

Benthic megafauna in the Arctic Ocean

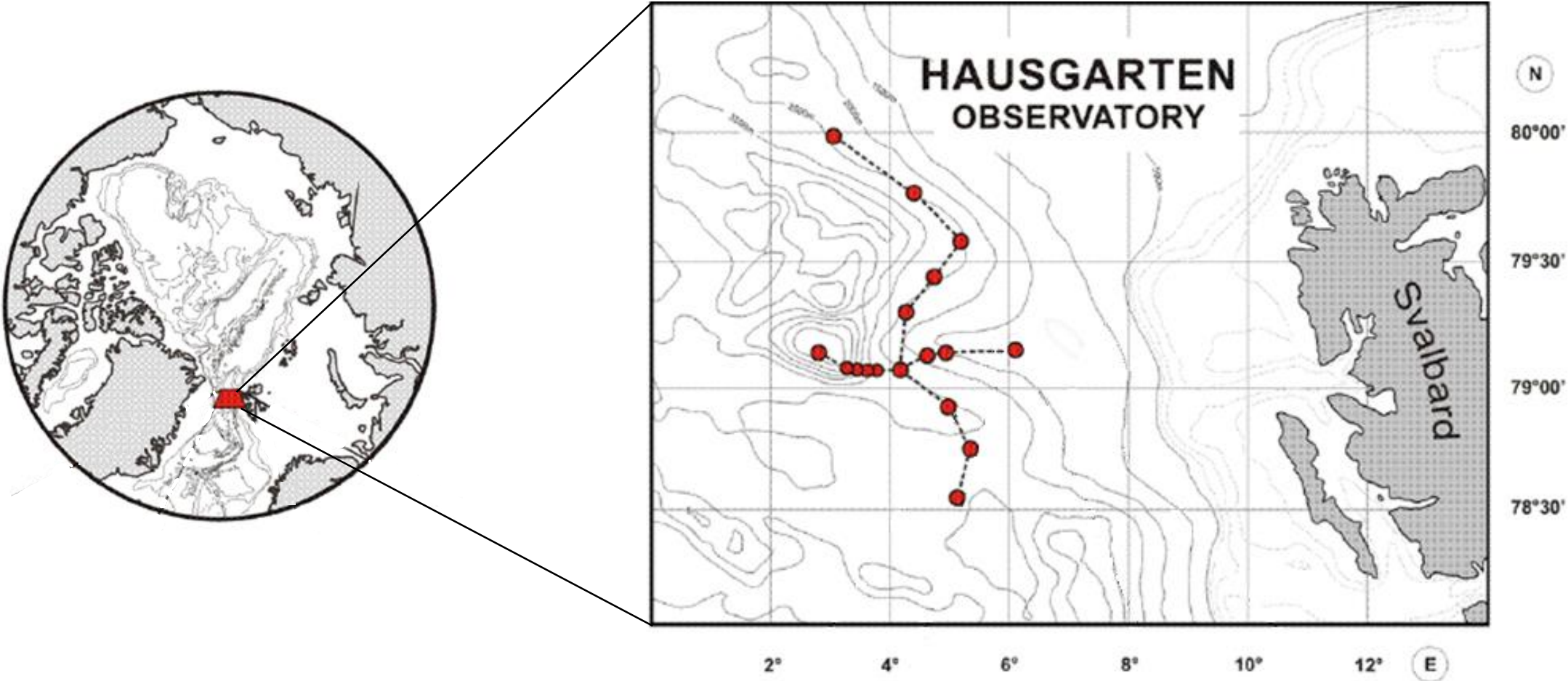
Future dominion by sea cucumbers?



What are benthic megafauna?



Where was the data collected?



Modified after Meyer et al. 2013

How was the data collected?





How was the data collected?

