

We Are All Explorers

# The Polar Latitudes Citizen Science Program



# Why Offer Citizen Science?

*“Lets try to leave the place better for us having been there”.*

## How we do that:

- Embracing staff idea's
- Contribute to the global collective knowledge base
- Create a core group of people who care and will fight for Antarctica

# Why Offer Citizen Science?



*“To utilize a platform, where scientists can gather important data using trained staff and passengers that are already going down there, is a smart and effective use of resources”*

# What Is Citizen Science?

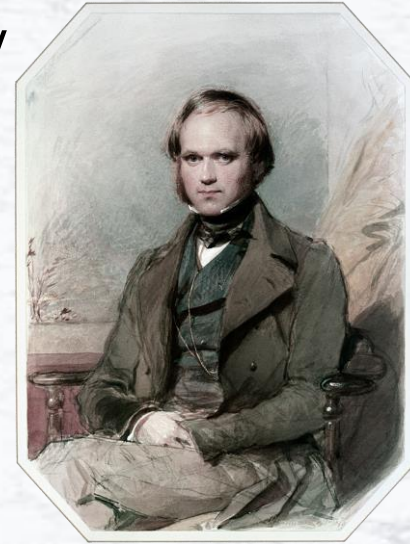
- Involving the public in scientific research
  - Long history dating back to at least middle of 19<sup>th</sup> century when science was not an occupation. It was a hobby



**Polymath Benjamin Franklin (1700):**  
invention of the lightning rod and bifocal glasses



**Nurse Florence Nightingale (1800):**  
Pioneering work in statistics & Data visualisation



**Theorist of evolution Charles Darwin (1800):**  
Ducked out of his medical degree homework to study Marine invertebrates for fun

# Citizen Science examples

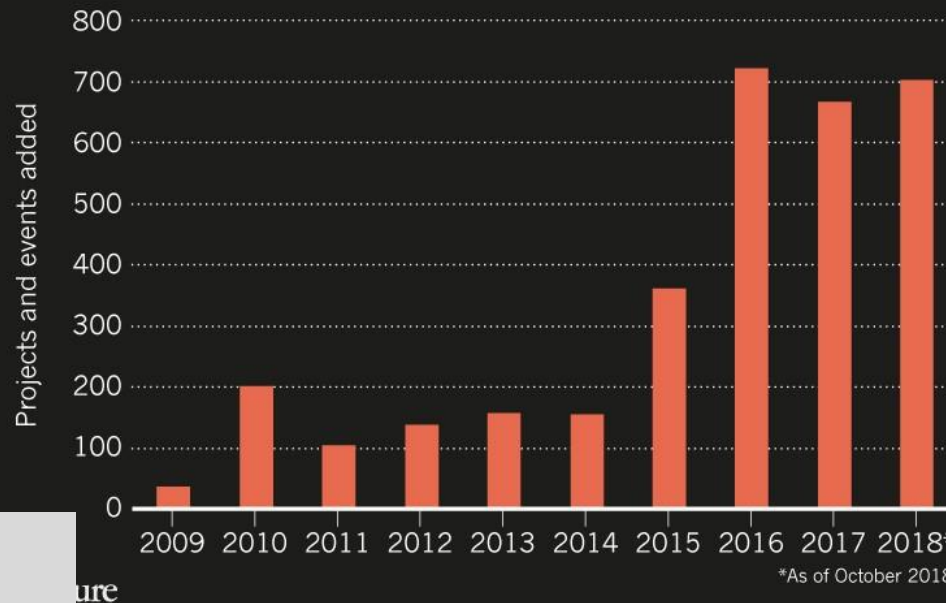


# Citizen Science examples



## CROWD POWER

The SciStarter repository has been documenting the rise of citizen-science projects and events. The field is largely decentralized, which makes such efforts hard to track. Dates on this chart reflect the year in which the initiatives were added to SciStarter's records.



