

1 Supplementary information 2

2 Species- and breeding population-specific seasonal distributions (in polar stereographic projection) in
3 geographic (A, C, E, G) and environmental space (B, D, F, H) during autumn (A, B), early winter (C, D), late
4 winter (E, F) and spring (G, H). Common guillemot (COGU) breeding population distributions are
5 displayed in figure S2.1-8 and Brünnich's guillemot (BRGU) breeding population distributions in figure
6 S2.9-16. Colours correspond to spatiotemporal clusters identified by network analysis (figure 1).

7 In geographic space, kernel utilization distributions (UD) show seasonal space use as composite of
8 individual UDs scaled to their respective population sample size. Symbols display colony locations.
9 Dotted and solid circles indicate areas where location estimation was affected by or impossible due to
10 polar night or midnight sun, respectively. Grey stippled and solid areas display 15% and 90% ten year
11 seasonal median sea ice concentration, respectively.

12 In environmental space, each seasonal track is displayed as centre with variance. Darker crosses denote
13 the median of all locations and the total variance displayed. Stippled lines represent 100% and 50%
14 kernel UD contours of available environmental space in the North Atlantic over 11 years.

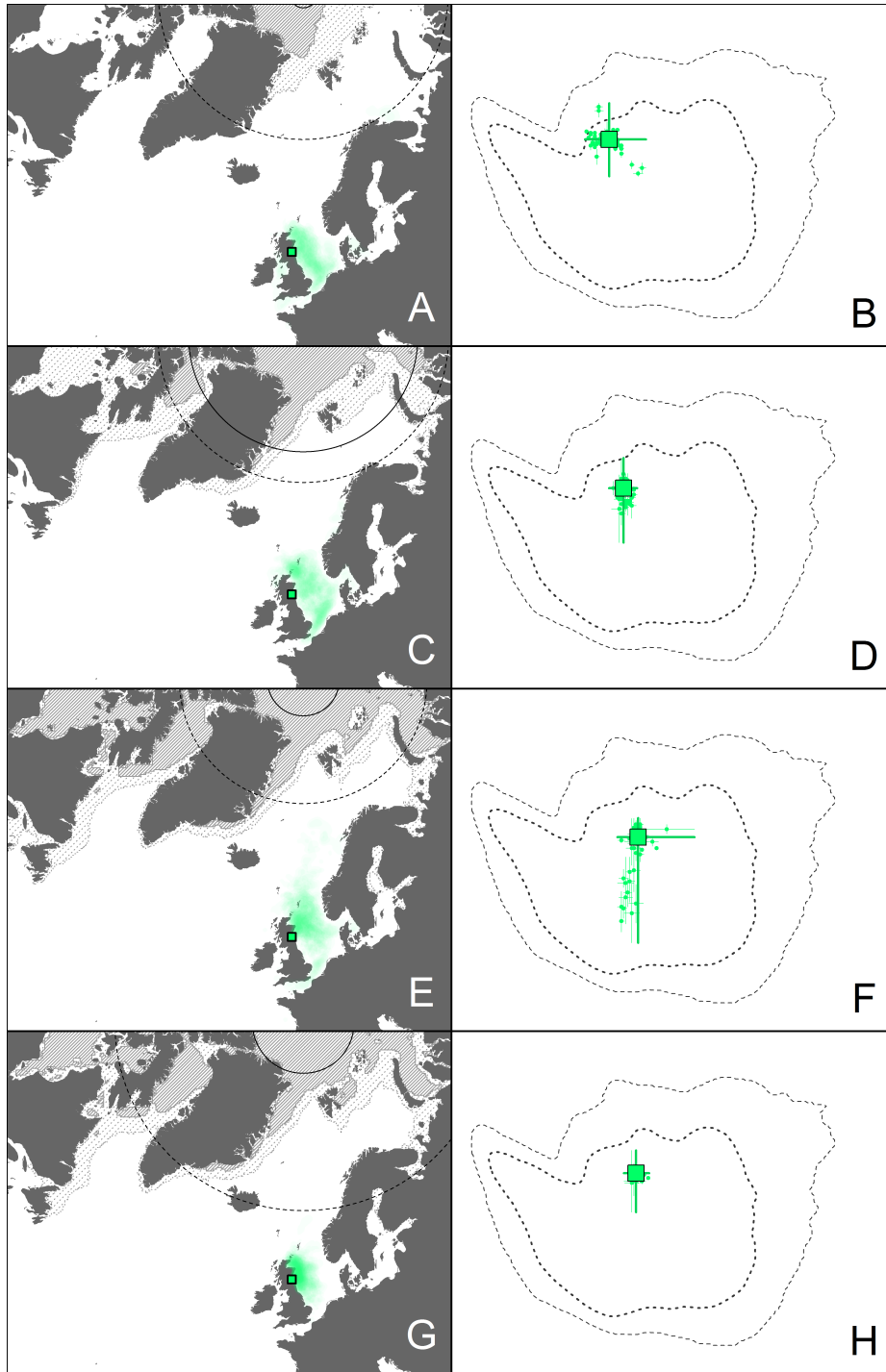
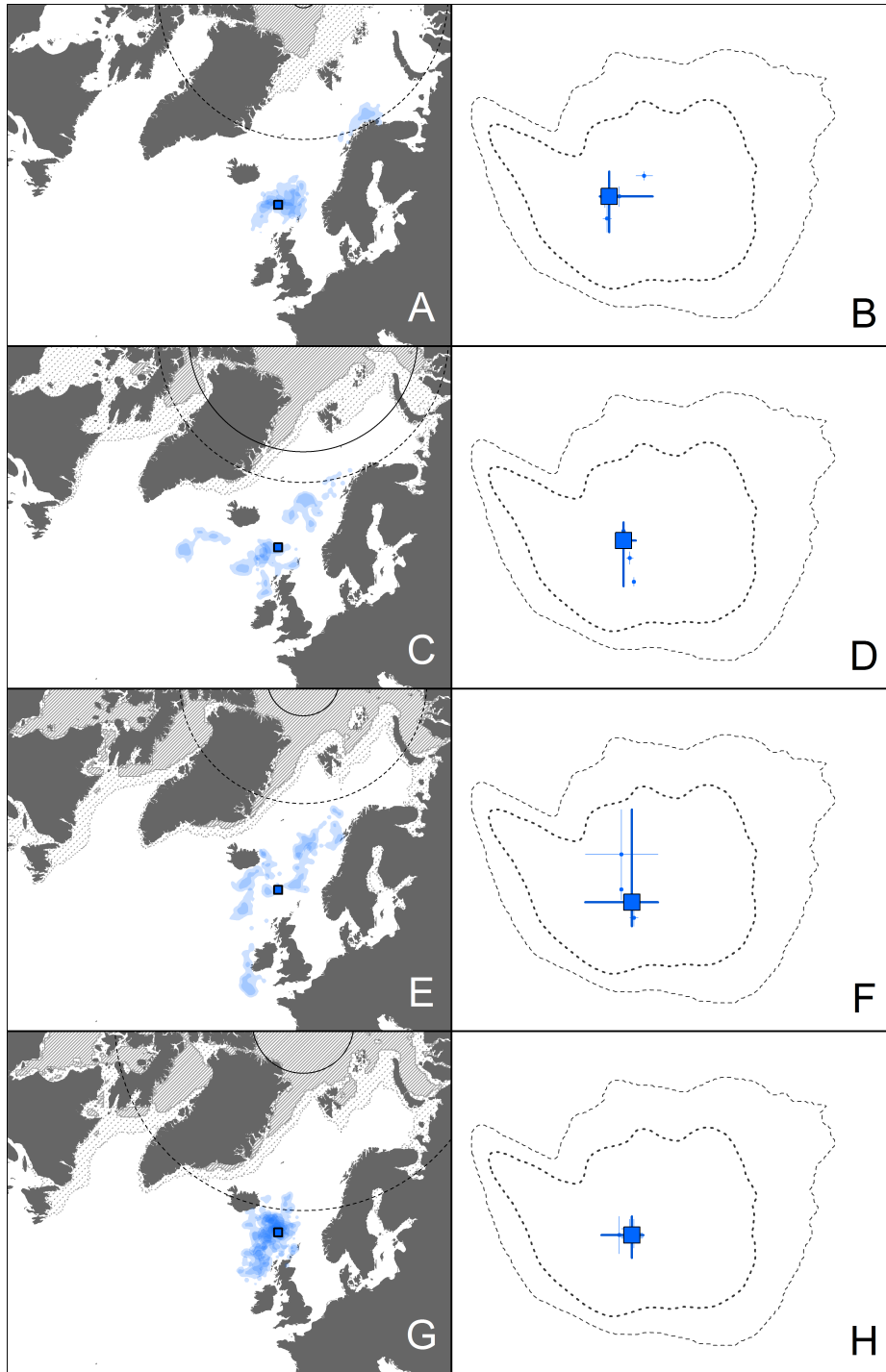
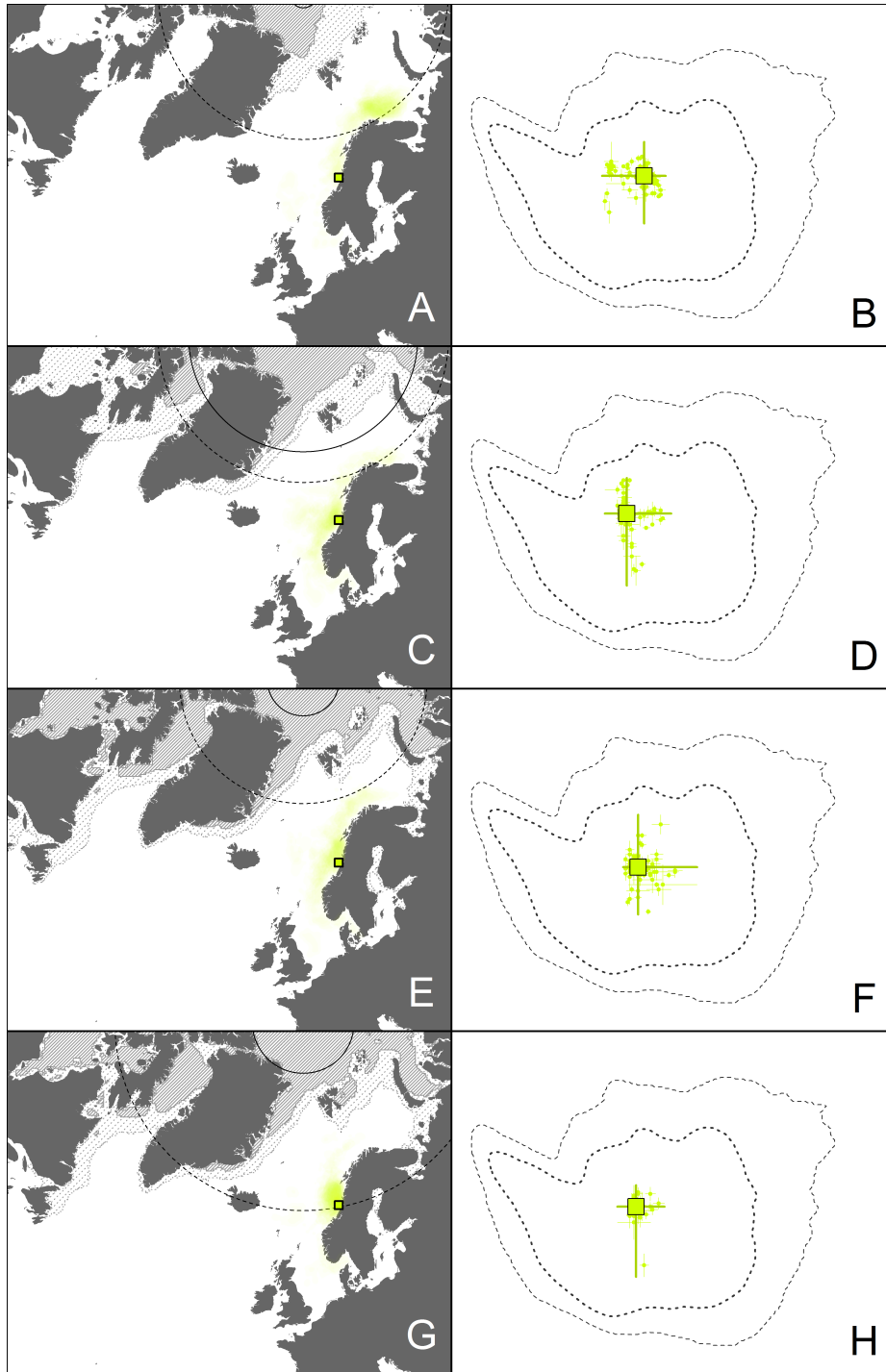


