
Ecology: The Arctic Sculpin is generally associated with rocky substrata and macroalgae beds. Like other cottids, they are benthic and forage on a variety of prey items including crustaceans and small invertebrates.

Bigeye Sculpin *Triglops nybelini* Jensen, 1944 (A29 – page 59)
The Bigeye Sculpin is a deep-water, offshore species that can be found inshore but is more abundant at depths greater than 135 meters. It is found throughout the Canadian Arctic and has been found in deeper waters off the continental shelf of the Mackenzie Delta. In Darnley Bay, this species has only been observed off the shelf of Cape Parry in deep water.

Maximum standard length: 170 mm
Ecology: Generally, this benthic species is associated with cold (<0°C) high salinity waters and mud substrates. It is found in deep waters of the Amundsen Gulf near Cape Parry, interactions with other co-occurring species in this area are largely unknown.

Ribbed Sculpin *Triglops pingelii* (Reinhardt, 1837) (A30 – page 60)
Knowledge of basic biology and habitat associations of Ribbed Sculpin in the Canadian Beaufort Sea is limited. It has been observed on the Beaufort Sea shelf, but in relatively low abundances (Rand and Logerwell 2011; Majewski et al. 2017). It has been observed in Darnley Bay at depths < 20 meters, however, it is more abundant in the deeper waters off Cape Parry.

Maximum total length: 140 mm
Ecology: Ribbed Sculpin is a benthic species that preys upon crustaceans and other small benthic invertebrates. There are limited occurrences within the ANMPA and Darnley Bay, and therefore ecological interactions with other species are relatively unknown. In other regions, it is associated with cold (<0°C), high salinity water.

Cyclopteridae
(lumpfish, grosse poule de mer)

Leatherfin Lumpsucker *Eumicrotremus derjugini* Popov (A31 – page 61)
The Leatherfin Lumpsucker is found in higher abundances in the North Atlantic, however, there are several records of this species in deep waters off Cape Parry and in Franklin Bay. This

species is associated with benthic shelf habitats, and is therefore not observed by the fishers from Paulatuk.

Maximum total length: 127 mm
Ecology: Leatherfin Lumpsuckers are found in deep (50 m to 1038 m), benthic habitats with mud, gravel or stone substrates (Coad and Reist 2018). They are generally planktivorous and juveniles can be found in shallow water. In the ANMPA their habitat use and ecological linkages to other organisms are unknown.

Atlantic Spiny Lumpsucker *Eumicrotremus spinosus* Müller, 1776 (A32 – page 62)
The Atlantic Spiny Lumpsucker is a benthic species that is commonly found in the North Atlantic and occasionally in the Beaufort Sea. This species is not often observed by members from coastal communities in the Inuvialuit Settlement Region, given its preferences for deep water. Previous surveys have recorded this species off the shelf of Cape Parry and in Franklin Bay (Majewski et al. 2017).

Maximum total length: 137 mm
Ecology: Lumpsuckers are benthic fish that are distinguishable by a ventral disc, which allows them to anchor to hard substrates, where it typically forages on small crustaceans. In Darnley Bay, this species has only been observed in deeper waters > 20 meters and has not been found in nearshore areas. Habitat use within the ANMPA is largely unknown.

Gadidae
(cods; morues)

Polar Cod *Arctogadus glacialis* (Peters,1872) (A33 – page 63)
Polar Cod is most abundant in Atlantic waters, however, it also occurs in the western Arctic, though in lower abundance than Arctic Cod. Polar Cod is a small forage fish found in high Arctic marine waters generally offshore. It can be found up to depths of 930 m (Coad and Reist 2018).

Maximum total length: 480 mm
Ecology: There is only one record of this species in proximity to Darnley Bay, however, it is likely that although in low abundance, Polar Cod co-occur with Arctic Cod in the region. Difficulties in identifying this species from Arctic Cod likely result in substantive under-reporting of its occurrence. This species is pelagic, planktivorous, and associated with cold water masses as well as with sea ice. It is uncertain if it inhabits the deeper waters (> 20 m) of the ANMPA.

Arctic Cod *Boreogadus saida* (Lepechin, 1774) (A34 – page 64)
Arctic Cod are the most ubiquitous forage fish found throughout much of the Canadian Arctic, representing a substantial amount of biomass in marine waters of the Beaufort Sea. This lipid-rich forage fish serves as a critical linkage between lower trophic levels and upper trophic predators in both nearshore and offshore environments. Although they are generally not found nearshore (< 20 meters in depth), they occupy the upper 50-100 m of the water column during

early life history stages until adulthood, when many individuals inhabit the lower water column off the Beaufort Sea shelf between 350 and 500 meters (Majewski et al. 2015).

Maximum total length: 400 mm
Ecology: Arctic Cod are considered a keystone species in Arctic marine food webs, serving as the primary prey item for many species of marine mammals, sea birds, and marine and anadromous fishes. This species is closely associated with sea ice for spawning and egg development, and is therefore well adapted for cold temperatures with lipid-rich muscle and the ability to produce anti-freeze glycoproteins. As a result, this species is considered to be a higher quality prey item, relative to other forage fishes, for higher trophic level predators. In the ANMPA, Arctic Cod are found in deeper water off Cape Parry, and demersal juveniles are also found in the centre of the bay where they forage primarily on calanoid copepods (McNicholl et al. 2016). The presence of Arctic Cod in the diet of sea birds has served as a positive ecological indicator in other regions of the Canadian Arctic (Gaston et al. 2003), however, the proportion of cod in the diet of Cape Parry sea birds is uncertain. Similarly, it is unknown if there has been any changes in proportions in recent years.
Cultural Importance: Given that Arctic Cod are not typically caught by the fishers of Paulatuk they are not targeted for consumption, however, their importance as a prey source for local predators is widely recognized. In the Inuvialuit Settlement Region they are referred to as Uugaq, a term that includes other gadids (Sallirmiutun).

Liparidae
(snailfish, limaces de mer)

Sea Tadpole *Careproctus reinhardti* (Krøyer, 1862) (A35 – page 65)
The Sea Tadpole is a common deep-water species found primarily in the eastern Canadian Arctic, however, there are records of this species in deeper waters of the Beaufort Sea, including Franklin Bay and off Cape Parry.

Maximum total length: 300 mm
Ecology: This epibenthic species can be found in shallow habitats, however, it is generally associated with deeper waters and can be found up to depths of 1750 meters. In Darnley Bay, there are limited occurrences of this species off the northern end of Cape Parry, and therefore its habitat preferences and ecological significance to the ANMPA are largely unknown.

Gelatinous Snailfish *Liparis fabricii* Krøyer, 1847 (A36 – page 66)
Gelatinous Snailfish is an epibenthic, typically deep-water species that is abundant in the eastern Canadian Arctic, but also found in deep water off the Beaufort Sea shelf. They have been found off the shelf of Cape Parry and into the Amundsen Gulf, but generally are not found in nearshore (< 20 meters depth) waters.

Maximum total length: 194 mm
Ecology: They are associated with soft bottoms at depths up to 1800 meters, where they forage on small crustaceans and worms. Although they can be found in shallower habitats, they have not been observed nearshore in the ANMPA and have only been observed in deeper waters of the

Amundsen Gulf. The habitat preferences and ecological linkages of this species in the ANMPA are largely unknown.

Variegated Snailfish *Liparis gibbus* Bean, 1881 (A37 – page 67)
The Variegated Snailfish is an offshore species, generally found at depths > 100 m. It is common in deep waters in the eastern Canadian Arctic, and to a lesser extent in the Beaufort Sea. There are several occurrences of this species in Franklin Bay, as well as in Darnley Bay, within the ANMPA off Cape Parry.

Maximum total length: 524 mm
Ecology: This species is associated with mud, rock or sandy substrates and is primarily benthic. There are few records in the Darnley Bay area, therefore the habitat preferences of this species are unknown with respect to the ANMPA. In other regions it preys upon crustaceans, amphipods, copepods and other small invertebrates.

Kelp Snailfish *Liparis tunicatus* Reinhardt, 1836 (A38 – page 68)
Although there has been only one record of this species within the ANMPA, there are several observations of the Kelp Snailfish in Franklin Bay and throughout the Mackenzie Delta. This species is most commonly found in the upper slope (200 – 500 meters; Majewski et al. 2017).

Maximum total length: 200 mm
Ecology: There are limited habitat association data on this species for the Darnley Bay area. Kelp Snailfish is generally associated with shallow waters, where they can attach to kelp or rock surfaces with their ventral adhesive disc. In other regions this species generally forages on pelagic invertebrates, such as amphipods, or small crustaceans.

Myctophidae
(lantern fish, poisons-lanternes)

Glacier Lanternfish *Benthosema glaciale* (Reinhardt, 1837) (A39 – page 69)
Glacier Lanternfish is an epipelagic to bathypelagic species found in surface to deep waters. They are found in both the eastern Arctic and deep waters of the Beaufort Sea shelf and offshore basin. There are limited records of this species in the western Arctic, however, it has been observed off Cape Parry in the Amundsen Gulf.

Maximum total length: 150 mm
Ecology: Glacier Lanternfish can be found in surface waters, however in proximity to Darnley Bay and the ANMPA, this species has only been found in deeper waters of the Amundsen Gulf. It is typically associated with cold, deep water where it preys upon small crustaceans. Due to the limited number of records of this species in the ANMPA, knowledge of its ecological linkages to other species in the region is limited.

Pleuronectidae
(righteye flounders, plies)

Greenland Halibut *Reinhardtius hippoglossoides* (Walbaum, 1792) (A40 – page 70)
Greenland Halibut, also known as Turbot, is an epibenthic to surface water species widely found throughout the eastern Arctic. Although less abundant, this species is also found in the Beaufort Sea, and has been observed in the Amundsen Gulf near Cape Parry.

Maximum total length: 1190 mm
Ecology: In Darnley Bay, Greenland Halibut have only been observed in deeper waters associated with the Amundsen Gulf. Given the habitat preference of deeper water, this species is not observed by the community members of Paulatuk, and has not been observed in nearshore waters (< 20 m depth). In other regions, this species can be found at depths up to 2000 m, where it typically preys on fishes, crustaceans, and squids. While in the Beaufort Sea it also feeds on smaller invertebrates such as amphipods (Giraldo et al. 2018). There are limited records of this species in Darnley Bay, therefore knowledge of ecological linkages of the species with the ANMPA is largely unknown.

Rajidae
(skates, raies)

Arctic Skate *Amblyraja hyperborea* (Collett, 1879) (A41 – page 71)
Several species of *Amblyraja* are found in the Canadian Arctic, including the Arctic Skate, which occurs in both the western and eastern Canadian Arctic. This species is not commonly found in nearshore areas, and is typically associated with deep, shelf habitats. One occurrence of this species was observed off the shelf of Darnley Bay, however, their habitat use in the area is largely unknown.

Maximum total length: 1060 mm
Ecology: The Arctic Skate is a benthic species, found at depths up to 1600 meters and typically no less than 167 meters. Since there is limited information of this species in the Darnley Bay area, their habitat use with respect to the ANMPA is unknown. In other regions this species inhabits silt bottoms and forages on benthic prey such as crustaceans, amphipods, decapods, and polychaetes.

Stichaeidae
(pricklebacks, sichées, blennies, shannies)

Stout Eelblenny *Anisarchus medius* (Reinhardt, 1837) (A42- page 72)
Stout Eelblennies are small, eel-like fishes found in benthic habitats throughout the Canadian Arctic. This species is commonly found on the Mackenzie shelf, and in deeper waters of the Amundsen Gulf, in close proximity to Cape Parry.

Maximum total length: 180 mm
Ecology: The Stout Eelblenny can be found in cold, deep waters up to 300 m but may also be found in shallower habitats. They are associated with soft substrates such as sand or mud, where

they prey upon small crustaceans, worms, or bivalves. In Darnley Bay, they have only been found in deeper water near Cape Parry and it is uncertain if they also inhabit nearshore habitats. Due to the limited observations of this species, knowledge of its habitat preferences in the ANMPA and ecological linkages are relatively unknown.

Daubed Shanny *Leptoclinus maculatus* (Fries, 1838) (A43 – page 73)
Daubed Shanny is commonly found in the eastern Canadian Arctic, and to a lesser extent in the Canadian Beaufort Sea. Knowledge of its distribution in the western Arctic is limited, however, several records exist for this species in Franklin Bay and Darnley Bay, including the ANMPA.

Maximum total length: 230 mm
Ecology: Daubed Shanny can be found in shallower coastal regions, however, with respect to Darnley Bay it has been found at greater depths (>50 m) off the coast of Cape Parry. They are generally associated with hard and sandy bottoms where they prey upon benthic epifauna, and amphipods.

Zoarcidae
(pouts, lycodes)

Fish Doctor *Gymnelus viridis* (Fabricius, 1780) (A44 – page 74)
The Fish Doctor is a shelf species found throughout the Canadian Arctic, generally at depths between 50 and 100 m. There are several records of this species in Franklin Bay and Darnley Bay, including in the ANMPA at the northern end of Cape Parry.

Maximum standard length: 256 mm
Ecology: This deep-water species typically prefers muddy substrates, and is occasionally associated with kelp beds. In Darnley Bay the habitat preferences of this species are largely unknown. Fish Doctor forage on a variety of invertebrates, such as bivalves, amphipods, small crustaceans, and polychaete worms.

Doubleline Eelpout *Lycodes eudipleurostictus* Jensen, 1902 (A45 – page 75)
The Doubleline Eelpout is a deepwater species that is primarily found in the eastern Arctic, however, there are observations of this species in the Canadian Beaufort Sea, including Darnley Bay. In the eastern Arctic they are known to occur at depths up to 1287 m.

Maximum total length: 400 mm
Ecology: The habitat preferences of this species in the western Canadian Arctic are not well known, however, Doubleline Eelpout generally prefer deep, shelf habitats. It typically forages for small invertebrates or epibenthic prey.

White Sea Eelpout *Lycodes marisalbi* (Knipowitsch, 1906) (A46 – page 76)
This species of *Lycodes* is considered to be difficult to define taxonomically, and therefore, there is little information available with respect to its ecology and confusion due to misidentification may exist in the literature for this species. It has primarily been observed in the western Canadian Arctic, including Franklin and Darnley Bay.

Maximum standard length: 213 mm
Ecology: Substantial knowledge gaps exist with respect to this species habitat preferences, particularly for the ANMPA. White Sea Eelpout can be found at shallow depths, and up to 326 m in the Beaufort Sea. In Darnley Bay this species was found off the northern shelf of Cape Parry. It generally prefers sandy or muddy benthic habitats.

Canadian Eelpout *Lycodes polaris* (Sabine, 1824) (A47 – page 77)
This species is found in the eastern Canadian Arctic, and in the Beaufort Sea. Habitat use of the Canadian Eelpout in the western Canadian Arctic is unknown. There are multiple records of this species off the shelf of Cape Bathurst, in Franklin Bay, and off Cape Parry in the ANMPA.

Maximum standard length: 260 mm
Ecology: Compared to other eelpouts, the Canadian Eelpout is found in shallower waters, typically < 100 m. There are limited records of this species in Darnley Bay, therefore details on the habitat associations in the region are limited. However, in other regions this species typically prefers rock substrates, where they rely on amphipods, polychaetes and other benthic epifauna.

Arctic Eelpout *Lycodes reticulatus* Reinhardt, 1835 (A48 – page 78)
The Arctic Eelpout is found throughout the eastern Arctic, off Baffin Island, and to a lesser extent in the Canadian Beaufort Sea. It can be found at depths up to 930 m, and although it has been recorded in shallower water it is generally associated with benthic offshore habitats.

Maximum total length: 760 mm
Ecology: Information on habitat associations for this species in the Darnley Bay area is limited. In other regions the Arctic Eelpout is associated with deep, shelf habitats. It prefers muddy substrates and mainly feeds on epibenthic prey such amphipods, bivalves and sometimes small fishes.

Freshwater Species

The following species are primarily fresh water in their habitat associations, however, unlike many other freshwater species some exhibit tolerances to low to moderate salinities (5 to 18 PSU). Thus, in summer these species may also occur in nearshore areas near to freshwater inflows to the coastal area, estuaries and offshore highly freshened plumes from larger rivers. The ecology of these species is distinct from that characterizing anadromous species that can tolerate higher levels of salinity.

Catostomidae
(suckers; meunier)

Longnose Sucker *Catostomus catostomus* (Forster, 1773) (A49 – page 79)
The Longnose Sucker is a large, benthic, freshwater fish found throughout northern Canada, and frequently found in lakes and rivers of the Northwest Territories. This species is not often found in Darnley Bay, but is present in the Hornaday River. It is unknown if Longnose Sucker uses the coastal environment of the ANMPA.

Maximum fork length: 640 mm (Mecklenburg et al. 2002)

Ecology: There is limited information on this species with respect to the Darnley Bay area. In other regions this species co-occurs with anadromous fishes during the fall and winter. It preys upon benthic invertebrates, and occasionally algae or fish eggs (Scott and Crossman 1973).

Cottidae
(sculpins, chabot)

Slimy Sculpin *Cottus cognatus* Richardson, 1836 (A50 – page 80)
Slimy Sculpin is a euryhaline cottid found in freshwater habitats, and nearshore coastal sites across Canada. It is not frequently observed in the coastal Beaufort Sea, and only a few records exist at the mouths of the Hornaday and Brock rivers.

Maximum total length: 128 mm (Mecklenburg et al. 2002)
Ecology: Slimy Sculpin are benthic fishes that prey upon a wide variety of invertebrates. Their habitat preferences and interactions with other Darnley Bay fishes are generally unknown.

Gadidae
(loche, lotte)

Burbot *Lota lota* (Linnaeus, 1758) (A51 – page 81)
Burbot is a freshwater cod species, found throughout the Canadian Arctic, that may on occasion also be found in estuarine environments of the Mackenzie Delta. In the Darnley Bay area, Burbot has most commonly been observed in fresh water, but may also be found in Paulatuk Harbour.

Maximum total length: 1520 mm (Mecklenburg 2002)
Ecology: Burbot is not frequently observed in the Paulatuk area, however, it may on occasion be captured during the winter in nearby lakes. The habitat use and diet of this species with respect to Darnley Bay is largely unknown. In other regions this species preys upon small invertebrates, crustaceans, forage fishes, and small coregonids.
Cultural importance: In the Inuvialuit Settlement Region, Burbot is a desired subsistence species during the fall and spring fishing seasons. Locally it is known as “loche” or Tiktaaliq (Inuvialuktun-Sallirmiutun). It is not often captured for consumption within the ANMPA.

Gasterosteidae
(sticklebacks)

Ninespine Stickleback *Pungitius pungitius* (Linnaeus, 1758) (A52 – page 82)
Ninespine Stickleback is a small fish species, found widely throughout freshwater habitats of Canada, including estuarine environments of the Mackenzie Delta and brackish water areas of Darnley Bay. In some areas this species is anadromous or coastal marine with respect to habitat associations, however, most evidence to date for the western Arctic suggests it is primarily freshwater in association.

Maximum total length: 71 mm in Darnley Bay (McNicholl et al. 2017a)

Ecology: In the Darnley Bay region this species has been observed during the summer months in generally warm (> 10°C), low saline < 19 PSU, areas such as lagoons or at the mouth of rivers entering the bay (McNicholl et al. 2016). In these habitats it co-occurs with juvenile salmonids, such as Broad Whitefish, or Arctic Char, of a similar size.

Osmeridae
(smelts;éperlan)

Pond Smelt *Hypomesus olidus* (Pallas, 1814) (A53 – page 83)
Pond Smelt is a small, freshwater forage fish that is closely associated with the Mackenzie River, Great Bear Lake, and Peel River of the Yukon Territory. Knowledge of its distribution outside of these regions is largely unknown. In Darnley Bay one record exists of this species in a small river north of the mouth of the Brock River. It is likely that it occurs in other nearby creeks and rivers but it is not often observed by community members of Paulatuk.

Maximum total length: 200 mm (Gallagher unpublished data)
Ecology: There is limited knowledge of this species' habitat use in the Darnley Bay area, however, it is likely most prevalent in freshwater habitats. It may serve as a prey source for larger piscivorous fishes such as Arctic Char, or Lake Trout, while it would feed on small crustaceans and invertebrates.

Salmonidae
(whitefishes; poisson blanc)

Lake Whitefish *Coregonus clupeaformis* (Mitchill, 1818) (A54 – page 84)
Lake Whitefish is a common species found throughout the Mackenzie Delta, that has been extensively studied in fresh water, however, there is little information of its ecology in the Darnley Bay area. Although this species has been observed in the marine environment of Darnley Bay, and in the ANMPA, it is less common than Arctic Cisco and Broad Whitefish. Typically, they are most commonly found in freshwater habitats where they are harvested by local fishers. See also the taxonomic note below for Humpback Whitefish: Lake Whitefish and Humpback Whitefish are part of a taxonomically unresolved species complex found in northwestern North America. These may be ecologically distinct but co-occurring taxa with Lake Whitefish primarily associated with fresh waters and Humpback Whitefish associated with fresh and coastal marine waters. Generally, these two taxa cannot be reliably identified in the field using basic taxonomic characters, however, they are distinguishable using laboratory analyses (Coad and Reist 2018). Because of this identification ambiguity, much of the literature on these two species for the area likely represents a mixture of the taxa.

Maximum total length: 436 mm in Darnley Bay (McNicholl unpublished data)
Ecology: Lake Whitefish are generally considered a freshwater-estuarine species, and are not commonly found in the ANMPA. Substantive knowledge gaps exist with regard to this species' use of the coastal areas and connected freshwater sites. There have been too few occurrences to approximate the depth, thermal, and salinity tolerance ranges of this species in the ANMPA.
Cultural Importance: Although Lake Whitefish are not commonly caught during the summer fishing season, fishers of Paulatuk will harvest this species in the spring and fall under the ice of

nearby lakes. Locally they are known by fishers as “humpbacks” or Qalupiaq (Inuvialuktun-Sallirmiutun).

Humpback Whitefish *Coregonus pidschian* (Gmelin, 1789) (A55 – page 85)
Humpback Whitefish is an anadromous, coregonid species found in many freshwater habitats connected to the Beaufort Sea. Although noted herein as a distinct species, the delineation of Humpback Whitefish from Lake Whitefish is incomplete and additional taxonomic work is required (see relevant descriptions in Coad and Reist 2018). General evidence suggests, but is not fully confirmed as yet, that Humpback Whitefish may be the anadromous coastal migratory form of a species complex (Lake, Humpback and Alaska whitefishes) that occurs in the northwestern Arctic of Canada and Alaska. If so, this taxon is likely most closely associated with populations in eastern Siberia and Chukotka that exhibit similar coastal associations. Moreover, evidence to date suggests this taxon in northwestern Arctic Canada does not venture far out in the marine environment remaining in close association with freshened areas near river mouths or perhaps using coastal areas to migrate between freshwater areas used for various aspects of life history. If Humpback Whitefish are the equivalent of a distinct species it is likely best described as a semi-anadromous species given the ecological information above.

Least Cisco *Coregonus sardinella* Valenciennes, 1848 (A56 – page 86)
Least Cisco is a small, coregonine species, that is commonly found throughout freshwater systems of the Northwest Territories, particularly in the Mackenzie Delta. Although it is known to enter brackish, marine water of the Mackenzie estuary, it is not often found far from the rivers from which the population occurs, nor far from shore in brackish areas including Darnley Bay.

Maximum total length: 470 mm (Mecklenburg et al. 2002)
Ecology: Least Cisco is a pelagic, primarily freshwater species that is often found in lakes, and typically forages on small invertebrates. There are no records of this species in the ANMPA, however, it does inhabit lakes that are connected to the marine environment during the summer months. There is limited knowledge regarding interspecific interactions between Least Cisco and other salmonids in the region, however, it is expected that they co-occur in the freshwater system.

Round Whitefish *Prosopium cylindraceum* (Pallas, 1784) (A57 – page 87)
Round Whitefish is widely distributed throughout the Northwest Territories. Typically found in deep lakes, it may also be found in estuarine habitats, such as the Mackenzie estuary. This species is not commonly observed in the Darnley Bay area, and its distribution in neighbouring freshwater habitats is largely unknown. It has been observed at the mouths of the Hornaday and Brock rivers.

Maximum total length: 560 mm (Mecklenburg et al. 2002)
Ecology: With respect to Darnley Bay, the ecology of this species in neighbouring freshwater habitats is generally unknown, however, this species likely occurs in deep-water lakes, foraging on benthic invertebrates and potentially competing for prey with other coregonines (Scott and Crossman 1973).

Mountain Whitefish *Prosopium williamsoni* (Girard, 1856) (A58 – page 88)
Although not commonly observed in the freshwater environment of the Northwest Territories, there are recorded occurrences of the Mountain Whitefish in the Mackenzie Delta Region, and on the Cape Parry Peninsula. It is a freshwater species found most often in lakes and rivers. It is not known if it can tolerate brackish water of the Mackenzie estuary. Identification of this species from other members of the genus, particularly Round Whitefish, can be difficult. Accordingly, care should be exercised in both the identification of new possible occurrences of this species and in regards to interpretations of identifications made in past literature.

Maximum total length: 305 mm (Scott and Crossman 1998)
Ecology: There is limited information regarding the habitat use of this species with respect to the ANMPA. It was observed in the Hornaday River, and may inhabit neighbouring lakes and rivers, however, it is not frequently observed by the community members of Paulatuk. Typically, this species forages on benthic invertebrates, and occasionally mayflies or stoneflies (Scott and Crossman 1998). The extent to which this species interacts with other local salmonids such as Arctic Char and Broad Whitefish, is unknown.

Lake Trout *Salvelinus namaycush* (Walbaum, 1792) (A59 – page 89)
Lake Trout is a ubiquitous species found throughout the Canadian Arctic. It is an important subsistence species in the Northwest Territories, including lakes near Darnley Bay. Anadromous forms of this species are found in estuarine regions of the Mackenzie Delta, and in Darnley Bay where this species has been observed at the mouth of the Hornaday and Brock rivers (Gallahger unpublished data).

Maximum total length: 642 mm (Gallagher, unpublished data)
Ecology: Lake Trout is generally a freshwater species, not commonly found in coastal areas of Darnley Bay. This species co-occurs with other anadromous salmonids, such as Arctic Char and Broad Whitefish, in fresh waters connected to Darnley Bay. In this region it presumably forages on small fishes, and freshwater invertebrates. Although this species appears to exhibit anadromy in some areas (e.g., Husky Lakes area, river systems further east in Nunavut) individuals likely do not venture far out into coastal or marine environments (Gallagher, unpublished data).
Cultural importance: Lake Trout is a highly desired subsistence species during the spring fishing season by the community harvesters of Paulatuk. They are generally targeted by the local fishers between March and May, when they can be captured through holes in the ice on nearby lakes until the spring breakup. Locally they are known as Iqaluakpak (Inuvialuktun-Sallirmiutun).

Arctic Grayling *Thymallus arcticus* (Pallas, 1776) (A60 – page 90)
Arctic Grayling is a common freshwater species found throughout the Northwest Territories. In the Darnley Bay area, it has been found in the Hornaday River, Brock River, and other small streams that drain into the marine environment.

Maximum total length: 760 mm (Mecklenburg et al. 2002)
Ecology: Arctic Grayling is not frequently caught in close proximity to the ANMPA, however, it is ubiquitous throughout the Mackenzie Delta region. It has been observed at the mouth of the Hornaday River, and the shoreline between Paulatuk Harbour, and Brock River, so it is possible that it will occasionally enter the marine environment when salinity is low. This species is

generally associated with clear, riverine habitats, with rocky bottoms, but it may also inhabit lakes.
Cultural Importance: Arctic Grayling is not a species that is typically targeted for subsistence by the fishers from Paulatuk, nor is it commonly caught in the region.