Image 3: SW_RELEASER_2020_09_27 at 13_39_15 IMG_0164.JPG

Load list of keywords

- Anthozoa
- Actinaria
- Amphianthus_sp.
- cf._Bathypheila_margaritacea
- long-tentacled_actinarian
- small_white_actinarian
- purple_actinarian
- orange_actinarian
- white_long-tentacle_actinarian
- Gersemia_fruticosa
- Mollusca
- Bivalvia
- Mohnia_sp.
- Crustacea
- Barnacle
- Birsteiniamysis_inermis
- Bythocaris_spp.
- Halirages_cainae
- Neohela_lamia
- Saduria_megalura
- Small_isopod
- Holothuroidea
- Elpidia_heckeri**
- Kolga_hyalina
- Crinoidea
- Comatulida
- Bathycrinus_cf._carpenteri
- Bathycrinus_stalk
- Echinoidea
- Echinoid_test
- Pourtalesia_jeffreysi
- Asteroidea
- Hymenaster_pellucidus
- Ophiuroidea
- Ophiostriatus_striatus
- Porifera
- Caulophacus_arcticus
- Caulophacus_debris
- Cladorhiza_gelida
- Lissodendoryx_complicata
- tan_encrusting_sponge
- small_round_sponge
- narrow_white_sponge
- stalked_sponge
- linear_sponge
- Bryozoan
- Annelida
- Polychaeta
- Bylgides_groenlandicus
- Pycnogonida
- Ascorhynchus_abyssei
- Actinopteri
- Lycodes_frigidus
- unknown
- unknown_shell
- unknown_blob
- Stalk
- suprabenthic_organism

Replace a keyword in all images

Draw scale bar

Scalebar length [m]:

Max. scale: 1:1 Screen PPI: 96 Enable

Export summary results

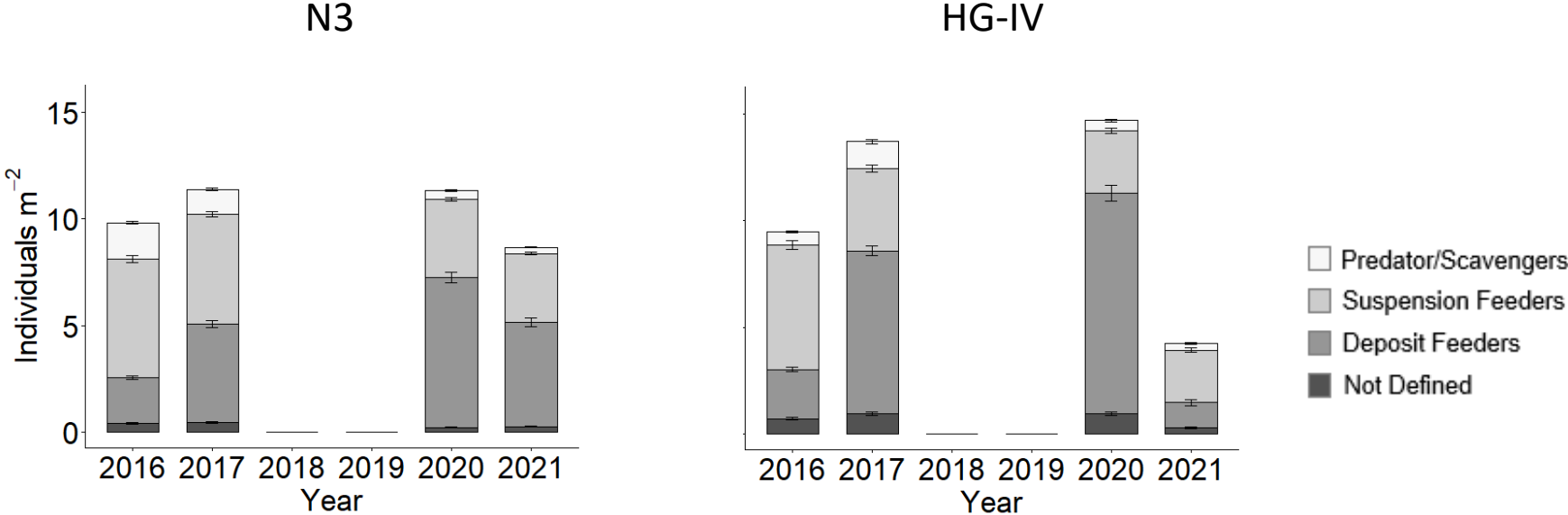
Year	2016	2017	2020	2021
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Station	N3	HG-IV
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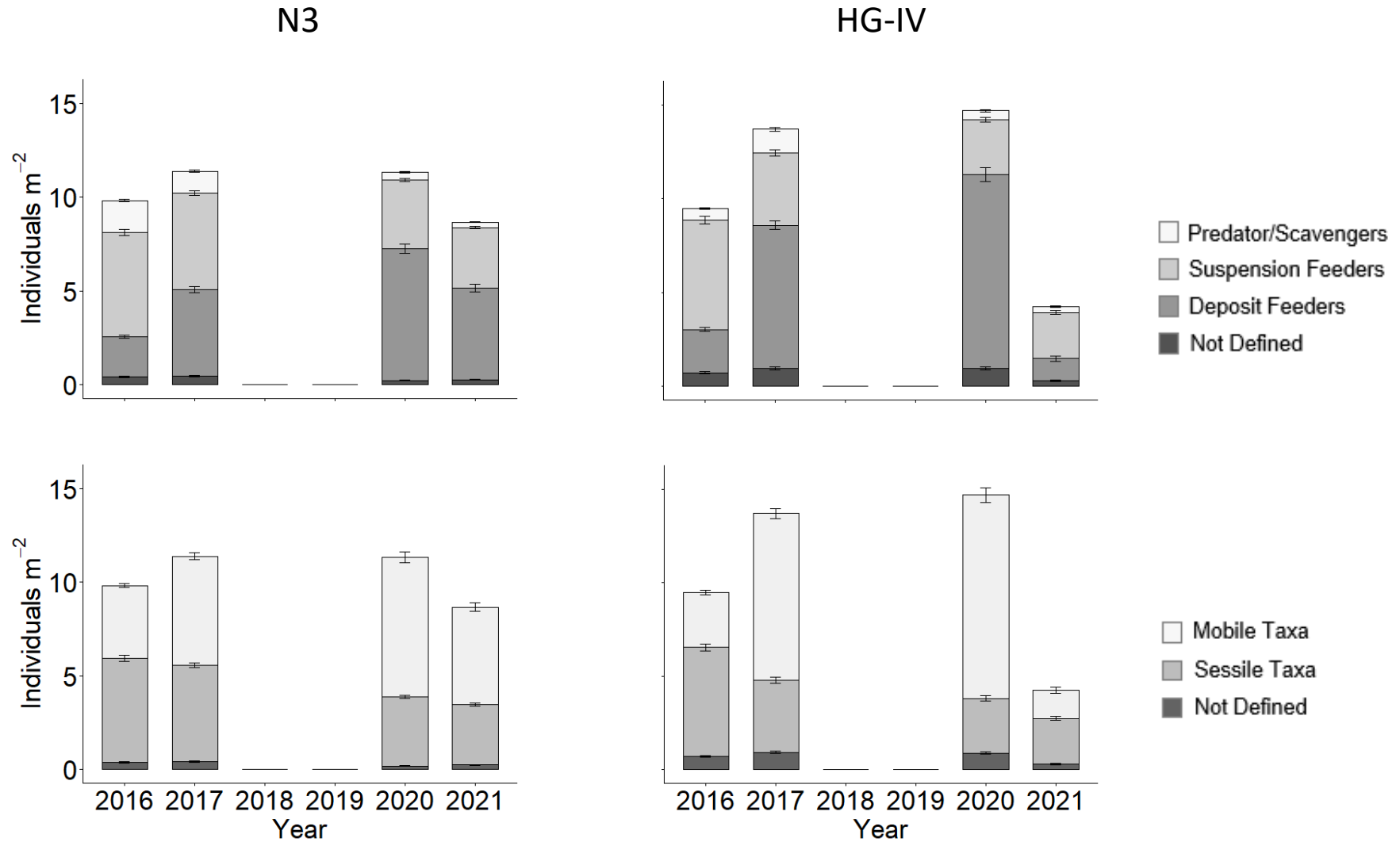
1. Convert abundance to density
(number of individuals per m²)
2. Calculate overall megafaunal density
3. Group taxa by mobility and feeding types
4. Statistical analysis



Change in community composition over time?