Figure S2.1. Common guillemots, Isle of May



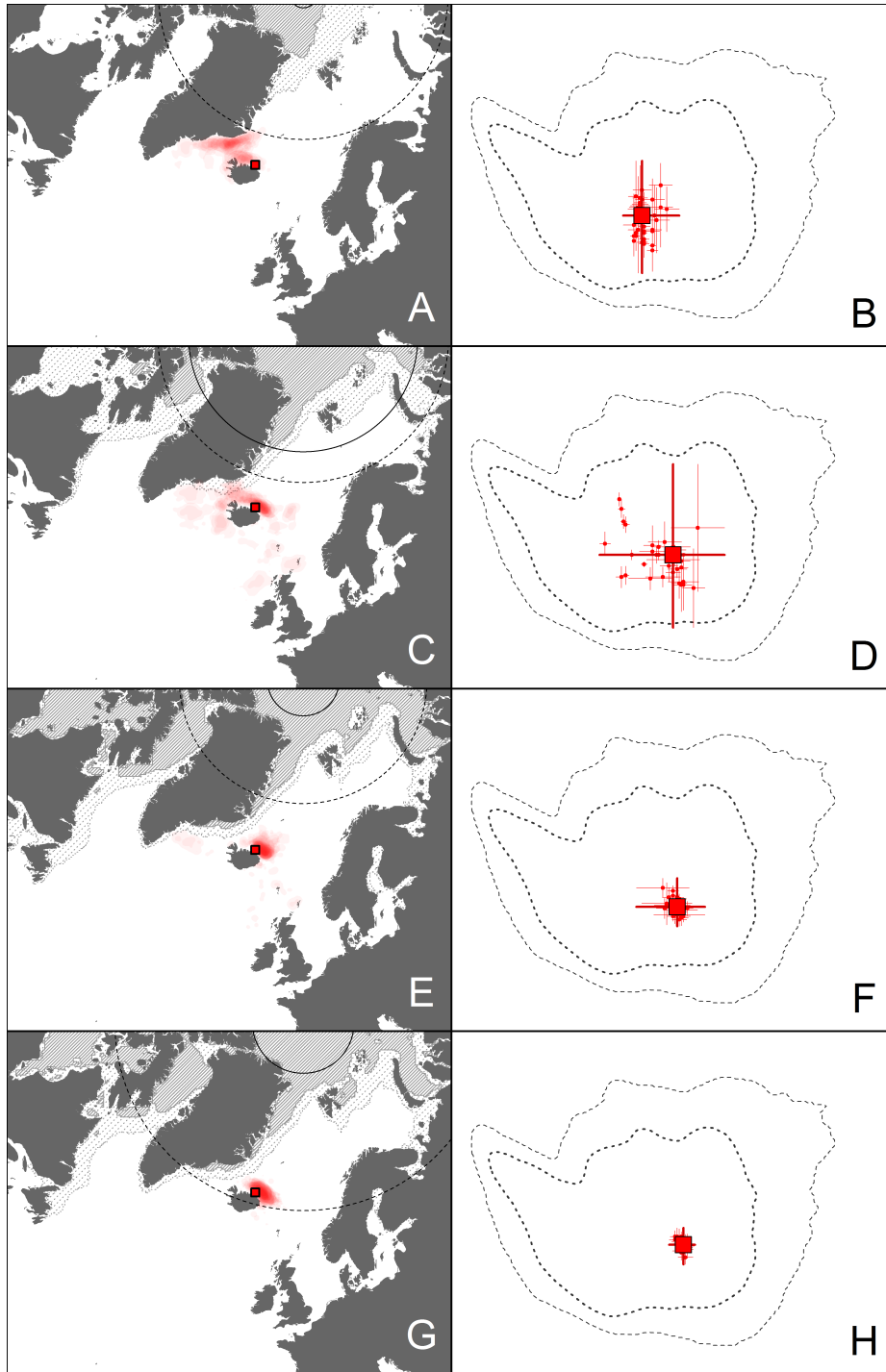
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18 **Figure S2.2.** Common guillemots, Faroe Islands