CONCLUSIONS

Baseline knowledge of fish biodiversity, ecologies and habitat associations is necessary when developing future ecologically and biologically significant areas (EBSAs), marine protected areas (MPAs), ecosystem-based fisheries management approaches used by stock assessment, and/or choosing possible indicator species for longer-term monitoring in the Canadian Arctic. Knowledge gained from this synthesis contributes to a greater understanding of species biodiversity, spawning and rearing habitats, prey availability, and migratory corridors. Increased knowledge aids in effective management and monitoring of these areas in the future. This information is relevant for the development of ongoing fish and fish-habitat indicators for monitoring in the ANMPA and subsequent areas of interest in the western Canadian Arctic. As shifts in biodiversity occur with changing climate, established indicators of change will be necessary in order to determine ecological shift, rather than natural variability of species diversity.

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APPENDIX A – Distribution maps of fishes

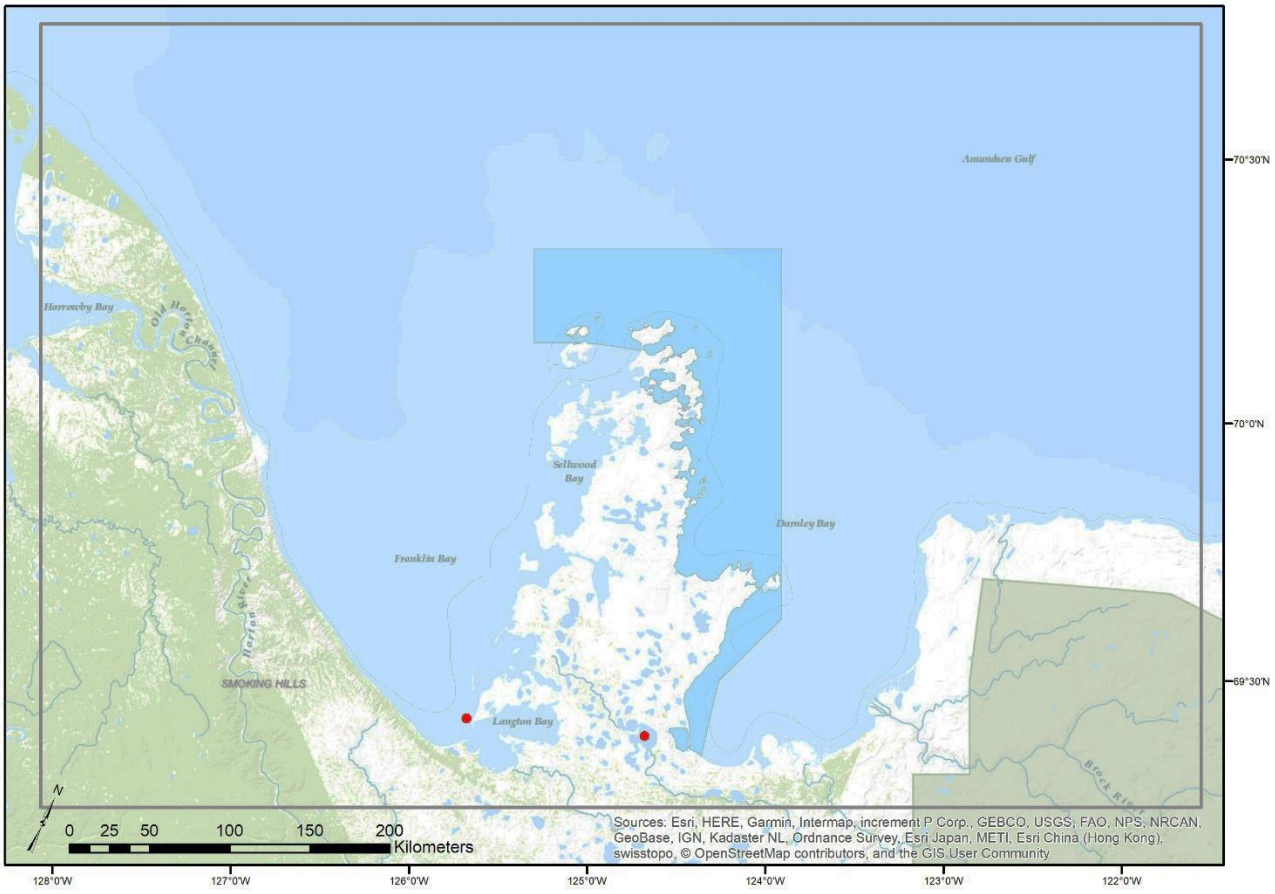

Figure A1. Distribution of Pacific Sandlance *Ammodytes hexapterus* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

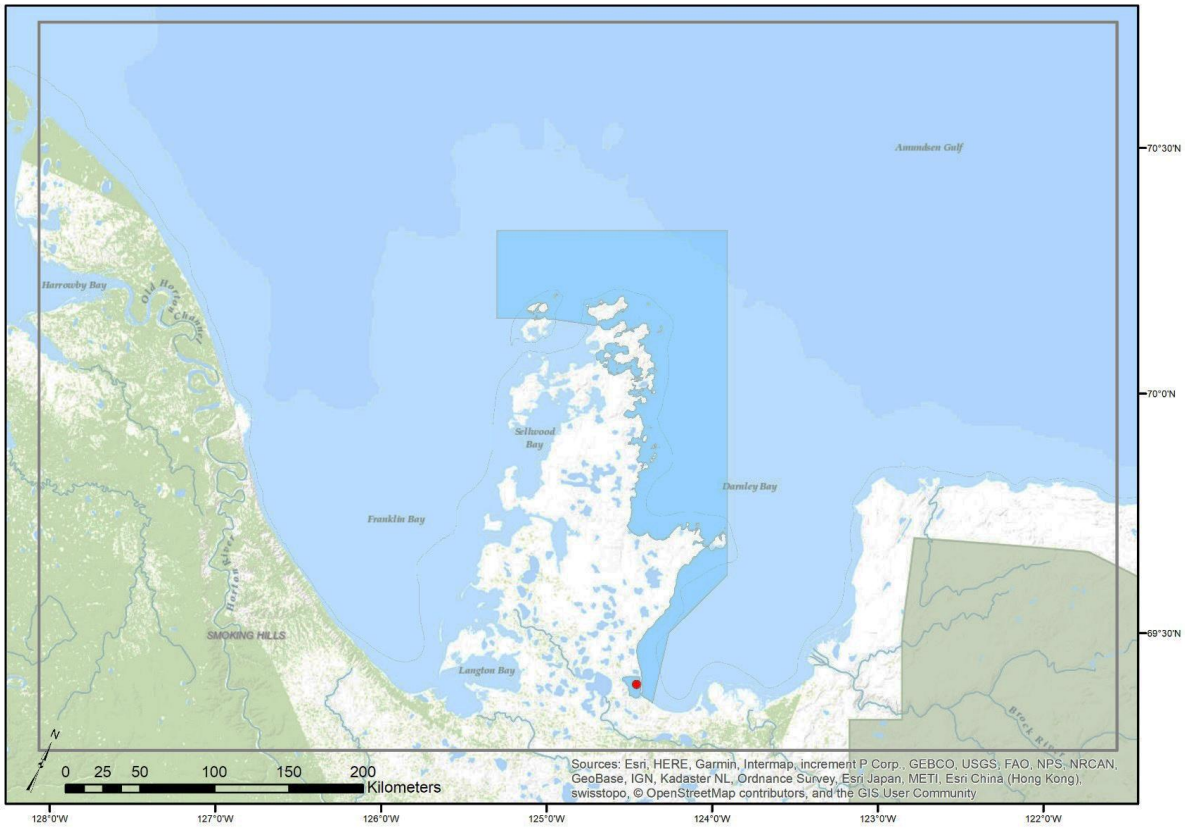

Figure A2. Distribution of Bering Wolffish *Anarhichas orientalis* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

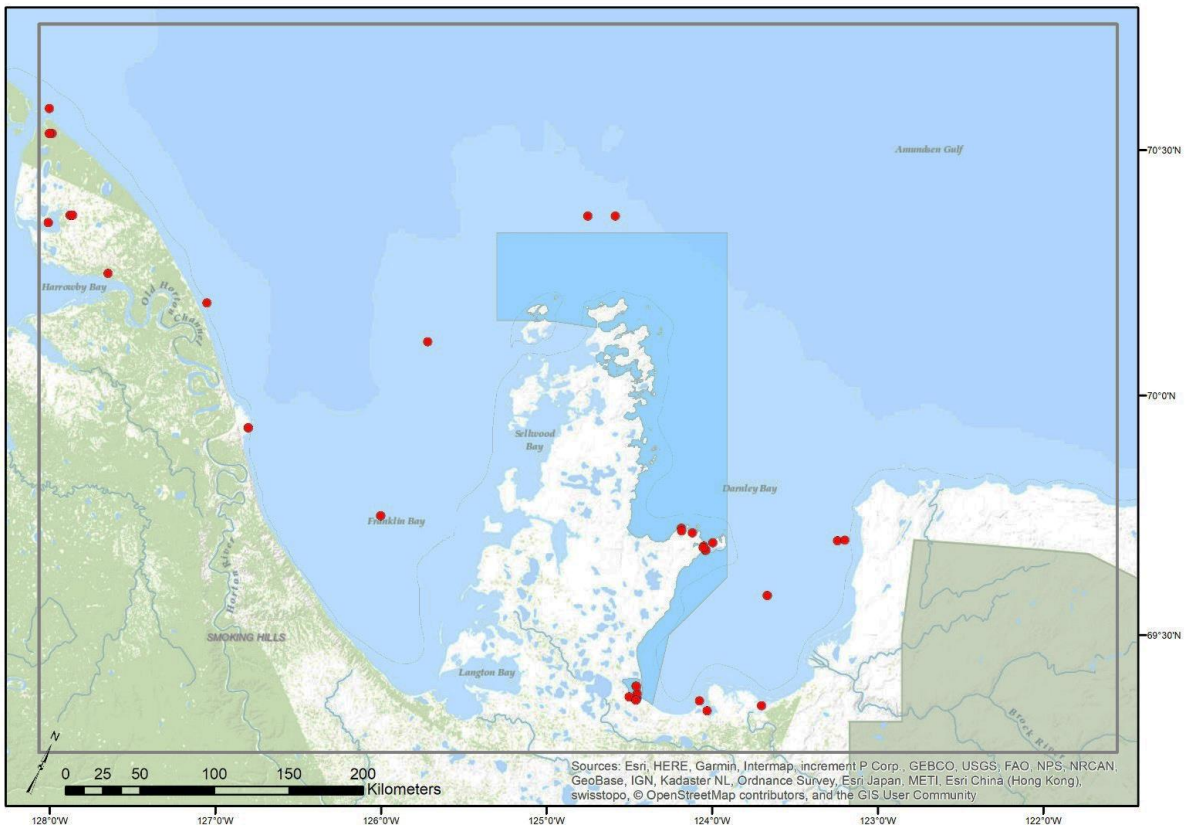

Figure A3. Distribution of Pacific Herring Clupea pallasii in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

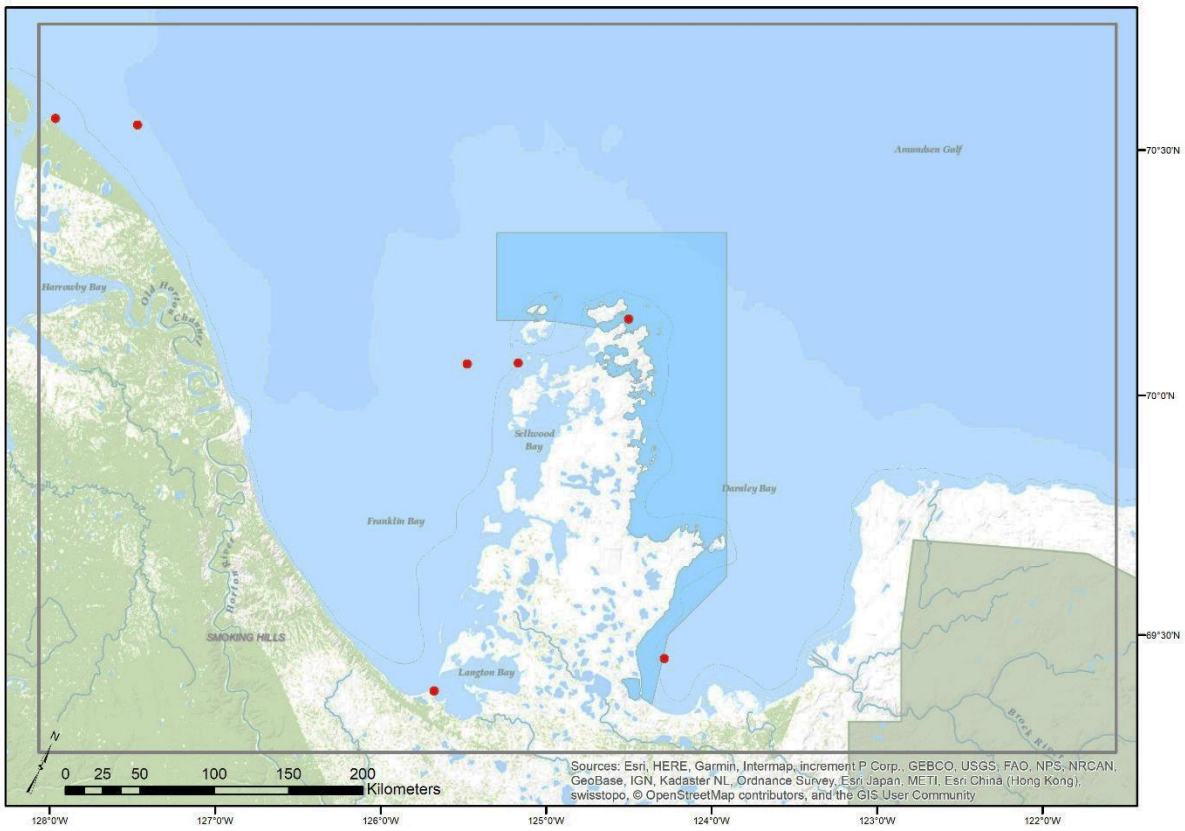

Figure A4. Distribution of Hamecon Artediellus scaber in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

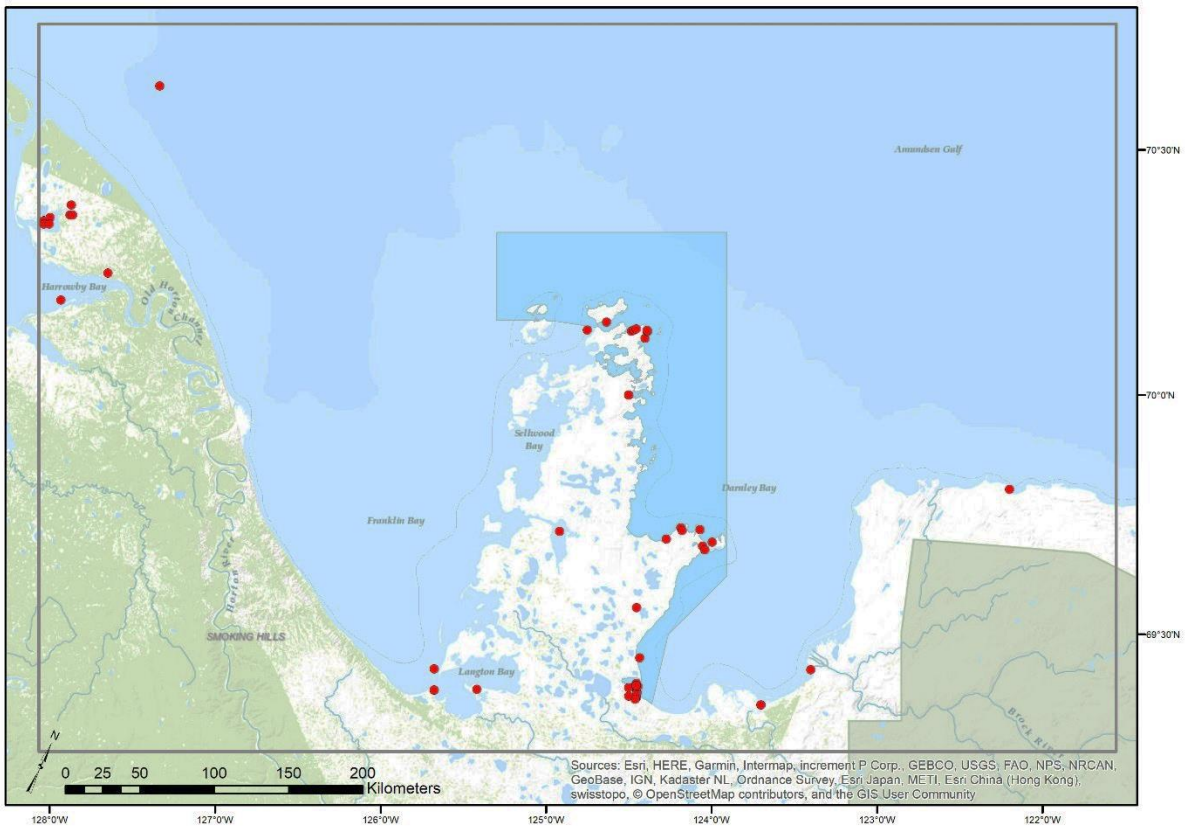

Figure A5. Distribution of Fourhorn Sculpin *Myoxocephalus quadricornis* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

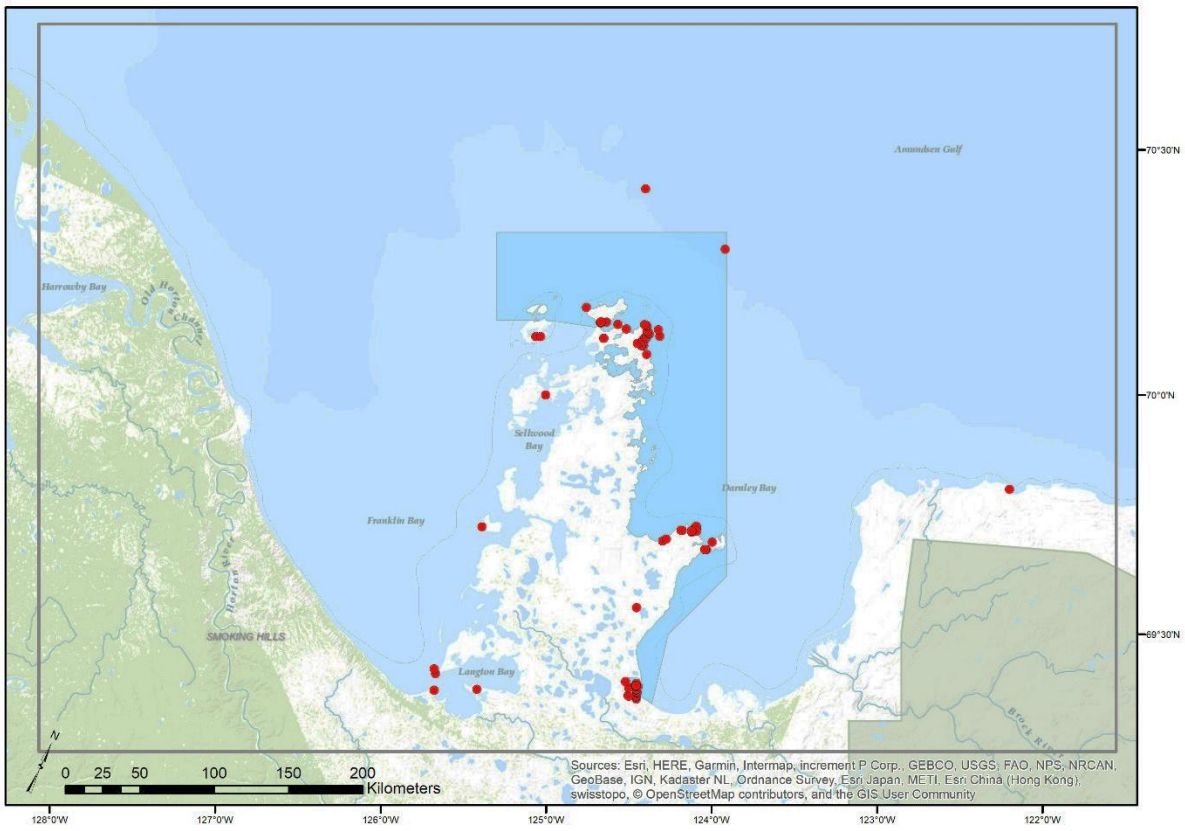

Figure A6. Distribution of Shorthorn Sculpin *Myoxocephalus scorpius* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

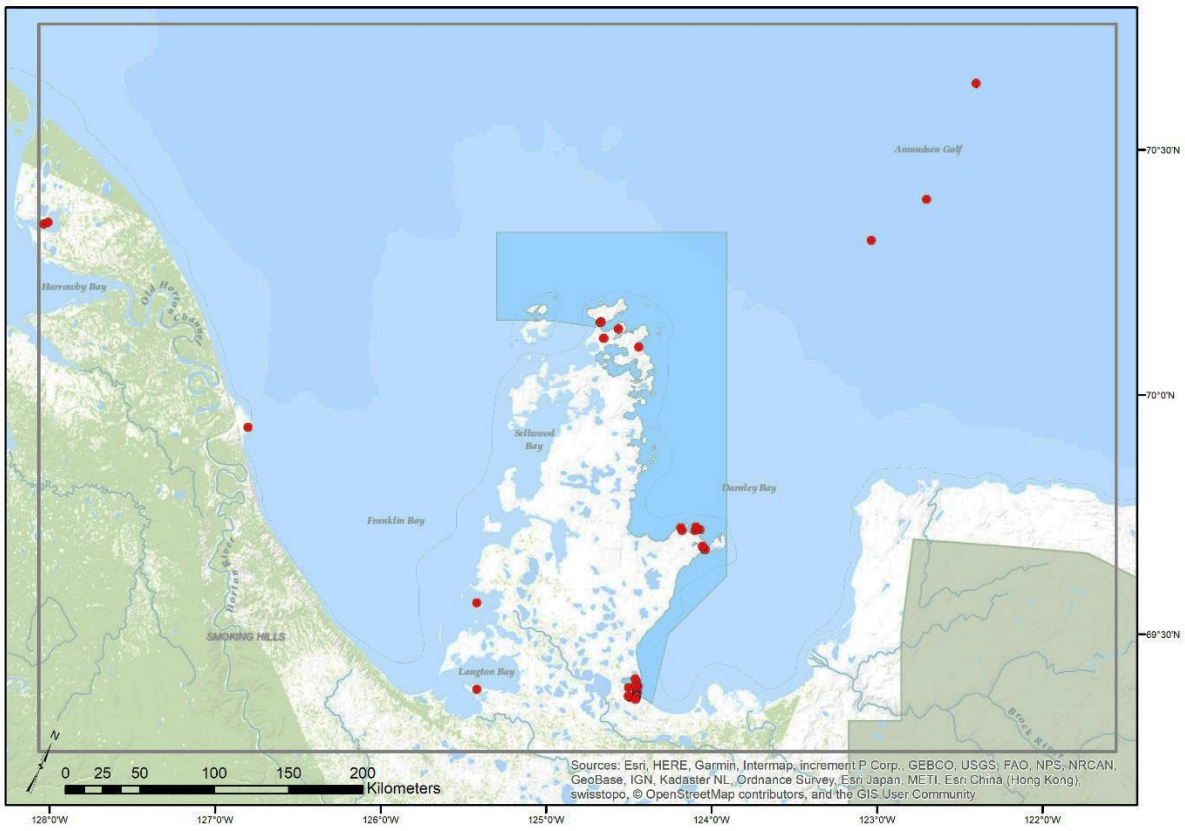

Figure A7. Distribution of Saffron Cod *Eleginus gracilis* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

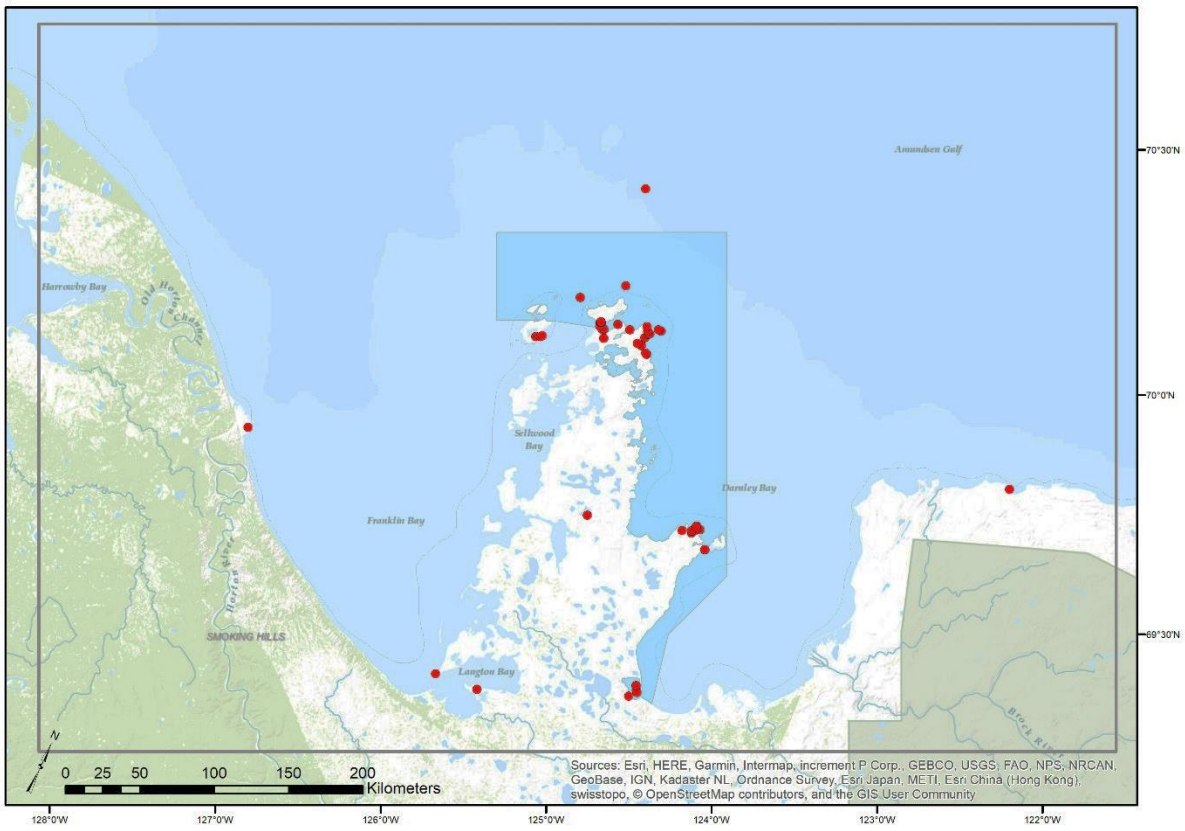

Figure A8. Distribution of Greenland Cod *Gadus ogac* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

