

Update of protection zones around seabird colonies

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Data sheet

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Title: Update of protection zones around seabird colonies

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Background

The document *Rules for field work and reporting regarding mineral resources (excluding hydrocarbons) in Greenland* ('Field Rules') (Anon., 2000) provides special provisions for field work related to mineral activities. The provisions are applied to activities within areas and periods of particular significance to wildlife.

The areas and provisions in the Field Rules were defined based on the existing biological knowledge of the time. Government of Greenland has requested a revision of Field Rules' chapters 2 and 3, including report and digital map to be available in NatureMap (<https://naturemap.eamra.gl>). NatureMap is an online mapping portal for environment and nature of Greenland. Information from NatureMap can be viewed in NunaGIS (<https://nunagis-asiaq.hub.arcgis.com>) and in LicenseMap on GovMin (<https://govmin.gl>) as direct data link service.

This brief is an update of the text on seabird colonies in section 2.03.01 and 2.03.02 of the Field Rules, including a revised map of the colonies and associated protection zones.

General description and sensitivity

Greenland is home to a very large number of seabird breeding colonies. They are mostly distributed along the coast on cliffs and small islands, but may also be found further inland e.g., on talus slopes and Nunataks. More than twenty different seabird species breed colonially in the country (table 1), and the colonies vary in size, shape and density from a few breeding pairs nesting on a small cliff, to hundreds of thousands of birds breeding closely along tens of kilometres of coastline (Boertmann et al. 1996, 2020). Several of the species are classified as endangered, vulnerable or near threatened on the national Red List (Boertmann & Bay 2018; see table 1).

English name	Danish name	Greenlandic name	Latin name	Greenland Red List status	IUCN global Red List status
Arctic tern	Havterne	Imeqqutaalaq	<i>Sterna paradisaea</i>	NT	LC
Atlantic puffin	Lunde	Qilanggaq	<i>Fratercula arctica</i>	VU	VU
Black guillemot	Tejst	Serfaq	<i>Cephus grylle</i>	LC	LC
Black-headed gull	Hættemåge	Nasalik	<i>Larus ridibundus</i>	VU	LC
Black-legged kittiwake	Ride	Taateraaq	<i>Rissa tridactyla</i>	VU	VU
Common eider	Almindelig ederfugl	Miteq	<i>Somateria mollissima</i>	LC	NT
Common murre	Almindelig lomvie	Appa sigguttoq	<i>Uria aalge</i>	EN	LC
Glaucous gull	Gråmåge	Naajarujussuaq	<i>Larus hyperboreus</i>	LC	LC
Great black-backed gull	Svartbag	Naajarluk	<i>Larus marinus</i>	LC	LC
Great Cormorant	Skarv	Oqaatsoq	<i>Phalacrocorax carbo</i>	LC	LC
Herring gull	Sølvmåge	Qioqi	<i>Larus argentatus</i>	NA	LC
Iceland gull	Hvidvinget måge	Naajaannaq	<i>Larus glaucoides</i>	LC	LC
Ivory gull	Ismåge	Naajavaarsuk	<i>Pagophila eburnea</i>	VU	NT
Lesser black-backed gull	Sildemåge	Naajarlusuaq	<i>Larus fuscus</i>	LC	LC
Little auk	Søkonge	Appaliarsuk	<i>Alle alle</i>	LC	LC
Northern fulmar	Mallemuk	Qaulluk (Timmiakuluk)	<i>Fulmarus glacialis</i>	LC	LC
Razorbill	Alk	Apparluk	<i>Alca torda</i>	LC	LC
Ross's gull	Rosenmåge	Naajannguaq	<i>Rhodostethia rosea</i>	VU	LC
Sabine's gull	Sabinemåge	Taateraarnaq	<i>larus sabini</i>	NT	LC
Thayer's gull	Thayers måge	-	<i>Larus thayeri</i>	DD	LC
Thick-billed murre	Polarlomvie	Appa	<i>Uria lomvia</i>	VU	LC

Table 1: Seabird species breeding in colonies in Greenland, including their national and international Red List status (LC: least concern, NT: near threatened, VU: vulnerable, EN: endangered, DD: data deficient, NA: not applicable) (Boertmann & Bay 2018; <https://www.iucnredlist.org/>).

