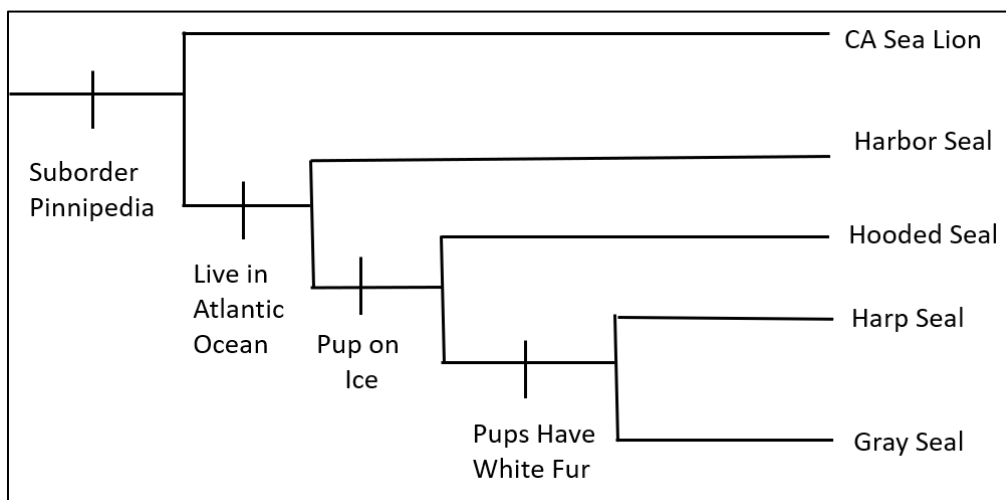


Biology 112 – Final Assignment
Gray Seal (*Halichoerus grypus*) Example
Stephanie Wood

1. Species – gray seal, *Halichoerus grypus*
2. Create a Character Table and Phylogenetic Tree (5 species and at least 4 characters).

Species	Belong to Suborder Pinnipedia	Live in Atlantic Ocean	Pup on Ice?	Pups Have White Fur
Gray Seal	1	1	1	1
Harbor Seal (<i>Phoca vitulina</i>)	1	1	0	0
Harp Seal (<i>Pagophilus groenlandicus</i>)	1	1	1	1
Hooded Seal (<i>Cystophora cristata</i>)	1	1	1	0
Outgroup: CA Sea Lion (<i>Zalophus californianus</i>)	1	0	0	0



3. Habitat and Community
 - a. What Biome does your species live in?

The temperate ocean but also spends time hauled out on coastal land/ice (Bonner 1994, King 1983).

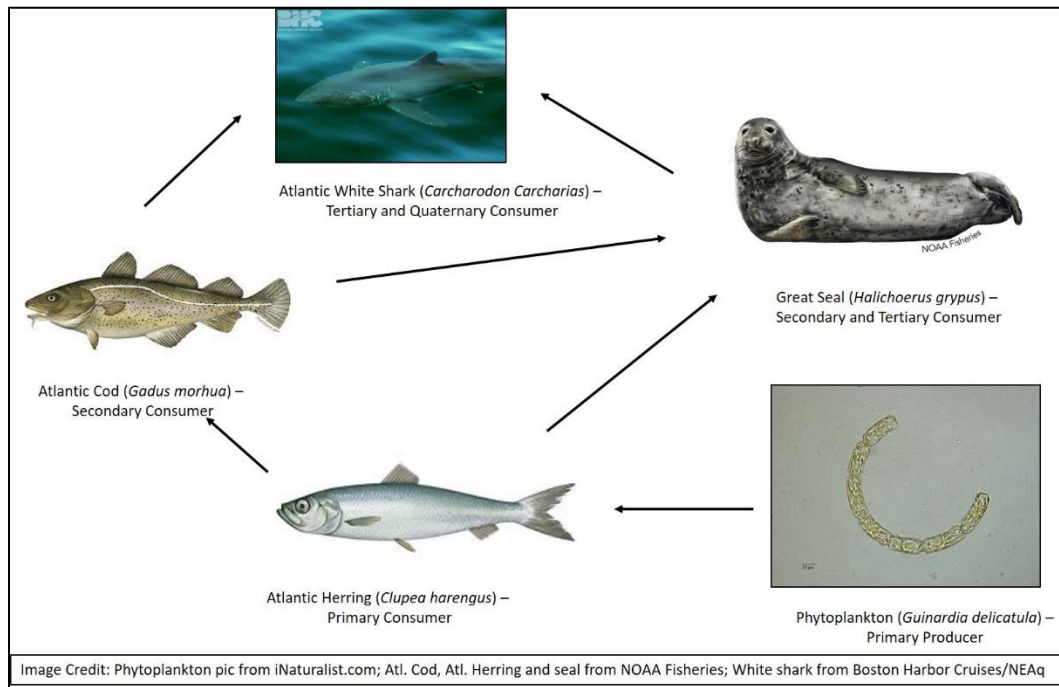
- b. Describe 1 abiotic factor and how your species is adapted to it.

Gray seals have thick blubber which keeps them warm in the cold ocean water (King 1983).