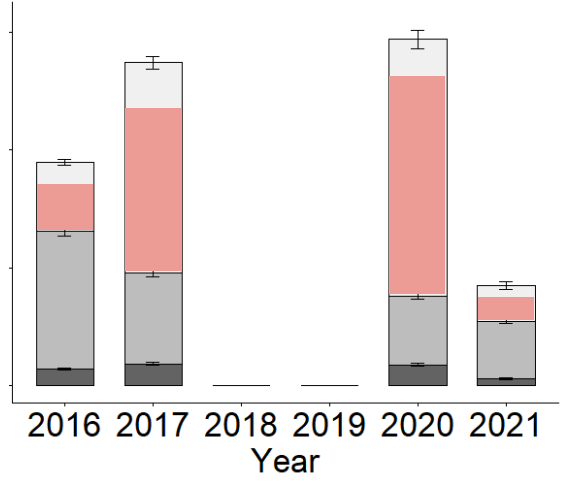
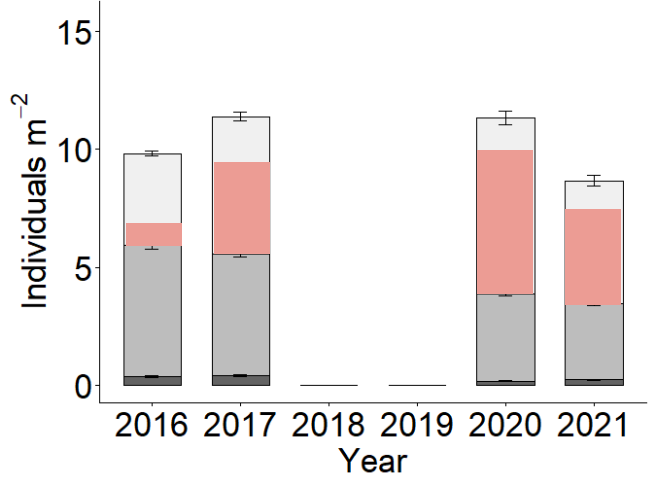
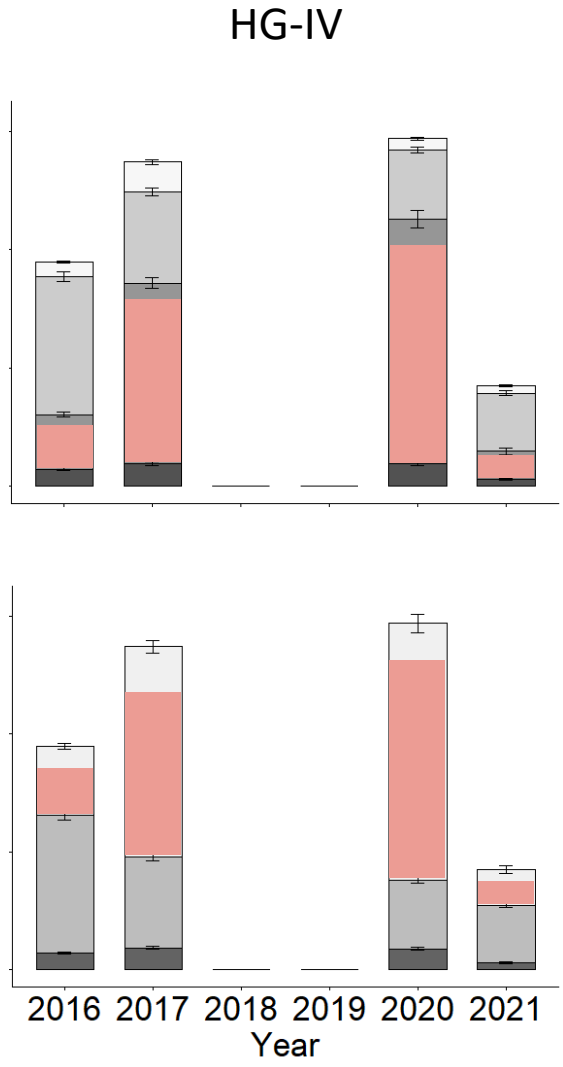
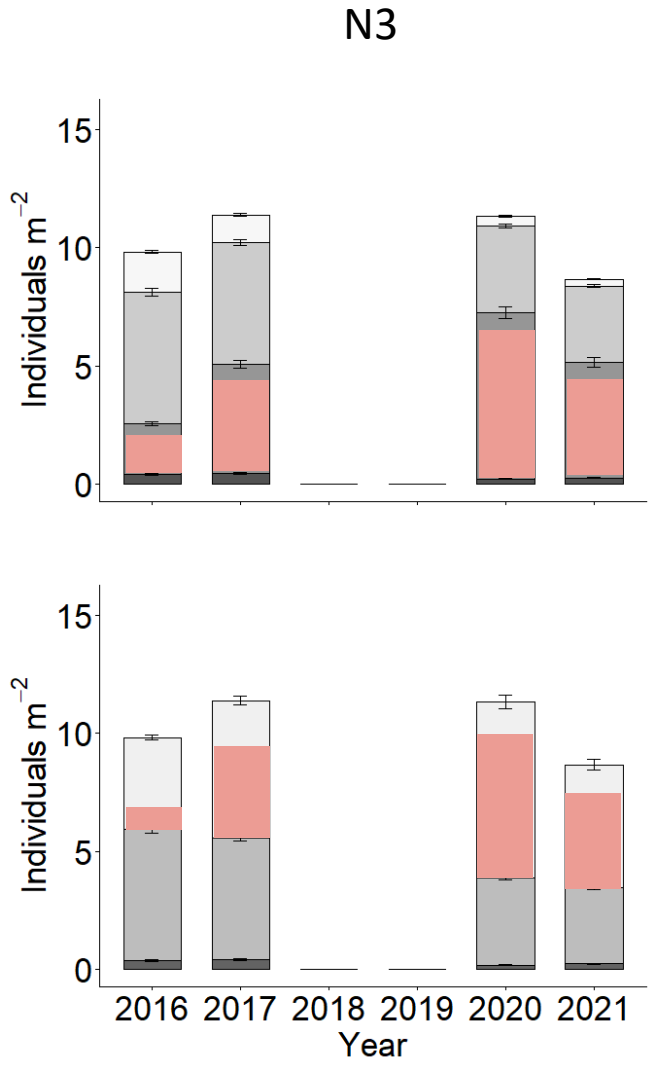