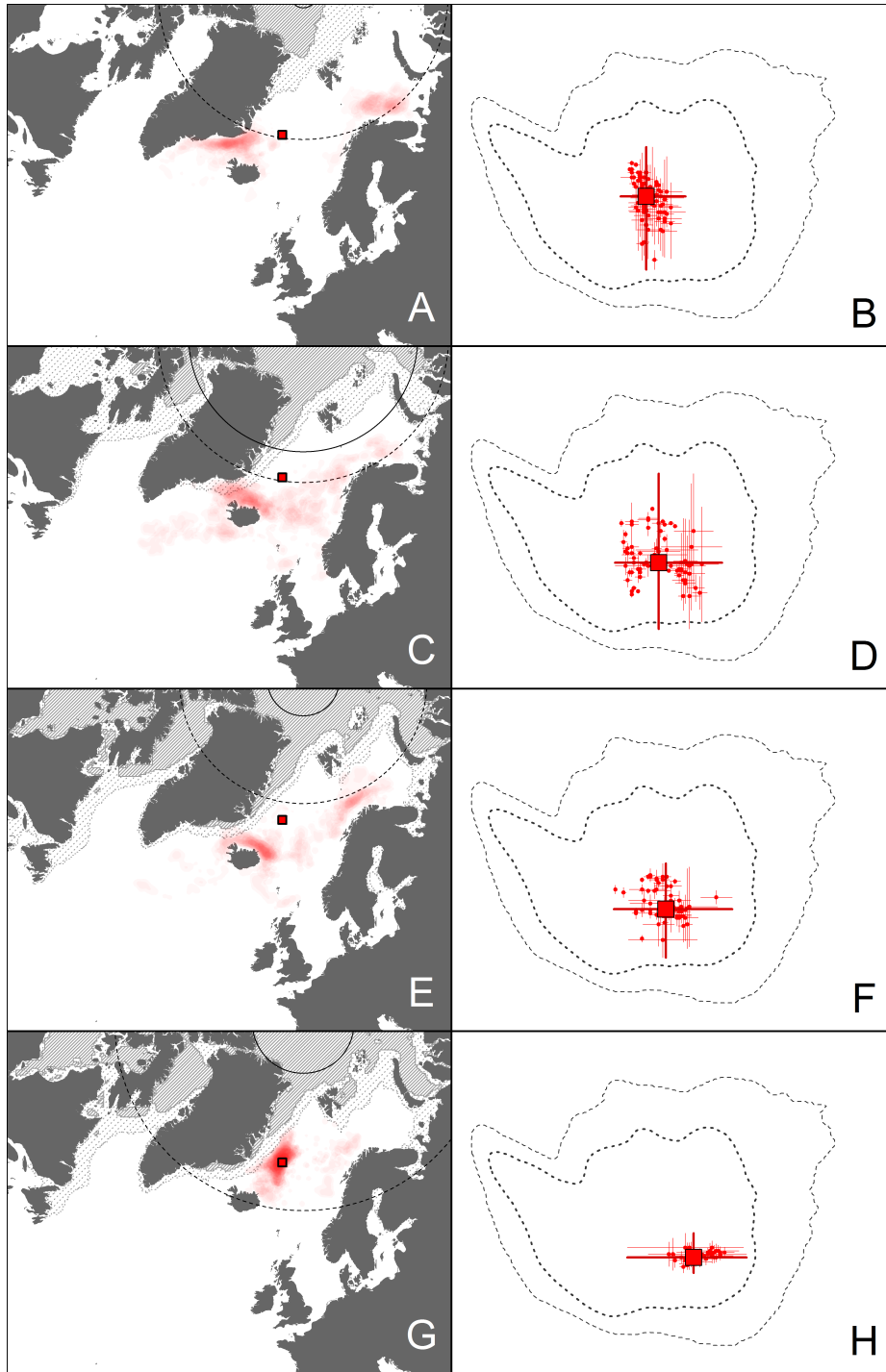
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20 **Figure S2.3.** Common guillemots, Sklinna



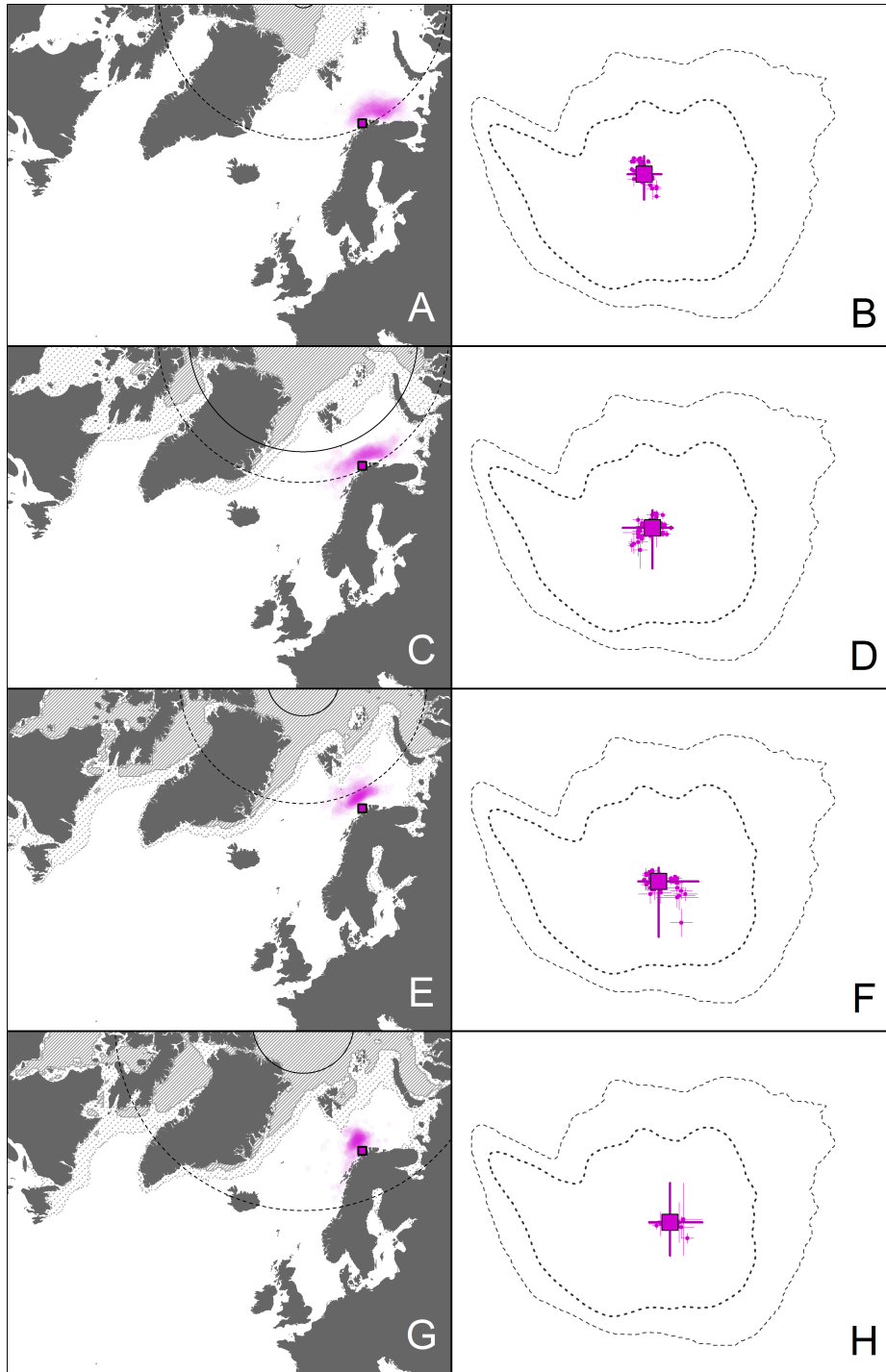
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22 **Figure S2.4.** Common guillemots, North-East Iceland (Grimsey, Langanes)