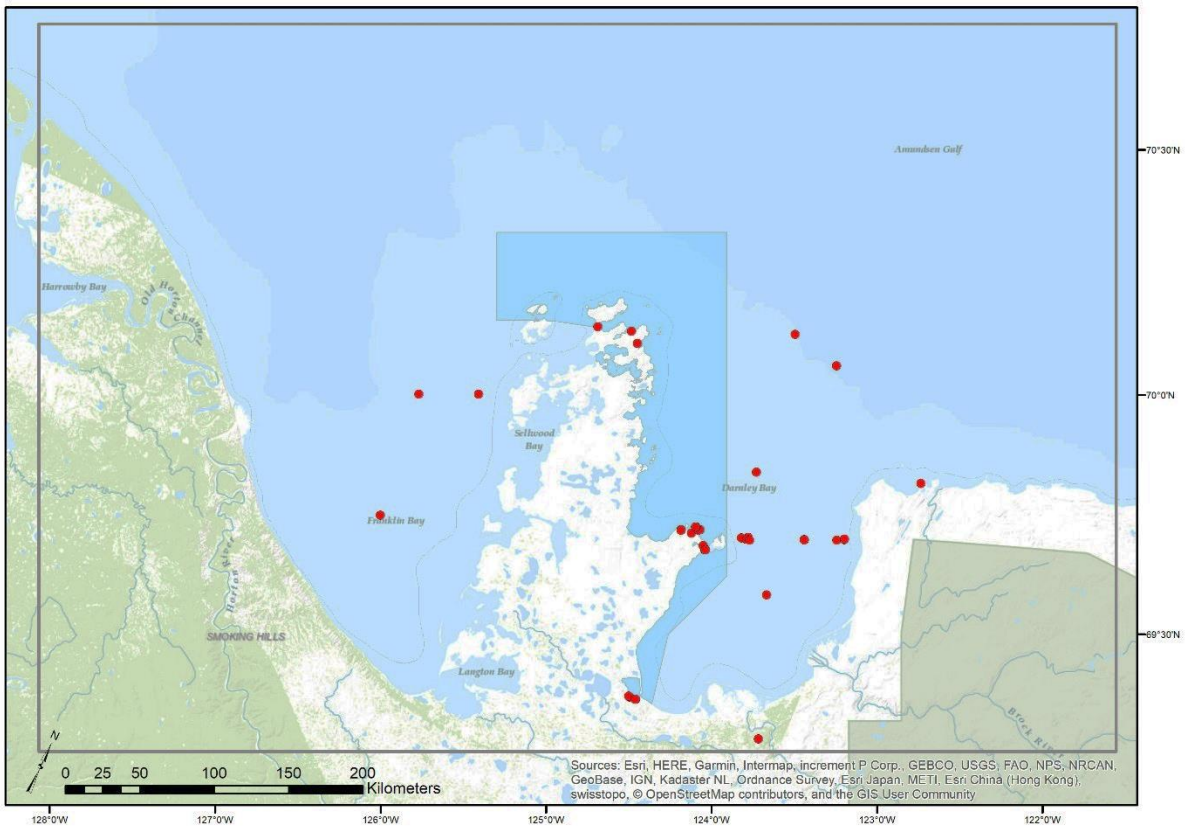

Figure A9. Distribution of Capelin *Mallotus villosus* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

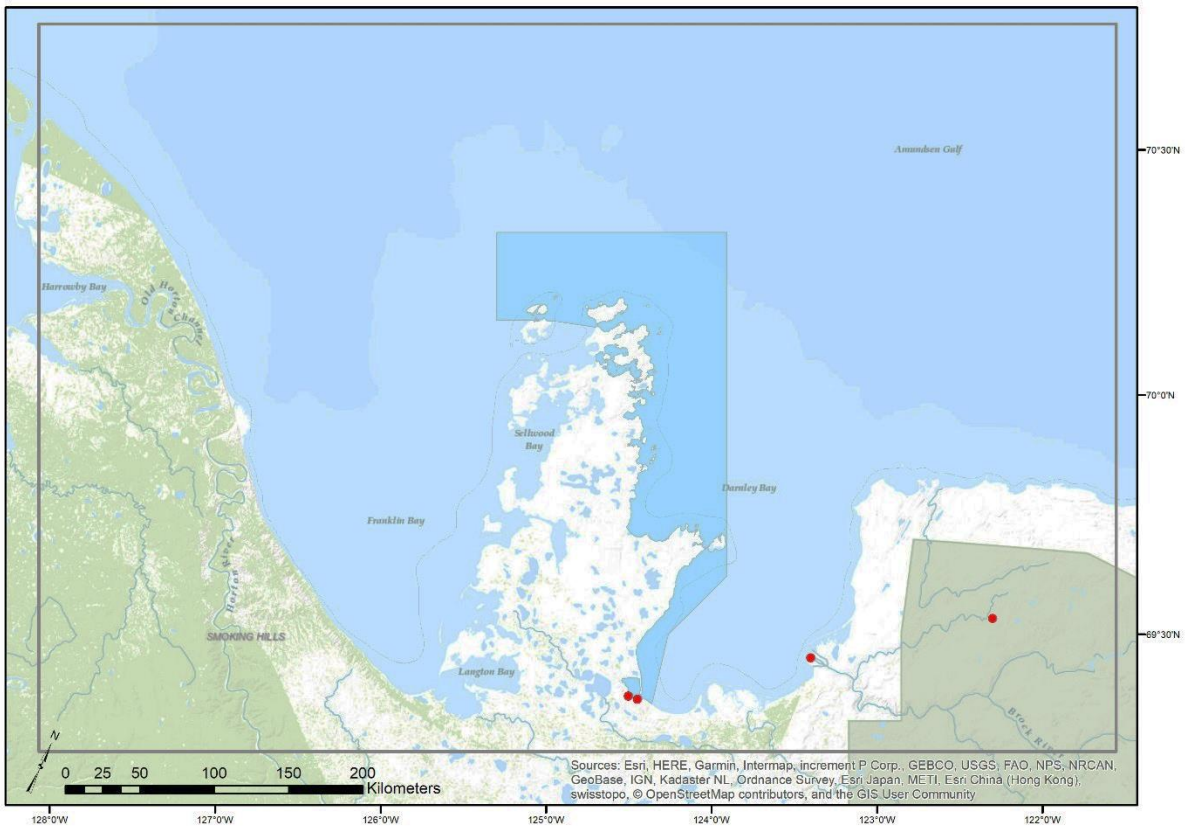

Figure A10. Distribution of Rainbow Smelt *Osmerus mordax* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

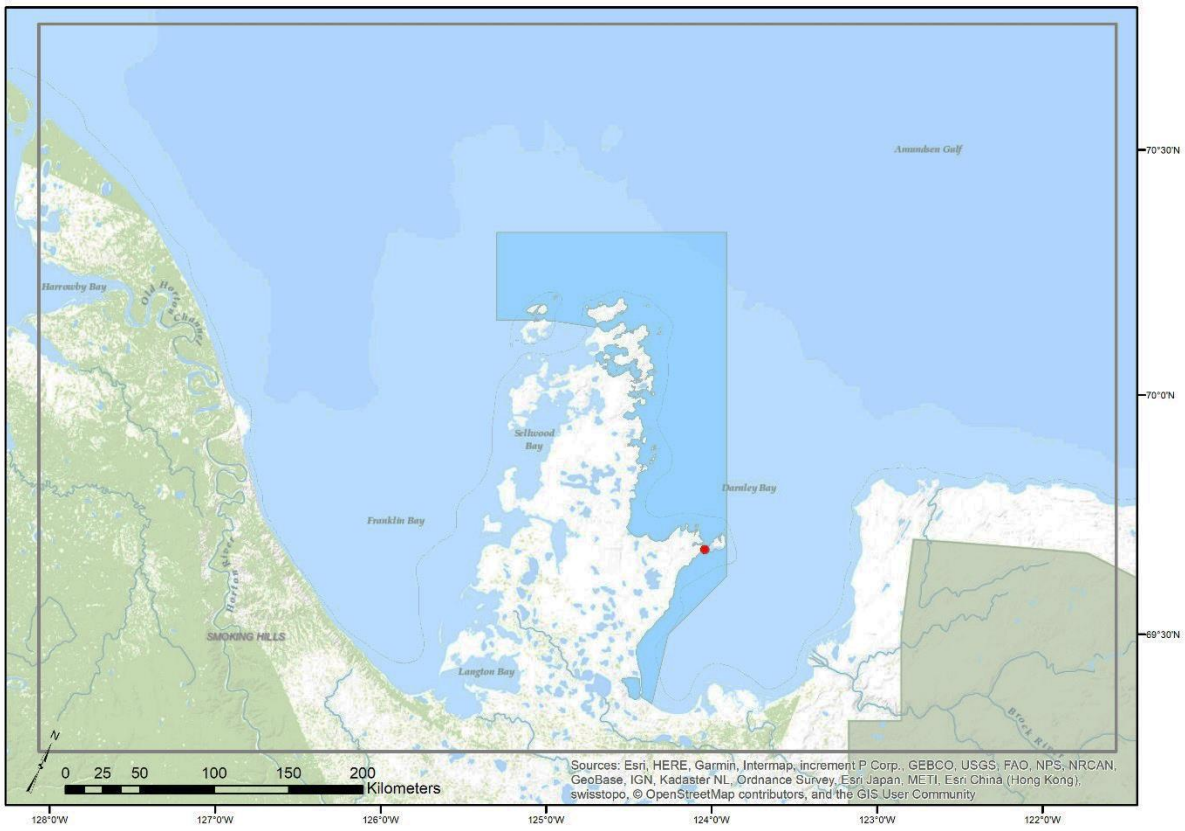

Figure A11. Distribution of Banded Gunnel *Pholis fasciata* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

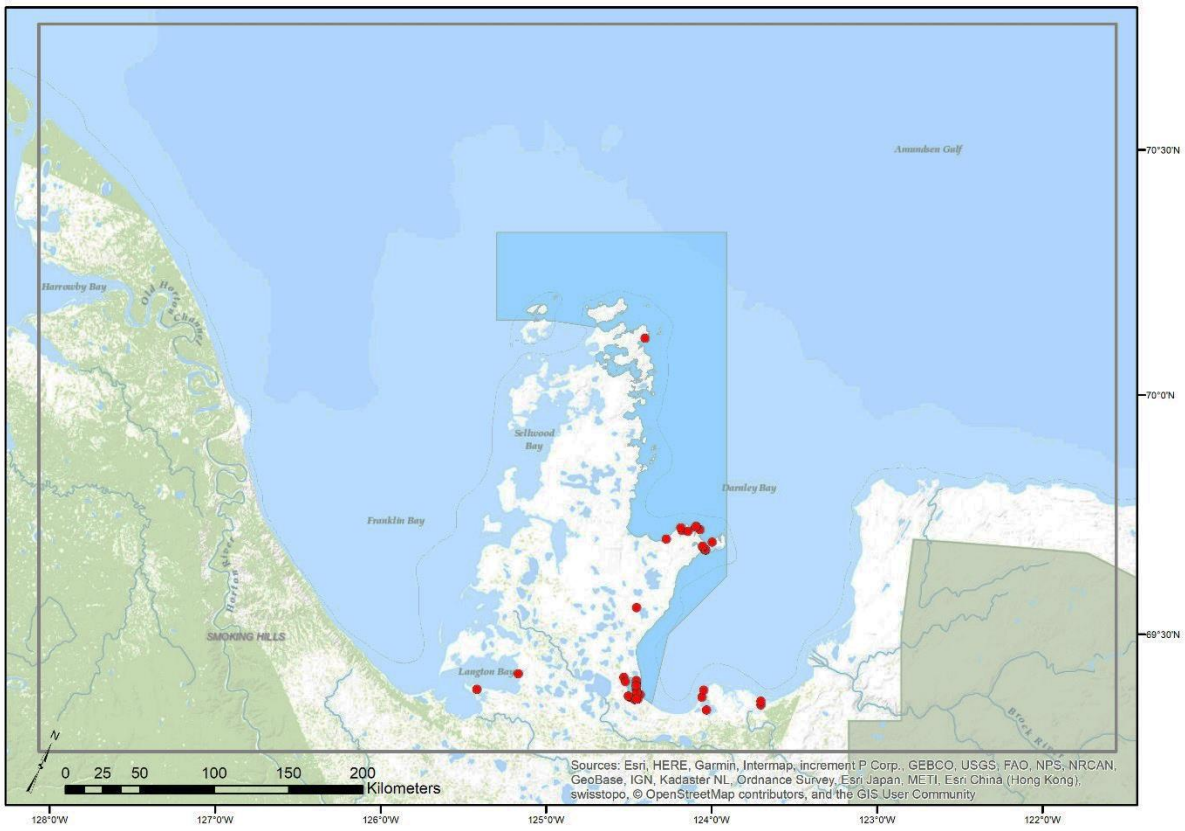

Figure A12. Distribution of Starry Flounder *Platichthys stellatus* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

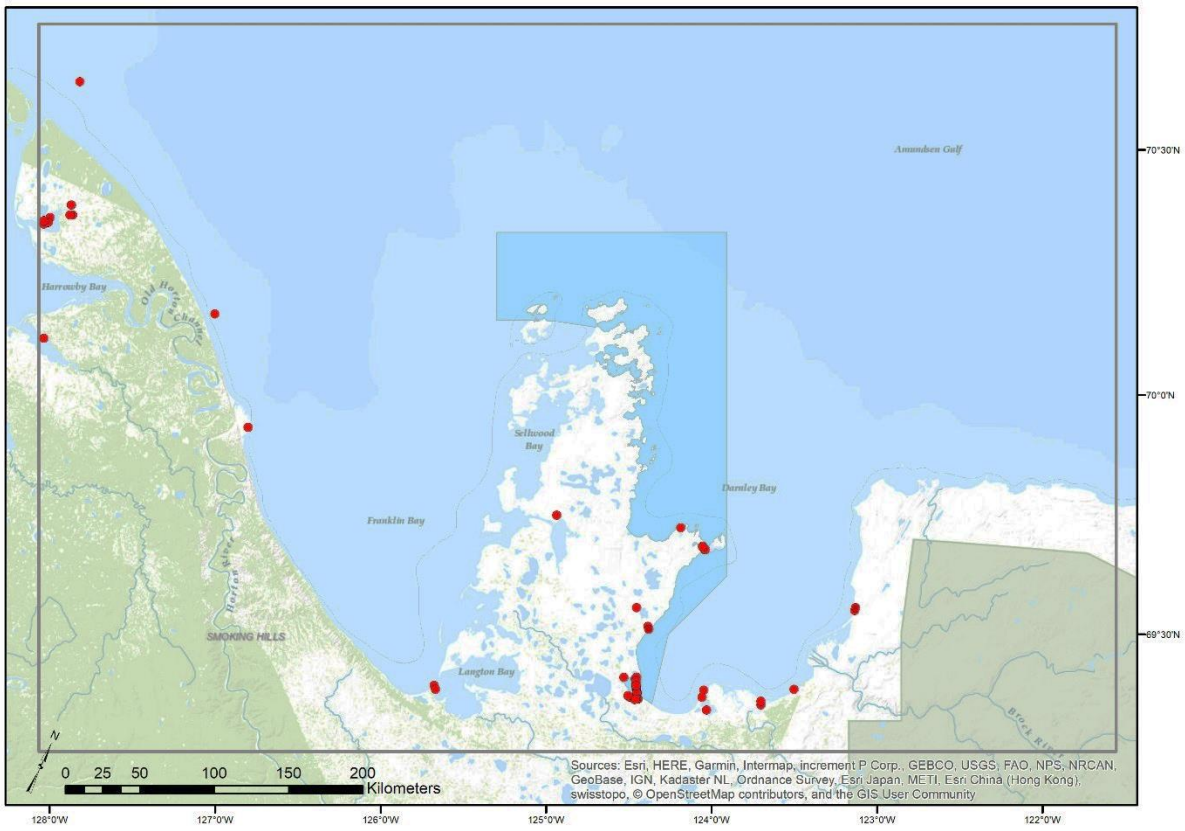

Figure A13. Distribution of Arctic Flounder *Pleuronectes glacialis* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

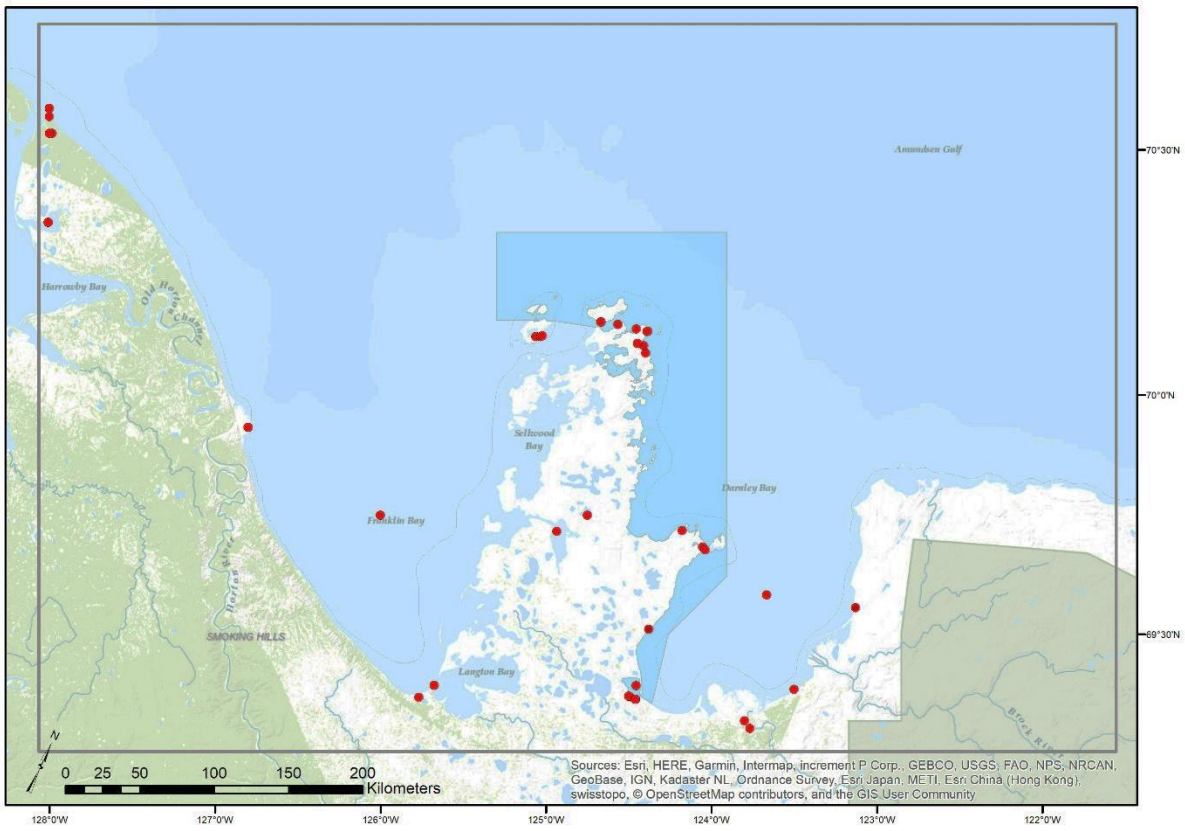

Figure A14. Distribution of Arctic Cisco *Coregonus autumnalis* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

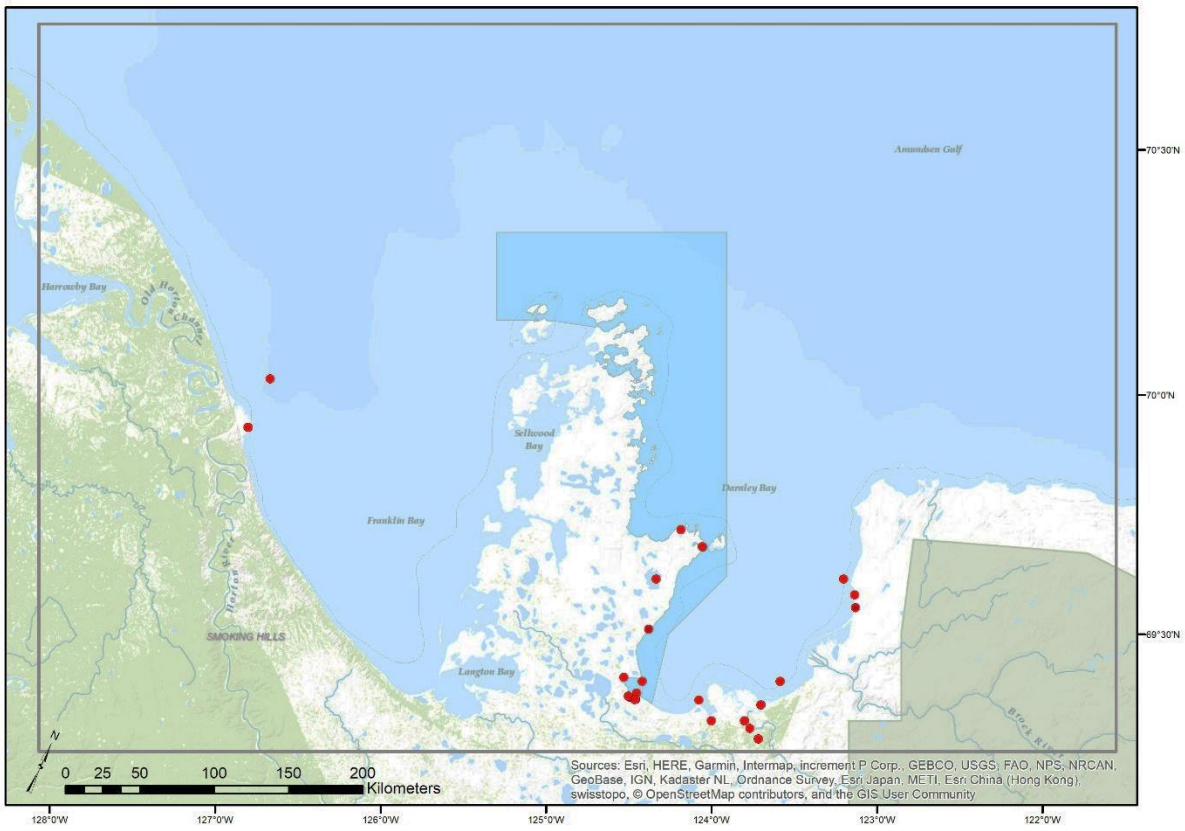

Figure A15. Distribution of Broad Whitefish *Coregonus nasus* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

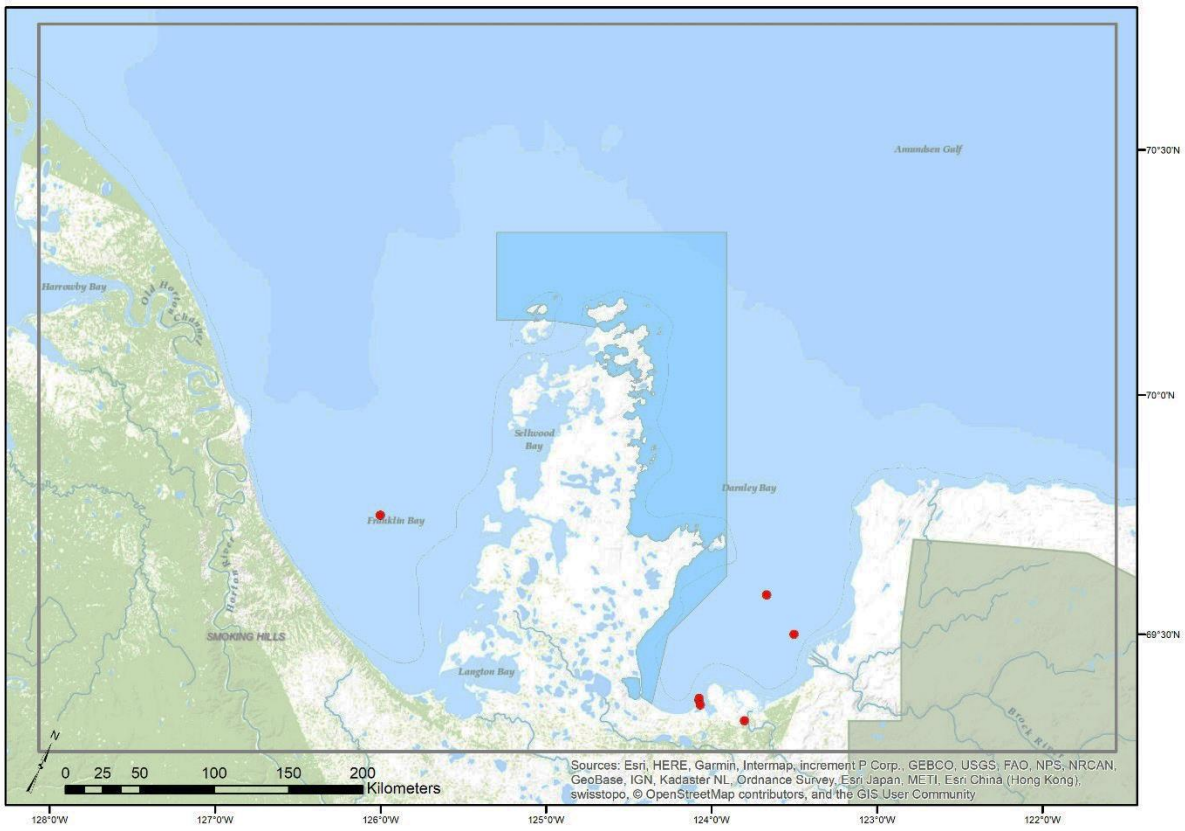

Figure A16. Distribution of Chum Salmon *Oncorhynchus keta* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

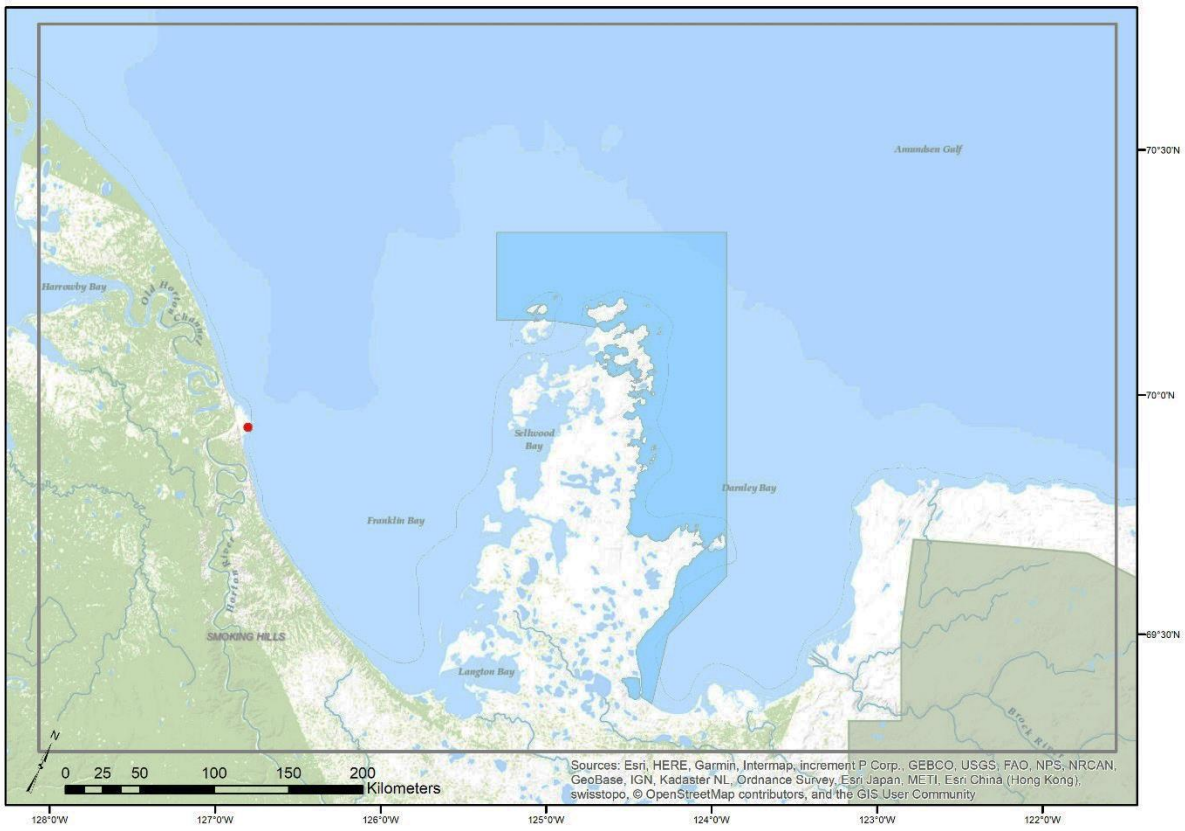

Figure A17. Distribution of Sockeye Salmon *Oncorhynchus nerka* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

