



# CANADA C3

COAST TO COAST TO COAST  
TROIS CÔTES • UN VOYAGE

## A 23 000 km transect: new Arctic plant & lichen collections from the Canada C3 Expedition

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## Introduction

The Canada C3 expedition was a 150 day marine journey from Toronto, Ontario to Victoria, British Columbia by way of the Northwest Passage. Based on the icebreaker *Polar Prince*, this expedition brought together a diverse group of Canadians to explore Canada's Atlantic, Arctic and Pacific coasts while reflecting on the journey's core themes of Diversity and Inclusion, Reconciliation, Youth Engagement and the Environment. As a part of the expedition's scientific program, shipboard researchers and expedition participants opportunistically collected plants and lichens at stops along the journey to add new knowledge on the floristic diversity of Canada's three coastlines. These specimens are the botanical legacy of this awesome voyage, providing a snapshot of the species found along the expedition route during Canada's sesquicentennial year. Once deposited into the National Herbarium of Canada at the Canadian Museum of Nature, these specimens will serve as useful data for future researchers seeking to know more about the identity and distribution of Canadian Arctic plants and lichens. They contribute to ongoing research on Canadian Arctic vascular plant and lichen biodiversity at the Canadian Museum of Nature.

## Sampling



Plant and lichen specimens were collected by expedition scientific staff, many of whom were non-botanists with various specialties, recruited from the Canadian Museum of Nature, various Government of Canada departments and agencies, NGO's and member institutions of the Alliance of Natural History Museums of Canada. On each leg, non-scientist participants assisted with the collection efforts on the land. Upon return to the ship after each landing, collections were sorted and processed (i.e., plants pressed and lichens dried) in the Bowhead Lab under the bow of the ship.