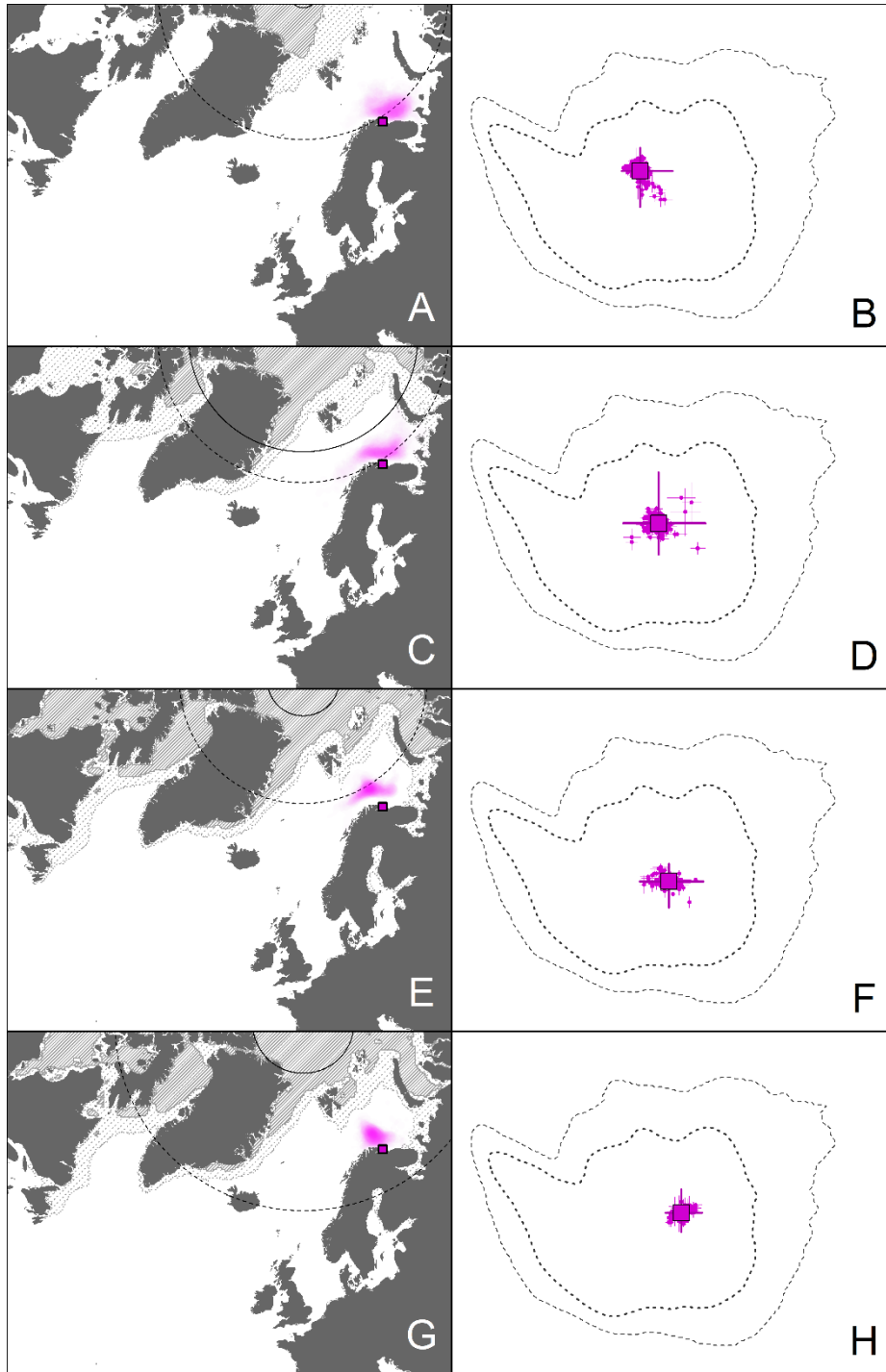
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24 **Figure S2.5.** Common guillemots, Jan Mayen



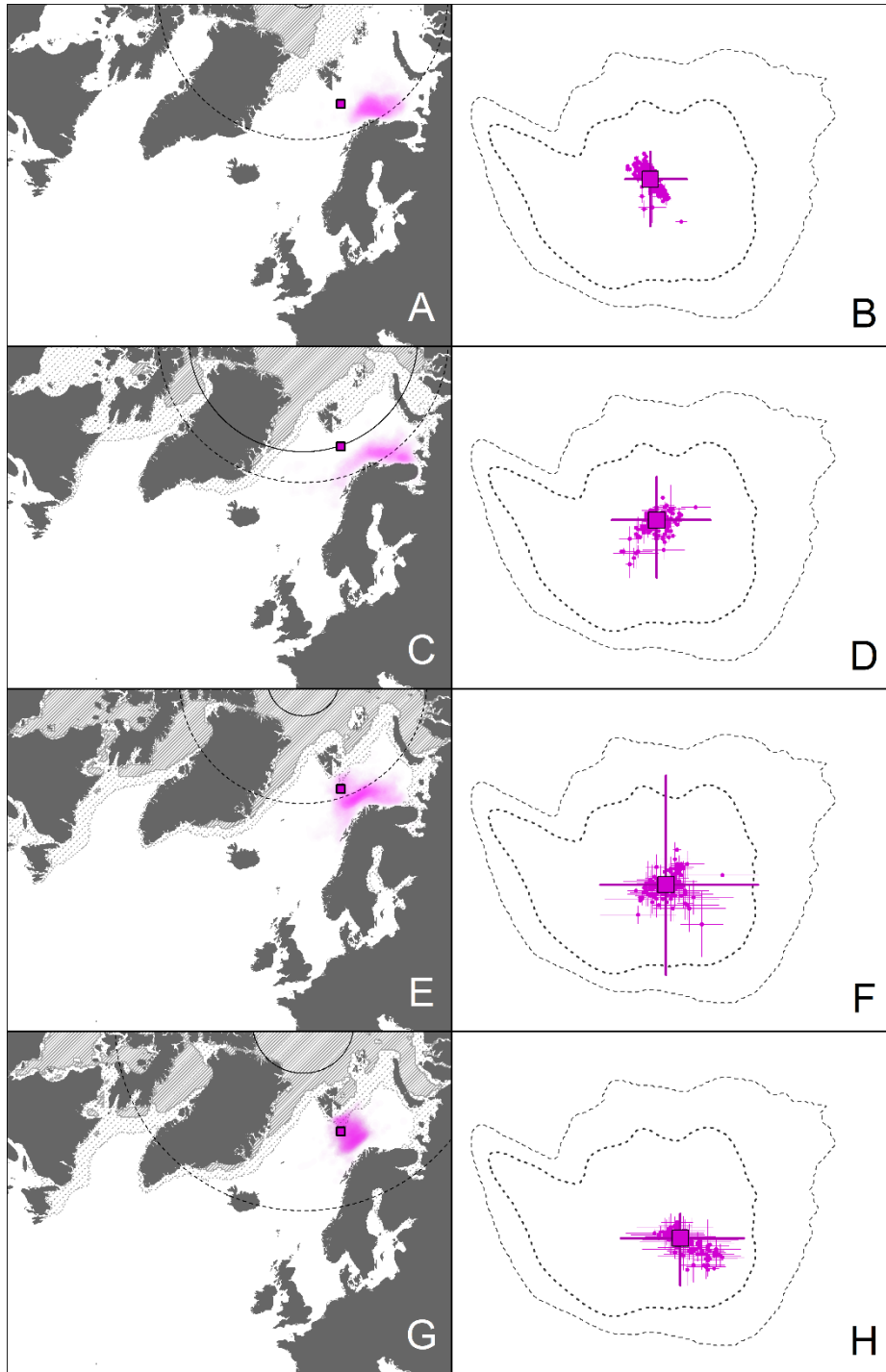
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26 **Figure S2.6.** Common guillemots, Hjelmsøya



