1. INTRODUCTION

Shipping activities in the Canadian Arctic are expected to increase due to global warming (sea ice reduction) and economic development. This increase is expected to enhance the risk for introduction of non-indigenous species via ballast water and biofouling vectors.

Dinoflagellates may survive in ballast tanks during voyages and reproduce after their release in destination ports. The capacity to produce resistant cysts (15% of dinoflagellates) increases their chances for survival, reproduction and invasion.

Dinoflagellates can be important for ecological and economic impacts on the ecosystems once released in a new environment (Casas-Monroy et al. 2016):
- Cause hypoxia in surface waters;
- Produce harmful blooms;
- Produce toxins that could be accumulated in filtered feeders (e.g., bivalves) and fishes, transferred through food chain and be lethal to marine fauna or humans;
- Cause important income losses to the aquaculture industry.

2. OBJECTIVES

- Characterize abundance, richness and diversity of dinoflagellate communities in high risk Canadian Arctic ports to provide baseline data and detect the presence of potential non-indigenous species
- Compare the communities of dinoflagellate sampled in 2007 and 2015 in Churchill

3. METHODS

Study Area. Samples were collected in the Canadian Arctic in August in the ports of Churchill (MB) in 2007 and 2015, Iqaluit (NU) in 2015, Deception Bay (QC) in 2016, and Milne Inlet (NU) in 2017.

Field work
- Vertical profile of temperature and salinity using a CTD;
- Photic zone depth determined using a Secchi disk;
- Vertical plankton net (Nitek® 20 μm) from the bottom to the surface to collect dinoflagellate samples;
- Concentrated samples preserved with formaldehyde solution (4%).

Laboratory
- Samples analyzed based on the Utermöhl method (Utermöhl, 1958) using a NIKON Eclipse TE-2000 inverted microscope at 200 X magnification;
- Sub samples of 300-500 cells enumerated and identified.

4. PRELIMINARY RESULTS

TAXONOMIC COMPOSITION

<table>
<thead>
<tr>
<th>Port</th>
<th>Family (%)</th>
<th>Abundance</th>
<th>Dominant Family</th>
<th>Dominant Species</th>
<th>Toxin Producers Taxa</th>
<th>Harmful taxa (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iqaluit</td>
<td>2</td>
<td>7</td>
<td>46 cells/l</td>
<td>Protoperidiniaceae</td>
<td>Proceratium brevisp. (Protoperidiniaceae)</td>
<td>P. reticulatum</td>
</tr>
</tbody>
</table>

5. CONCLUSION

The preliminary results indicate that dinoflagellate communities are different in each port. Statistical tests are underway for validation. We will also investigate the environmental factors on species composition among ports and examine correspondence between dinoflagellate communities found in ballast water with the results of the present work.

ACKNOWLEDGEMENTS

We want to thank Baffinland and Raglan mines and ship crews for their support. We are grateful to local community members, DFO and university collaborators who participated to sampling collections. This project is funded by Polar Knowledge Canada, Natural Sciences and Engineering Research Council of Canada, Nunavik Marine Region Wildlife Board, Nunavut Wildlife Management Board, DFO AIS Monitoring Program and Polar Continental Shelf Program.

REFERENCES