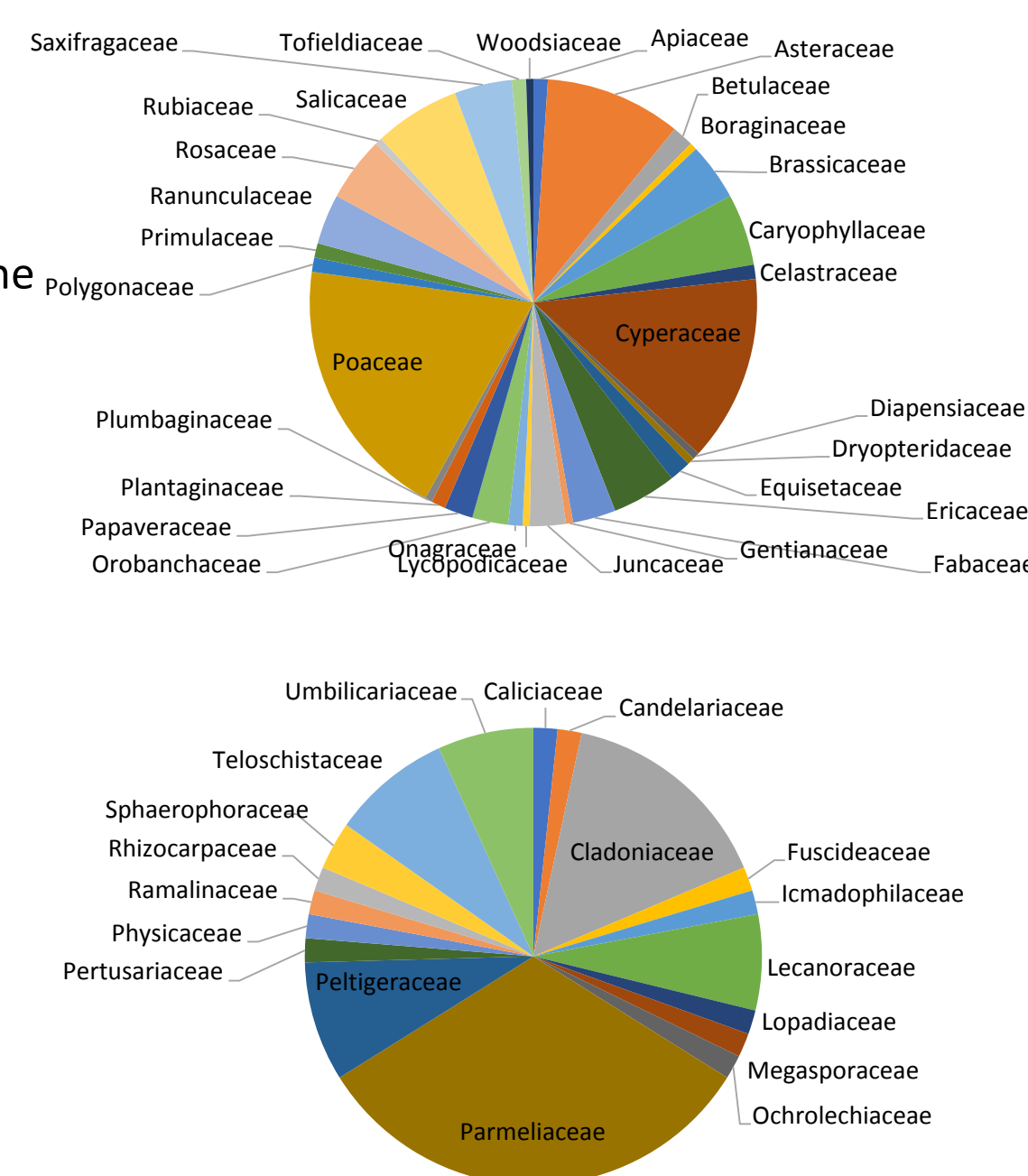
## Results

Group	Number of Collections	Number of Arctic Collections	Number of Species	Number of Arctic Species
Vascular Plants	857	585	354	193
Lichens	275	225	91	59
Bryophytes	180	80	IDs currently underway	
Macroalgae	28	13	8	5
Fungi	10	10	IDs currently underway	

Of the 1350 collections made on the voyage, 913 (67%) were made in the Canadian Arctic, and many were gathered from places where no or few botanical collections have been made previously (e.g., Cape Barrow, Nunavut; Tree River, Nunavut). Several new range extensions and noteworthy collections are listed below.

Collected species diversity in vascular plants was highest in the Poaceae (37 spp.), Cyperaceae (26 spp.), and Asteraceae (19 spp.).

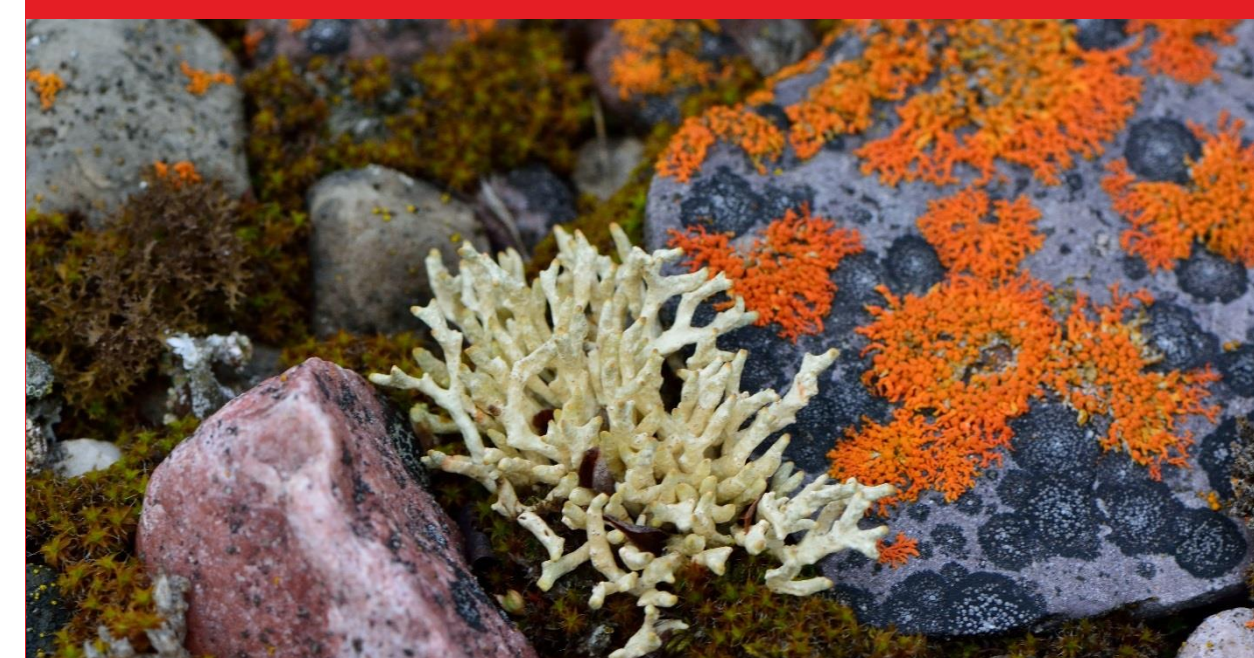
Collected species diversity in lichens was highest in the Parmeliaceae (19 spp.), Cladoniaceae (9 spp.), and Teloschistaceae (5 spp.).



