

### **Supplementary Material 3: Russian Data**

Figures for the data from the Russian cruises with cod stomach sampling.

The Russian cruises took samples from across the Barents Sea, further east than the UK or Norwegian surveys (Figure S3.1).

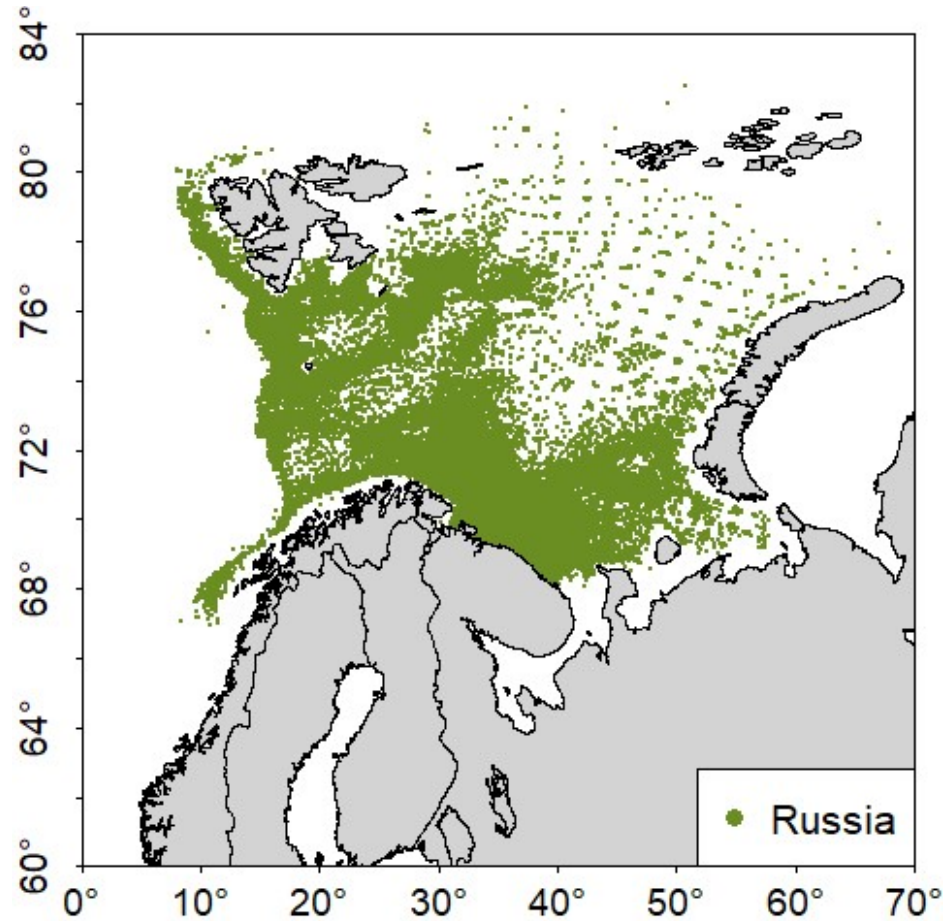


Figure S3.1. The location of the cod stomach samples taken in the Barents Sea by Russian cruises.

The surveyed area expanded over the century, with cruises extending much further north and east in the 2000s and 2010s (Figure S3.2).