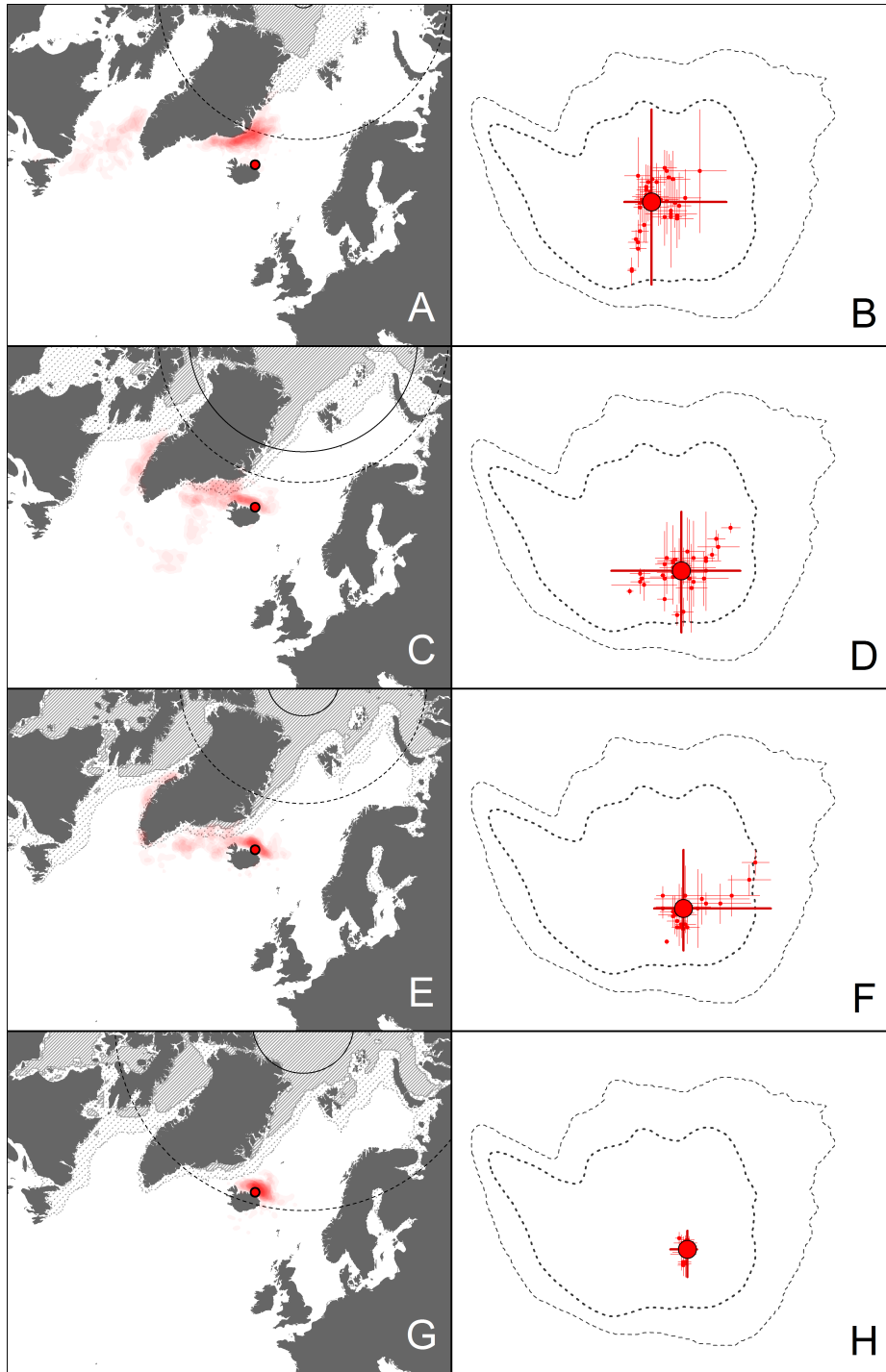
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28 **Figure S2.7.** Common guillemots, Southern Barents Sea (Hornøya and Cape Gorodetskiy)



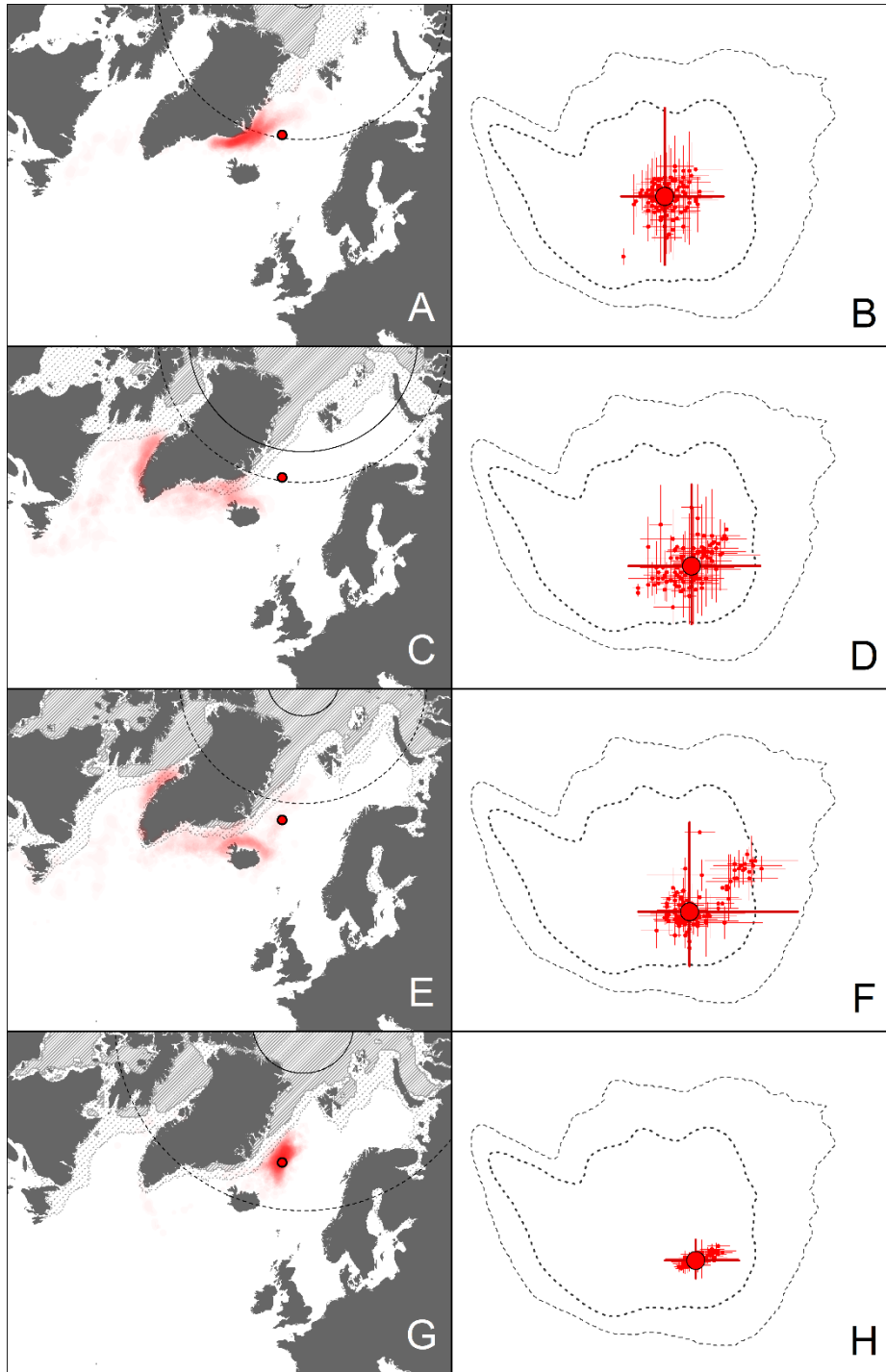
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30 **Figure S2.8.** Common guillemots, Bjørnøya