Seabirds are sensitive to noise and disturbance during the breeding season (Dias et al. 2019; Frederiksen et al. 2017). Disturbance typically causes the adult bird to leave the nest abruptly, and in that process, in addition to increased energetic cost, eggs and chicks risk falling off the cliff (Labansen et al.

2021). Until return of the adult, eggs and chicks are exposed to predation (Beale & Monaghan 2004). Multiple disturbances increase the likelihood of breeding failure and may ultimately lead to abandonment of the colony, for the season or for good. The sensitivity to disturbance varies by species, location and source and is not well documented for all species (Lorentsen & Follestad 2014). However, in Greenland, thick-billed murre colonies are known to be particularly sensitive (Labansen 2021).

All species of birds are protected under the Executive Order of the Government of Greenland no. 17 of 28th October 2019 on the Protection and Harvest of Birds (Anon., 2019), except for a listed number of species that have a defined hunting season (Anon., 2019 appx 1). In §12 of the Executive Order, species specific protection zones around seabird colonies are defined in relation to disturbance, hunting, boating at speeds over 3 knots, flying by fixed-winged planes and helicopters, and operating drones. Further, in §6 and §13 of the Executive Order, forty bird protection areas are identified based on the locations of seabird colonies. Within these areas, hunting, traffic and going ashore are prohibited during the seabird breeding season.

Period of importance

The colonies are only occupied by birds during the breeding season, the timing and duration of which varies by species and location, and to some degree by year. However, in Greenland, the seabird breeding season is generally confined within the period 15 April – 15 September.

Recommended revision of the Field Rules

In the latest version of the Field Rules (November 2000), regulations regarding seabird colonies are detailed in sections 2.03.01 and 2.03.02:

- 2.03.01. Colonies of breeding Brünnich's guillemots (=thick-billed murre): During the period June 1 - September 15 the activities indicated in section 2.02.01 within a distance of 5 km from the bird colony are subject to BMP's approval.
- 2.03.02. Colonies of breeding seabirds: During the period June 1 - September 15 the activities indicated in section 2.02.01 within a distance of 200 m from the bird colony are subject to BMP's approval.

DCE and GINR advise that these two sections are revised as follows:

- 2.03.01. By a seabird colony is meant a locality where at least 10 pairs of seabirds breed.
- 2.03.02. During the period 15. April to 15. September, the following regulations apply in proximity to a seabird colony, unless approved by the Mineral Resources Authority:
 - a. It is not allowed to cause disturbance, including traveling by boat at speeds above 3 knots, within a distance of 1000 meters, if the colony includes the species thick-billed murre, common murre, razor-

bill, Atlantic puffin, little auk, black-legged kittiwake, northern fulmar or great cormorant, and 200 meters for all other seabird colonies.

- b. *It is not allowed to fly by fixed-wing plane or helicopter within a vertical or horizontal distance of 3000 meters, if the colony includes the species thick-billed murre, and within a vertical or horizontal distance of 500 meters for all other seabird colonies.*
- c. *It is not allowed to fly drones within a vertical or horizontal distance of 100 meters from any seabird colony.*
- d. *Traffic and going ashore are not allowed within 500 meters of seabird colonies listed as Bird Protection Areas in The Executive Order on Protection and Harvest of Birds (see appendix 1).*

These recommended revisions are based on an extensive review of environmental rules and regulations related to mineral activities in Greenland, recently undertaken by DCE and GINR on behalf of EAMRA with the aim of assuring that the rules reflect state-of-the-art environmental research and best international praxis (Mosbech et. al. 2020).

Update of protection zones

On the maps in the latest version of the Field Rules (November 2000), seabird colony protection zones were represented as a circle around a central coordinate of the colony.