Change in community composition over time?



➔ Shift in dominant functional traits

Change in community composition over time?



- Predator/Scavengers
- Suspension Feeders
- Deposit Feeders
- Not Defined

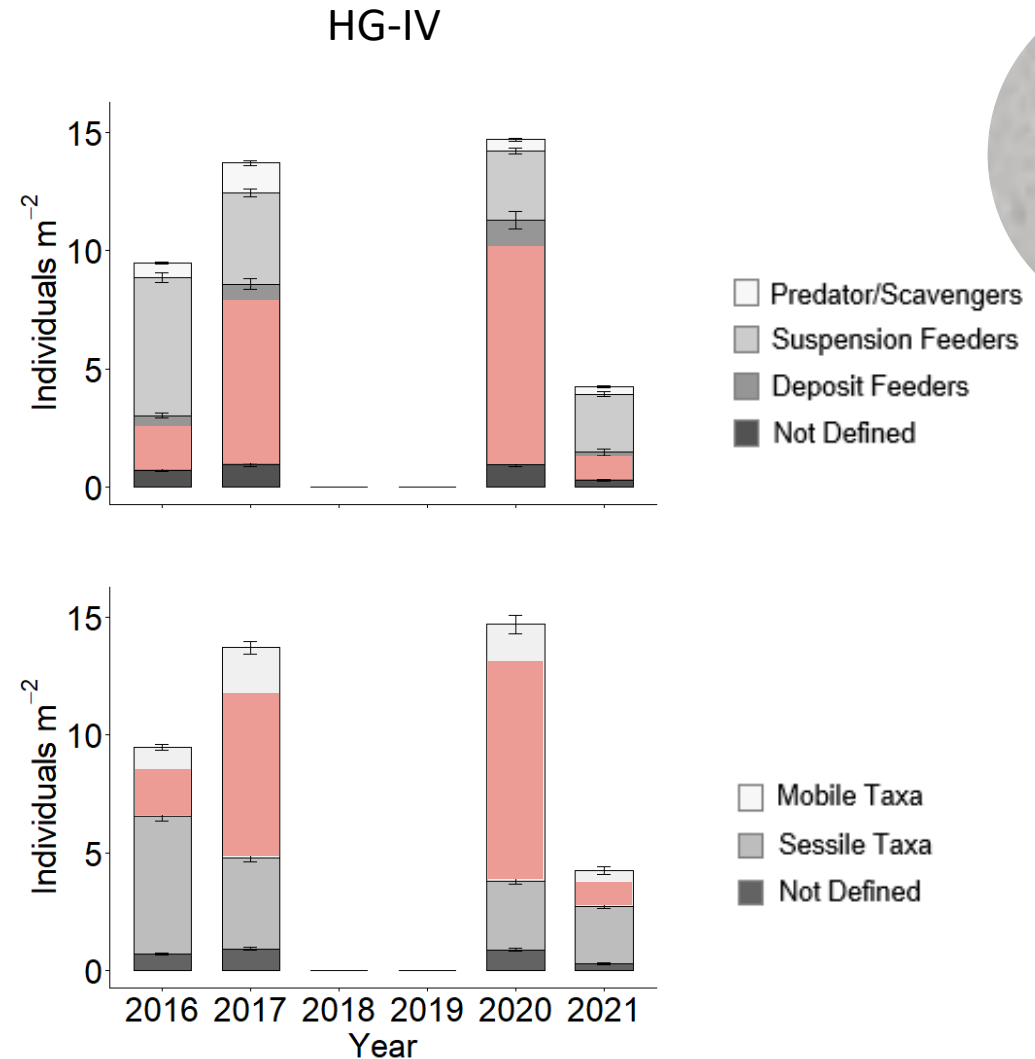
- Mobile Taxa
- Sessile Taxa
- Not Defined



➔ Shift due to *Elpidia heckeri*

- Opportunistic feeding behaviour
(Bluhm et al. 2011)
- Schedule time of spawning
incidental to environmental
factors
(Kremenskaia et al. 2020)
- ‚Boom and bust‘ cycles in
response to food availability
(Billett et al. 2010; Kuhnz et al. 2014)

➔ Opportunistic species may be
favoured in the future Arctic Ocean





**Thank you for your
attention!**



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- Kremenetskaia A, Ezhova O, Drozdov AL, Rybakova E, Gebruk A (2020) On the reproduction of two deep-sea Arctic holothurians, *Elpidia heckeri* and *Kolga hyalina* (Holothuroidea:Elpidiidae). *Invertebr Reprod Dev* 64:33–47.
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- Meyer KS, Bergmann M, Soltwedel T (2013) Interannual variation in the epibenthic megafauna at the shallowest station of the HAUSGARTEN observatory (79 N, 6 E). *Biogeosciences* 10:3479–3492.