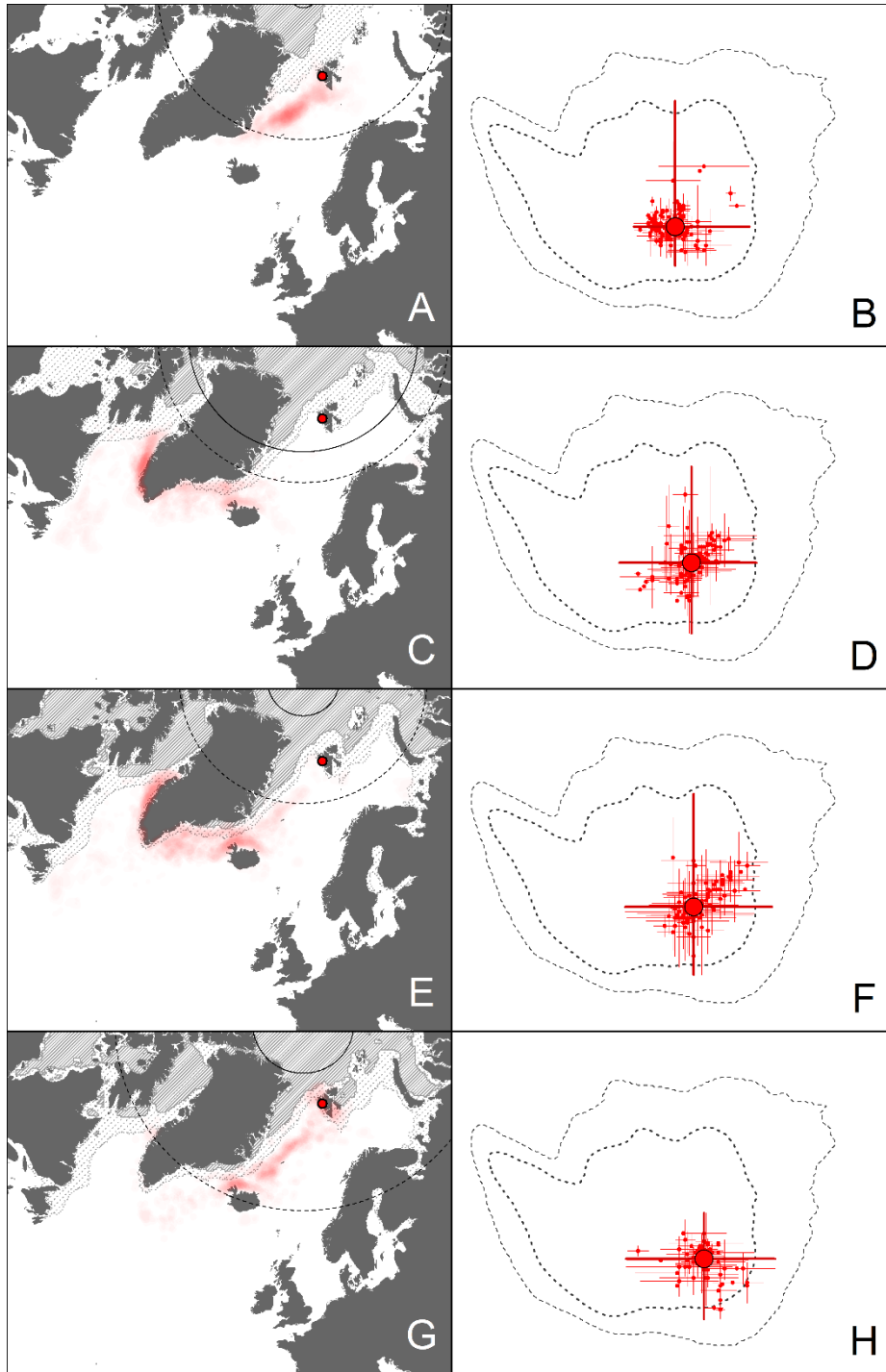
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32 **Figure S2.9.** Brünnich's guillemots, North-East Iceland (Grimsey, Langanes)



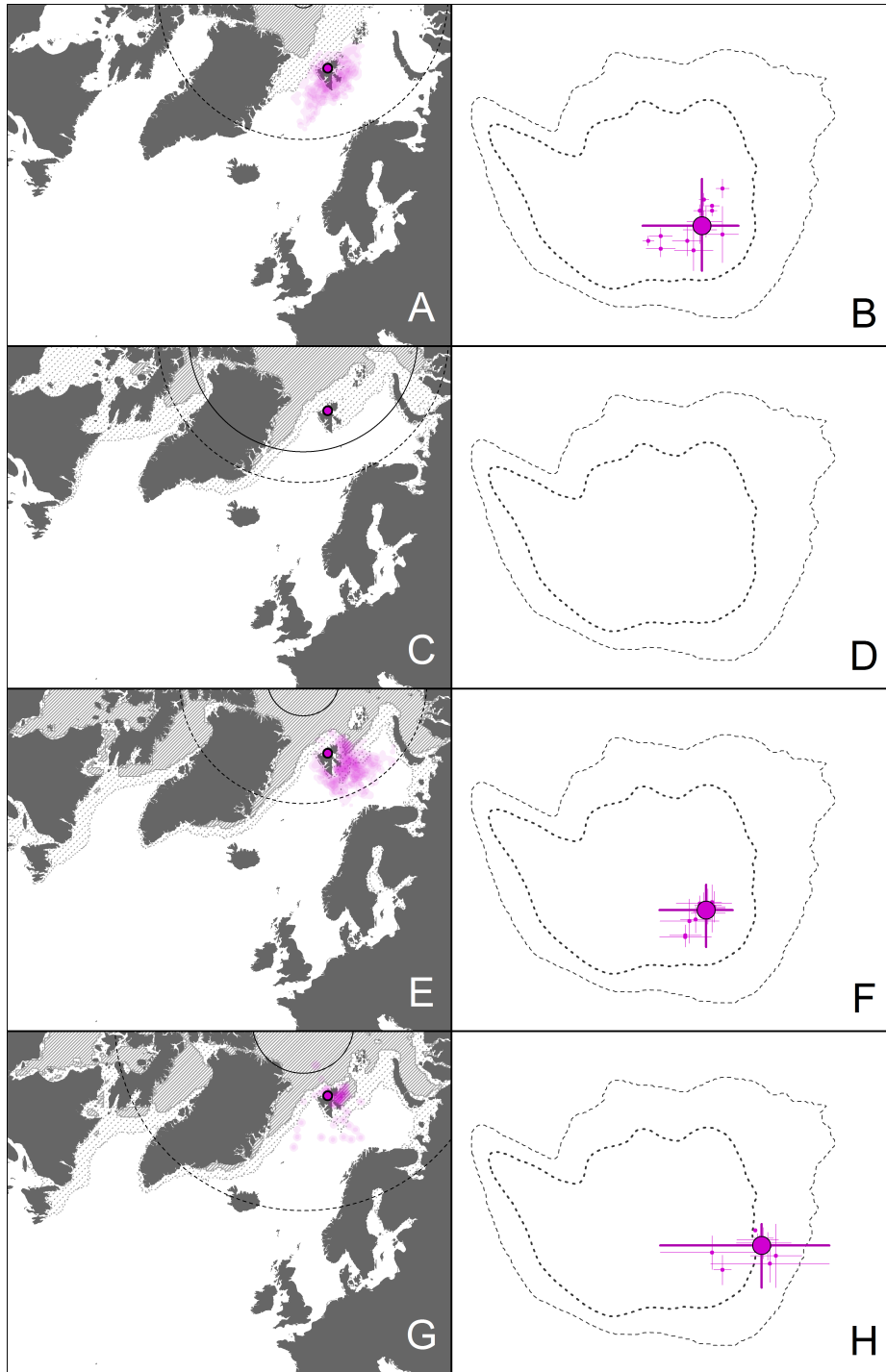
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34 **Figure S2.10.** Brünnich's guillemots, Jan Mayen



