



de Ruiter

Increasing presence of Risso's dolphins in Norwegian Arctic waters

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INTRODUCTION

Risso's dolphins (*Grampus griseus*) are found between latitudes 64°N to 50°S (especially 45°N - 30°S) along the continental slope in 400 to 1000 m deep waters and temperatures above 10°C. There are few sightings north of 64°N (IUCN, 2018 - Fig. 1), even though canyons along the continental shelf in colder waters make a suitable habitat for this species (Moors-Murphy, 2014; Jefferson et al., 2014).

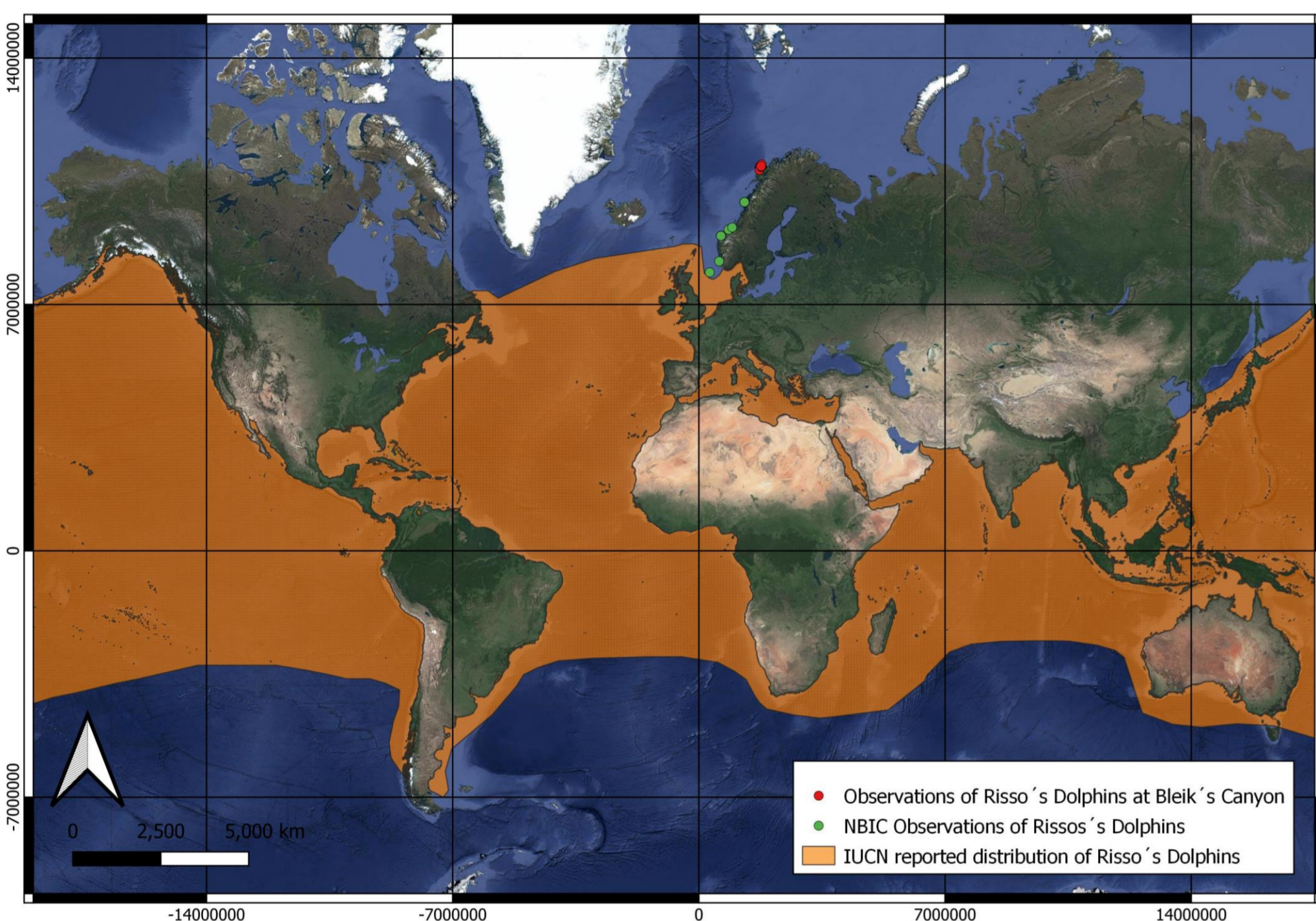


Figure 1: Global distribution of Risso's dolphins (IUCN, 2018).

