

# Coral by-catch in shrimp bottom trawl surveys in West Greenland waters

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## Introduction

The species composition of West Greenlandic corals is fairly well known but distribution patterns are poorly understood. Keeping a fisheries logbook has been mandatory since 1975 (Arboe and Kingsley 2013) resulting in a good record of commercial fishing activities in Greenland since then. By-catch of invertebrate species has not been documented and it has not been mandatory to log it, making it difficult to map amount of and distribution patterns of corals. In 2010 the Greenland Institute of Natural Resources started to collect cold water corals in a more systematic way to document the occurrence of corals in the bottom trawls made for the annual shrimp stock assessments.

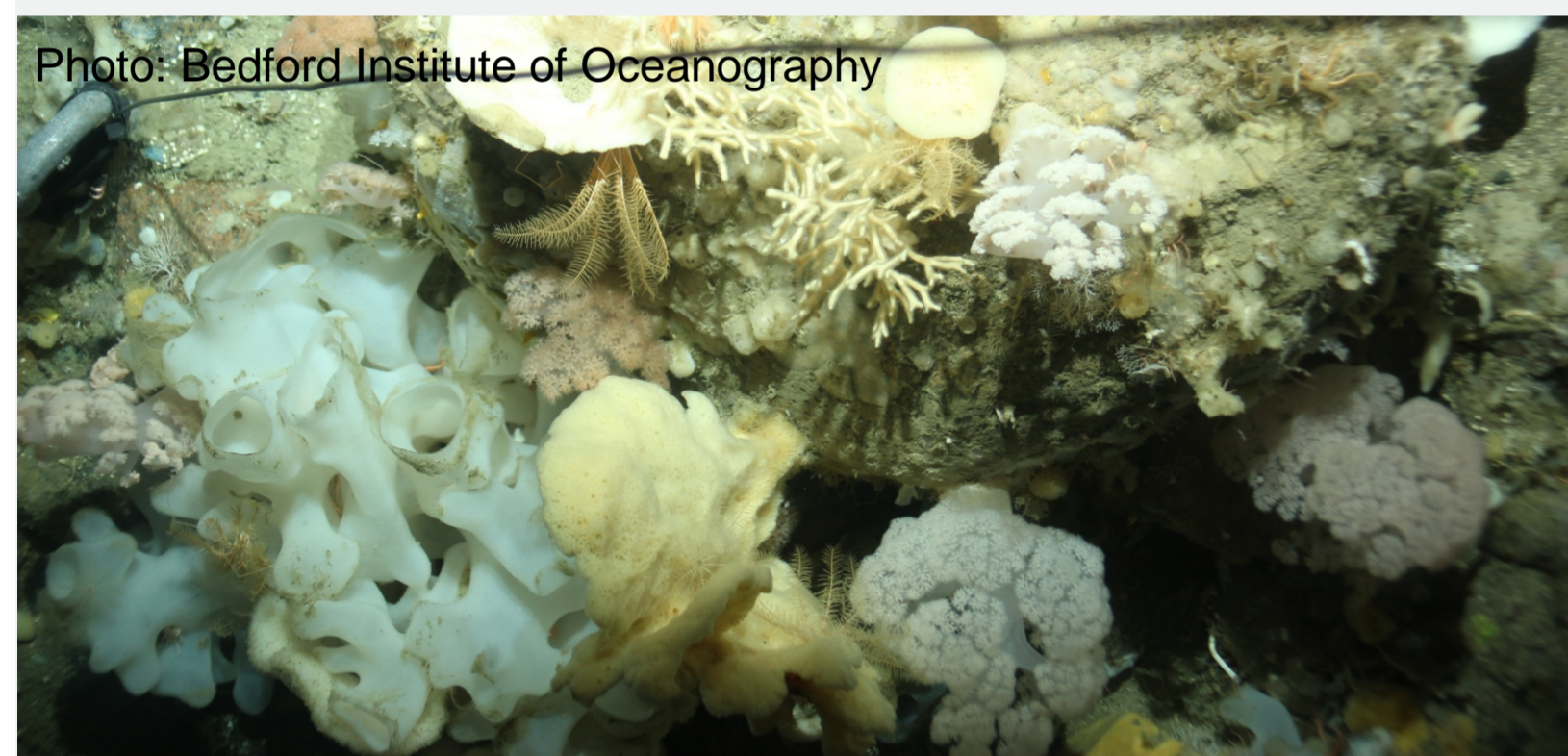


Photo: Bedford Institute of Oceanography

Top: Soft corals and other invertebrates  
Right: Bubblegum coral (*Paragorgia arborea*).