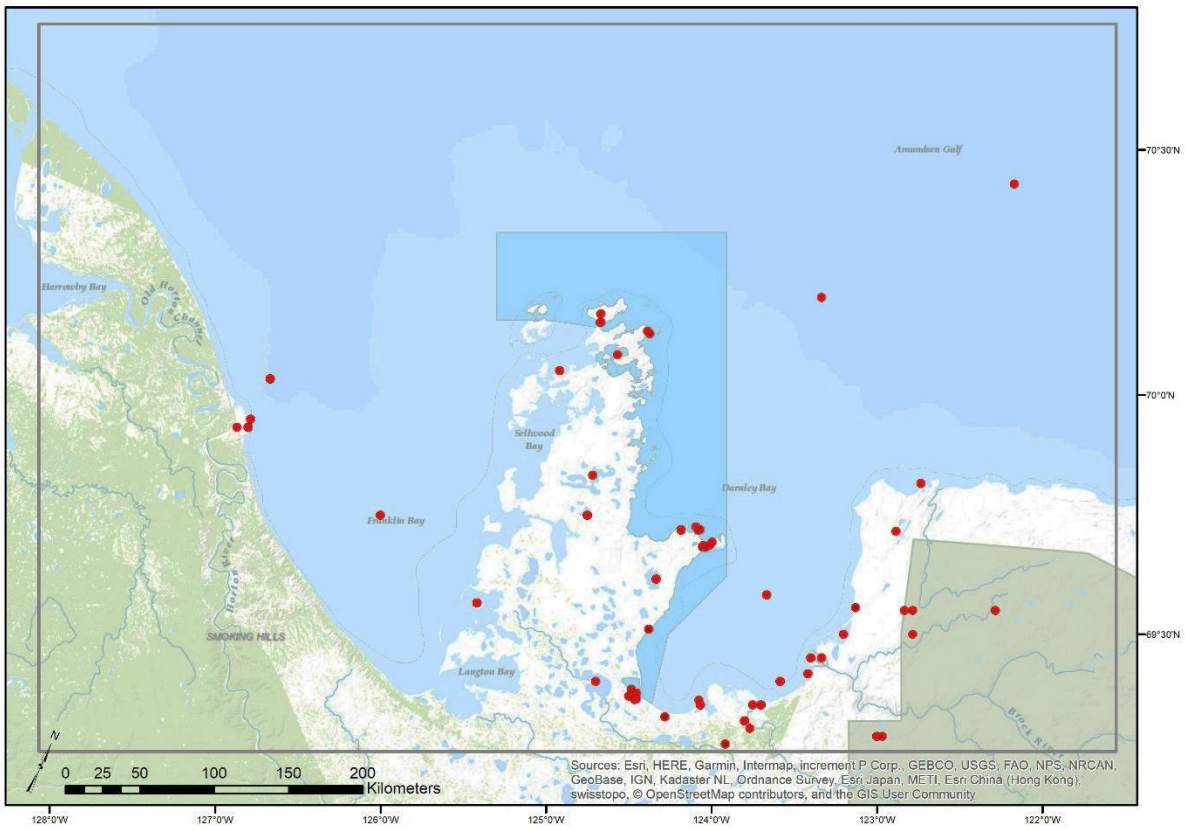

Figure A18. Distribution of Arctic Char *Salvelinus alpinus* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

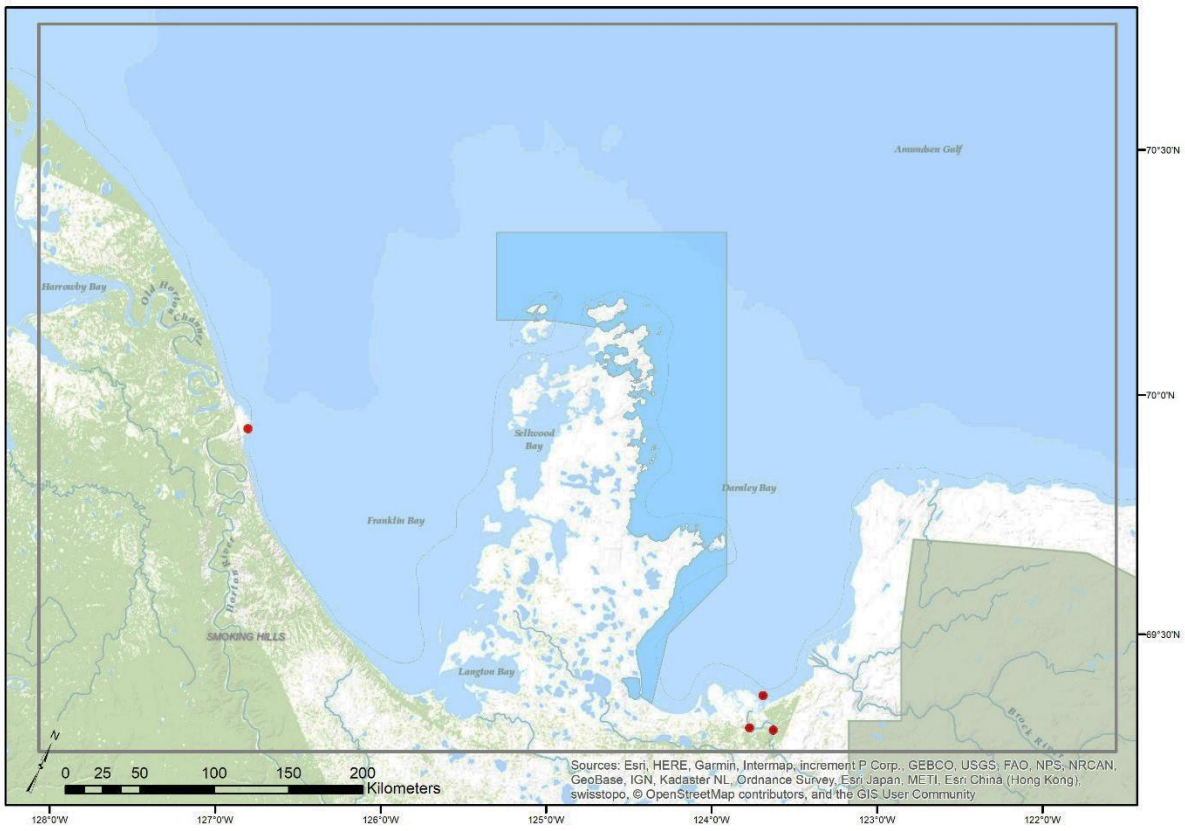

Figure A19. Distribution of suspected Dolly Varden *Salvelinus malma* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

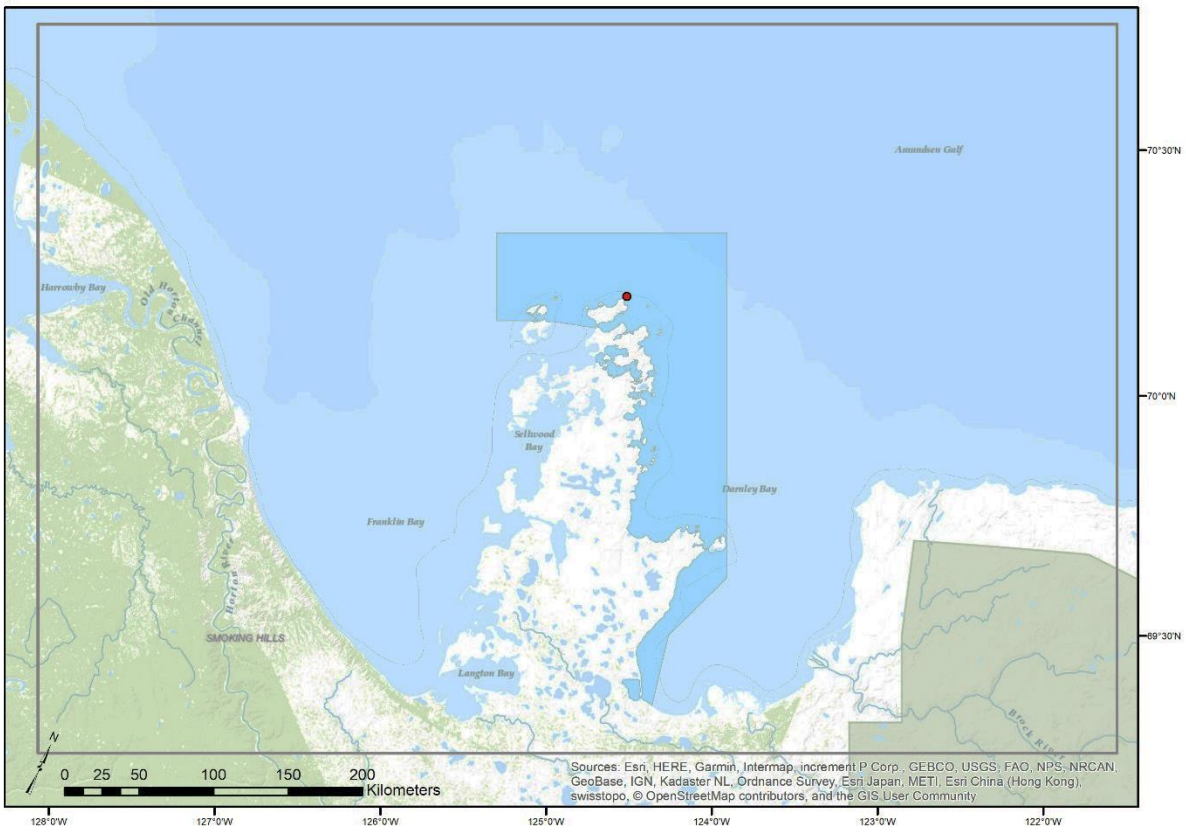

Figure A20. Distribution of Fourline Snakeblenny *Eumesogrammus praecisus* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

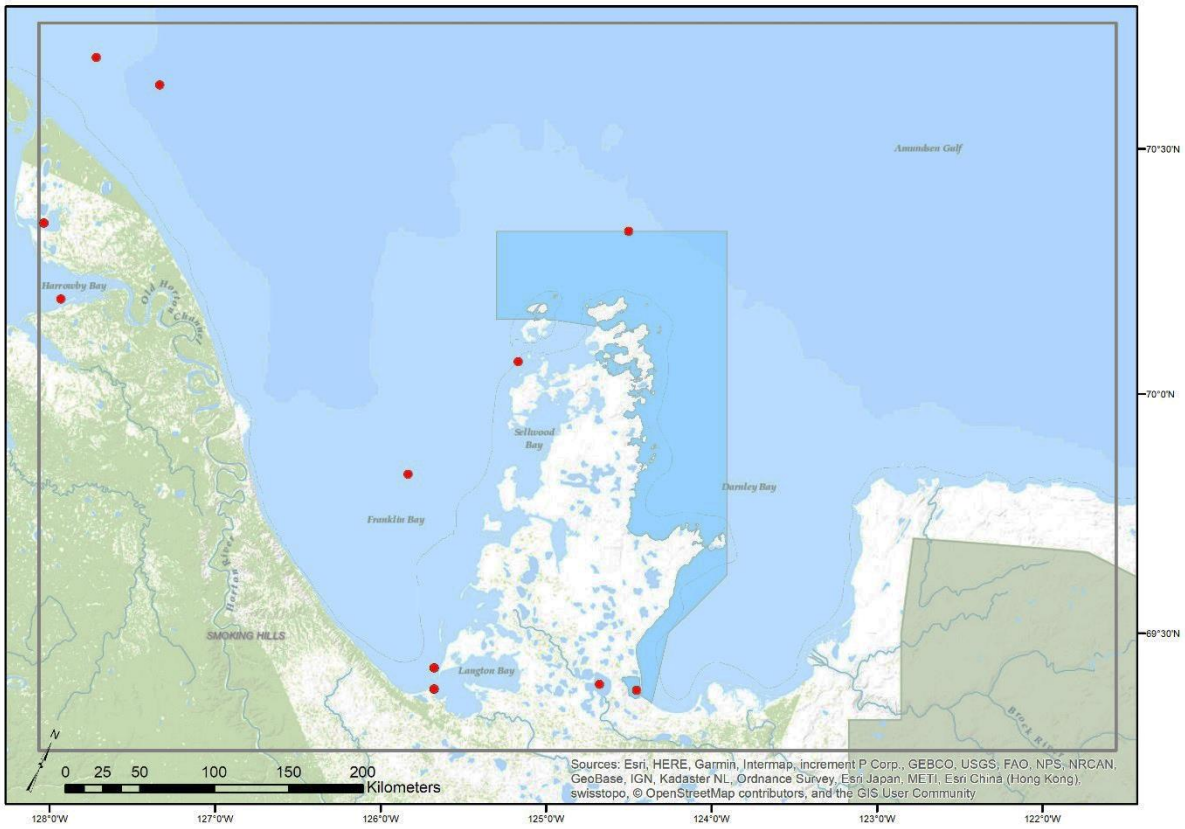

Figure A21. Distribution of Slender Eelblenny *Lumpenus fabricii* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

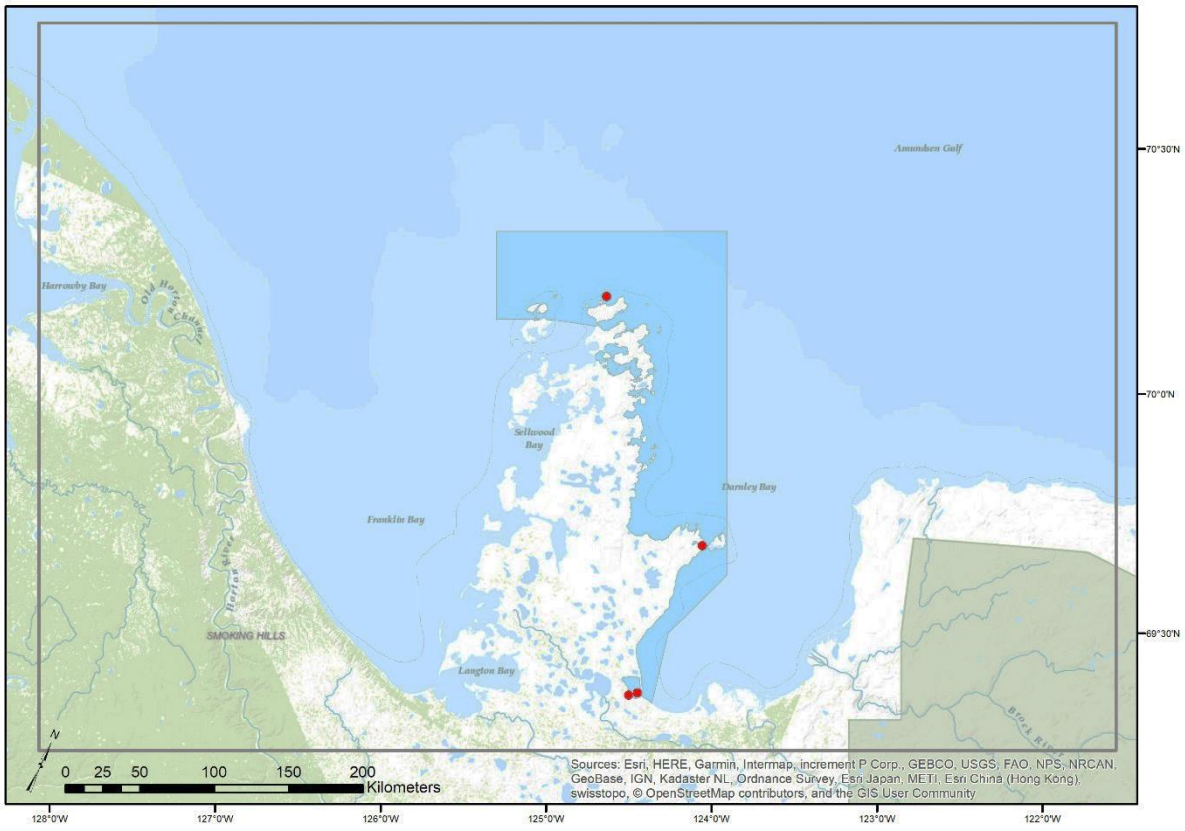

Figure A22. Distribution of Arctic Shanny *Stichaeus punctatus* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

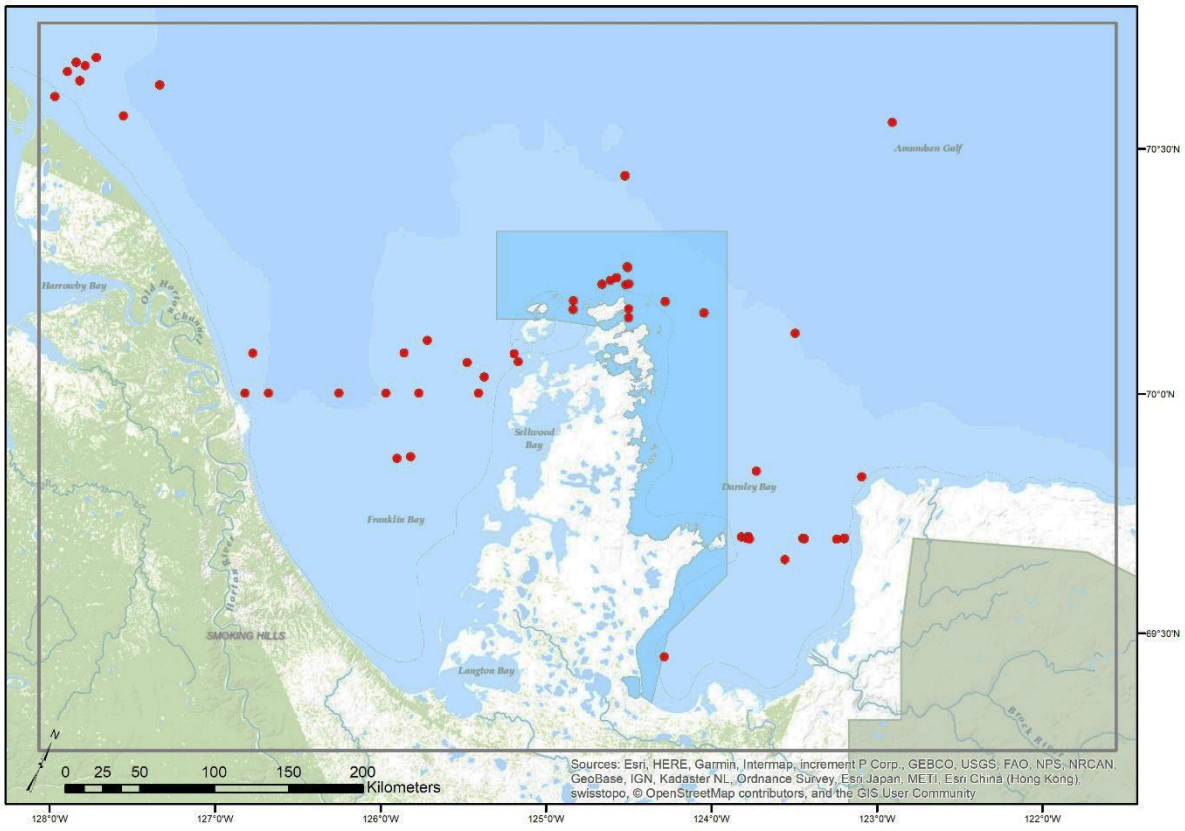

Figure A23. Distribution of Arctic Alligatorfish *Aspidophoroides olrikii* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

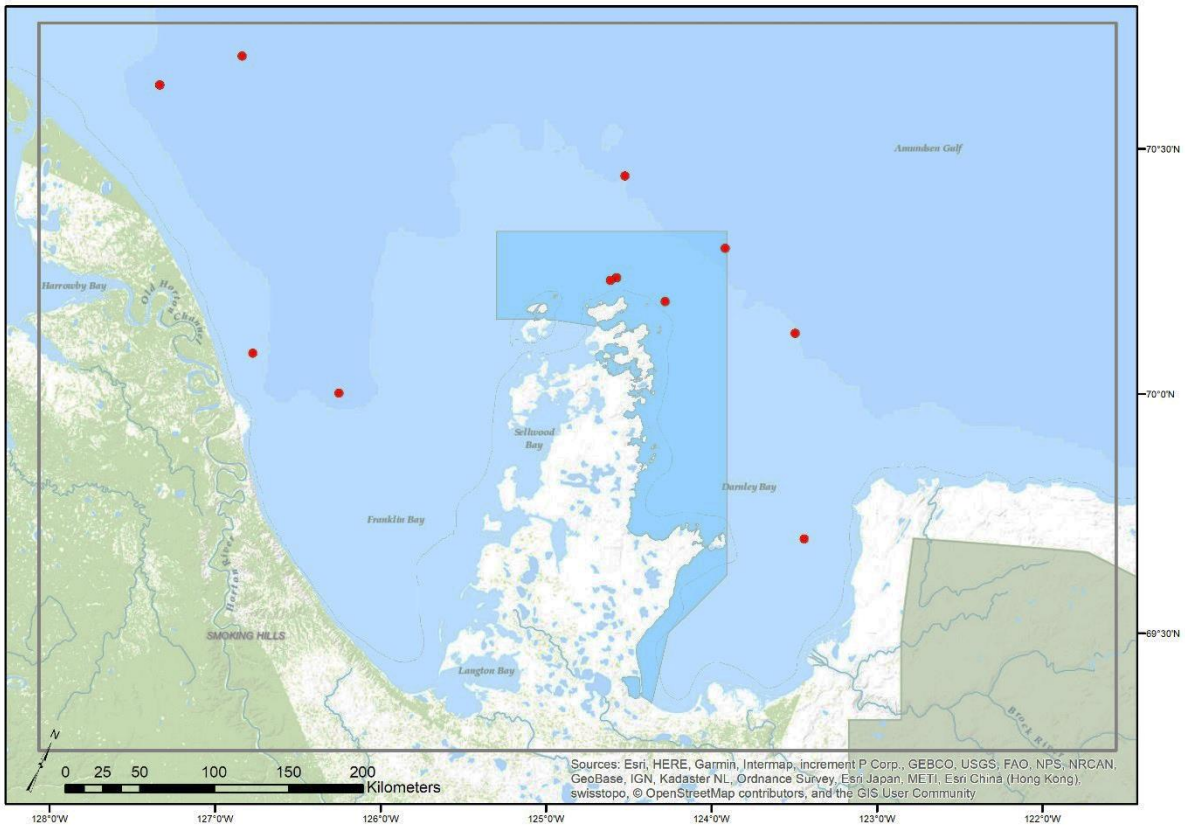

Figure A24. Distribution of Atlantic Poacher *Leptagonus decagonus* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

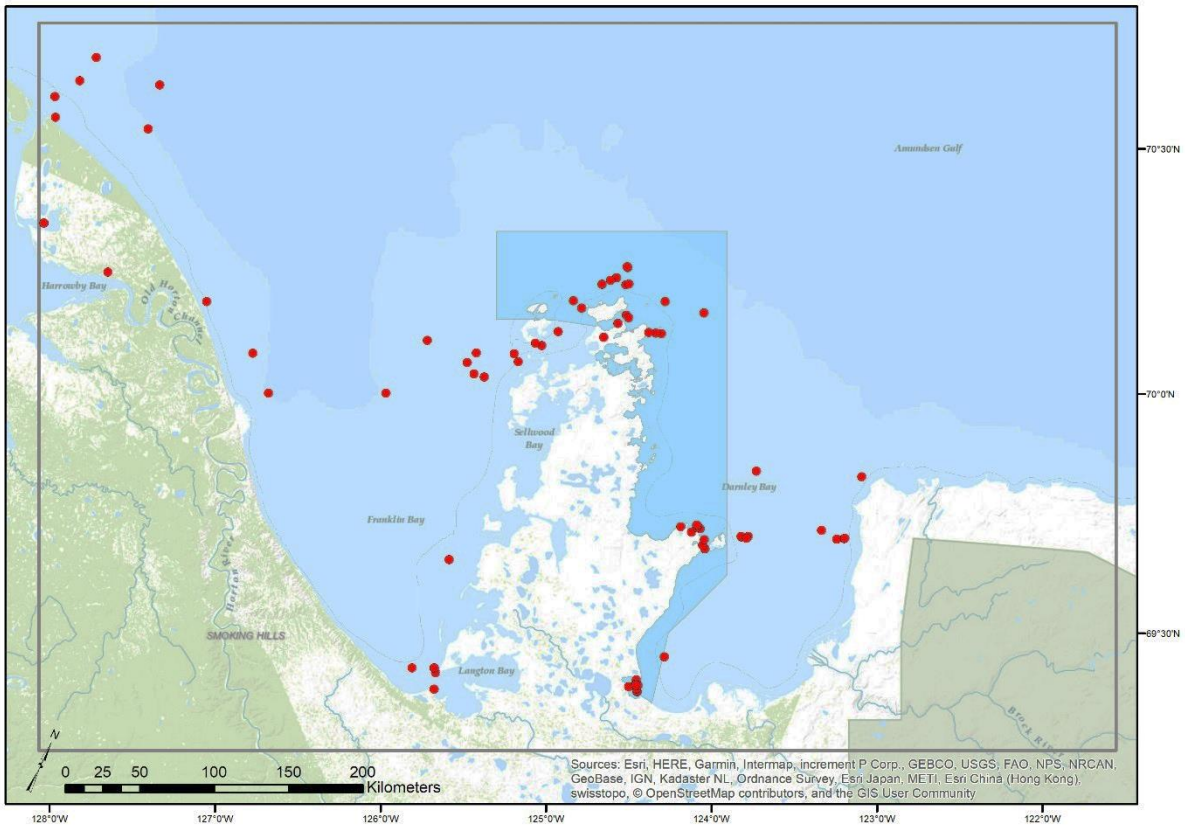

Figure A25. Distribution of Arctic Staghorn Sculpin *Gymnocanthus tricuspis* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

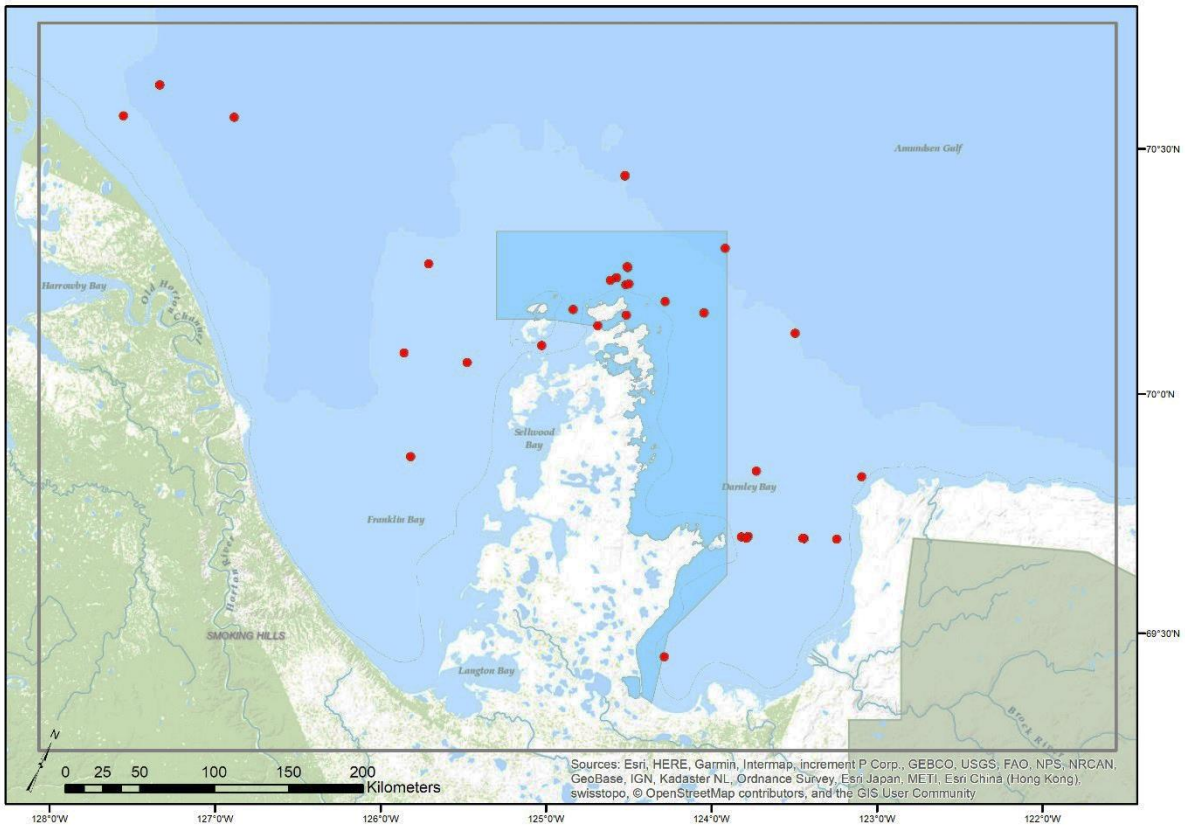

Figure A26. Distribution of Twohorn Sculpin *Icelus bicornis* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