METHODS – Study area

The Bleik Canyon (69°25'N, 15°45'E), in northern Norway (red marker in Fig 1), stretches for 40 km and reaches 2100 m deep (Laberg, 2007). Such topography creates an upwelling zone, providing a productive habitat for cetaceans (Rødland & Bjørge, 2015; Moors-Murphy, 2014). Cetacean sighting data in the area have been collected from whale watching and research platforms since 1987. Here, we combined sighting data and photographs collected by Whalesafari, Whale2Sea, and Norwegian Orca Survey to investigate new presence of Risso's dolphins in this region.

METHODS – Photo-ID

The group size was visually estimated for each sighting. Dolphins were identified using the shape of and nicks in the dorsal fin, as well as colorations and natural body scars. Individuals were assigned a unique ID number as they were discovered (Fig. 2 and Fig. 3).

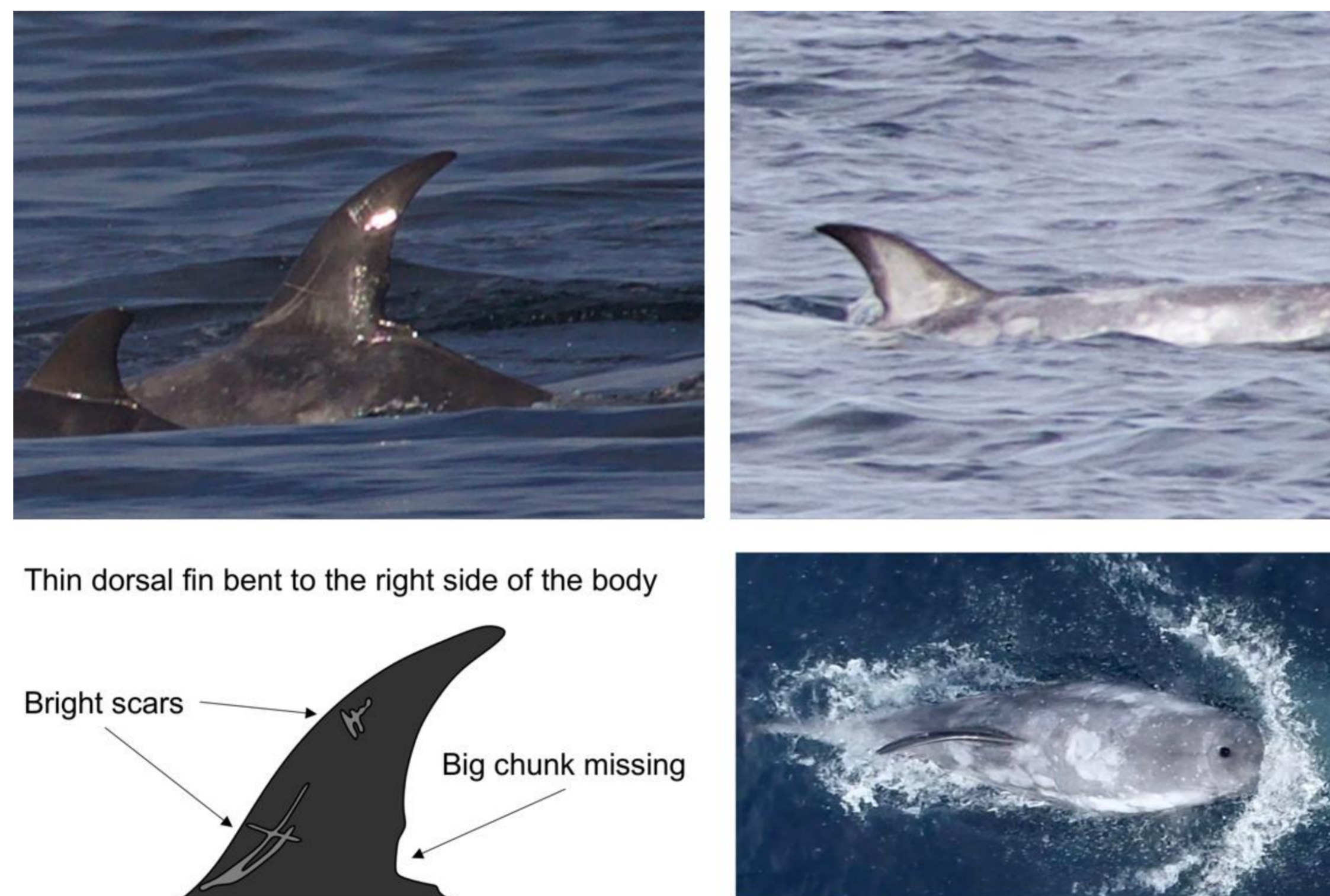


Figure 2: Example of complete identification (ID) entry for individual GG_045 in the Photo ID catalog. The four panels show all features, from both the left and right sides of the animal, used for identification.

Photos from three platforms were combined to form a photo ID catalogue. The catalogue was then used to register observed individuals and explore reoccurrence of Risso's dolphins at Bleik Canyon. Available geographic data was used to map sightings of Risso's dolphins.

CONCLUSIONS

Risso's dolphins are now regular visitors in Norwegian Arctic waters.

Possible explanations may be warming waters and a northwards expansion of their prey. Continuous collaboration between platforms for Photo ID and ecosystem surveys in the Northeast Atlantic could help understand Risso's dolphins behavior, social structure and habitat requirements under changing conditions.

RESULTS

Since 2017, Risso's dolphins have been seen on **26 days** at Bleik Canyon during the summer (Fig 4).