## Monitoring:

- Coral reefs (bleaching)
- Butterfly populations

## AND EVEN.....

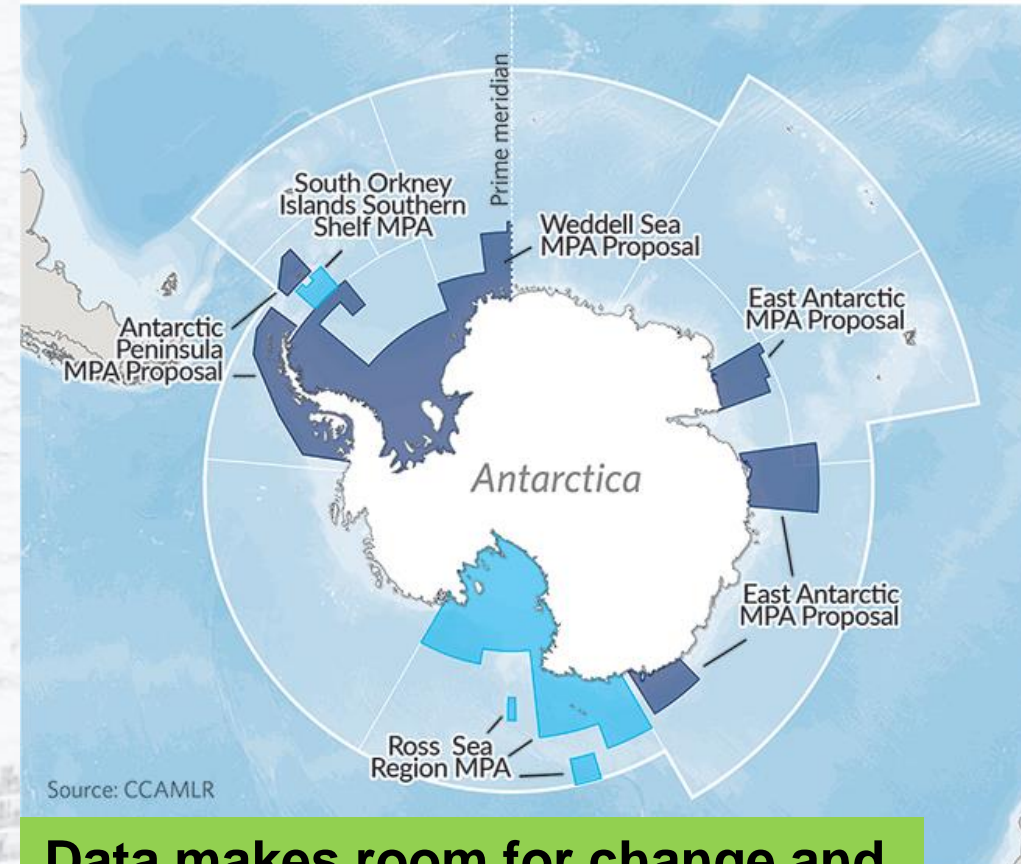
- Classifying galaxies

# Why Is Citizen Science Important?

- **Data generated** is an important source for scientists
- **Data informs research** and influences policy
- **Educating and informing the public:** Two-way engagement between public & scientists



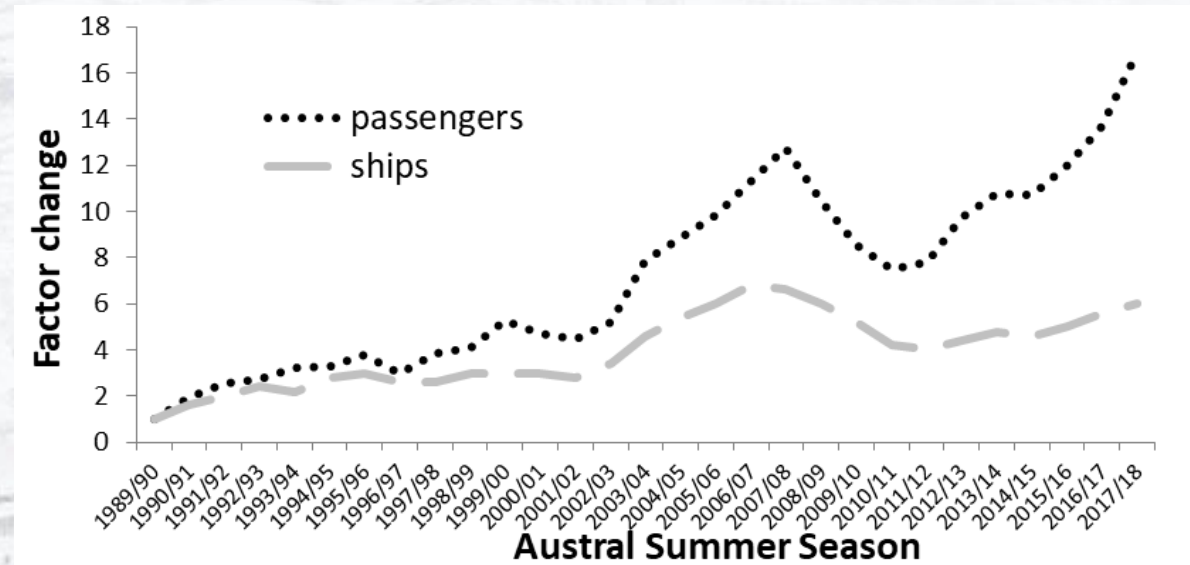
Southern Ocean Regions in Need of Protection