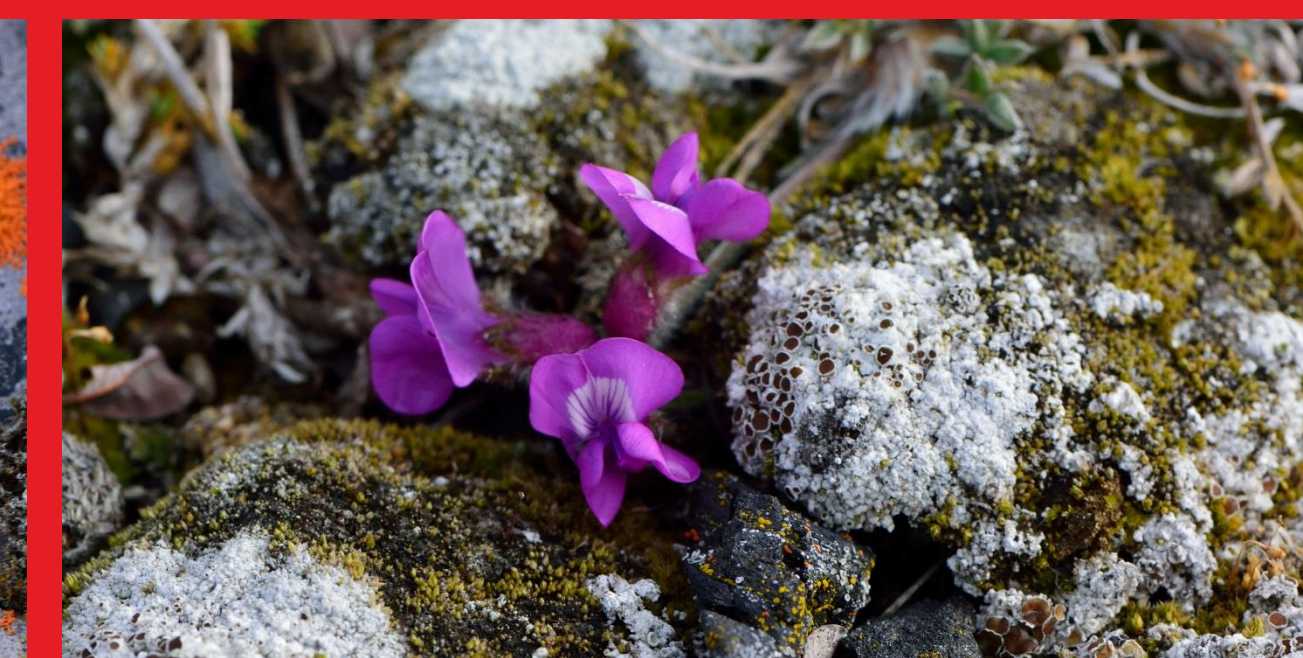
**Polar Prince:** This privately owned icebreaker was launched in 1958 and served in the Canadian Coast Guard until 1986. It was leased to the Students on Ice Foundation for the Canada C3 expedition.



**Sampling locations:** Plants and lichens were collected from 60 different sites along the expedition route. Botanical sampling was conducted on each leg starting with Leg 3 (Nova Scotia) through to Leg 12 (Alaska) with one additional site on Leg 15 (British Columbia).