In connection with the current revision of the Field Rules, all records in the Greenland Seabird Colony Register (Boertmann et. al 2010; DCE & GINR Arctic Environmental Data Center) have been checked and the geographical extent of each colony assessed and delineated using polygon geometry (figure 1). Details on this work are described in Johansen et al. (2022).

Based on the colony polygons, new seabird colony protection zones have been calculated as buffer zones in accordance with the minimum distances specified in sections 2.03.02a, 2.03.02b, 2.03.02c and 2.03.02d of the revised Field Rules (figure 2). In total, these protection zones cover ca. 4700, 4800, 1100 and 235 km², respectively. The combined area of all four protection zones is only ca. 6700 km² as the zones overlap each other.

As a consequence of the update, more than 90 % of the seabird colonies have undergone changes in delineation and/or geographical position, and the protection zones of all colonies have been re-calculated. Thus, all mineral license areas with seabird colonies are affected by the update.

Please note that a significant number of colonies and derived protection zones are referenced to the map “GTK 1:250.000 vector” (<https://data-forsyningen.dk/data/985>), which is known to be inaccurate of up to 100-1000 meters in many areas.

Also, note that unrecorded seabird colonies might exist, particularly in remote areas, and that the same regulations apply should a colony be encountered which is currently not included on the map.

DCE and GINR advise that the seabird colony map and associated protection zones are updated on an annual basis to reflect new data in the Greenland Seabird Colony Register from the biological monitoring of the Greenlandic seabird colonies.