**Data makes room for change and conservation efforts**

# What Is so Special about Citizen Science in the Polar Regions?

- It's urgently needed: We have to understand this region in order to protect it.
- Research in polar regions is challenging due to remoteness and limited seasonal access, yet numerous ships, carrying many citizen scientists **are available**.



IAATO 2018



# Success with Citizen Science

**YOPP** Newsletter #12 // Sept. 2019  
**WORLD METEOROLOGICAL ORGANIZATION**  
 International Coordination Office (ICO) Find more information at [www.polarprediction.net](http://www.polarprediction.net)

adventurers aware of the exceptional features of the places they are visiting, but also to inform them about the work scientists and researchers carry out during polar research expeditions. Since 2015, SIRT – in collaboration with the polar cruise operator Poseidon Expeditions – has been collecting sea-ice and atmospheric data during repeated transits from Murmansk, Russia, to the North Pole during summer. The involvement of tourists in the scientific measurements during the ice-breaking led by trained guides, is a key element of this unusual Arctic undertaking. The engagement in the expeditions facilitates the Polar Citizen Science Collective and contributes to the outreach activities in the framework of the Year of Polar Prediction.

**Enthusiastic Response**  
 Aboard the *M/V 50 let Pobedy*, up to 150 people are given the opportunity to become polar scientists for the duration of the Arctic Passage and expedition guides meet them a day on the captain's bridge or deck to make visual observations of ice and cloud conditions. Once the vessel reaches the North Pole, the group disembarks to explore the ice and to carry out depth profile measurements of melt ponds present on the ice. The response is enthusiastic: "We are contributing to research at the North Pole – that is something very few people can say about themselves one of the cruise participants from the



ANTARCTIC AFFAIR

RICARDO ROURA, AMANDA LYNNE, MARIS VEREI, MARCO FAVERO, LAUREN FARMER

Fifteen tourists had the Russian icebreaker the North Pole (photo)

**BBC TWO NATURAL WORLD**

2018-2019, Humpback Whales: A Detective Story  
**Humpback Whales: A Detective Story**  
 Documentary about our relationship with whales and their future alongside us.

Phytoplankton composition and bloom formation nearshore waters of the western Antarctic Peninsula  
 Martina Mascioni<sup>1,2</sup> · Gastón O. Almandoz<sup>1,2</sup> · Adrián O. Cefarelli<sup>1,4</sup> · Allis Maria Vernet<sup>5</sup>

Received: 14 January 2019 / Revised: 27 June 2019 / Accepted: 22 August 2019  
 © Springer-Verlag GmbH Germany, part of Springer Nature 2019

**Abstract**  
 The western Antarctic Peninsula (WAP) is one of the most productive regions in the world. Sampling was carried out in the frame of a Citizen Science during the spring–summer 2016–2017. Species identification and enumeration of diatoms and phytoplankton carbon biomass was estimated by using cell-vc abundance and biomass values were found in December–January, and were (2–20 µm). Cryptophytes were more abundant in early summer and prasinophyte bloom-forming diatoms was unexpectedly low. Three blooming flagellated diatoms: *Pyramimonas* sp. in Neko Harbor (March 3, 2016,  $1.4 \times 10^6$  cells L<sup>-1</sup>), *Wilhelmia* Bay (December 14, 2016,  $6.4 \times 10^6$  cells L<sup>-1</sup>), and  $97.5 \mu\text{gC L}^{-1}$  near Danco Island (December 18, 2016,  $9.5 \times 10^6$  cells L<sup>-1</sup>, and  $1597 \mu\text{gC L}^{-1}$ ) the first record of a dinoflagellate bloom in the WAP. It is to note that bloom did not coincide with previously described Antarctic species.

