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JAV-01935
Pettex, E., Lambert, C., Fort, J., Dorémus, G. and Ridoux, V. 2019. Spatial segregation between immatures and adults in a pelagic seabird suggests age-related competition. – J. Avian Biol. 2019: e01935

Supplementary material

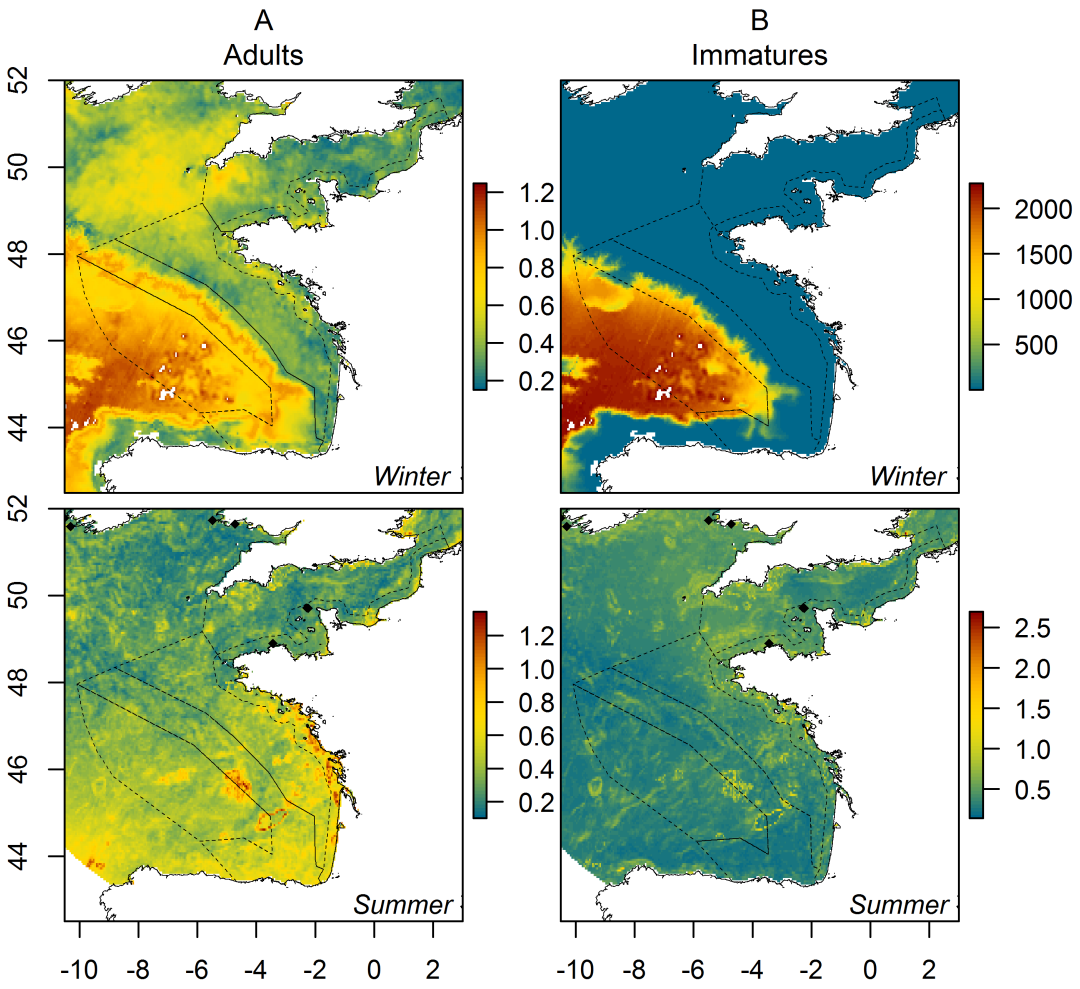
Appendix E

Predicted distributions

Figure E1. Habitat-based predictions of densities (individuals per km²) for adult (A) and immature (B) gannets in winter (left) and summer (right) and cumulated predicted densities of gannets (C). Black dots are the colony locations. Thin dotted lines materialized the survey area (see Figure 1).