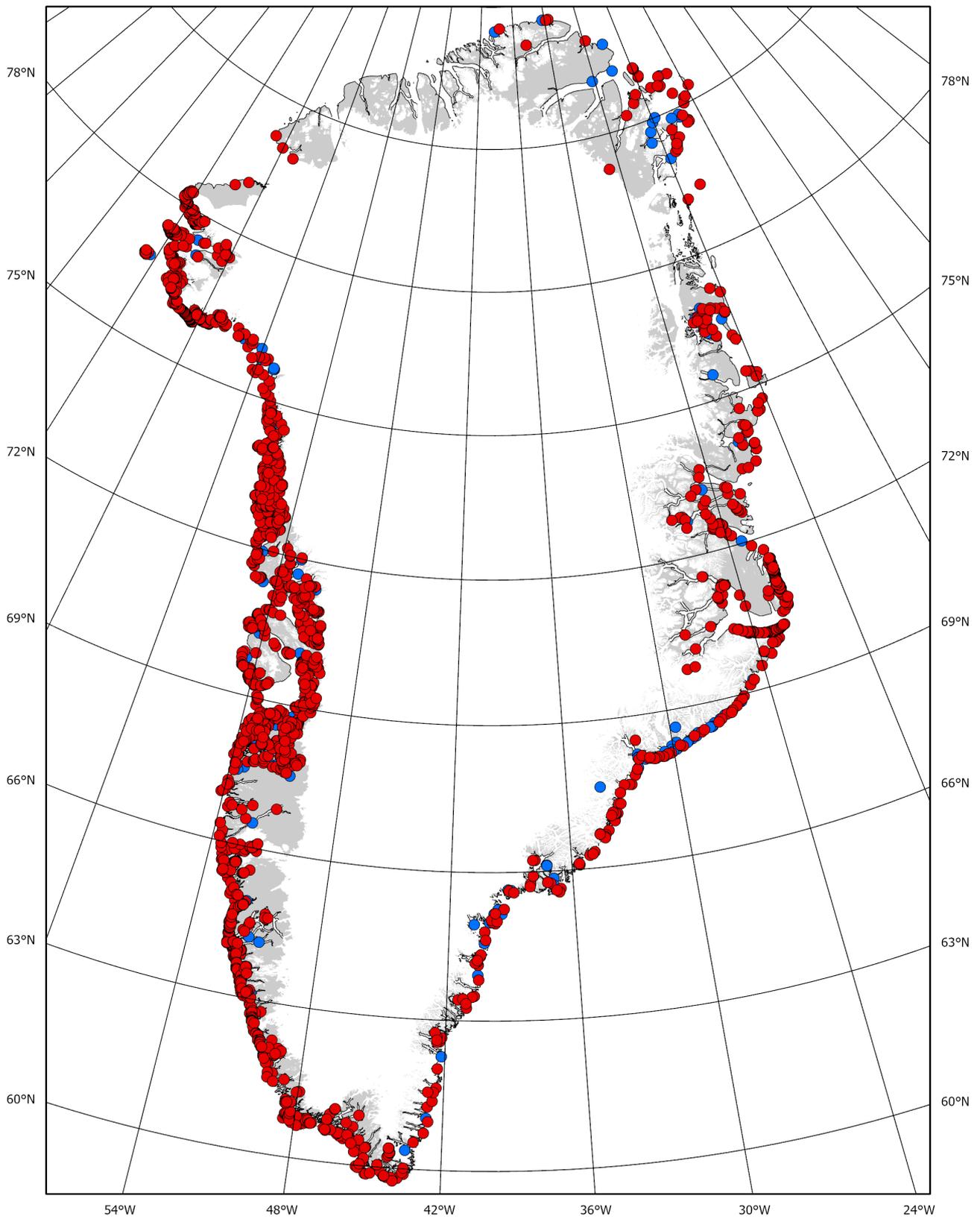


Figure 1: Updated map of seabird colonies in Greenland ($n=2225$). Red dots indicate colonies which have undergone changes in delineation and/or position as result of the update, whereas blue dots indicate colonies which were unaffected by the update. Protection zones around all colonies, red as well as blue, have changed as consequence of the update.