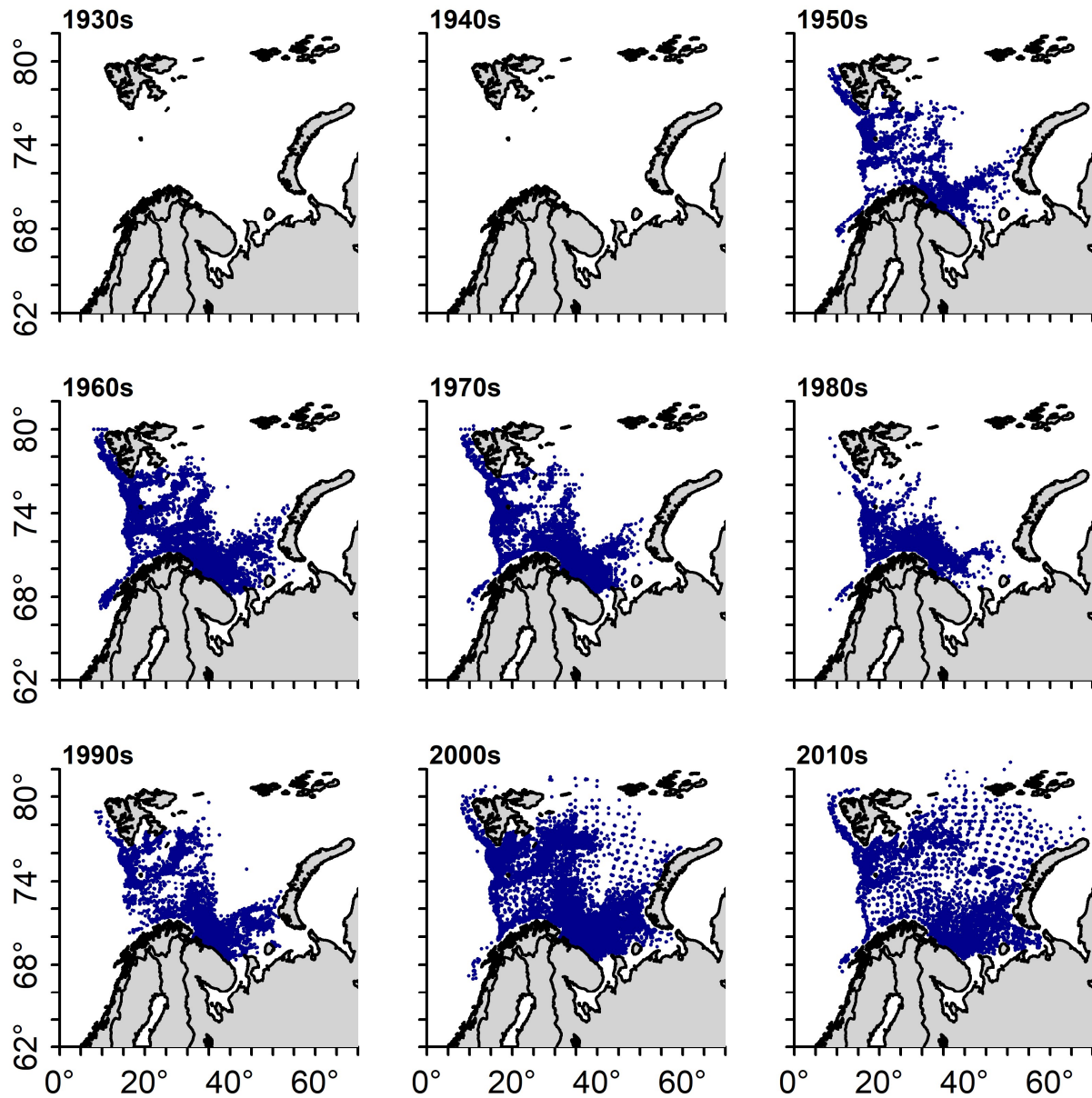


Figure S3.2. Sampling coverage in each decade for all Russian data combined. Each dot denotes a station with stomach sample.

Few stomachs were sampled in the 1930s (these data are not digitized, and are likely lost) and 1940s, but there were consistently high numbers from the 1950s to the 1990s, and then many more in the 2000s (Figure S3.3).