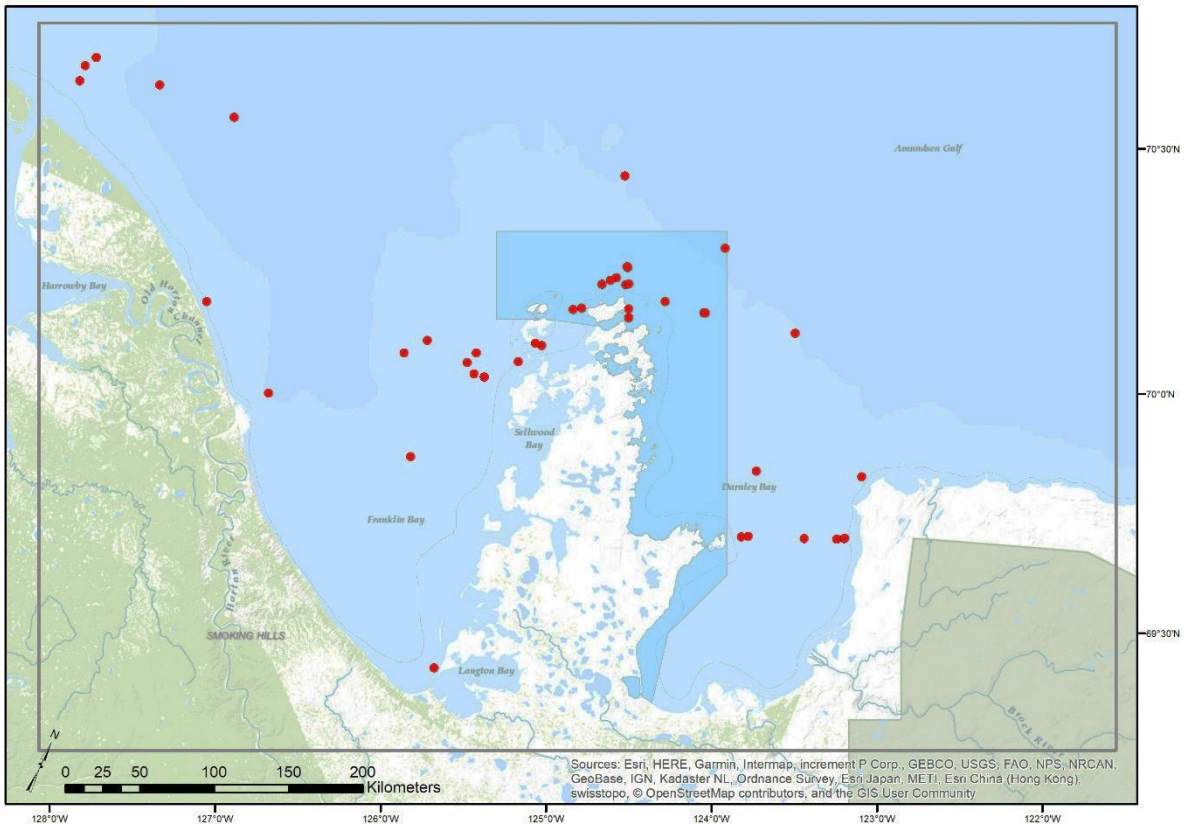

Figure A27. Distribution of Spatulate Sculpin *Icelus spatula* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

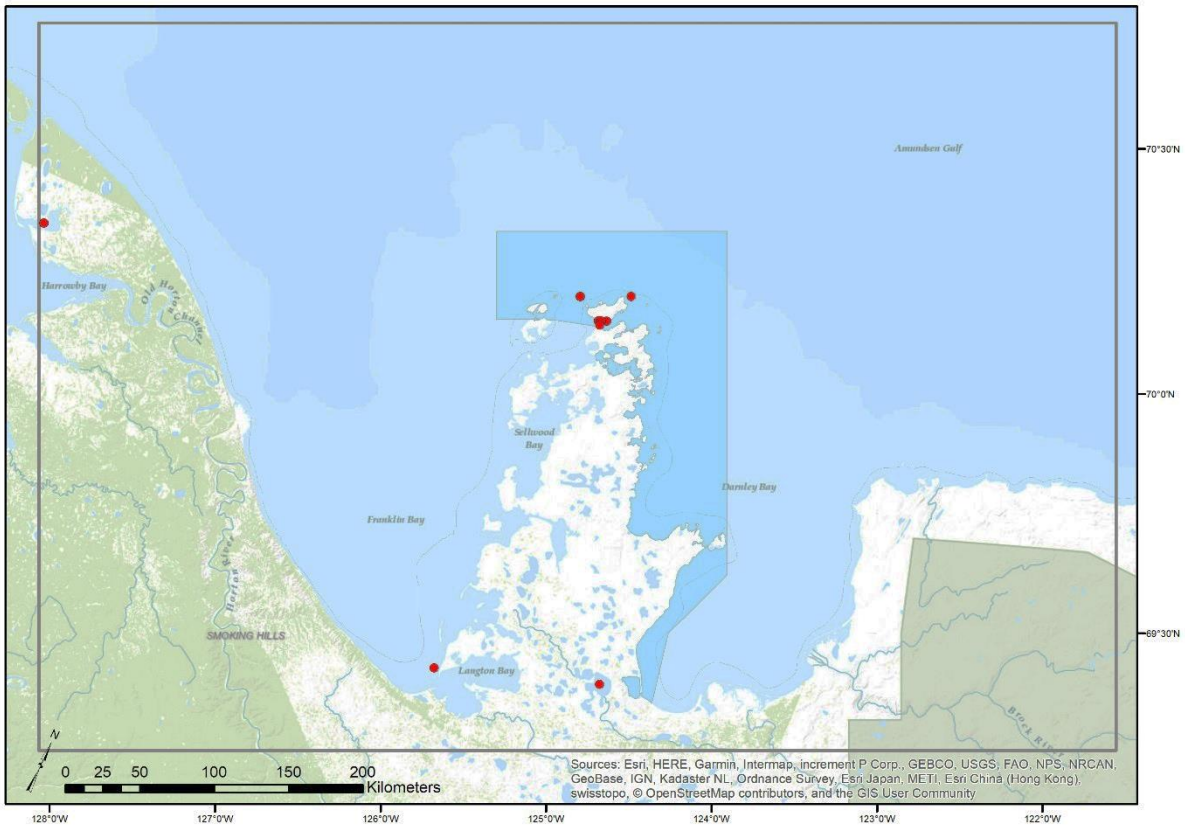

Figure A28. Distribution of Arctic Sculpin *Myoxocephalus scorpioides* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

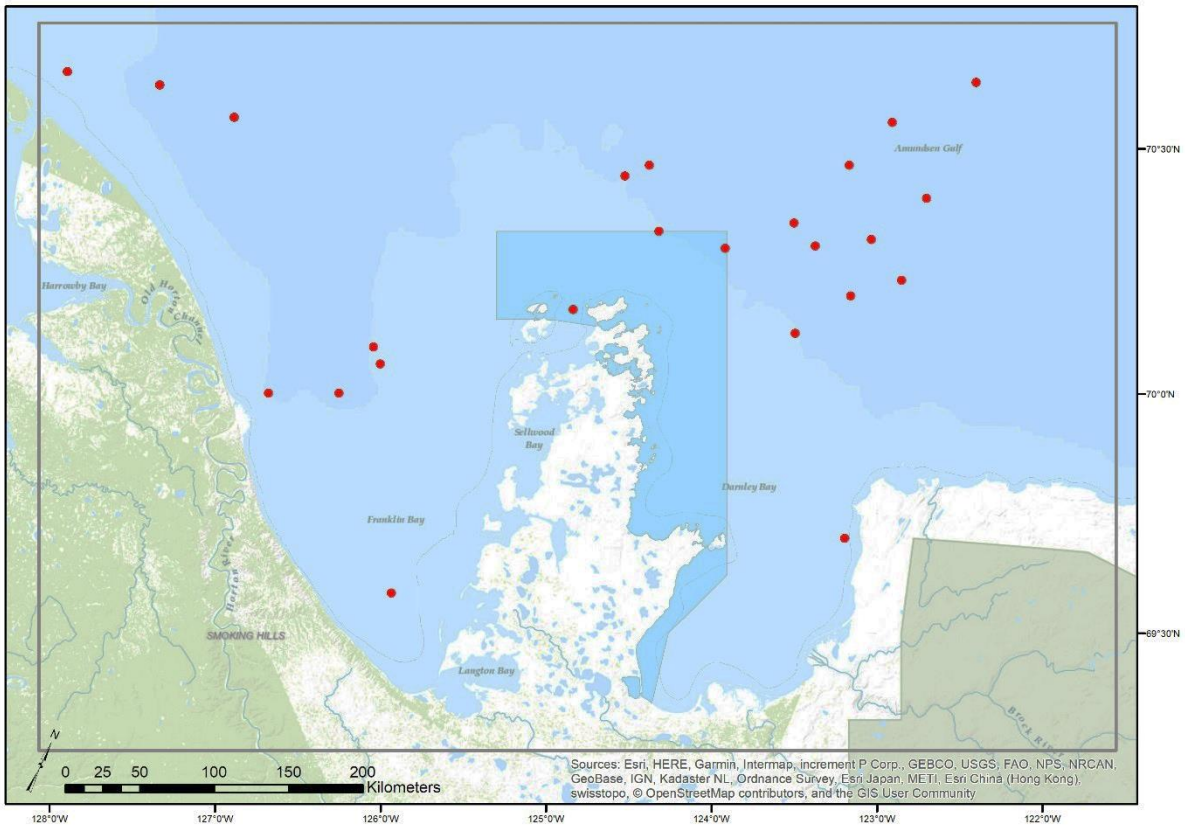

Figure A29. Distribution of Bigeye Sculpin *Triglops nybelini* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

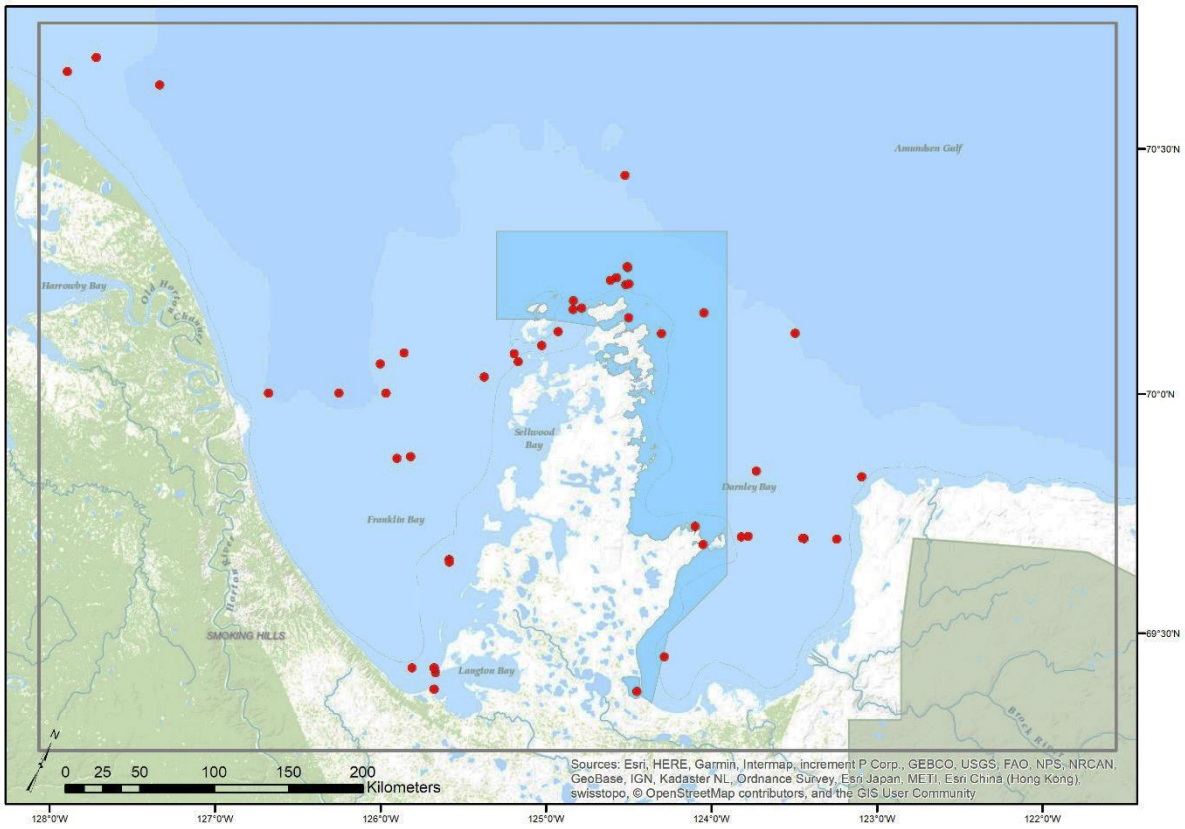

Figure A30. Distribution of Ribbed Sculpin *Triglops pingelii* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

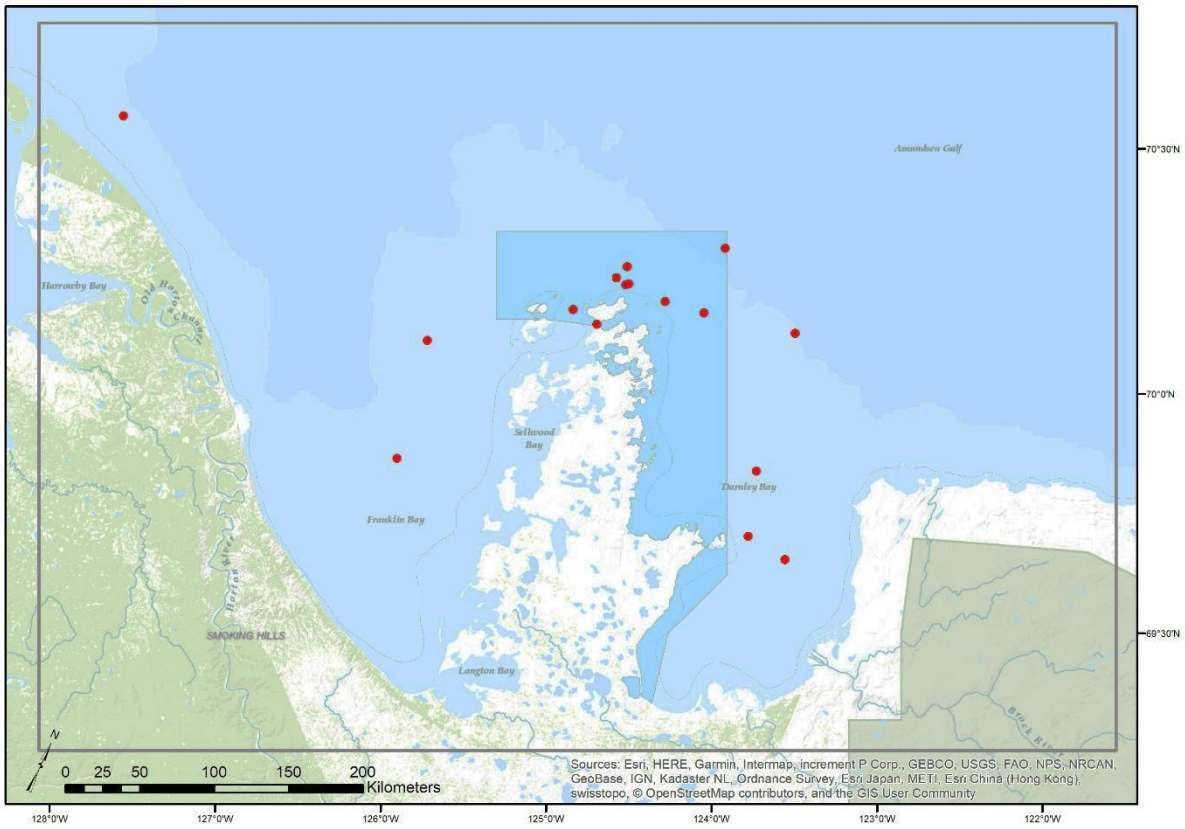

Figure A31. Distribution of Leatherfin Lumpsucker *Eumicrotremus derjugini* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

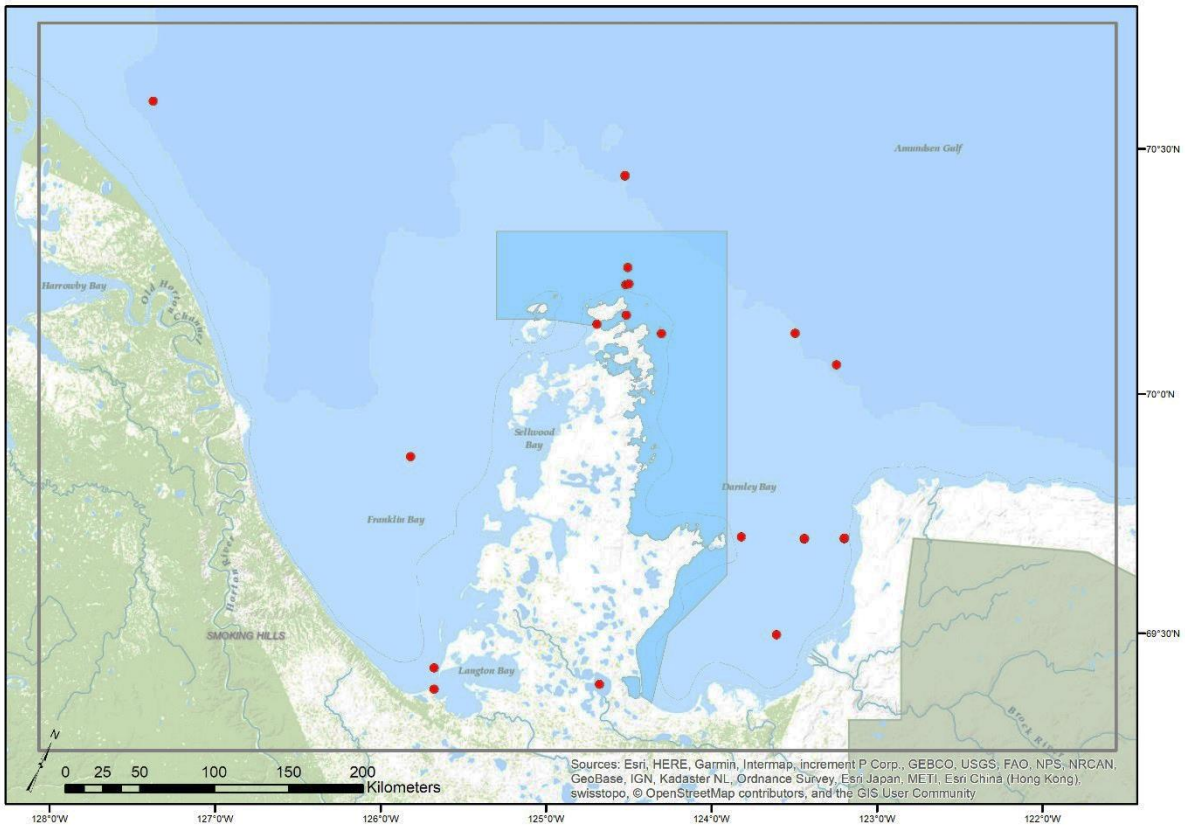

Figure A32. Distribution of Atlantic Spiny Lumpsucker *Eumicrotremus spinosus* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

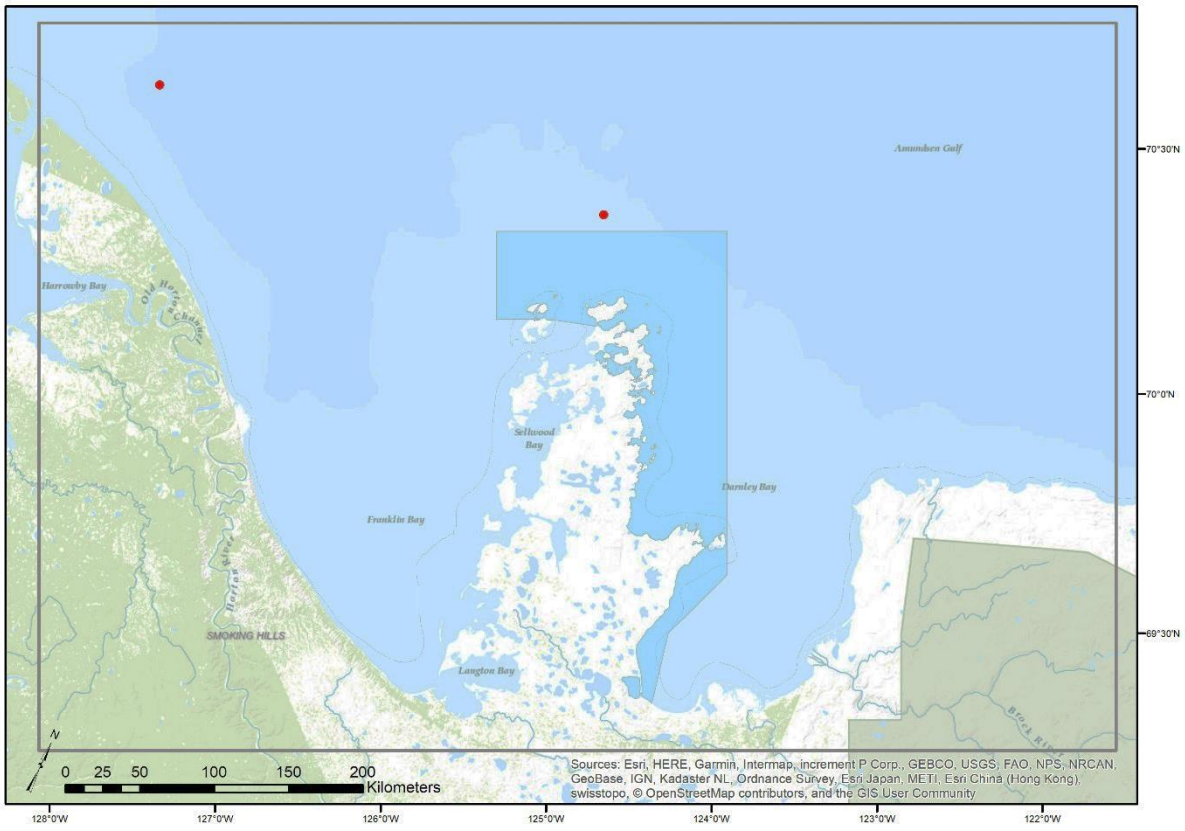

Figure A33. Distribution of Polar Cod *Arctogadus glacialis* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

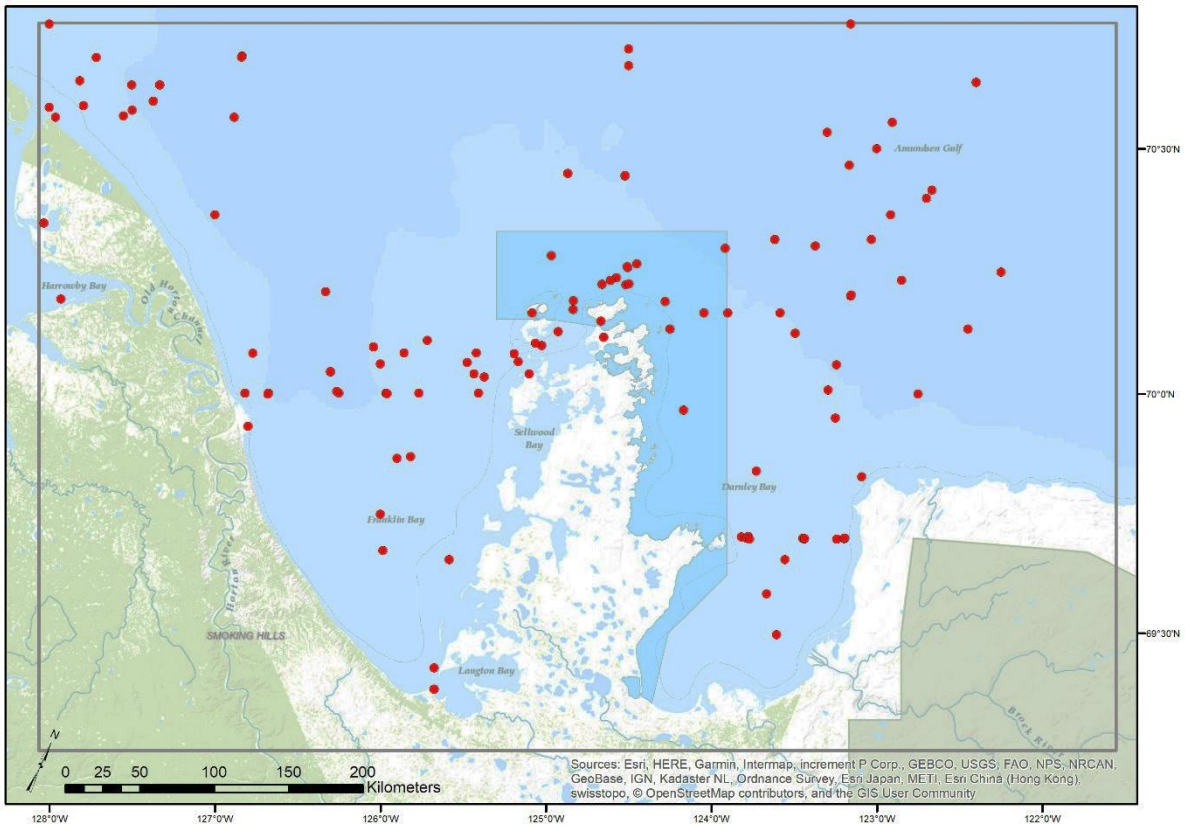

Figure A34. Distribution of Arctic Cod *Boreogadus saida* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