**Keywords** Western Antarctic Peninsula · Citizen Science · Diatoms · Cryptophyte · Dinoflagellate bloom

**Introduction**  
 The western Antarctic Peninsula (WAP) includes the most extensive system of glacio-marine fjords of the Antarctic continent. Ecological and biogeochemical processes in these ecosystems are strongly influenced by sea ice formation and freshwater input from melting gla-

**scientific reports**

**OPEN** The Southern Ocean Exchange: porous boundaries between humpback whale breeding populations in so polar waters

580 views | Aug 26, 2019, 09:04am

**Exploring Antarctica as Citizen Scientist with Polar Latitudes**  
 Everett Potter Contributor

M. C. C. Marcondes<sup>1</sup>, T. Cheeseman<sup>2,3</sup>, J. A. Jackson<sup>4</sup>, A. S. Friedlaender<sup>5</sup>, M. O'Leary<sup>6</sup>, L. L. Wedekin<sup>7</sup>, F. G. Daura-Jorge<sup>8</sup>, J. Cardoso<sup>9</sup>, J. D. F. Santos<sup>10</sup>, M. F. Araújo<sup>11</sup>, M. Bassoli<sup>12</sup>, V. Beaver<sup>13</sup>, A. Bomboschi<sup>14</sup>, C. W. Clark<sup>15</sup>, J. A. Boyle<sup>16</sup>, K. Rasmussen<sup>17</sup>, O. Savenko<sup>18,19</sup>, J. C. Avila<sup>20</sup>, D. M. Paladi<sup>21</sup>, R. S. Sousa-Lima<sup>11,22,23</sup>

Humpback whales (*Megaptera novaeangliae*) are a cosmopolitan species and migrations between low-latitude breeding areas and high-latitude feeding populations appear to be spatially and genetically segregated due to long fidelity to natal breeding areas. In the Southern Hemisphere, some humpback populations mix in Southern Ocean waters in summer, but very little mixing of Atlantic waters has been identified to date, suggesting these waters constitute genetically distinct populations. Here, we present new evidence of the West Antarctic Peninsula feeding area of two recovering humpback whales from the Atlantic (Brazil) and Pacific (Central and South America). As humpback recover, observations like this point to the need to revise our perceptions of stocks, particularly on high-latitude feeding grounds. We suggest that this "Exchange" may become more frequent as populations recover from climate change modifies environmental dynamics and humpback whale prey availability.

Humpback whale migration patterns and breeding stocks. Humpback whales are a cosmopolitan species which can migrate up to 8500 km between s-