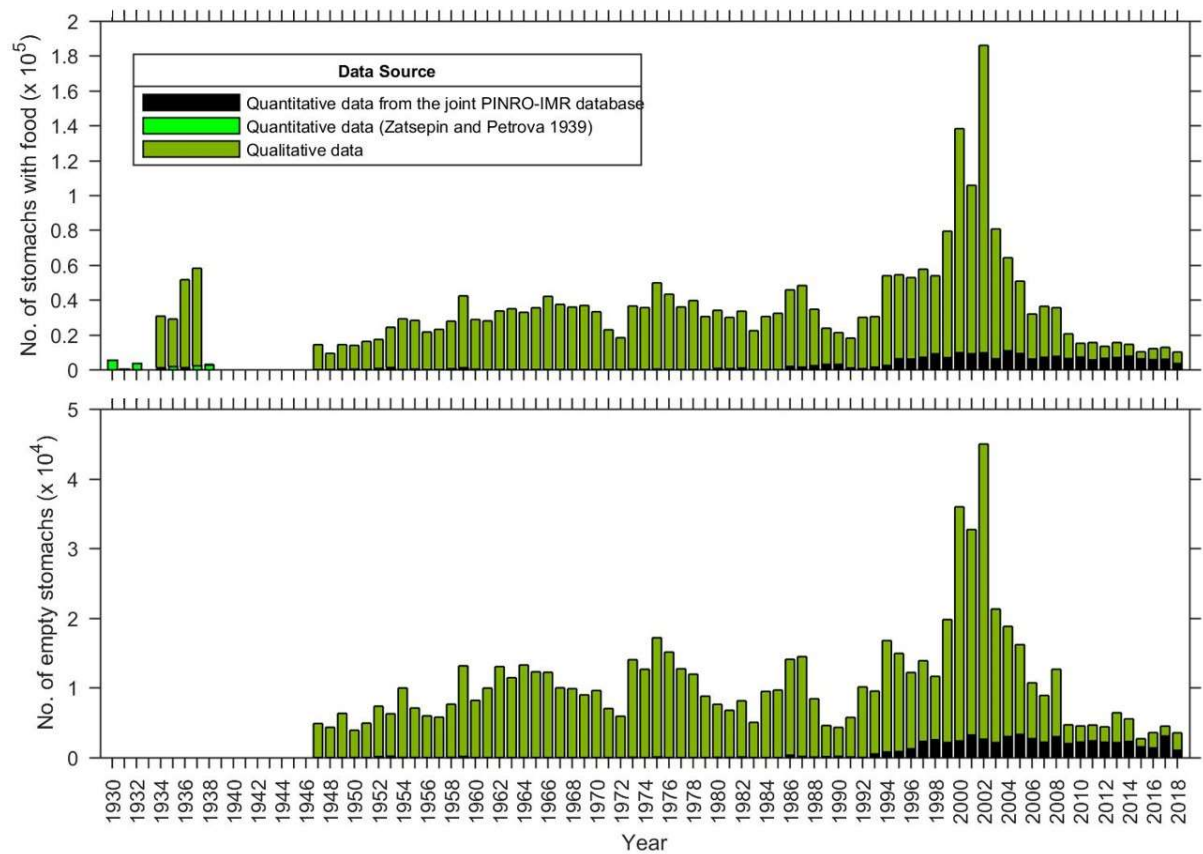
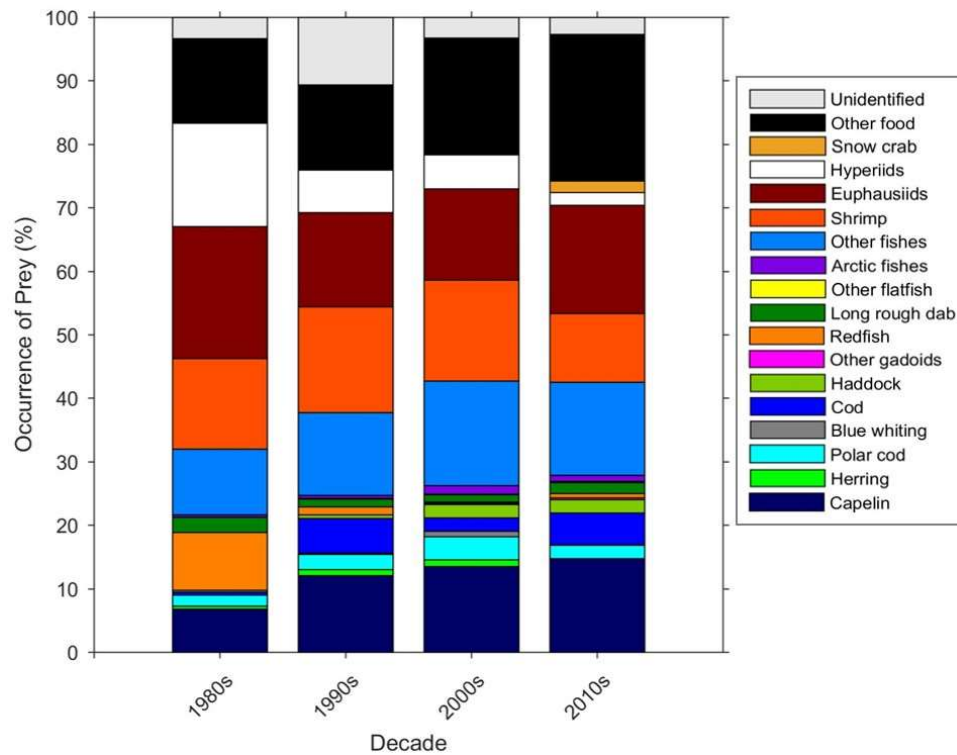