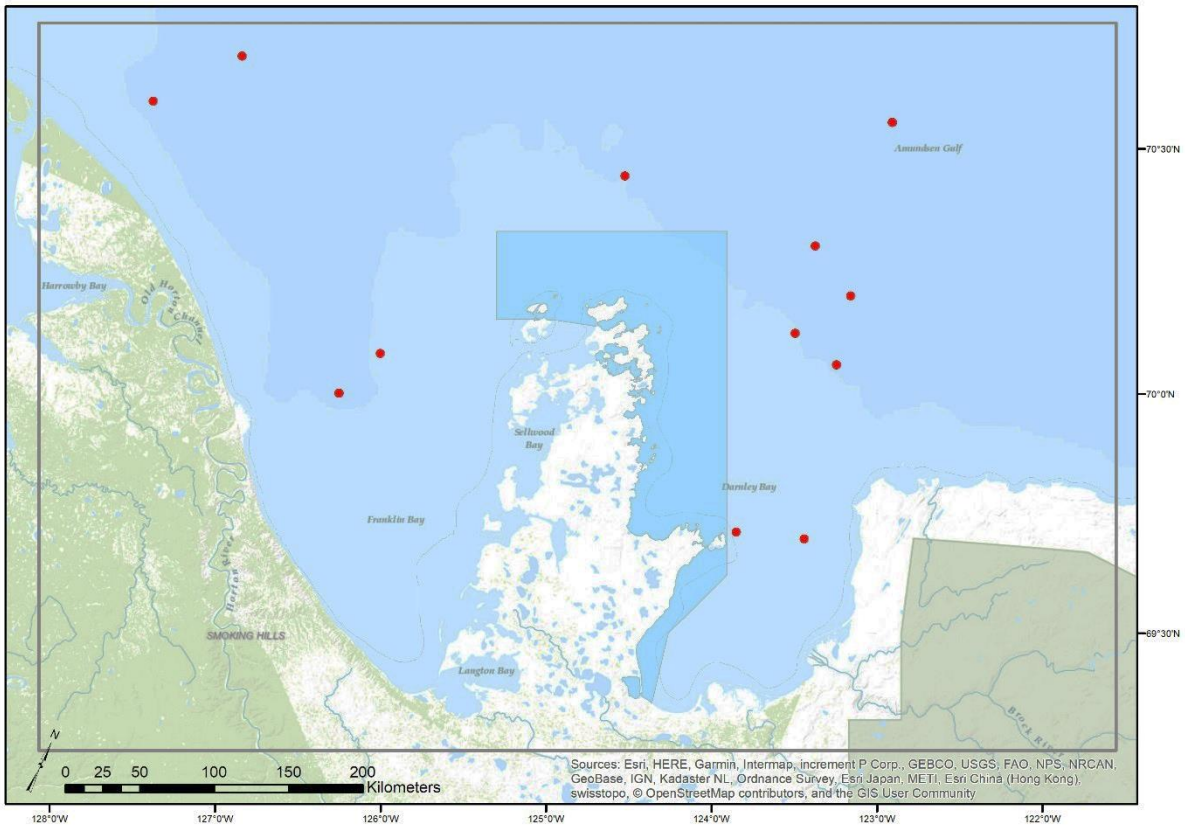

Figure A35. Distribution of Sea Tadpole *Careproctus reinhardti* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

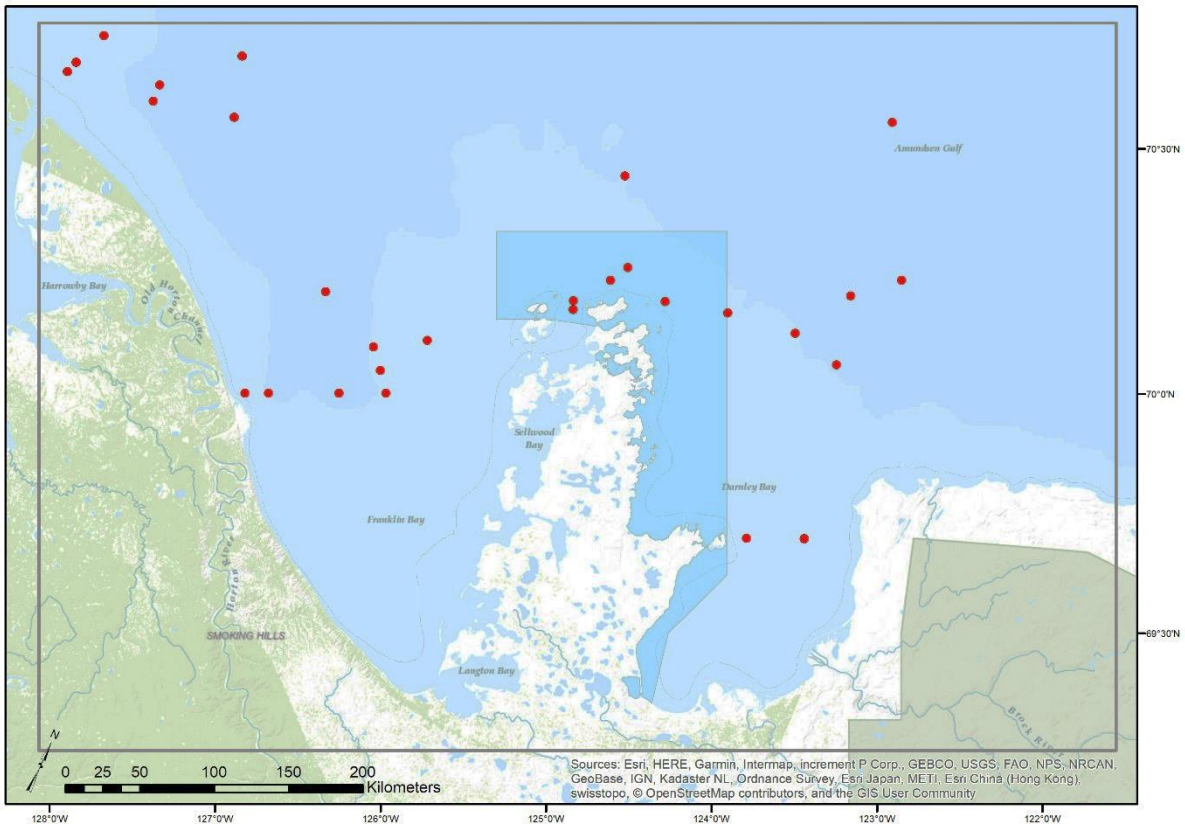

Figure A36. Distribution of Gelatinous Snailfish *Liparis fabricii* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

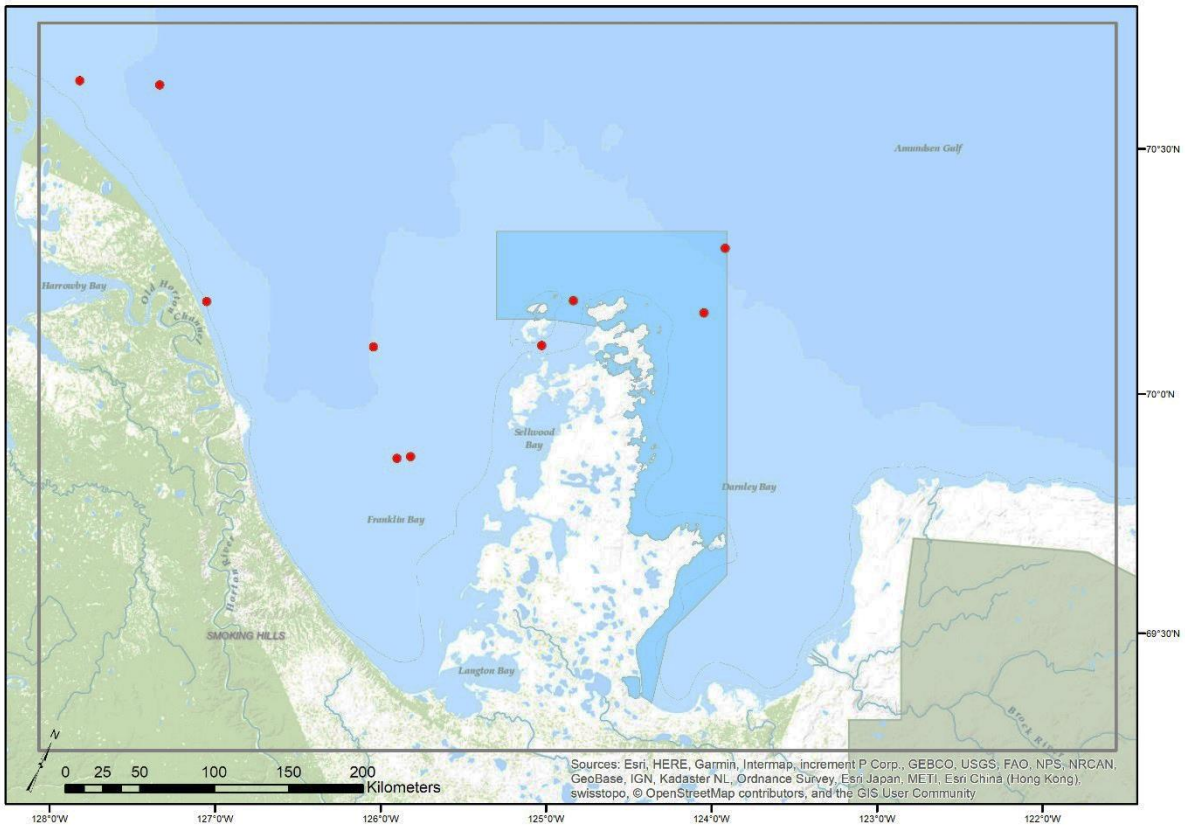

Figure A37. Distribution of Variegated Snailfish *Liparis gibbus* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

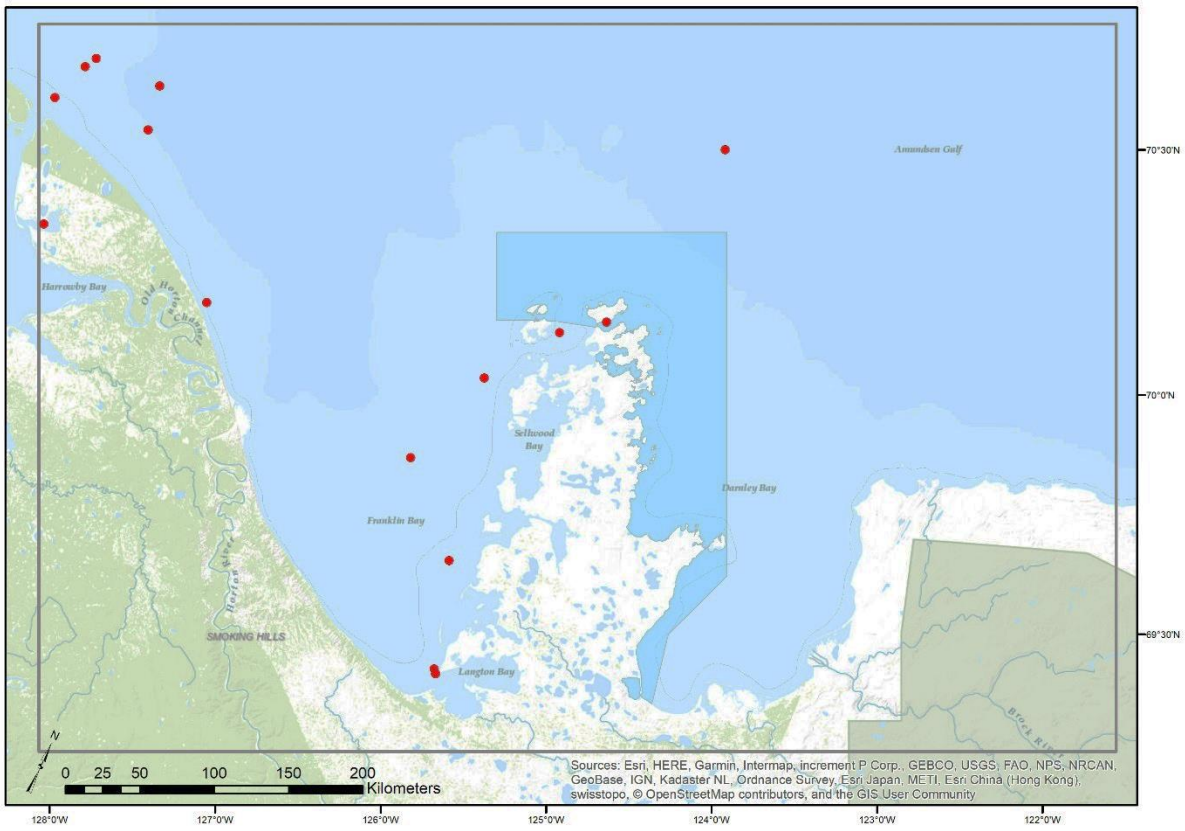

Figure A38. Distribution of Kelp Snailfish *Liparis tunicatus* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

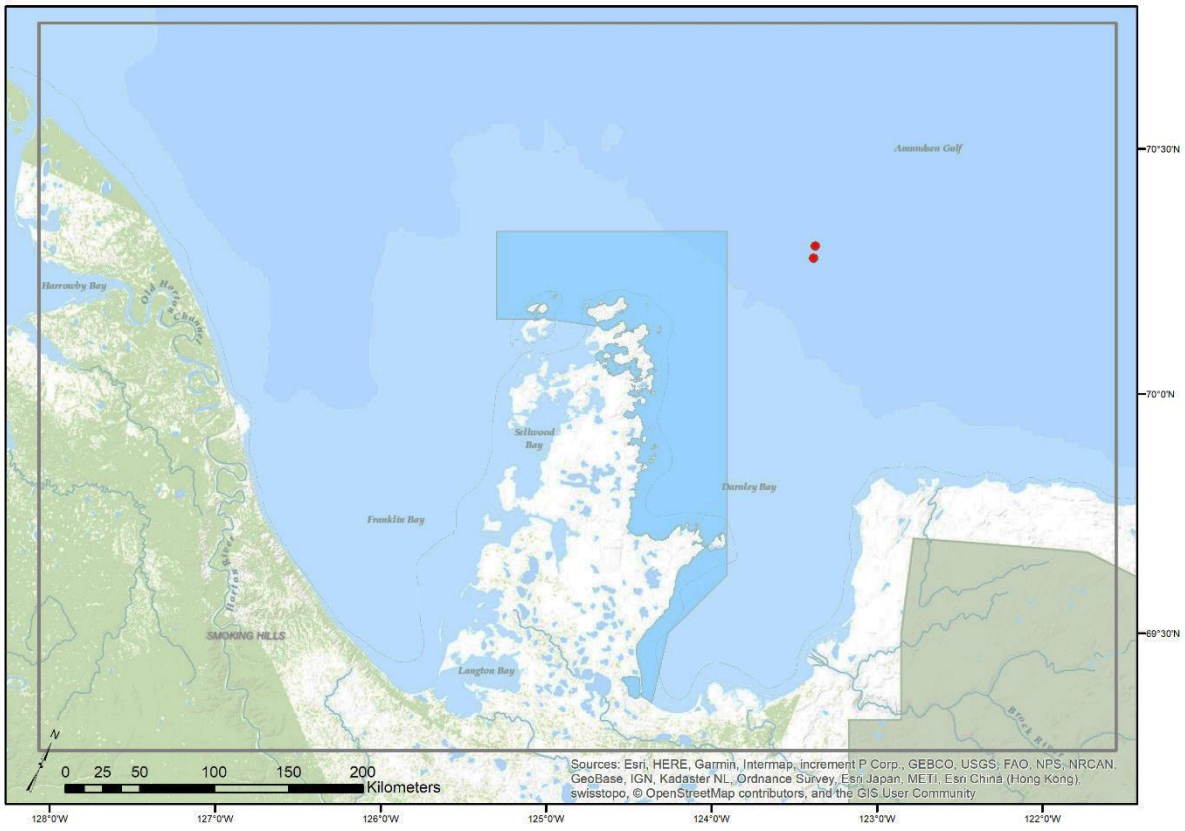

Figure A39. Distribution of Glacier Lanternfish *Benthosema glaciale* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

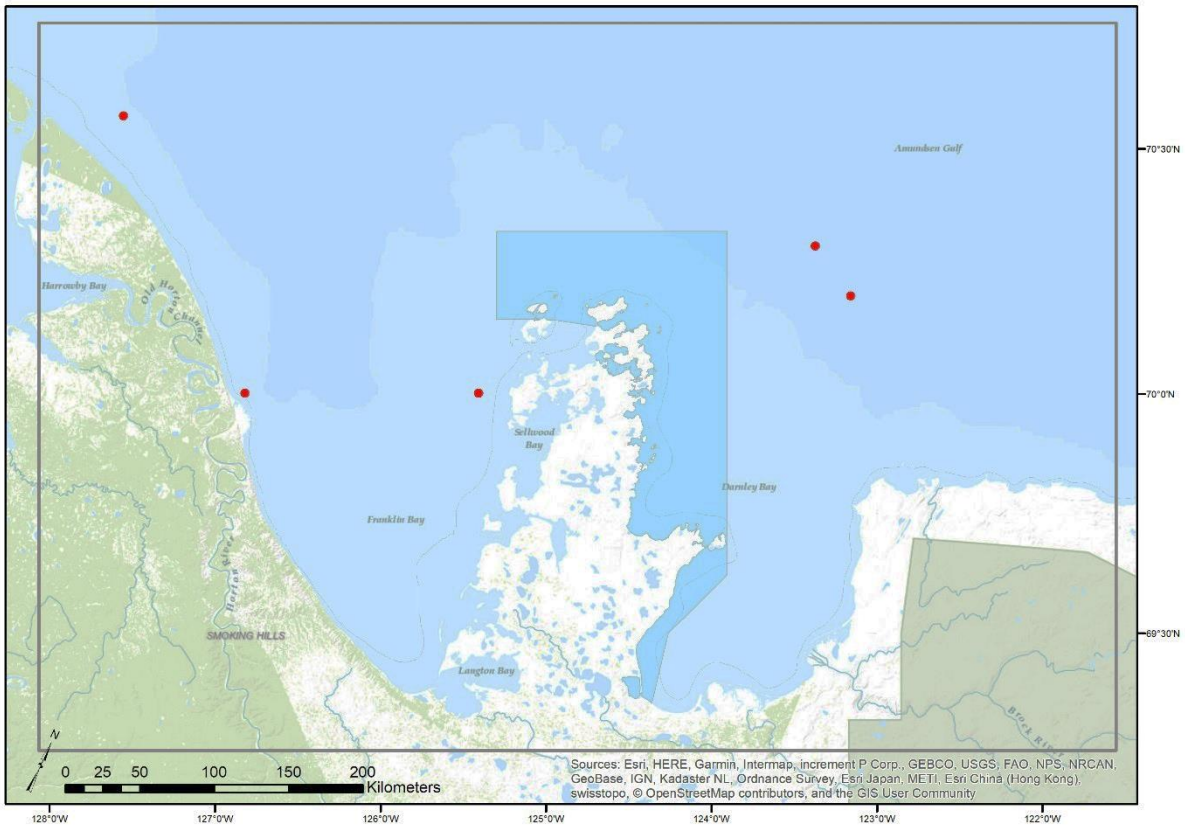

Figure A40. Distribution of Greenland Halibut *Reinhardtius hippoglossoides* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

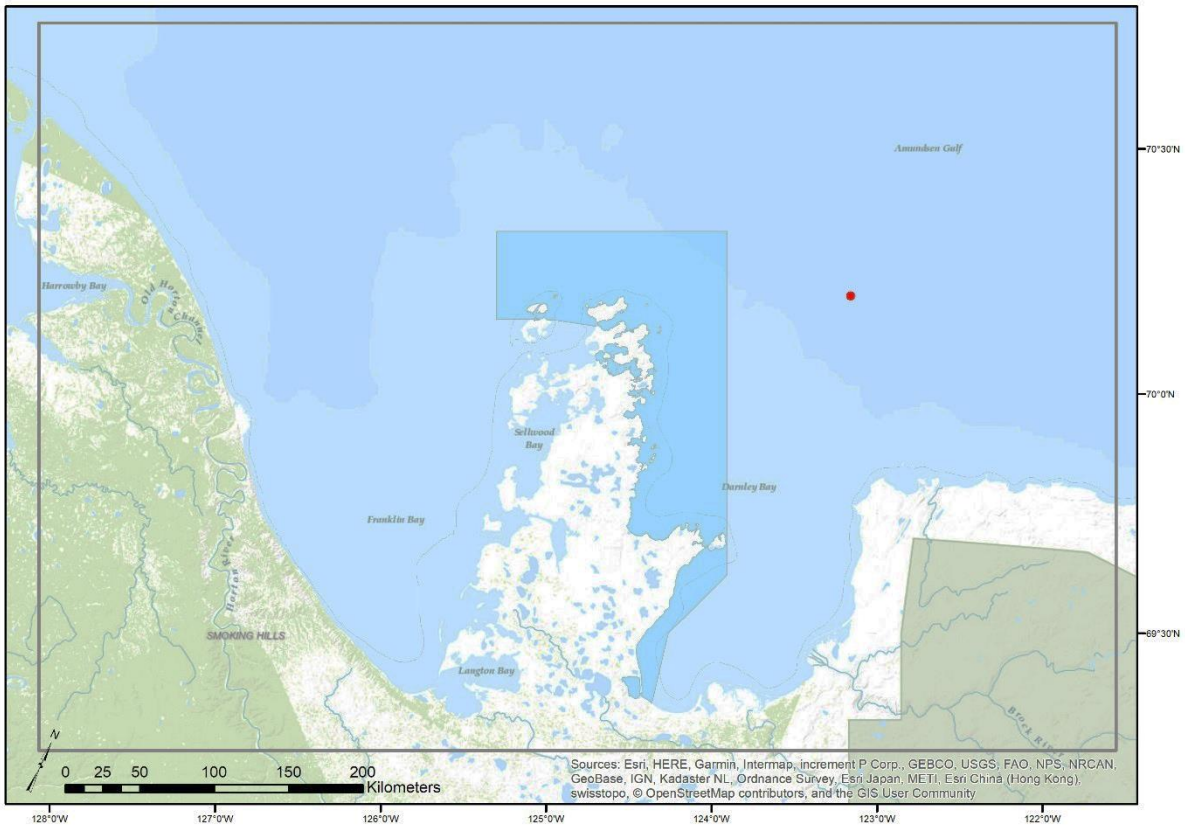

Figure A41. Distribution of Arctic Skate *Amblyraja hyperborea* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

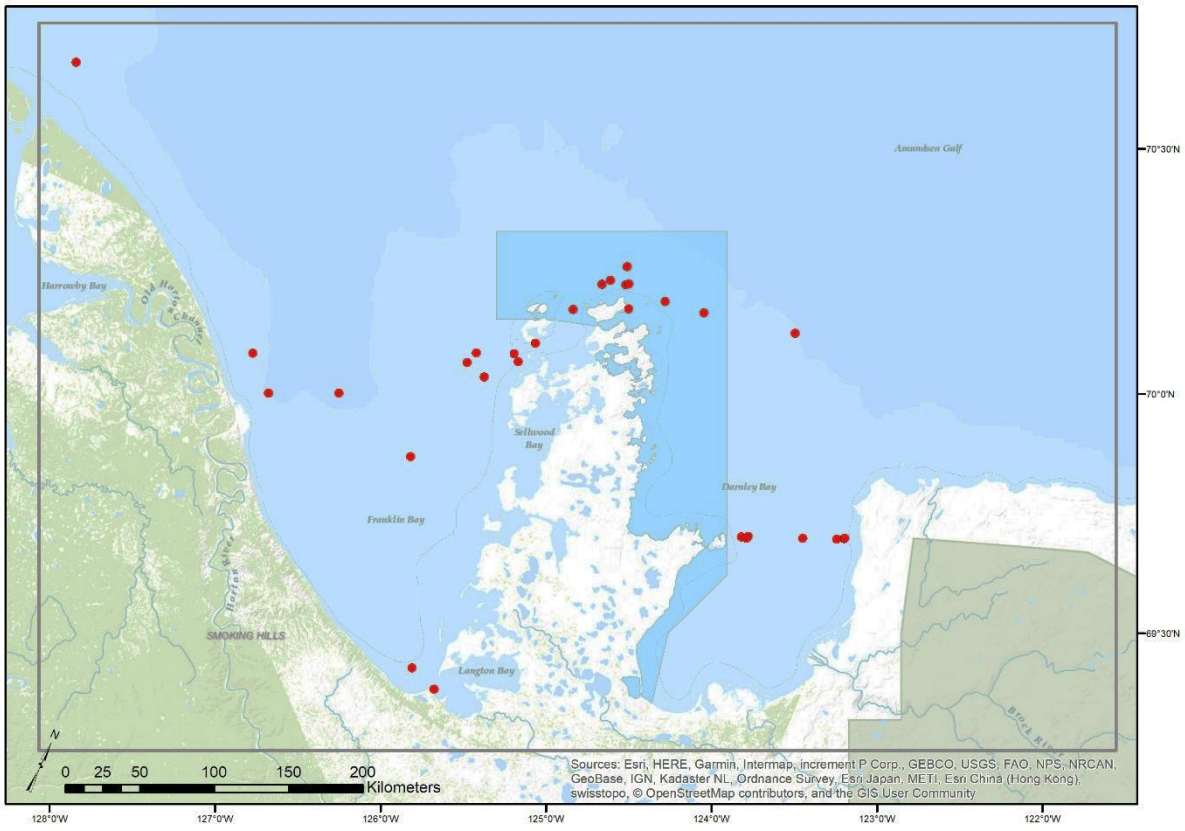

Figure A42. Distribution of Stout Eelblenny *Anisarchus medius* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

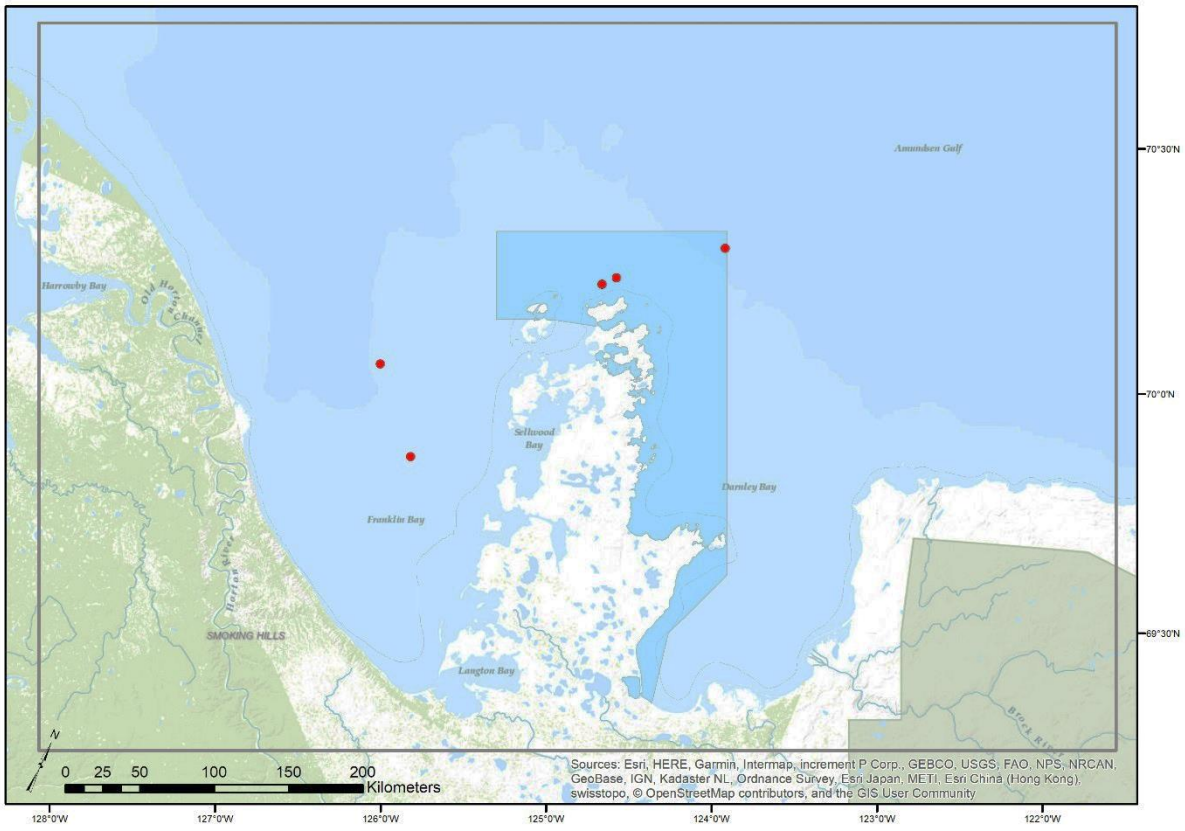

Figure A43. Distribution of Daubed Shanny *Leptoclinus maculatus* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