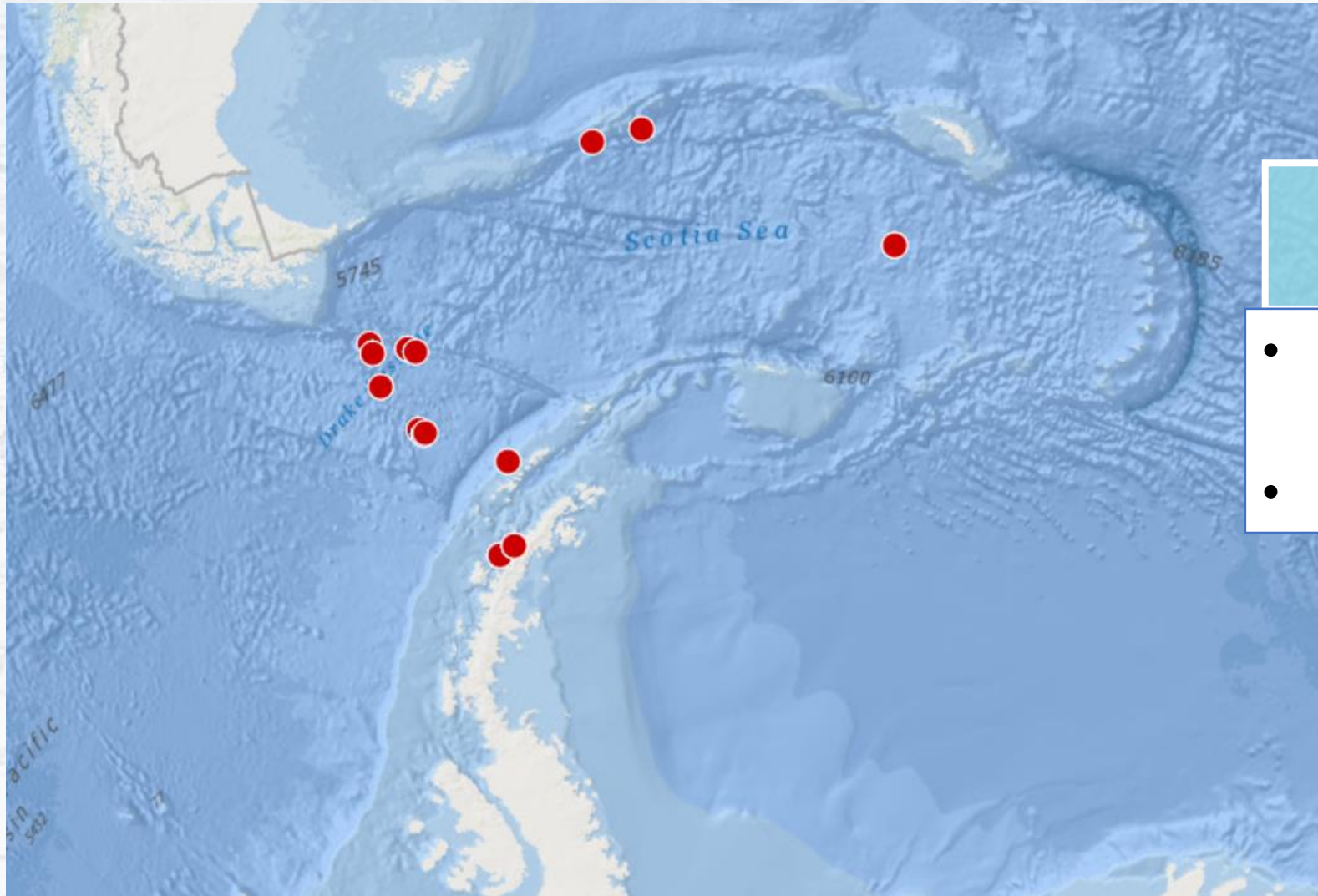
**There are plenty of companies that offer expedition-style cruises to Antarctica. Then there's Polar Latitudes, a relatively new company founded in 2010 that focuses on a combination of luxury and adventure.**

Not just media articles but scientific papers to!

<sup>1</sup> Integrative Oceanography Division, Scripps Institution of Oceanography, University of California San Diego, La Jolla, CA 92093-0218, USA  
<sup>2</sup> shallow mixed layers (Vernet et al. 2008). Particularly, in these WAP embayments, baleen whales, seals and penguins  
 Published online: 05 September 2019