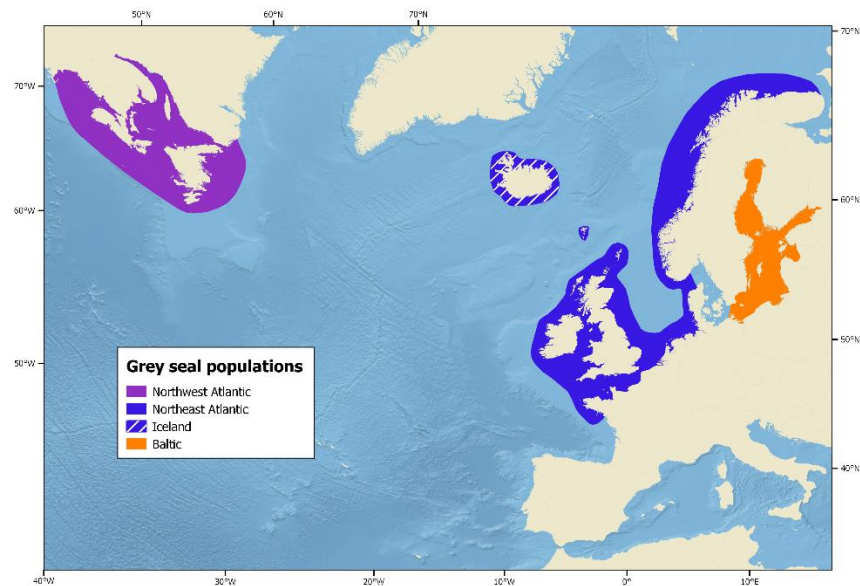
- c. Describe 1 biotic factor and how your species is adapted to it.

Seals use their vibrissae (whiskers) to hunt for fish in deep waters where there is not enough light to visually hunt (Bonner, 1994).

- d. Create a Food Web with species from 5 different trophic levels (including yours).



4. Distribution, Abundance and Population Structure/Status
- a. Include a map.

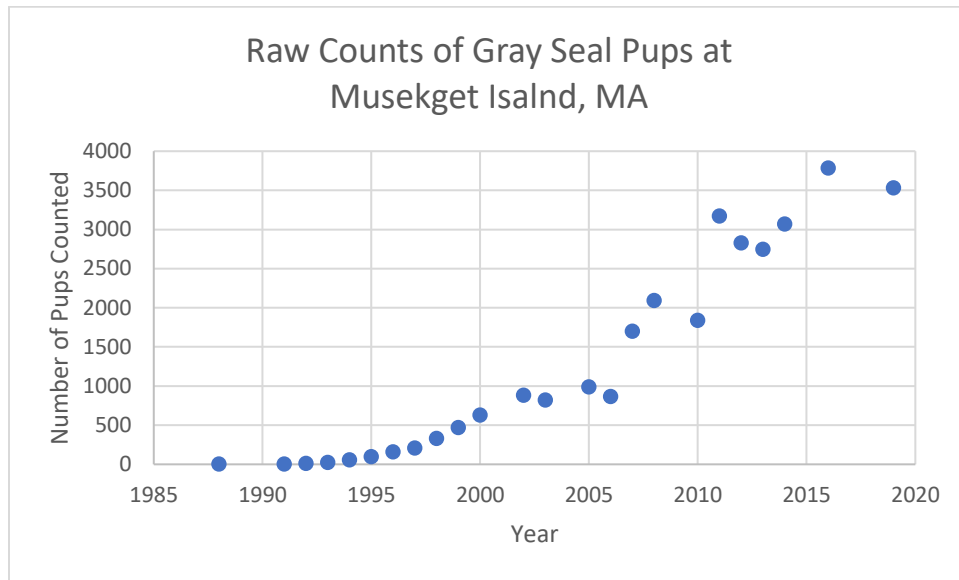


World distribution of gray seals (NAMMCO 2020).

- b. Population status (increasing/decreasing/unknown).

Increasing; the IUCN lists them as “Least Concern” and the U.S. gray seal population is not considered strategic under the Marine Mammal Protection Act (IUCN, 2020; NOAA Fisheries (a), 2020).

- c. Create a graph of population growth.



Data from Wood et al. (2019).

- d. Does your species disperse or migrate? Describe briefly.

Gray seals do not have a set migration, genetic studies have shown that they move between pupping sites (IUCN, 2020; Wood et al. 2011).

- e. What type of population structure exists?

Boskovic et al. (1996) described 3 gray seal populations based on mtDNA: Baltic Sea, Northeast Atlantic, Northwest Atlantic.

- f. Life history strategy – does your species mature slowly or quickly? How many offspring does it produce?

Females usually produce their 1st pup at age 4-5 years, males are sexually mature around 6 years but may not breed until they are older (King 1983). Females give birth to one pup per year (King 1983). Gray seals can live 25-35 years (NOAA Fisheries(b), 2020).

5. Conservation (20pts)

- a. What habitat does your species need/live in? Is the habitat intact?

Gray Seals split their time between the ocean and terrestrial habitats such as sandy beaches, rocky islands and ice which they use for giving birth to pups and molting their fur (King 1983). While parts of their habitat are generally intact, gray seals may have to contend with contaminants in the ocean, risk of entanglement in marine debris or fishing gear and human activity at pupping/hauling out sites (NOAA Fisheries (b), 2020).

- b. What is one threat to this species' survival?

Chemical contaminants in the ocean can bioaccumulate in gray seal blubber and may cause immune system and reproductive problems (NOAA Fisheries(b), 2020).

- c. Propose one way to mitigate this threat.

Support groups that actively work to clean up oceans (including responding to oil spills/contaminants). Education re: ecosystem function and the risks of bioaccumulation.
Support groups that research marine mammal health and respond to stranded/sick animals.

6. Reference Section

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Boskovic, R., K.M. Kovacs, M.O. Hammill and B.N. White. 1996. Geographic distribution of mitochondrial DNA haplotypes in grey seals (*Halichoerus grypus*). Canadian Journal of Zoology (74): 1787-1796.

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