Photo: Greenland Institute of Natural Resources

## Methods

All corals were recorded in seven bottom trawl surveys conducted on the Greenlandic research trawler R/V Paamiut from 2010 to 2012. The first year samples were obtained from one cruise (cruise 3) while in 2011 and 2012 samples were obtained from three cruises each year (cruise 1-3). The trawl used was a Cosmos 2000 trawl with 'rock-hopper' ground gear comprising steel bobbins and rubber disks. Tow duration was 15 minutes and towing speed was about 2.5 knots

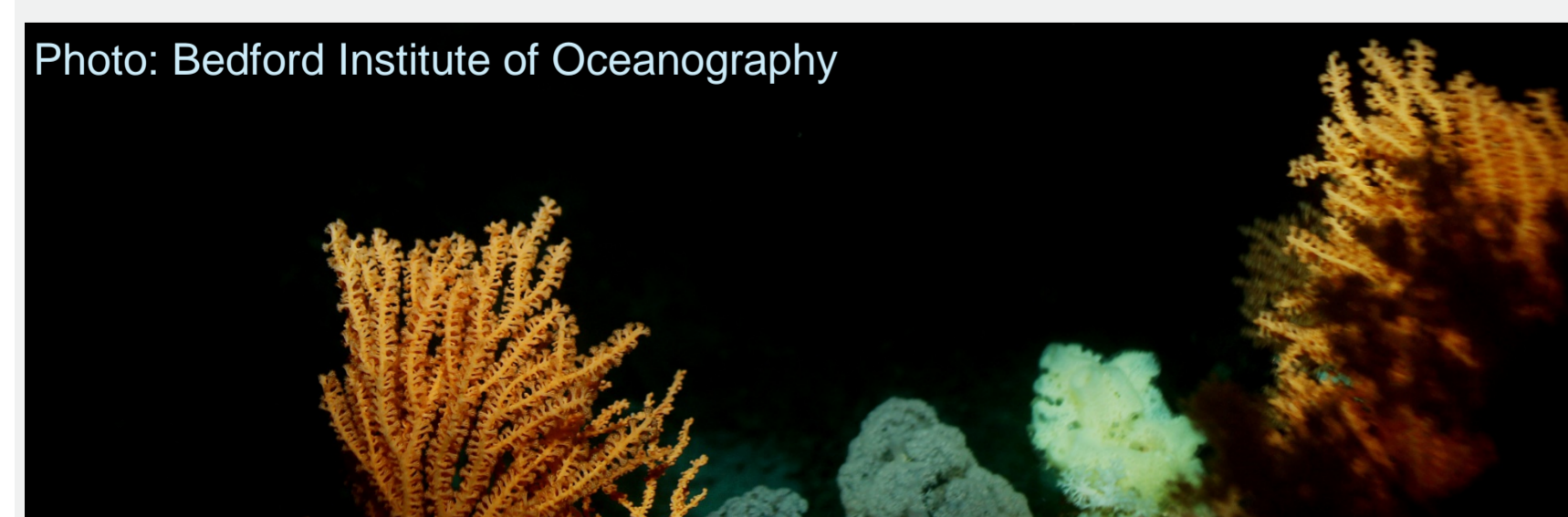
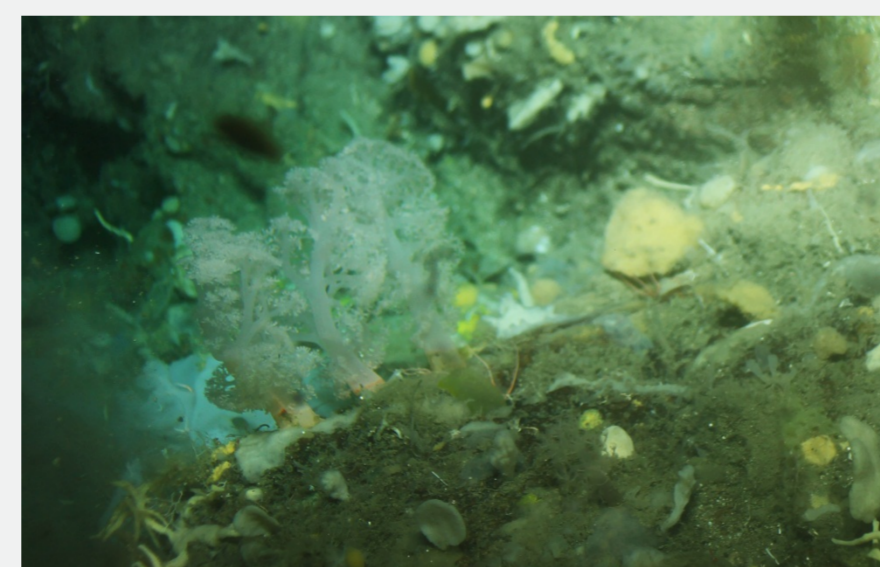