Appendix F

Coefficients of Variation



Appendix G

Potential suitable habitat without colony constraint

In order to test for the spatial competition between adult and immature gannets in summer, we predicted their suitable habitats by removing the distance from closest colony from selected best models. Explained deviances of models without distance to closest colonies dropped drastically compared to original ones (from 42.8% to 18.7% for adults; from 16.8% to 9.7% for immatures), as expected given this variable was the most contributory to the models.

Predicted distributions when removing the spatial constraint to the colonies highlighted the very similar habitat preferences of both groups. Frontal areas along the Bay of Biscay shelf edge and along Irish Sea and English Channel coasts would be the most suitable habitats for adult and immature gannets. Adults would be present in lower densities in the southern Bay of Biscay, while immatures would avoid the eastern English Channel. These two patterns of avoidance are likely reminiscence of spatial patterns present in the data used to fit the models: adults are absent from southern Bay of Biscay due to their link to colonies, hence their avoidance to warmer waters (see their relationship to Mean SST); immatures cannot accede eastern English Channel due to the presence of breeding adults in the western Channel, hence their avoidance for stronger mean SSH (see their relationship to Mean SSH).

This result likely strengthen evidence for the competitive exclusion between both groups as the origin of their spatial segregation. When removing the constraint to colony, both groups are predicted to use the same habitat, leading to an overlap of 89.6% of their distribution over the prediction area, 85.7% over the survey area.

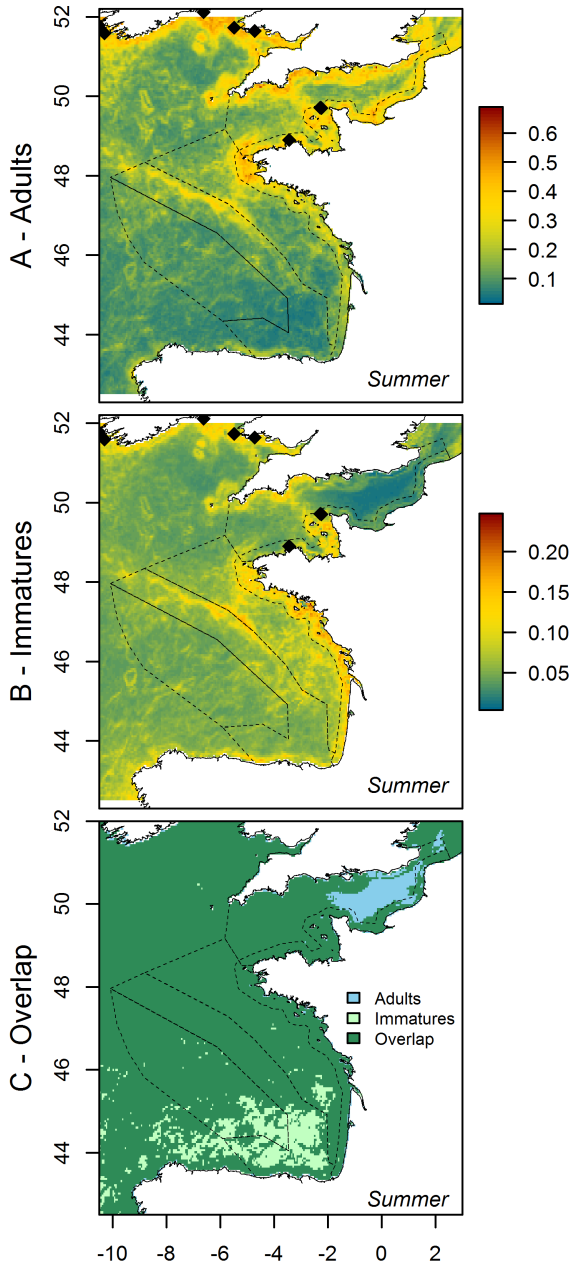


Figure G1. Summer habitat-based predictions of densities (individuals per km²) for adult (A) and immature (B) northern gannets and overlap between the two groups' distributions (C) when removing the distance to closest colony from selected best models. Black dots are the colony locations. Thin dotted lines materialized the survey area.