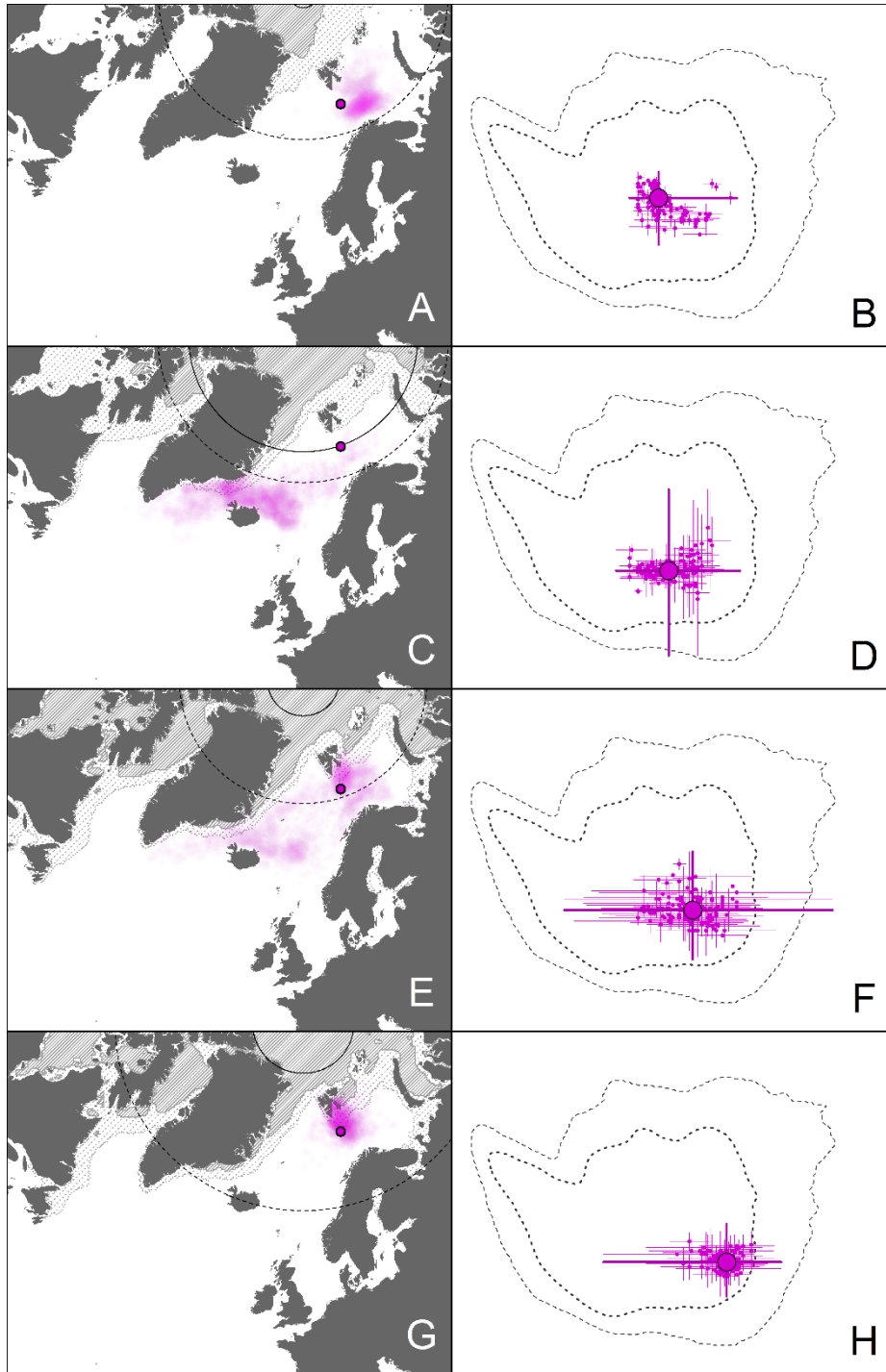
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36 **Figure S2.11.** Brünnich's guillemots, Western Spitsbergen (Diabas, Ossian Sarsfjellet and Amfifjellet)



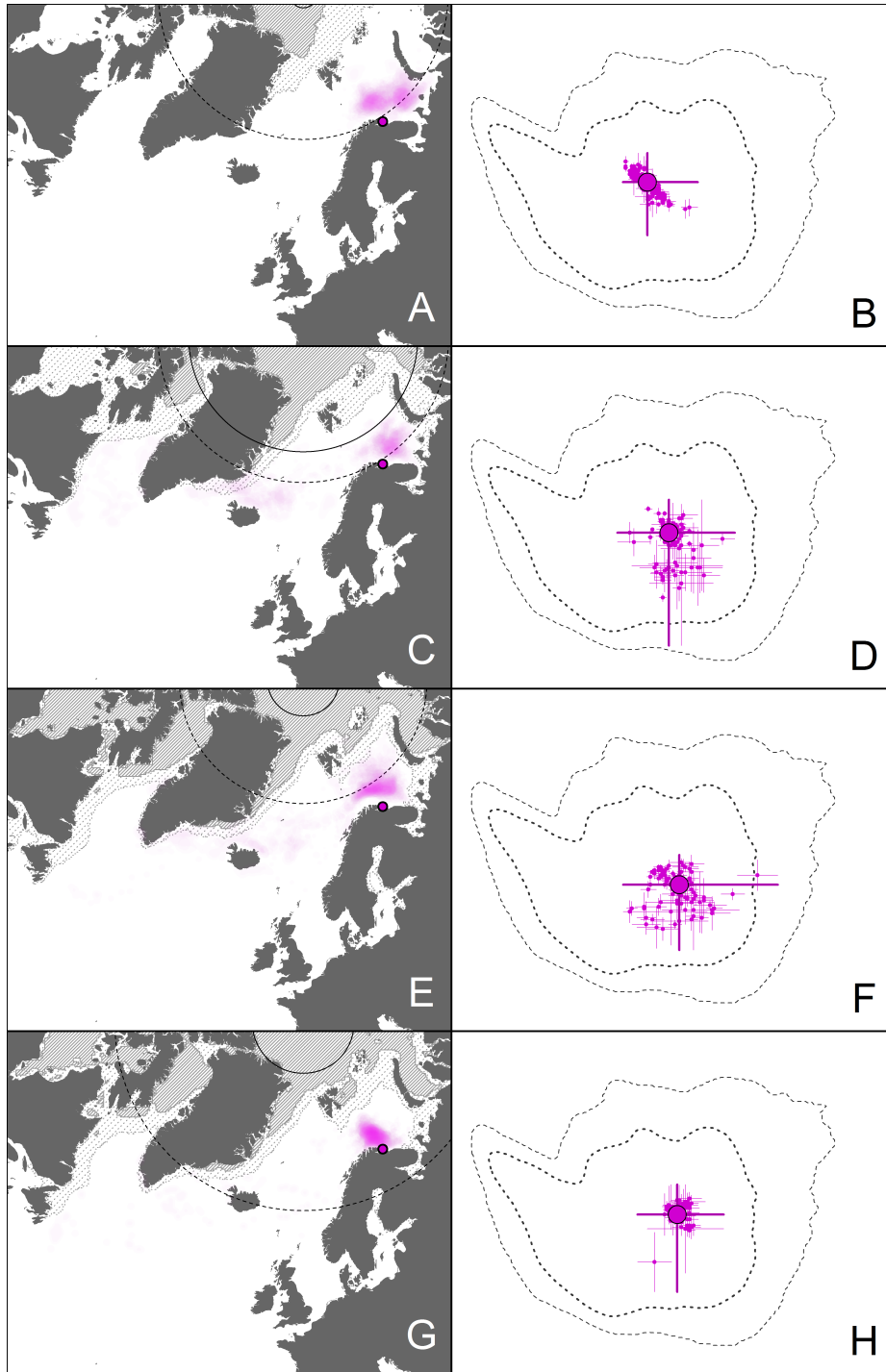
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38 **Figure S2.12.** Brünnich's guillemots, Eastern Spitsbergen (Alkefjellet)