# Success with Citizen Science – Cloud Project

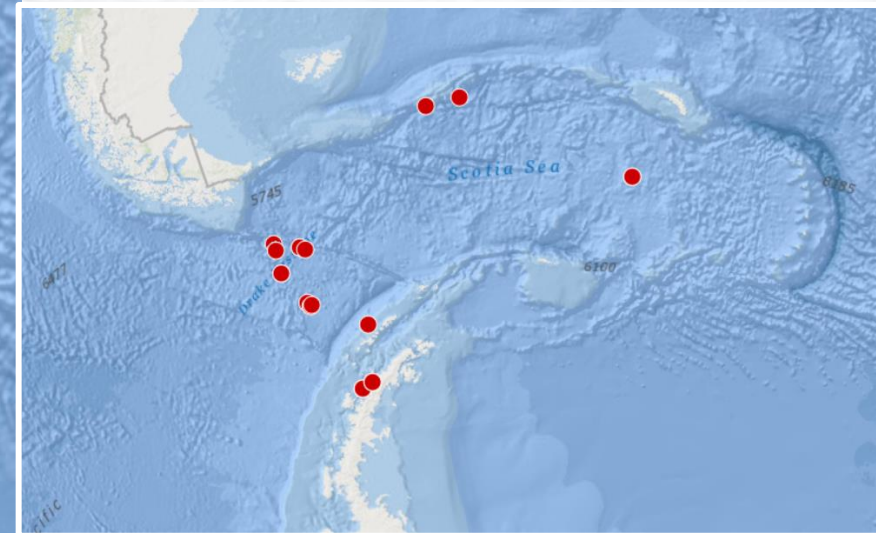
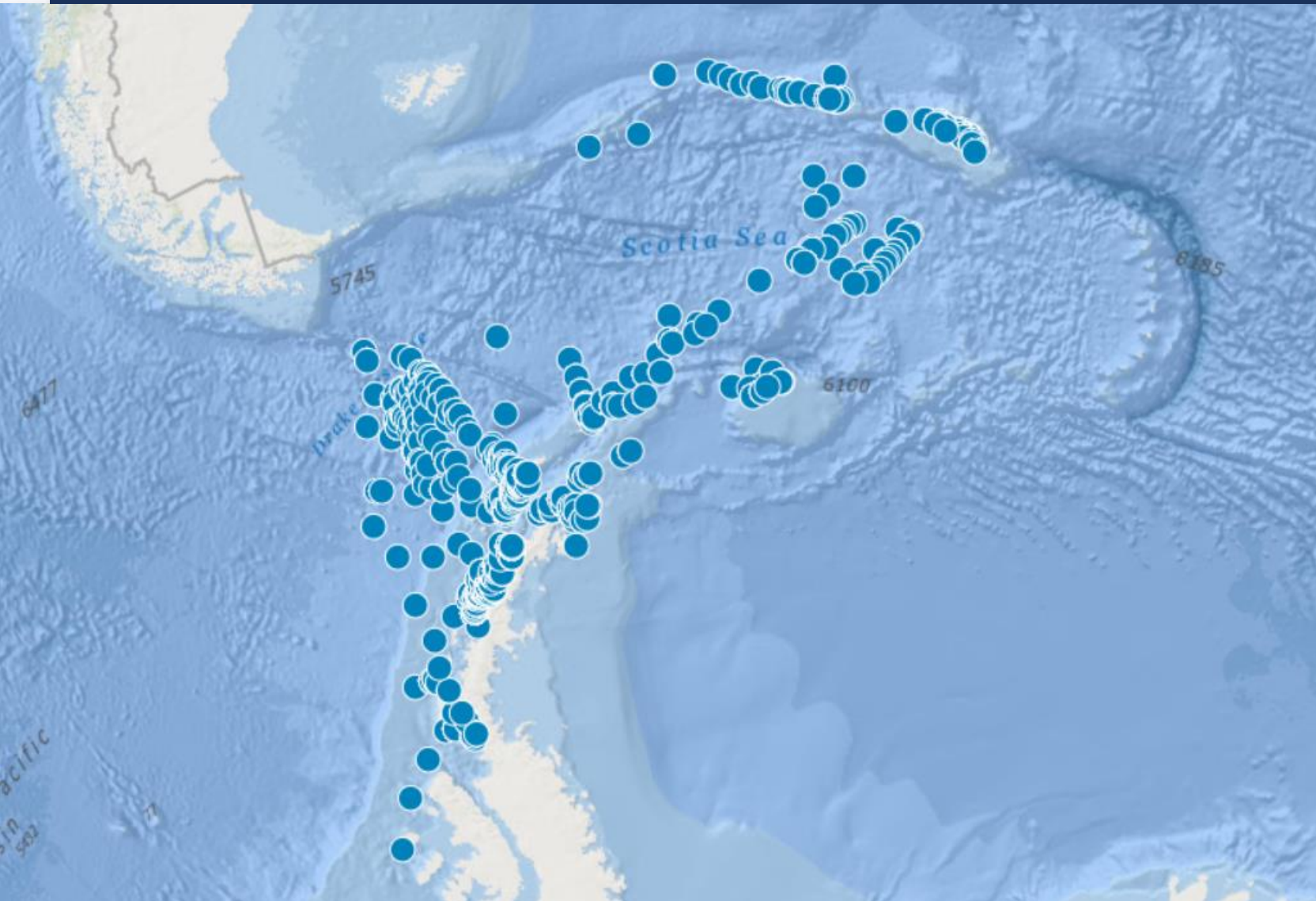


## Cloud Observations

- Even a few per trip make a real difference
- **Accumulation of DATA is the key**