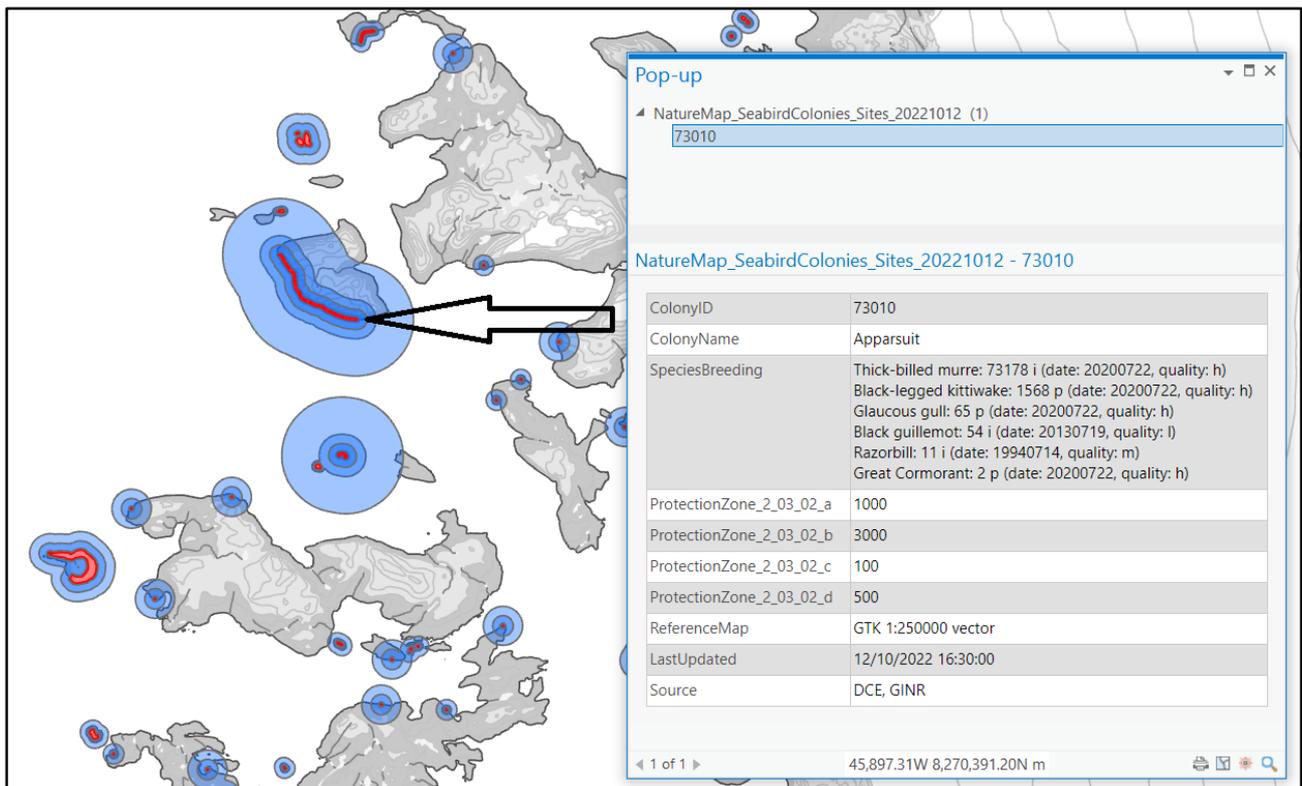


Figure 2: Close-up map of the northern Upernavik region with the new seabird colony polygons as red areas and protection zones in accordance with sections 2.03.02a, 2.03.02b, 2.03.02c and 2.03.02d of the revised Field Rules as blue buffer zones (from Johansen et al. 2022). All buffer zones have the same blue colour, and the differences in darkness of the blue colour on the map reflect how many of the four buffer zones that overlap. On NatureMap, the protection zones will be shown with a different symbology.

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Appendix 1: Colonies for which field rule 2.03.02d applies

Table of seabird colonies listed as bird protection areas in The Executive Order on Protection and Harvest of Birds (Anon., 2019). For these colonies, field rule 2.03.02d applies.

Area no	Greenlandic name	Other name	ColonyIDs on NatureMap
1	Lion Øer	Lion Øer	77001
2	Apparsuit	Hakluyt Ø	77002
3	Appat	Saunders Ø	76014
4	Issuvissuup Appai	Parker Snow Bugt	76013
5	Appat Appai		76012
6	Kitsissut	Carey Øer	76007_001
			76007_002
			76007_003
			76007_004
			76015
7	Saattut	Sabine Øer	75001
8	Kitsissorsuit	Edderfugleøer	74001
			74002
			74003
9	Kitsissut		73001
10	Uigorluk	Lilleflad Ø	72040
11	Nunanguit	Smålandene	72030
			72132
			72133
			72134
12	Kingittoq		72014
13	Kuup Apparsui	Kap Schackleton	73010
14	Kippaku Apparsui	Kippaku	73009
15	Issortusoq		72015
16	Timmiakulussuit		72011
17	Qeqertat	Schades øer	71043
			71044
			71053
			71078
			71079
18	Innaq	Ritenbenk	69049
19	Naajaat		69033
20	Assissut	Brændevinsskær	69001
21	Niaqomaq, Innarsuatsiaaq og Basis Ø	Grønne Ejland	68029_001
			68029_002
			68029_004
22	Saattuarsuit		68030
23	Nunatsiaq	Rotten	68010
24	Tasiusarsuaq		68078
			68079
			68080
			68081
			68082

Area no	Greenlandic name	Other name	ColonyIDs on NatureMap
			68100
			68101
			68102
			68161
			68162
			68164
			68179
			68180
			68181
			68182
			68183
			68184
			68185
			68186
25			67103
26	Taateraat		65019
27	Sermilinnuaq		65015
28	Sermilinnuaq		65013
29	Innarsuaq	Isortoq	65003
30	Qeqertannguit		64035
31	Innajuattoq		64019
32	Nunngarussuit		63010
33	Taateraarunnerit	Fox Faldet	61002
34		Indre Kitsissut	60030
35	Kitsissut Avallit	Ydre Kitsissut	60012
36	Qeqertat		59004
37	Kangikajik	Kap Brewster	70508
38	Appalik	Raffles Ø	70505
39		Sandøen	74501
40		Prinsesse Margrethe Ø	81504_003
			81504_004
			81504_005
			81504_001
			81504_002