

### S03: Distribution and trends of top predators

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## Hotspots in the distribution of the top predators – seabirds, cetaceans and pinnipeds – in polar marine ecosystems.

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Observations of major hotspots in the at-sea distribution of top predators were tallied during recent years in both polar areas on board icebreaker RV *Polarstern*, Bremerhaven, Germany. They concern cetaceans: fin whale *Balaenoptera physalus*, humpback whale *Megaptera novaeangliae*, Southern right whale *Eubalaena australis*, as well as pinnipeds: crabeater seal *Lobodon carcinophaga*, harp seal *Pagophilus groenlandica*, Antarctic fur seal *Arctocephalus gazella*, and seabirds: grey-headed albatross *Thalassarche chrysostoma*, Southern fulmar *Fulmarus glacialis*, little auk *Alle alle*, common and Brünnich's guillemots *Uria aalge* and *U. lomvia*, Antarctic prion *Pachyptila desolata* and kittiwake *Rissa tridactyla*. Numbers tallied during a few 30min transect counts (i.e. a few tens nm) concerned can reach thousands of individuals and represent up to 98% of all individuals of the species tallied during the whole expedition. Selected examples of maximal numbers in limited areas are: 1,950 common guillemots out of a total of 1,975 and 133 humpback whales out of a total of 149 (Joiris 2011), 304 fin whales out of 308, 6,945 grey-headed albatrosses out of 6,970 and 76,800 southern fulmars out of 77,000 (Joiris & Dochy 2013), 2,000 crabeaters out of 2,260 (Joiris & D'Hert 2015). Moreover very local concentrations were encountered such as 1,500 little auks during 10min, i.e. less than 2 nm (Joiris et al. 2014). The hotspots were basically observed in autumn, often in areas visited by scientists mainly in summer and sometimes in winter, and located on or around icebergs. They often concern cetaceans, pinnipeds and seabirds at the same location (see higher). They can thus be considered reflecting post breeding and pre-migration gatherings and probably correspond to very high prey (krill) concentrations. Practical consequences are on the one hand that they lead to drastic underestimations of actual densities if undetected. On the other hand, such data should obviously not be included in density calculations.

### References

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