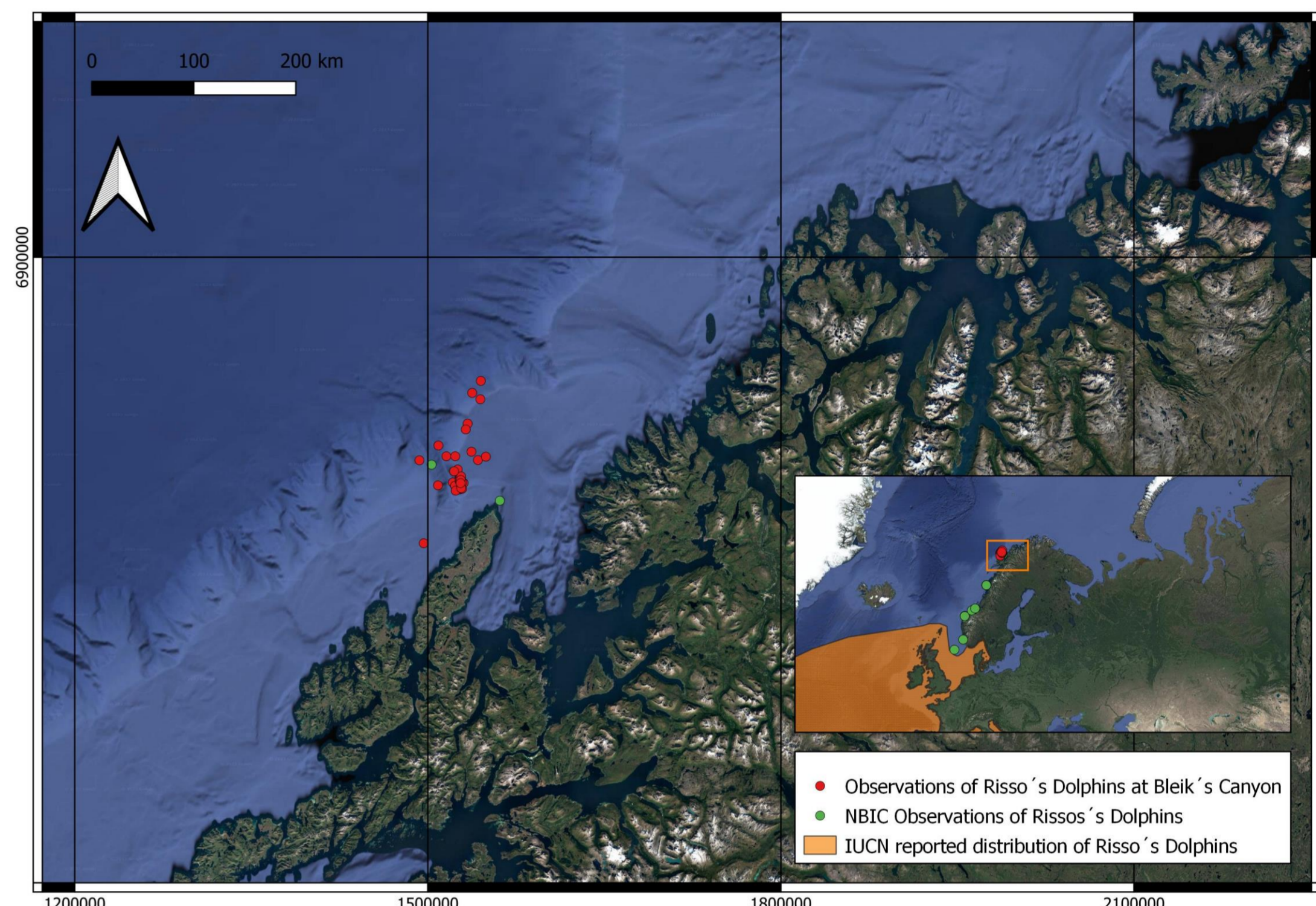


Figure 4: Observations of Risso's dolphins in Bleik Canyon

We identified a total of **115 individuals**, excluding calves (Fig 5). The group sizes ranged from 1 to 40 individuals. Some dolphins were seen in the area for several weeks. In total, ten dolphins were resighted between different years, including 7 individuals in 2022 and two in 2021 and 2018 (Fig. 5). Photo documentation was inconsistent, which could contribute to observed variation between years.