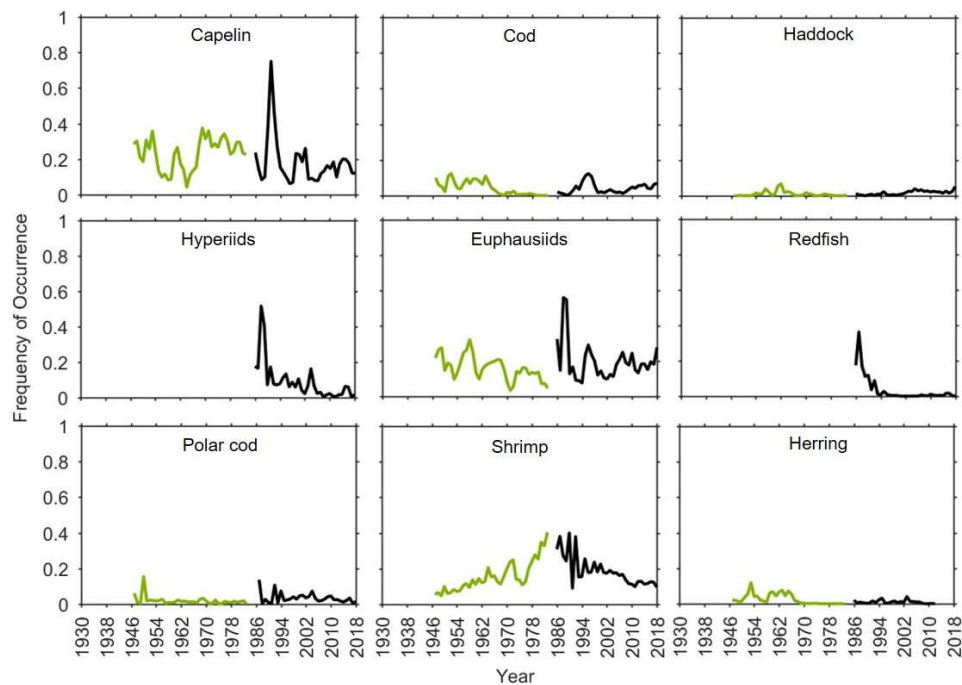
Figure S3.3. Number of stomachs sampled in each year, showing those with food contents (upper panel) and those that were empty (lower panel).

Considering the occurrence of prey for the quantitative Russian data, there is little variation between the decades (Figure S3.4). The main identified prey items of shrimp, euphausiids and capelin are present in each decade. Occurrence of hyperiids is highest in the 1980s, and cod as prey in the 1990s and 2010s. Snow crab appears as a prey item in the 2010s. Snow crab appears as a prey item in the 2010s.



**Figure S3.4.** The percentage occurrence of prey in each decade. The percentage occurrence of each prey item is calculated based on the total prey items in each decade and excludes empty stomachs.

For the main prey species, the frequency occurrence of prey items varies especially for capelin, hyperiids, euphausiids and shrimp across the time series (Figure S3.5). There is particularly high frequency of occurrence of these species, and redfish, in the 1980s and 1990s. Cod, haddock, polar cod and herring show a lower frequency of occurrence, with less variation in each year.



**Figure S3.5. Time series of occurrence of the main prey items in the dataset, excluding empty stomachs. The frequency of occurrence of each prey item is calculated based on the total number of stomachs in each year. (Black line: Russian quantitative data (from joint PINRO-IMR data base) & green line: earlier Russian qualitative data).**

Russian data (both qualitative and quantitative) are available under joint research projects.