# Success with Citizen Science – Cloud Project

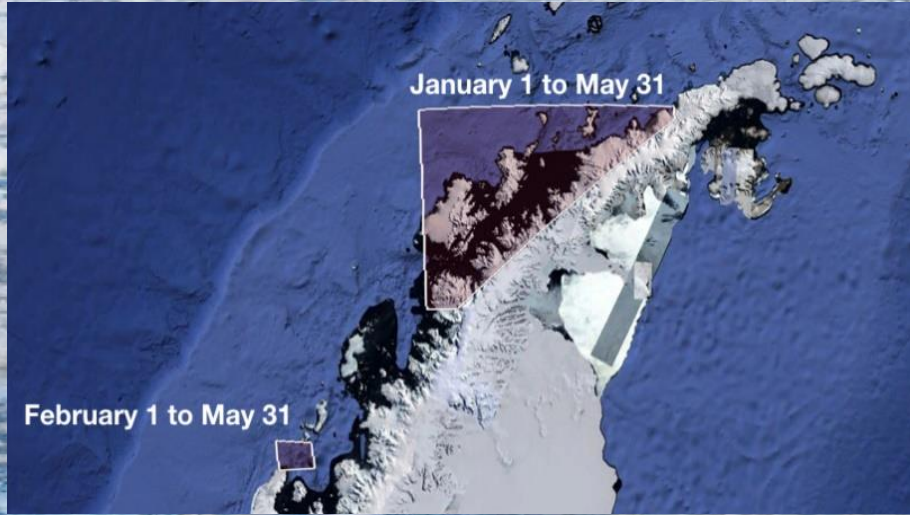


# Citizen Science making a difference



**Increasing Ship Strikes**

# Success with Citizen Science – Happy Whale Project



## Slow Down Zone

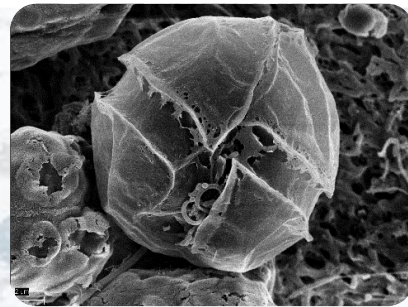
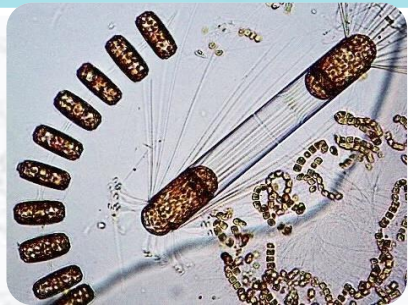
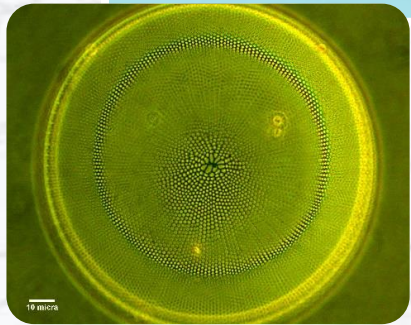
- 20,000 km<sup>2</sup> slow down zone
- Adopted 2019 to avoid ship - strikes
- Made possible due to thousands of guest submissions of WHALE FLUKE PHOTOS

# PL Citizen Science Program – How it all began

In 2015, all it took was a:

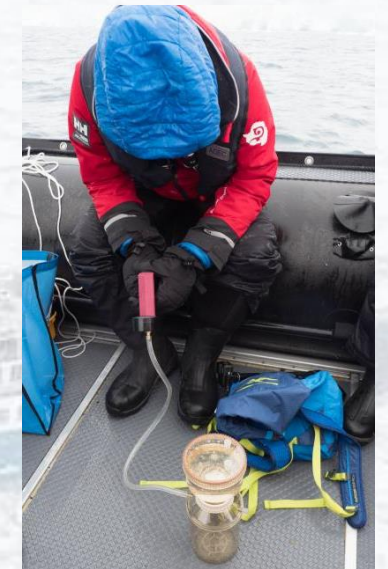
- A scientist in Need
- A willing President
- A delivery vessel aka Zodiac
- Expedition staff eager to help, AND.....
- A few brown bottles

**\*PL FjordPhyto project was created**



# Citizen Science – How it all began

The contents of those little brown bottles:  
- Interesting results created a broader field of research (now 44 locations)