Photo: Bedford Institute of Oceanography

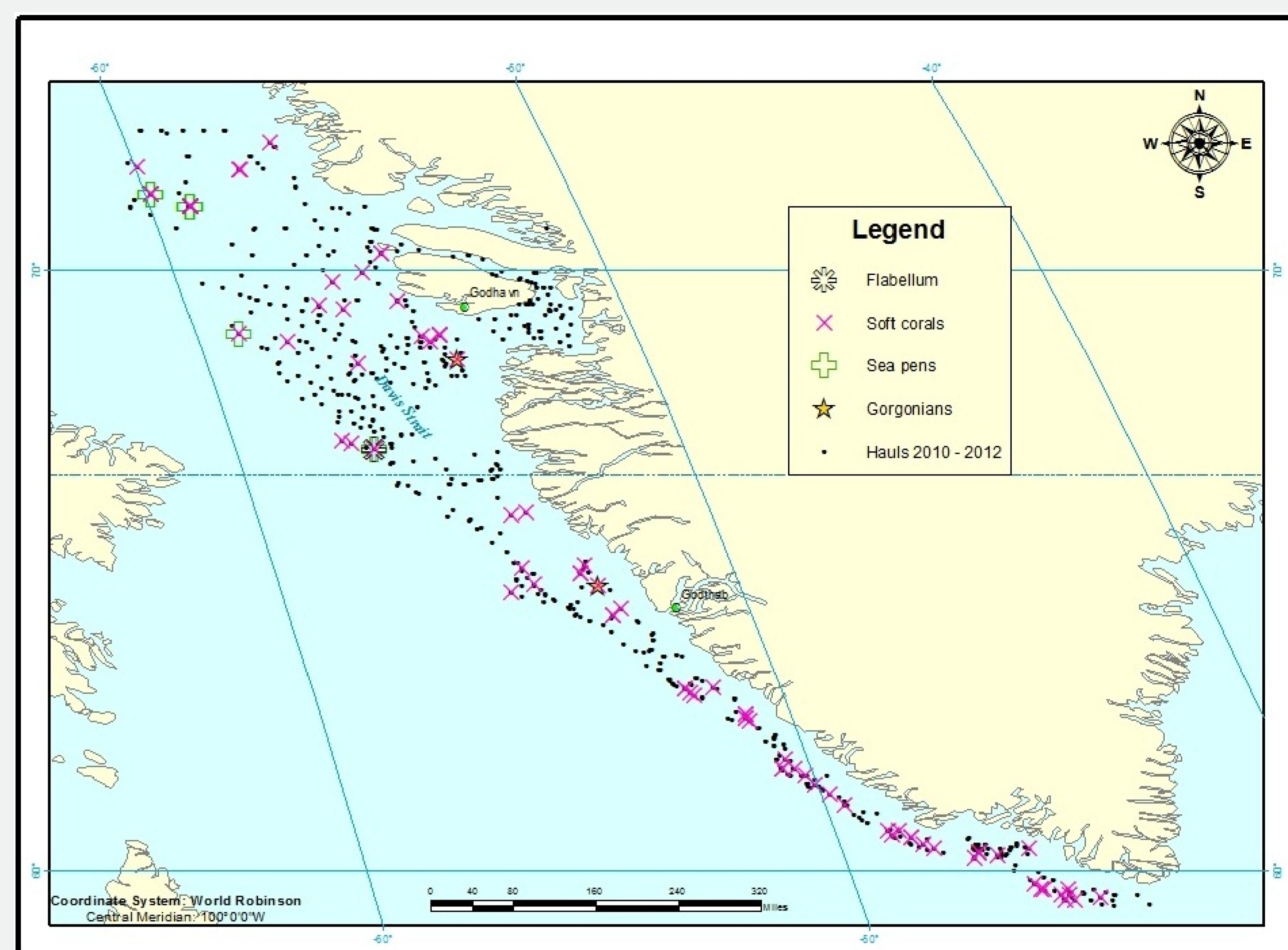
Soft corals and *Primnoa resedaeformis* photographed near Cape Desolation, south Greenland