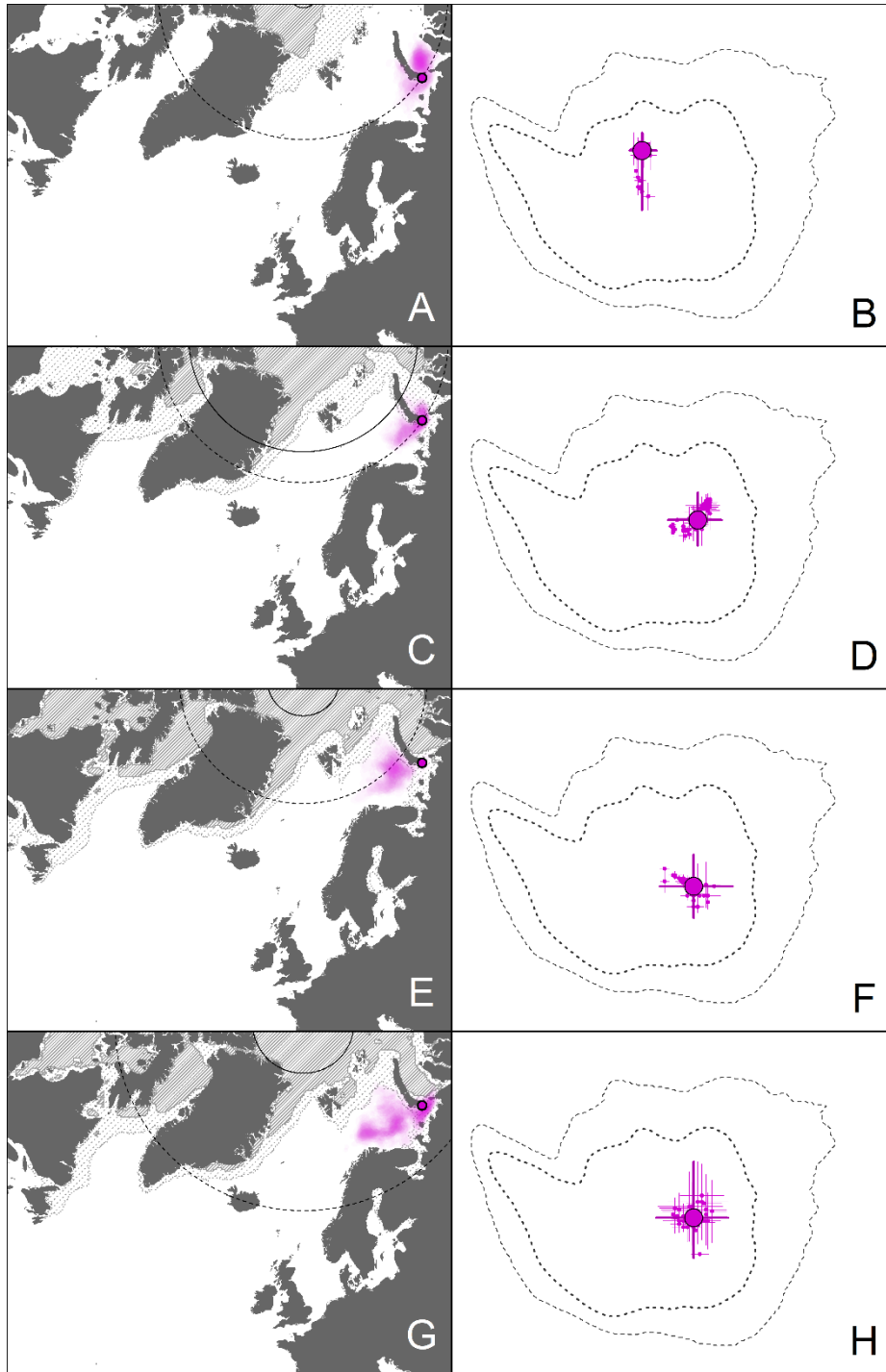
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40 **Figure S2.13.** Brünnich's guillemots, Bjørnøya



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42 **Figure S2.14.** Brünnich's guillemots, Southern Barents Sea (Hornøya and Cape Gorodetskiy)



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44 **Figure S2.15.** Brünnich's guillemots, Southern Novaya Zemlya (Cape Sakhanin)

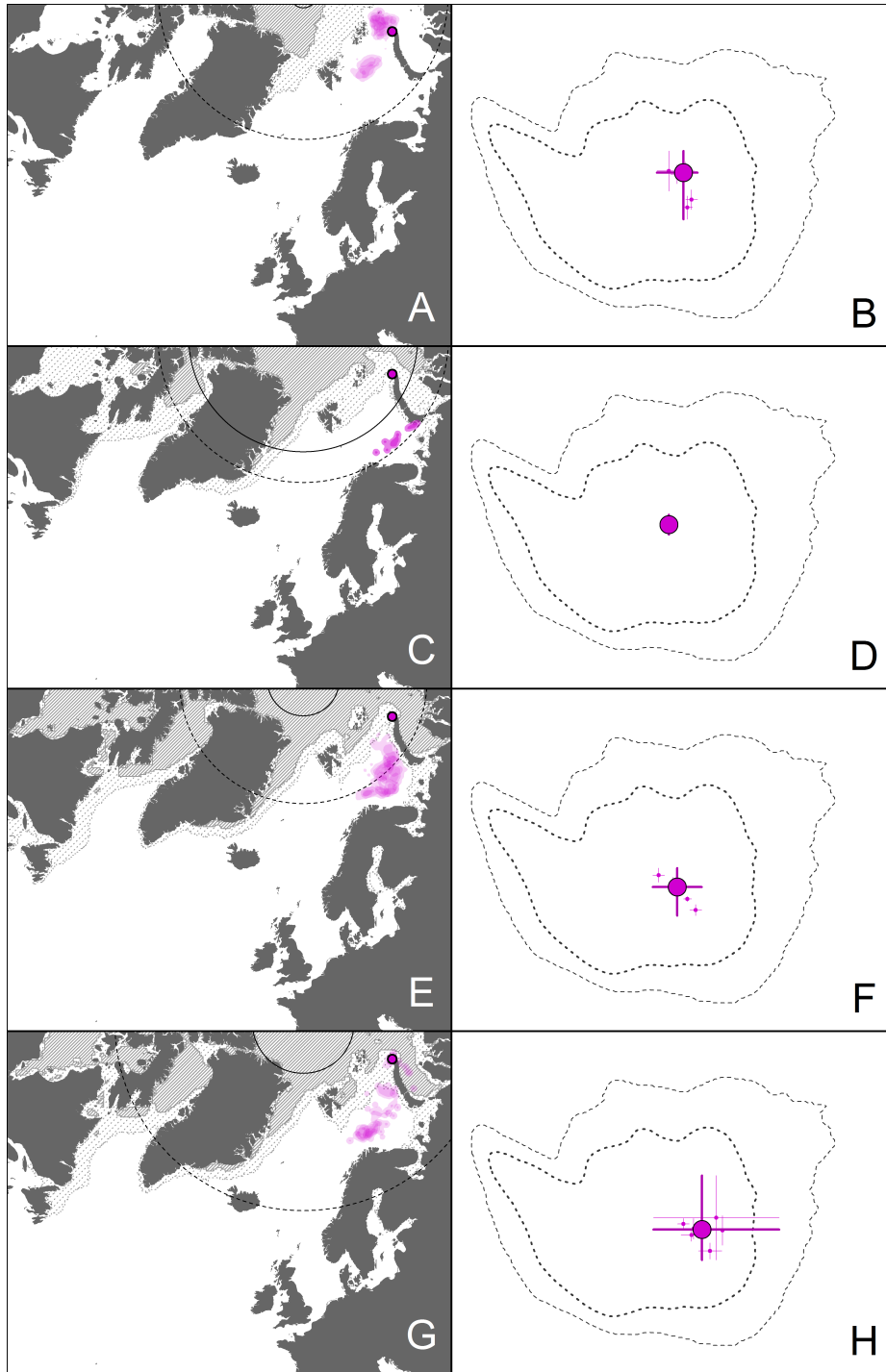


Figure S2.16. Brünnich's guillemots, Northern Novaya Zemlya (Oranskie island)