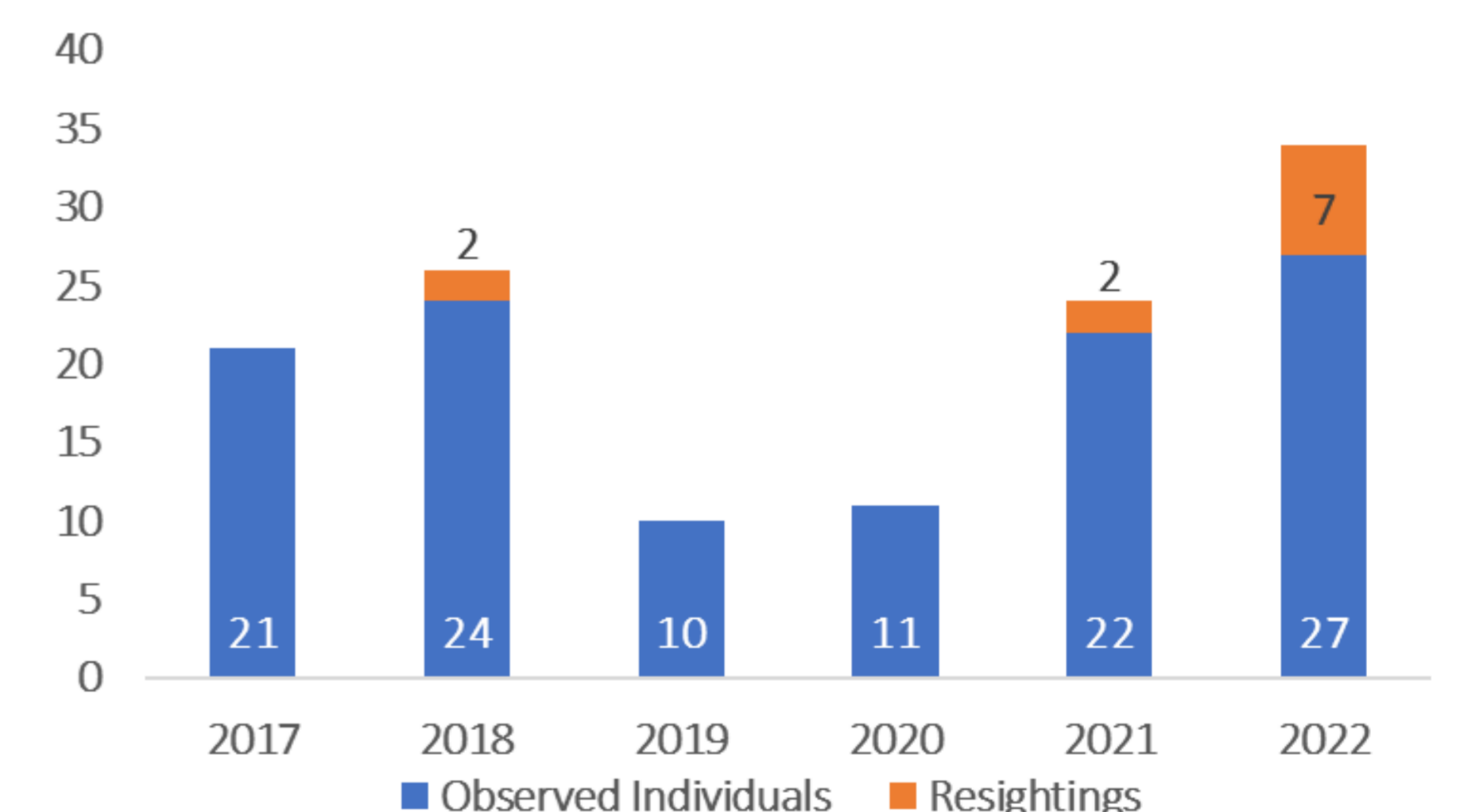


Figure 5: Number of observed and resighted Risso's dolphins at Bleik Canyon between 2017 and 2022.



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REFERENCES: Artsdatabanken (NBIC). (2021). *Grampus griseus* [Data file]. Retrieved from <https://artsdatabanken.no/taxon/Grampus%20griseus/48161> [accessed: 03.03.2023]; IUCN (International Union for Conservation of Nature) 2012. *Grampus griseus*. The IUCN Red List of Threatened Species; Jefferson, T. A., Weir, C. R., Anderson, R. C., Ballance, L. T., Kenney, R. D., & Kiszka, J. J. (2014). Global distribution of Risso's dolphin *Grampus griseus*: a review and critical evaluation. *Mammal Review*, 44(1), 56-68.; Laberg, J. S., Guidard, S., Mienert, J., Vorren, T. O., Hafidason, H., & Nygård, A. (2007). Morphology and morphogenesis of a high-latitude canyon; the Andøya Canyon, Norwegian Sea. *Marine Geology*, 246(2-4), 68-85.; Moors-Murphy, H. B. (2014). Submarine canyons as important habitat for cetaceans, with special reference to the Gully: a review. *Deep Sea Research Part II: Topical Studies in Oceanography*, 104, 6-19.; Rødland, E. S., & Bjørge, A. (2015). Residency and abundance of sperm whales (*Physeter macrocephalus*) in the Bleik Canyon, Norway. *Marine Biology Research*, 11(9), 974-982.