Soft corals

## Results

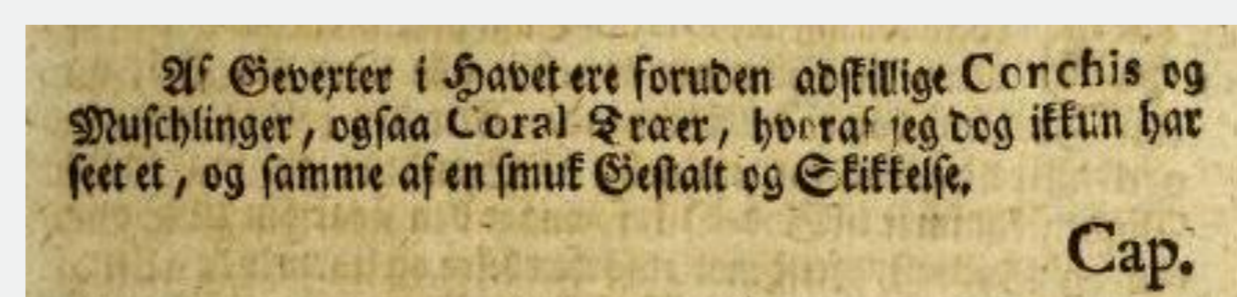
A total of 628 hauls were conducted covering an area of 2.6 km<sup>2</sup>. Sixty-six hauls contained corals and of these 13 hauls had two or more species of corals. Only two hauls contained more than one kilo of coral, which in each case were comprised of one only species. The bycatch consisted mostly of Alcyonaceans (72 incidents) and sea pens (12 incidents, of which one haul contained four kg.). Two gorgonian corals were caught, one fragment and one specimen of ≈100 kg. One stony coral (*Flabellum* sp.) was caught in the deepest part of the surveyed area at 670 meters.



Greenland bottom trawl surveys 2010 - 2012

## Discussion

Tow time in the survey was relatively short (15 minutes) and the trawl gear was not designed to catch sessile bottom fauna. The bycatches therefore only represents a minimum of the *in situ* fauna. The trawl pattern for the annual shrimp stock assessments included areas not trawled by the commercial trawlers. This could explain the size of the *Paragorgia arborea* (≈100 kg) caught in one haul. A specimen this large is probably very old, due to the slow growth rate. The single large catch of sea pens (4 kg) indicates that aggregations of sea pens exists and warrant future systematic surveys. The single stony coral was found in a relatively deep area (670 m). *Flabellum* is widespread in Greenland (Ole Tendal, pers. comm.) and was therefore an expected find. The widespread presence of soft corals in the fishable area correlates with video and picture data from the west coast of Greenland.



Coral trees (vernacular name for *Paragorgia arborea*) were mentioned as early as 1741 in the first natural history book from Greenland.

## Conclusion

While few corals besides soft corals were encountered, one aggregation of sea pens was found and islands of large/old corals were present in the fishable area. These results show the importance of identifying these islands of coral aggregations so that damage to them can be avoided in the future.

## References

- Arboe N, Kingsley M. (2013). The Fishery for Northern Shrimp (*Pandalus borealis*) off West Greenland, 1970–2013. NAFO SCR Doc. 013/058
- Kingsley, M.C.C, H. Siegstad & K. Wieland 2012. The West Greenland trawl survey for *Pandalus borealis*, 2012, with reference to earlier results. NAFO SCR Doc 12/044.