*Allocetraria madreporiformis*  
Bernard Harbour, Nunavut

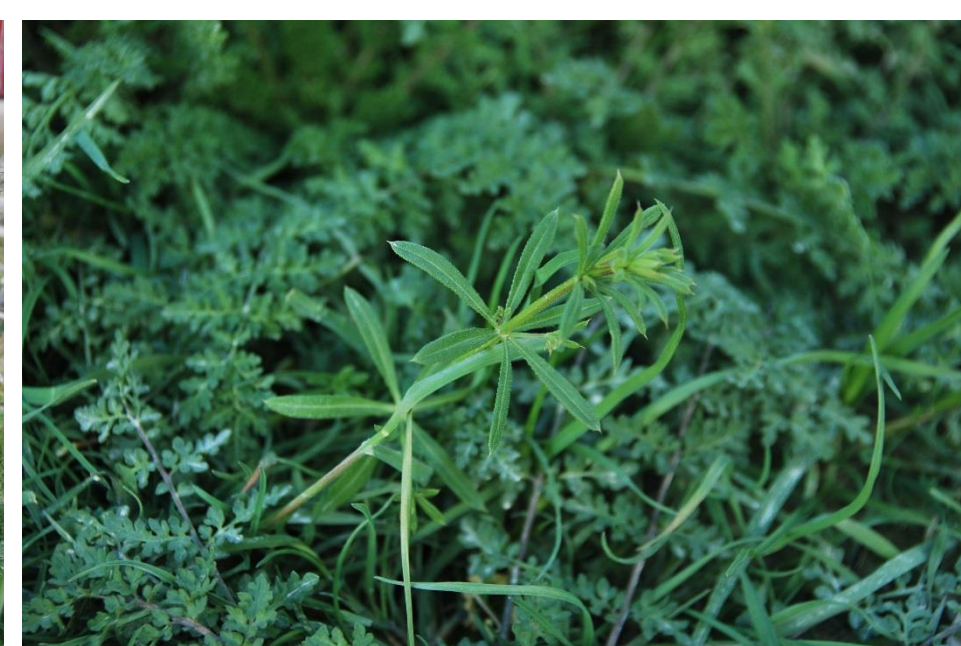


*Oxytropis arctobia*  
Bernard Harbour, Nunavut

## Noteworthy Collections



Perennial ryegrass (*Lolium perenne*) collected by Jeff Saarela in Cambridge Bay, NU on Leg 10 (Saarela 5294). This is the first record of this introduced grass species from the western Canadian Arctic Archipelago. It was likely planted.



Common bedstraw (*Galium aparine*) collected by Jeff Saarela in Cambridge Bay, NU on Leg 10 (Saarela 5295). This is the first record of this invasive species in the Canadian Arctic Archipelago. It may have been introduced as a grass seed contaminant.



*Fulgensia desertorum*, a lichen collected by Paul Sokoloff on Baillie Island, NT on Leg 11 (Sokoloff 1248), is the species' first record in the Canadian Arctic.



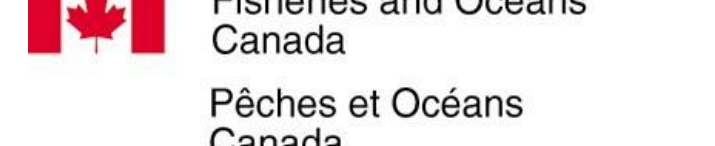
The Arctic orangebush lichen (*Xanthoptrychia aurantiaca*), collected by Paul Sokoloff on Cape Parry, NT during Leg 11 (Sokoloff 1201b). This globally rare (G1) lichen species is only known from the Inuvialuit Settlement Region in the western Canadian Arctic.

Other noteworthy collections include:

- The first confirmed record of Almquist's Cartilage Lichen (*Ramalina almqvistii*) in the Northwest Territories (Sokoloff 1150b).
- The second record for Mountain Oakmoss Lichen (*Evernia divaricata*) in Nunavut (Hamilton 118).
- A significant eastward range extension of the spruce muskeg sedge (*Carex bigelowii* subsp. *lugens*) from mainland Nunavut to northern Labrador (Van Buren 4b).

## Acknowledgements

We wish to thank the following Canada C3 expedition participants who acted as collectors during the voyage: Andrea Andersen, Carolyn Raab, David Bathe, Ellie Clin, Emmalee Agnew, Grant Gilchrist, Michele Genest, Mike Irvine, Mylène Paquette, Nancy Dénommée, Patrick Dell, Shaorong Li, Shazad Shah, Susan Gardener, Tammy Scott, Tim Tamashiro, Tracy Ross, Kristi Miller, Maurianne Reade, Lisa (Diz) Glithero, and Paul Allen Smith.



**Exploration:** Traveling by ship allowed expedition scientists to quickly document many botanically-interesting locations, such as this Alder (*Alnus incana* subsp. *tenuifolia*) stand at its northern limit at Bathurst Inlet, NU. This included sampling sites that had never before been collected.