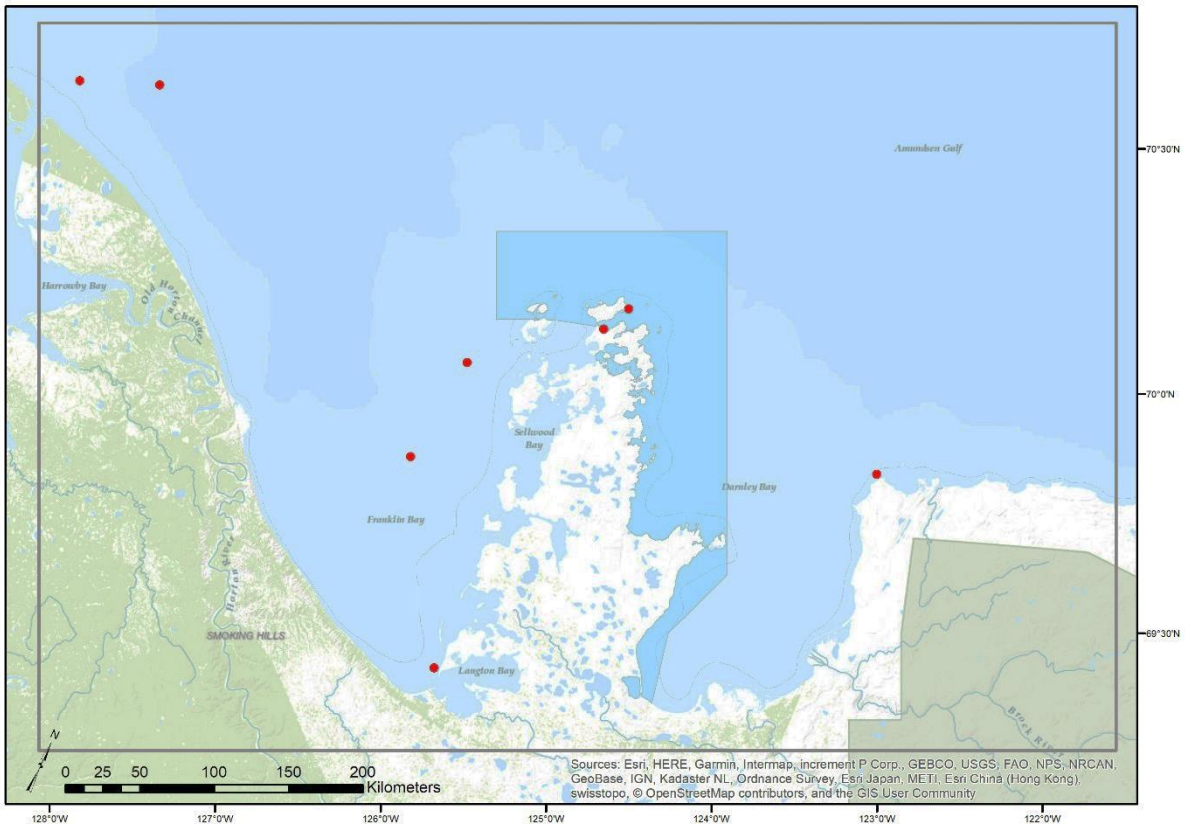

Figure A44. Distribution of Fish Doctor *Gymnelus viridis* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

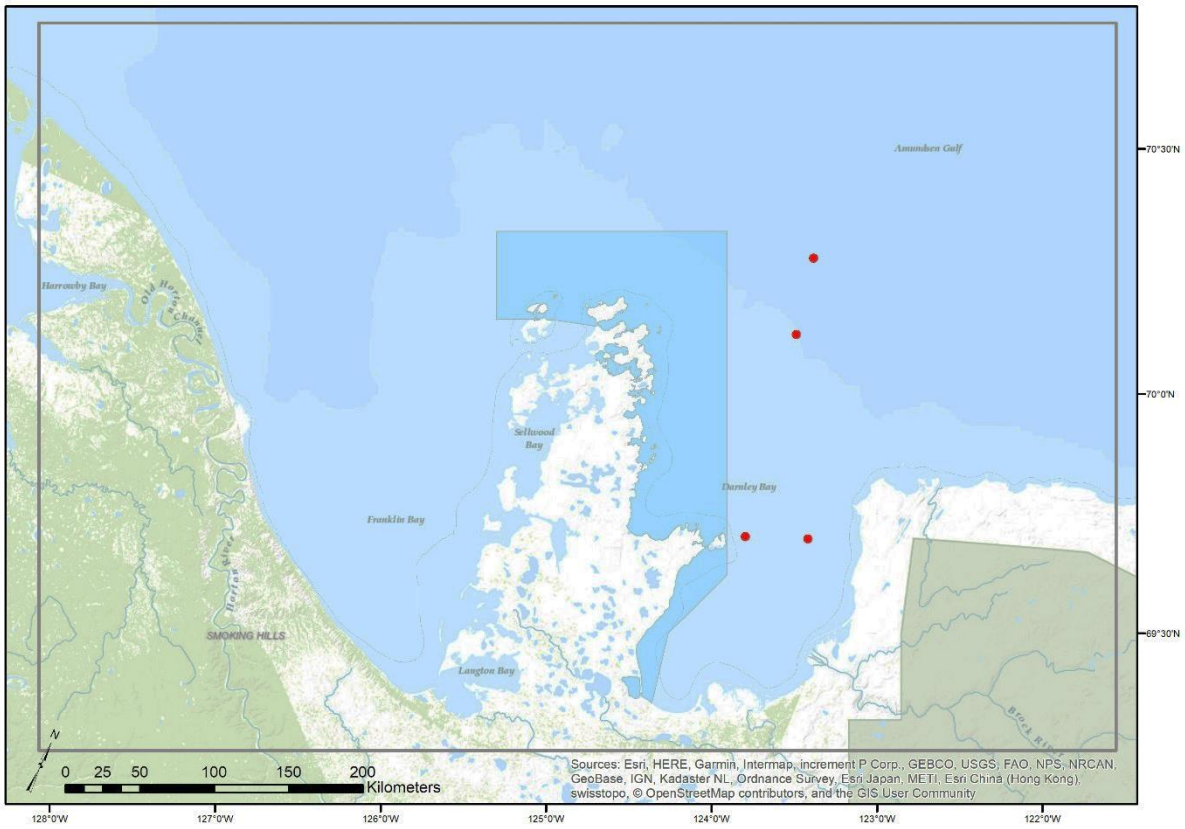

Figure A45. Distribution of Doubleline Eelpout *Lycodes eudipleurostictus* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

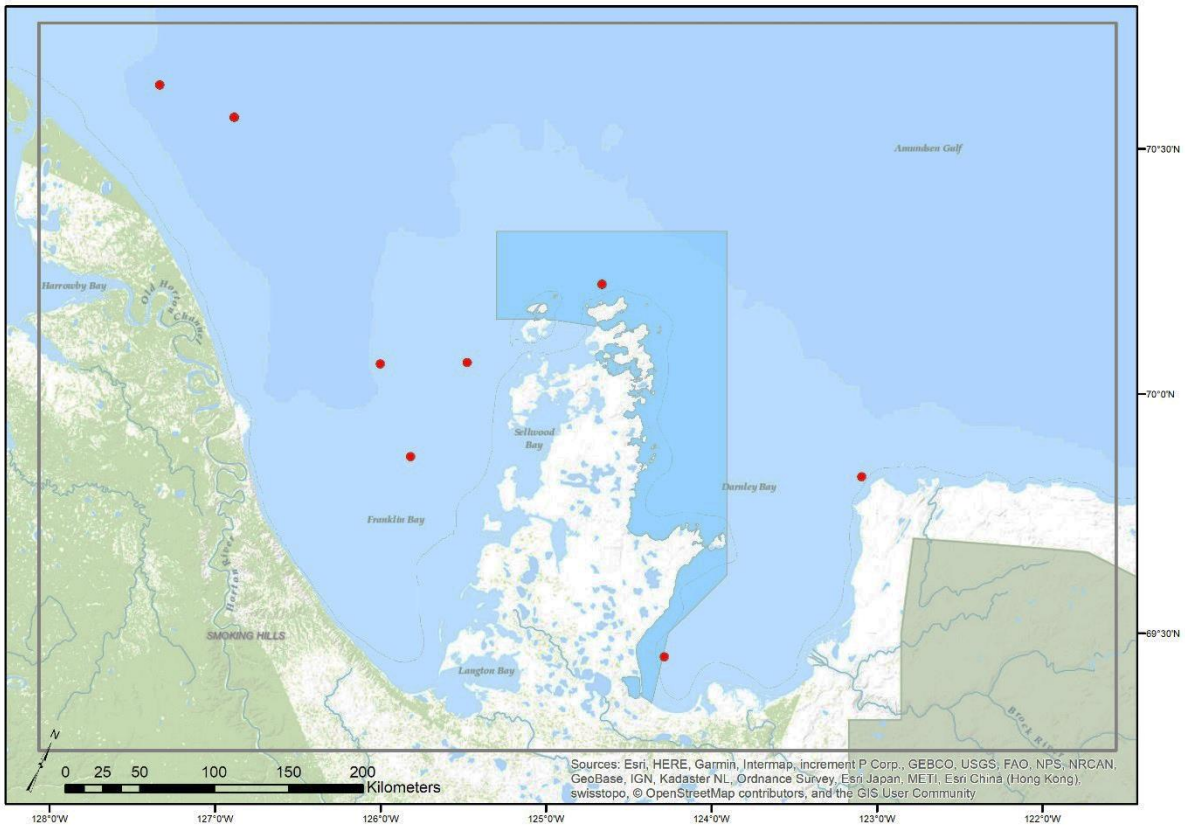

Figure A46. Distribution of White Sea Eelpout *Lycodes marisalbi* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

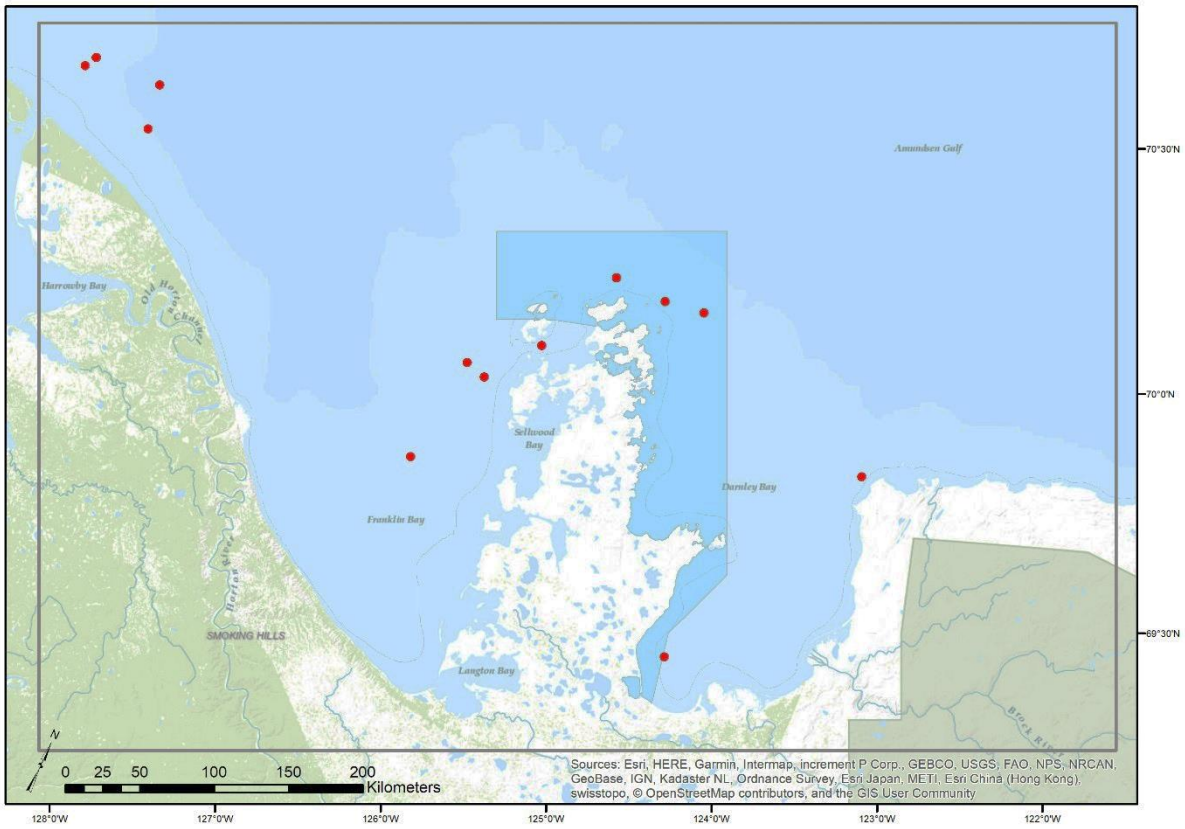

Figure A47. Distribution of Canadian Eelpout *Lycodes polaris* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

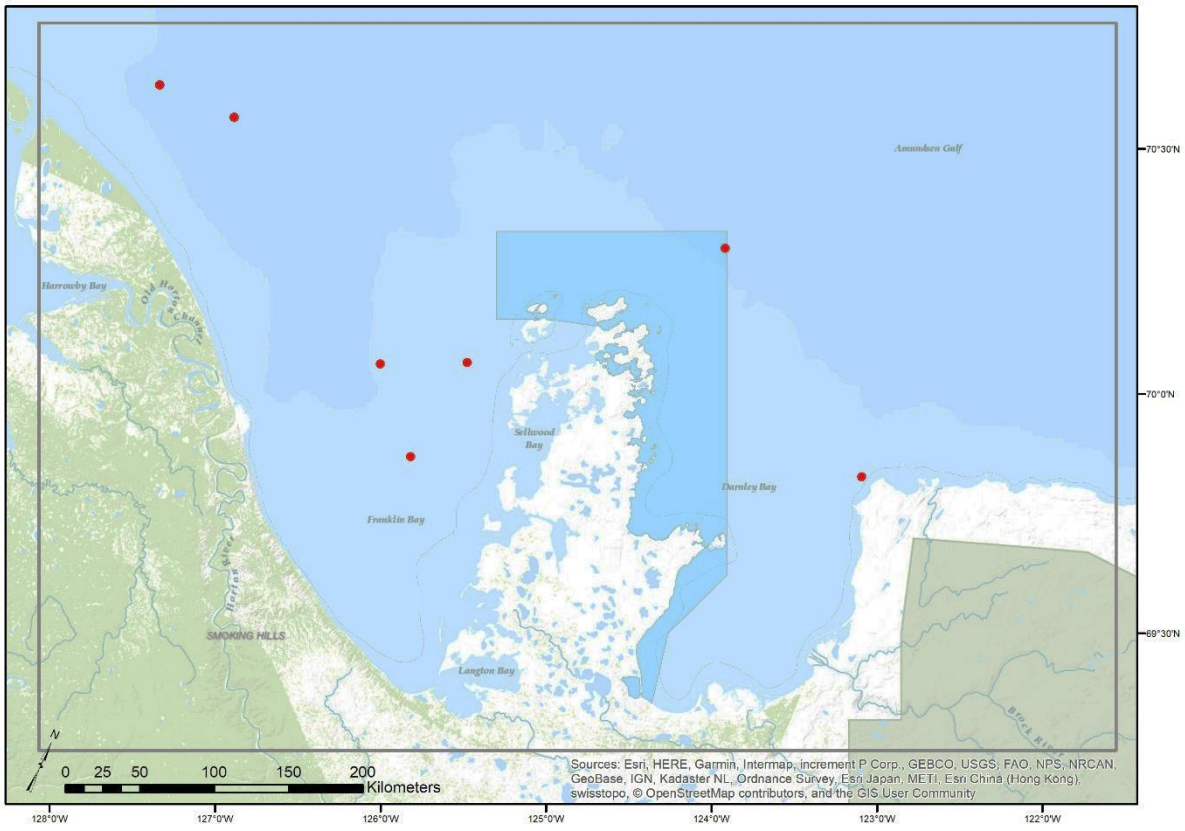

Figure A48. Distribution of Arctic Eelpout *Lycodes reticulatus* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

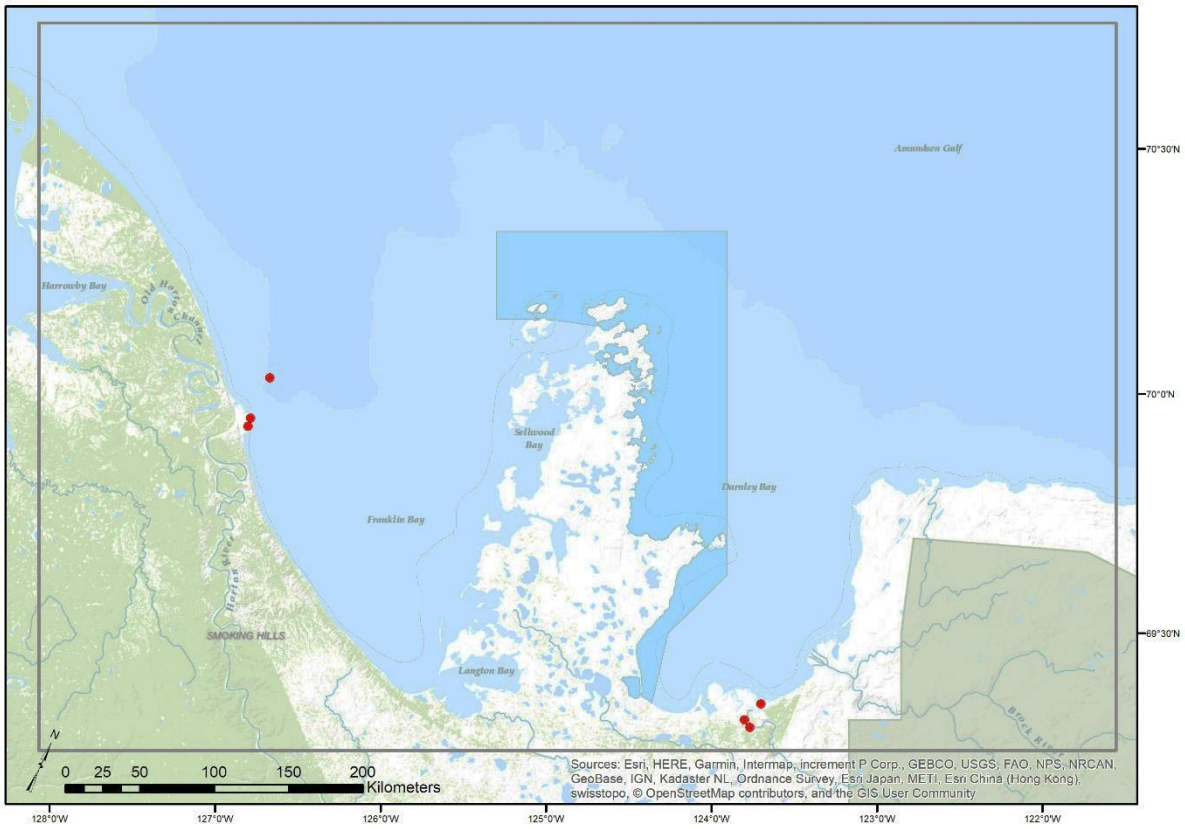

Figure A49. Distribution of Longnose Sucker *Catostomus catostomus* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

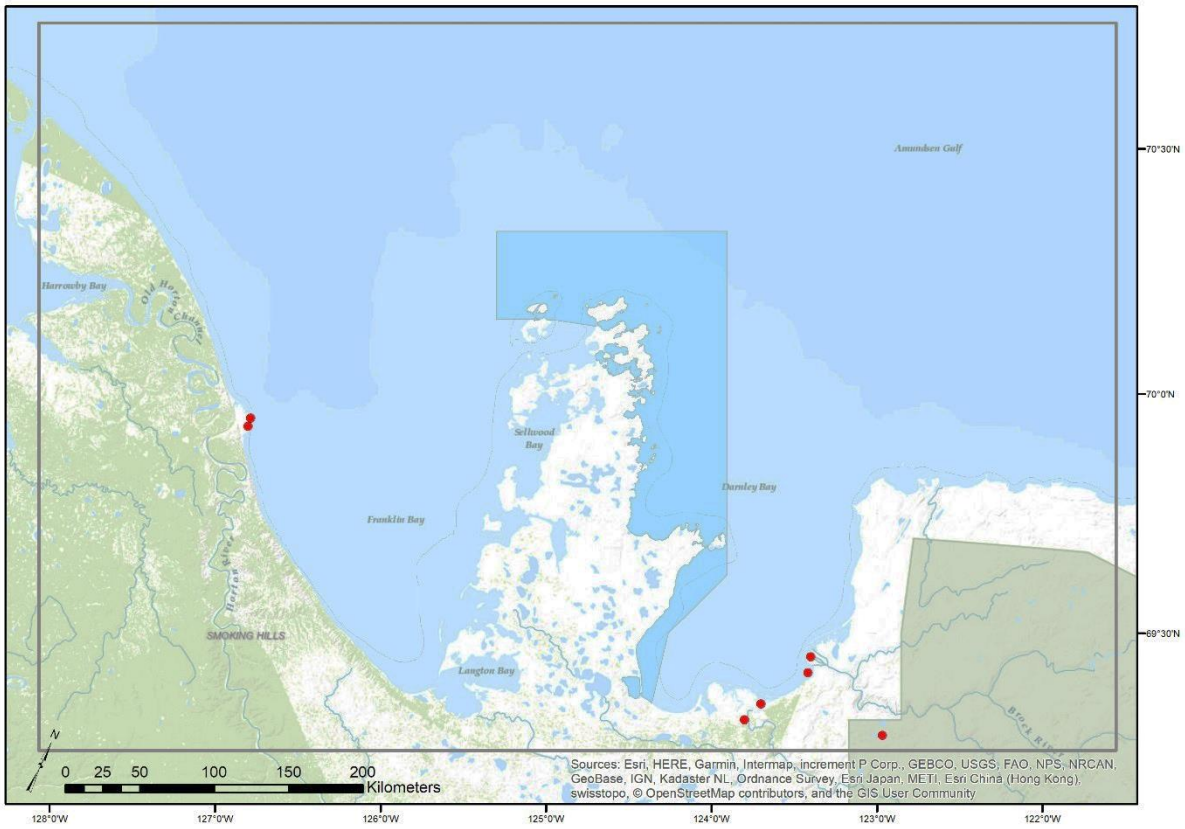

Figure A50. Distribution of Slimy Sculpin *Cottus cognatus* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

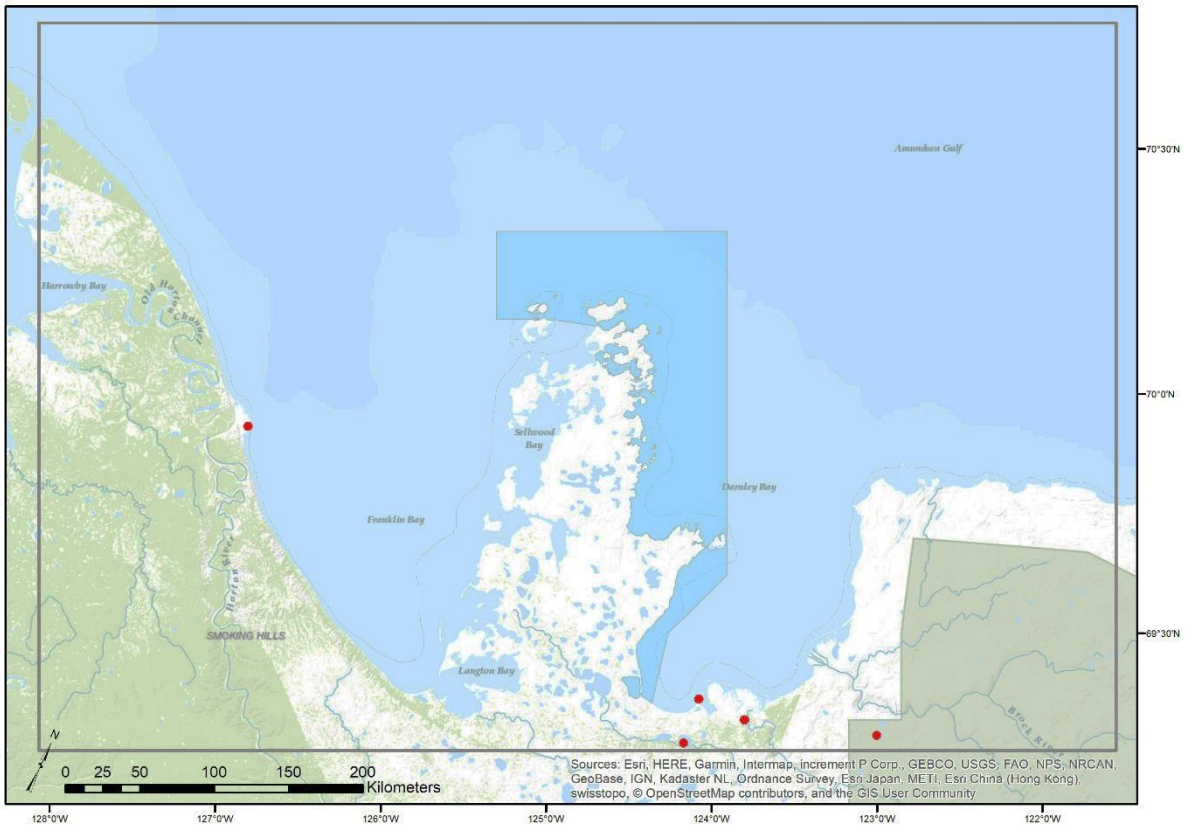

Figure A51. Distribution of Burbot *Lota lota* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

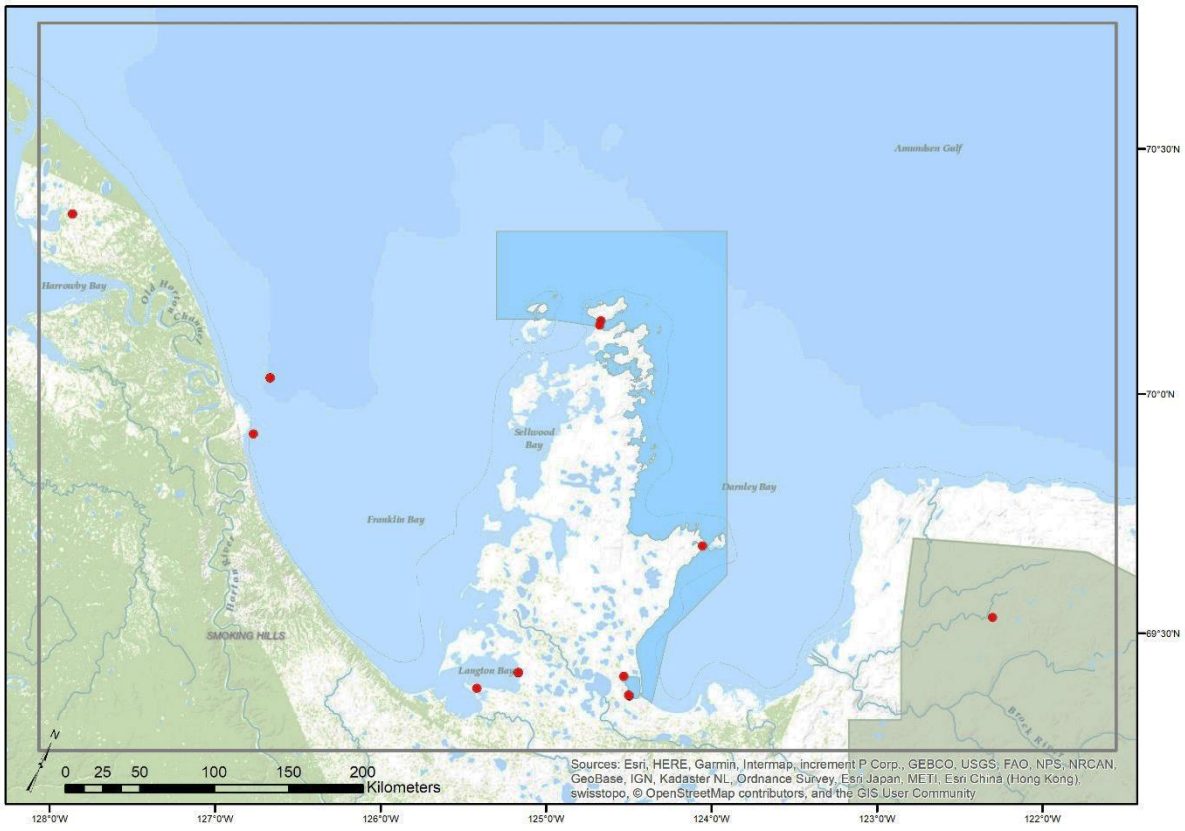

Figure A52. Distribution of Ninespine Stickleback *Pungitius pungitius* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

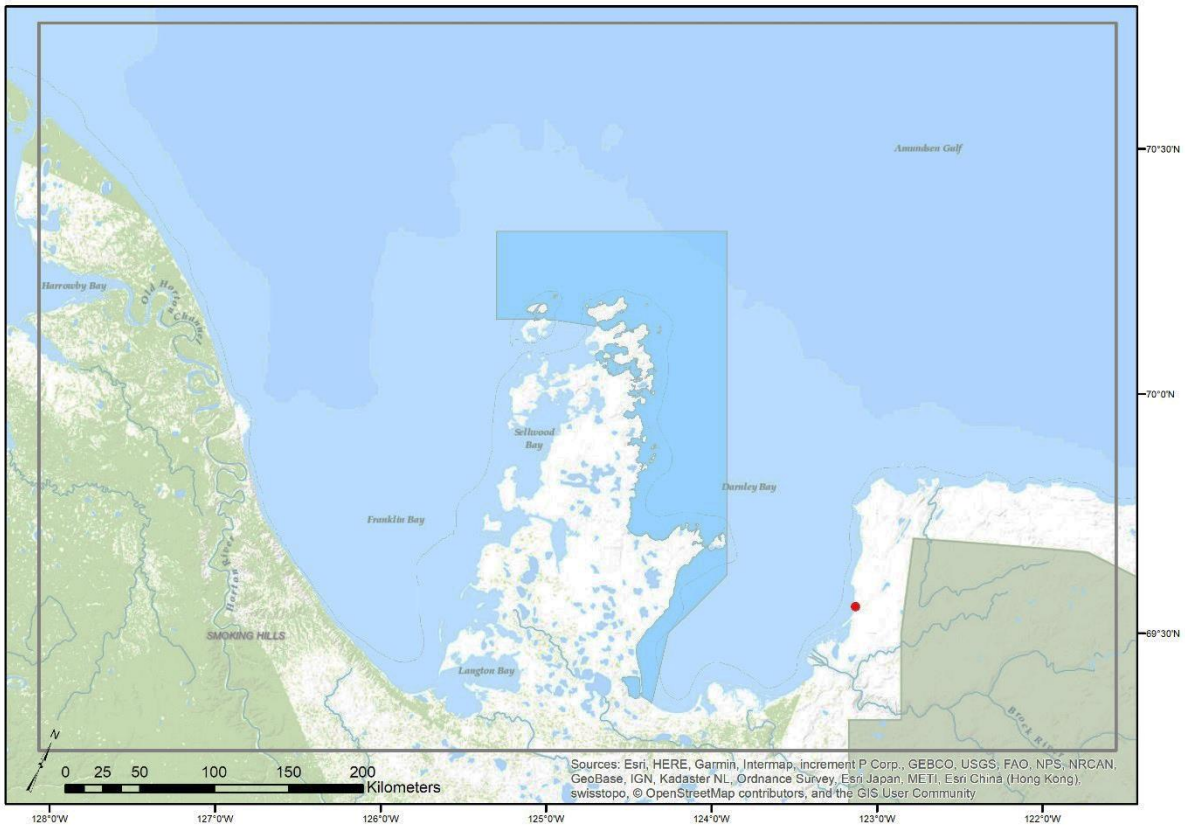

Figure A53. Distribution of Pond Smelt *Hypomesus olidus* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

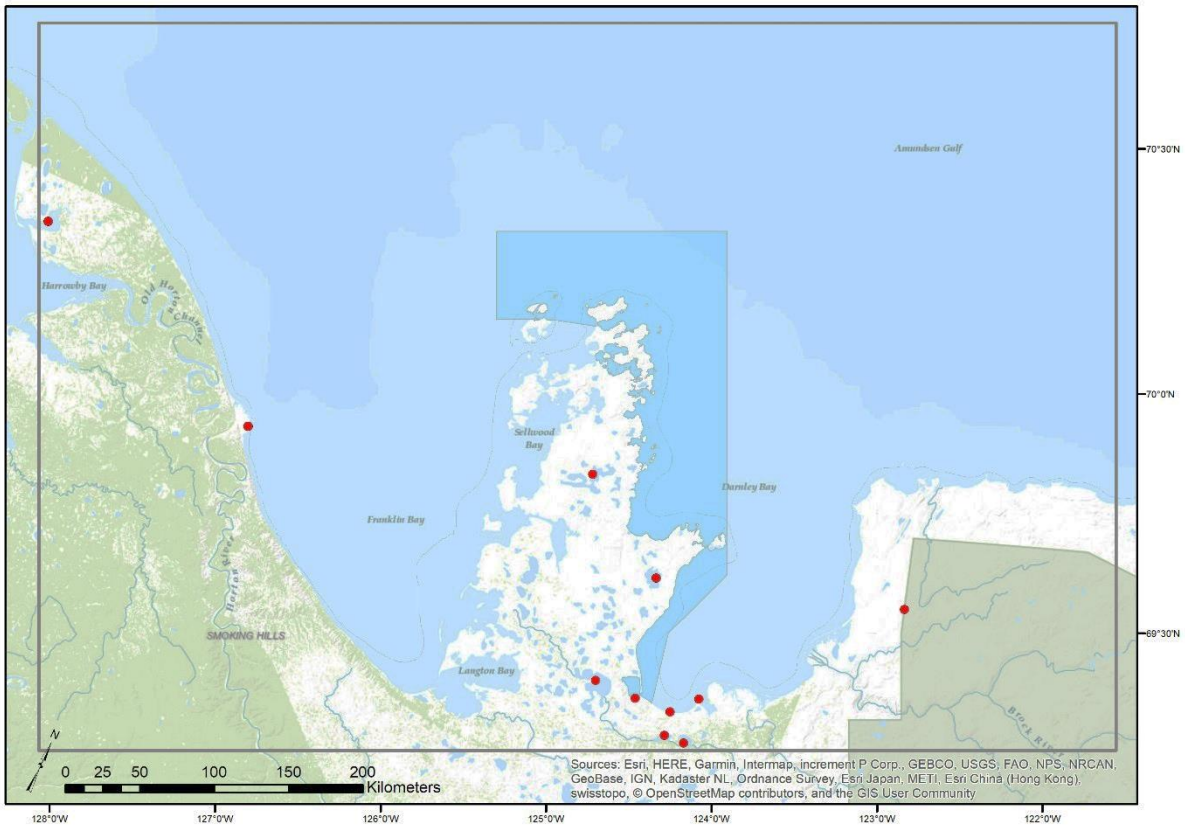

Figure A54. Distribution of Lake Whitefish *Coregonus clupeaformis* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

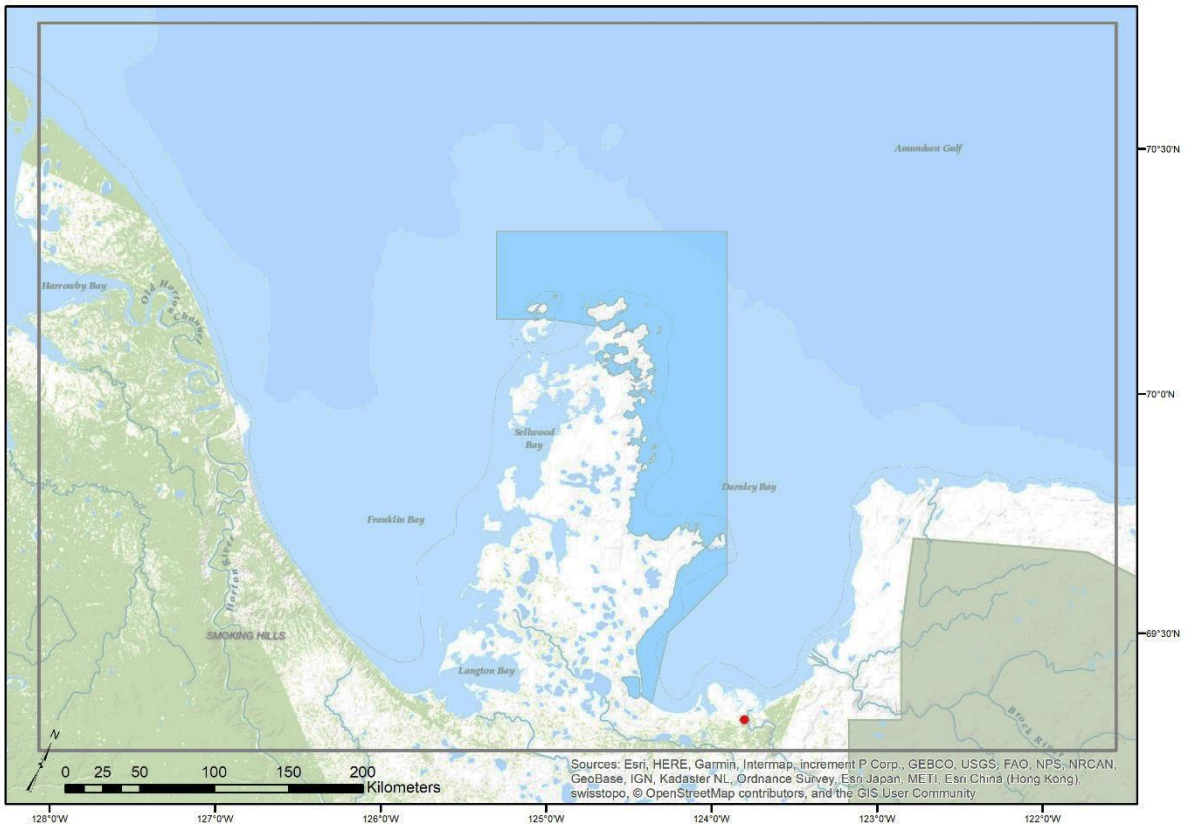

Figure A55. Distribution of Humpback Whitefish *Coregonus pidschian* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

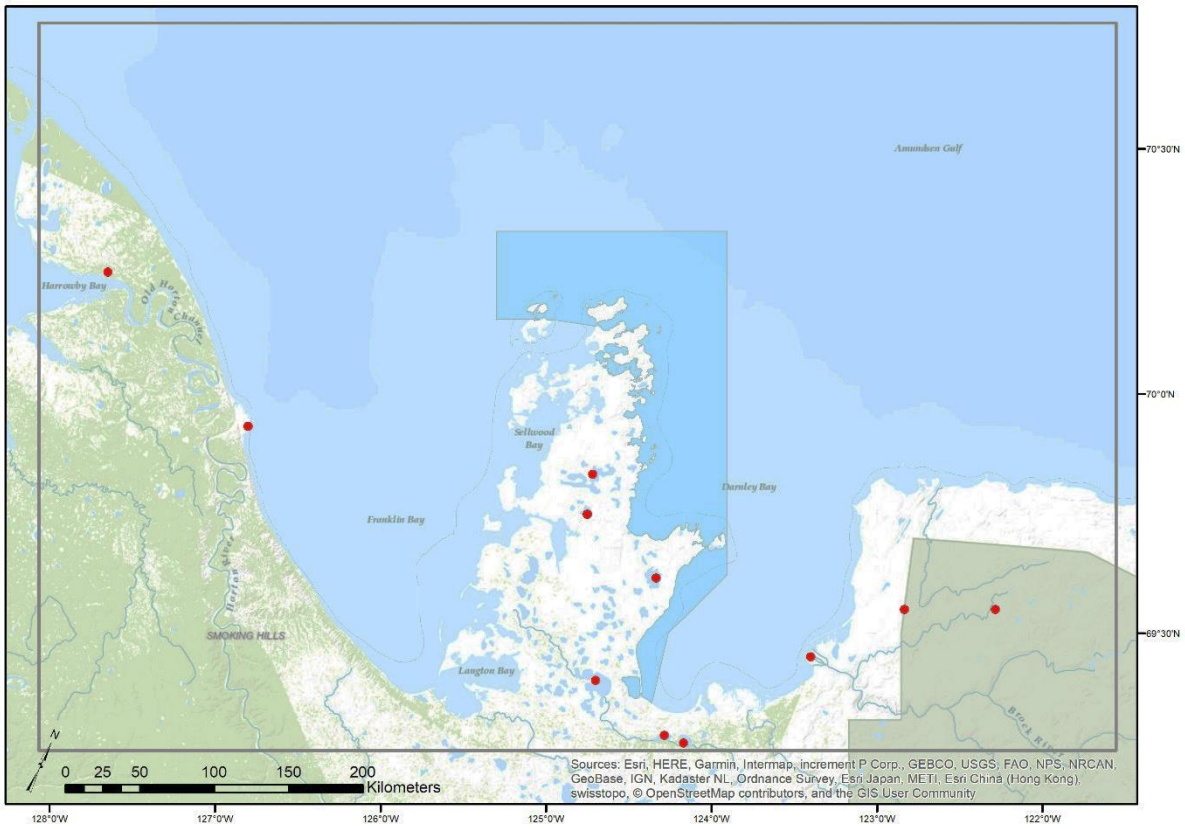

Figure A56. Distribution of Least Cisco *Coregonus sardinella* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

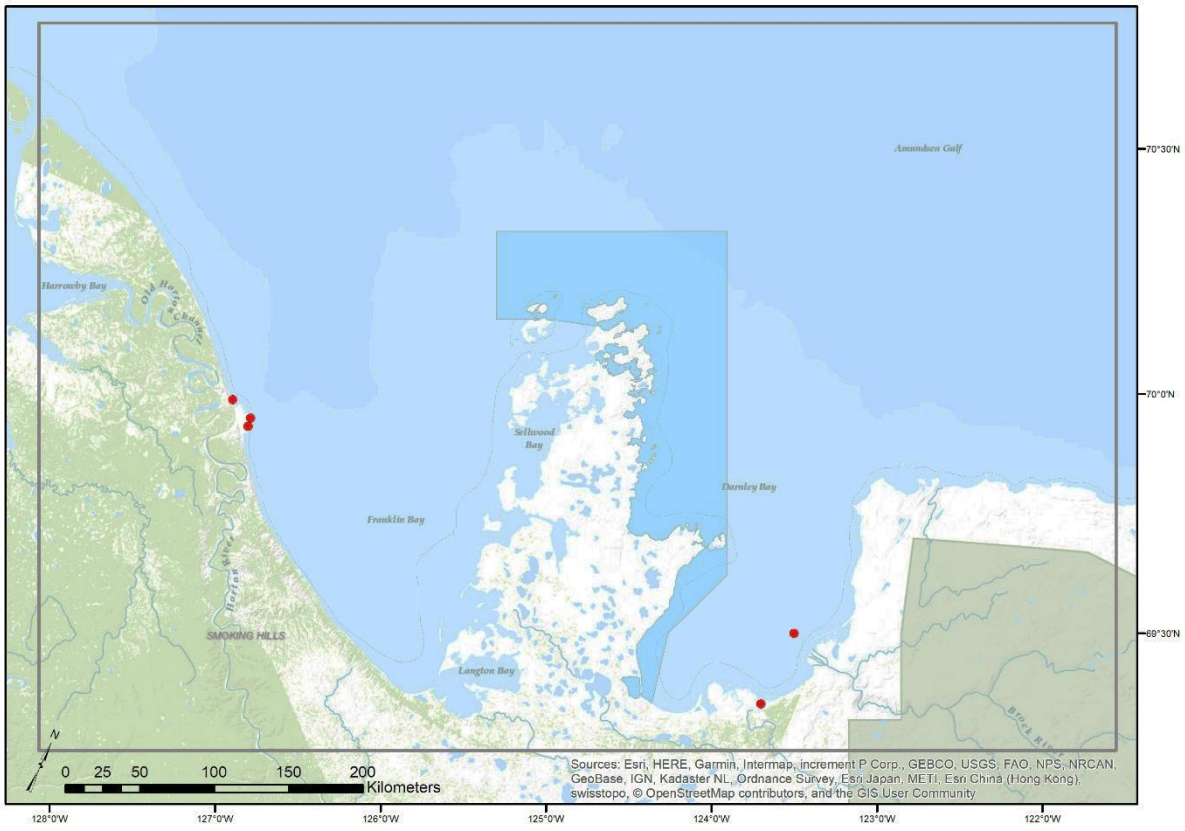

Figure A57. Distribution of Round Whitefish *Prosopium cylindraceum* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

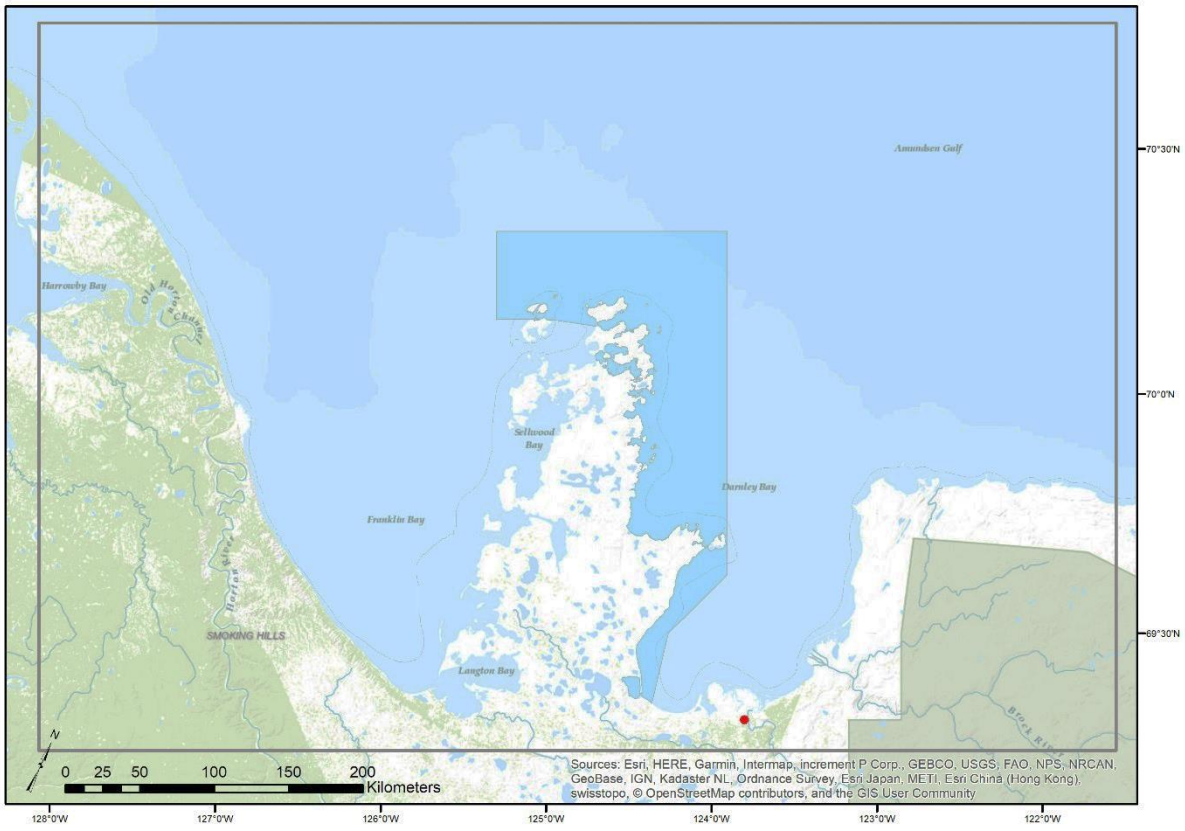

Figure A58. Distribution of Mountain Whitefish *Prosopium williamsoni* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

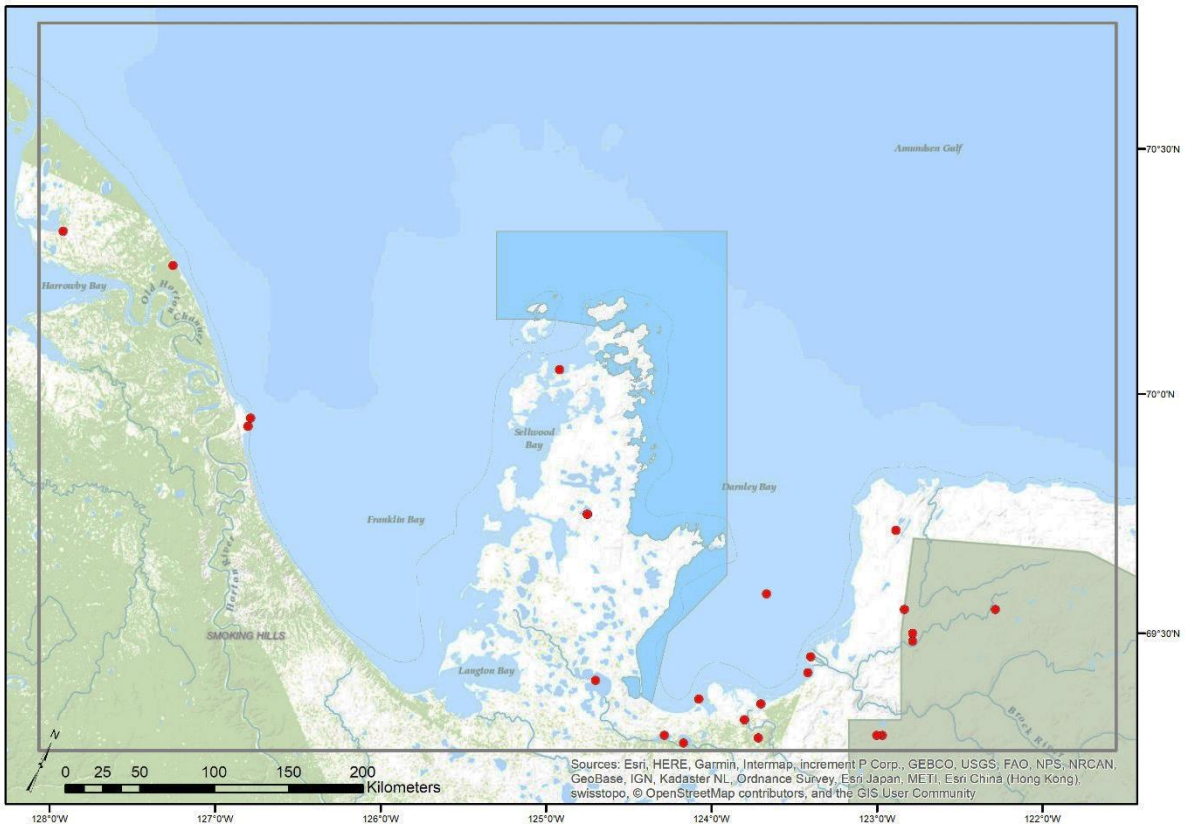

Figure A59. Distribution of Lake Trout *Salvelinus namaycush* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.

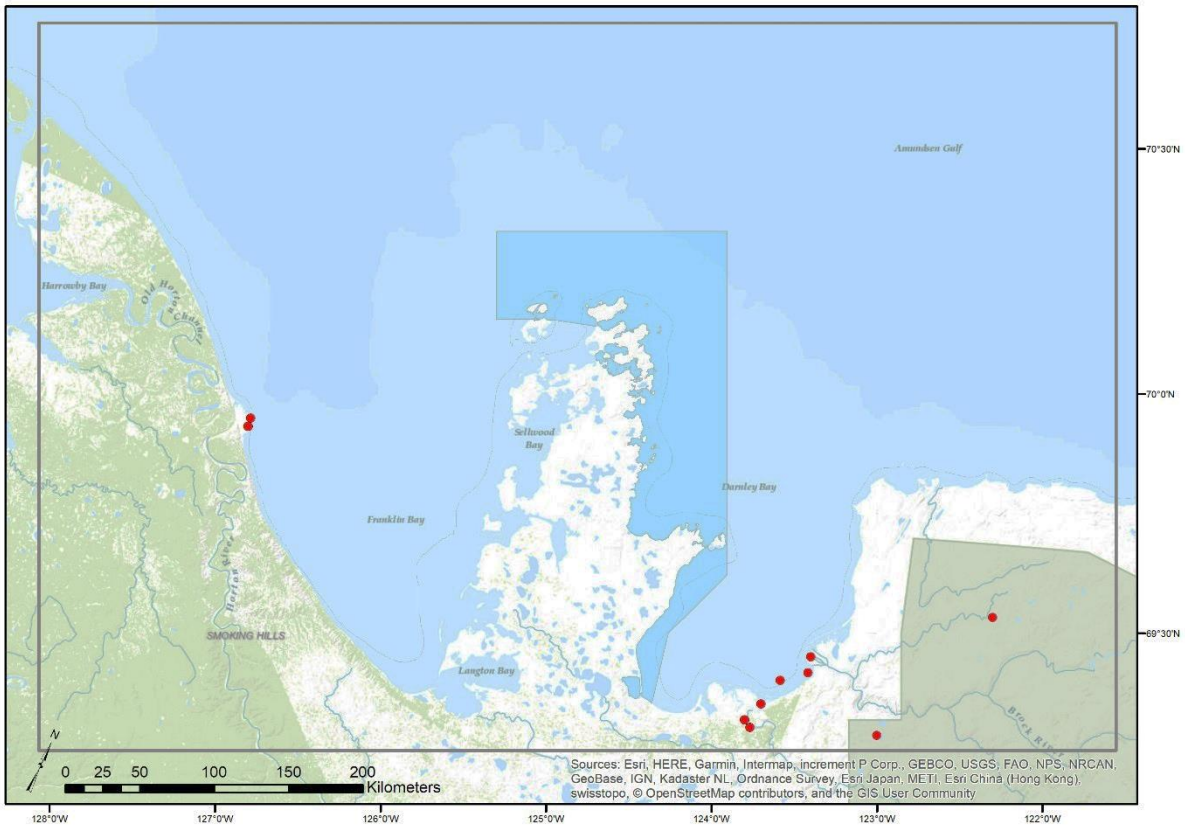

Figure A60. Distribution of Arctic Grayling *Thymallus arcticus* in Darnley Bay and adjacent areas. The ANMPA is indicated in dark blue.