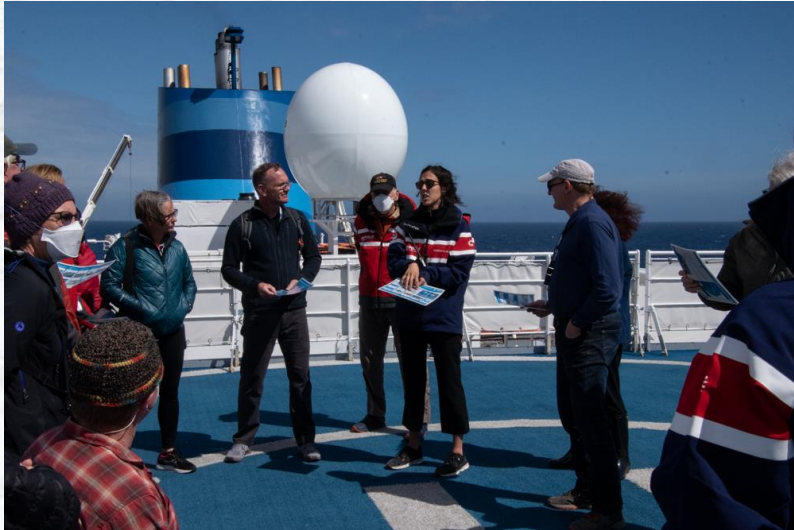


## FjordPhyto

- Helped start an entire Citizen Science project supporting 2 PhDs
- Potentially new species discovered

# How Do Our Guests Participate?

- Citizen Science Program - complimentary each trip
- Unique opportunity to gather valuable data for real scientists and learn about polar science

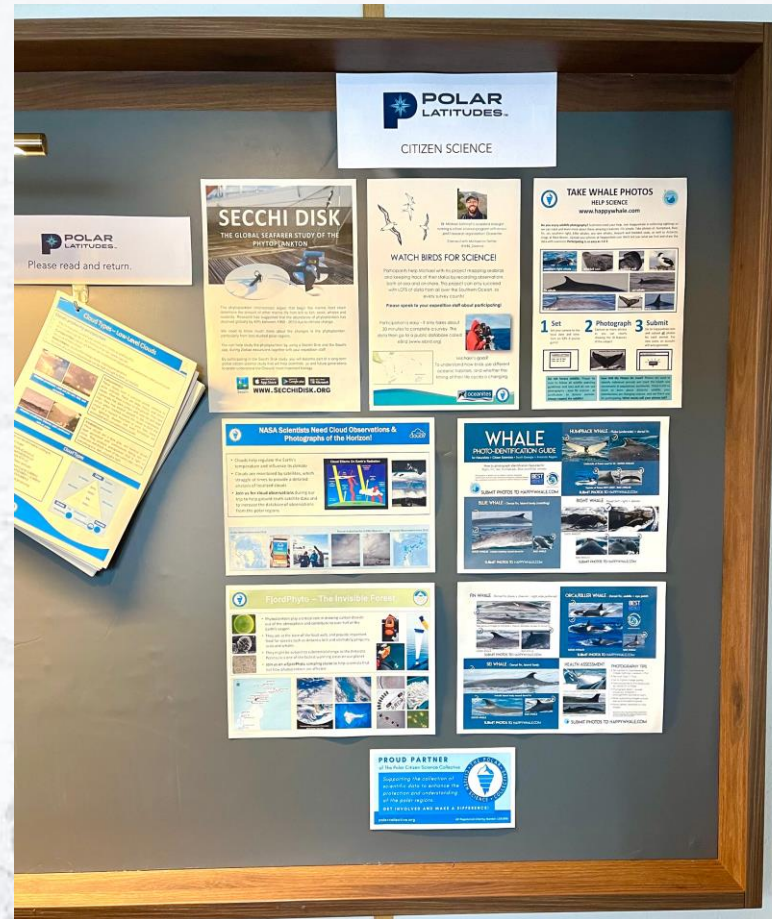




# Citizen Science on Board each voyage



Citizen Science Introductory Presentation + Recap



Citizen Science Board

Citizen Science  
(weather permitting)  
Please listen for  
announcements

Bird Survey - Deck 5 aft  
1400

Cloud Survey- Pool Deck  
1150 and 1800

Daily Program

# Citizen Science on Board

- A typical PL day with Citizen Science: 11:00 Bird Survey



# Citizen Science on Board

- A typical PL day with Citizen Science: 13:00 Cloud Observation for:

**NASA**



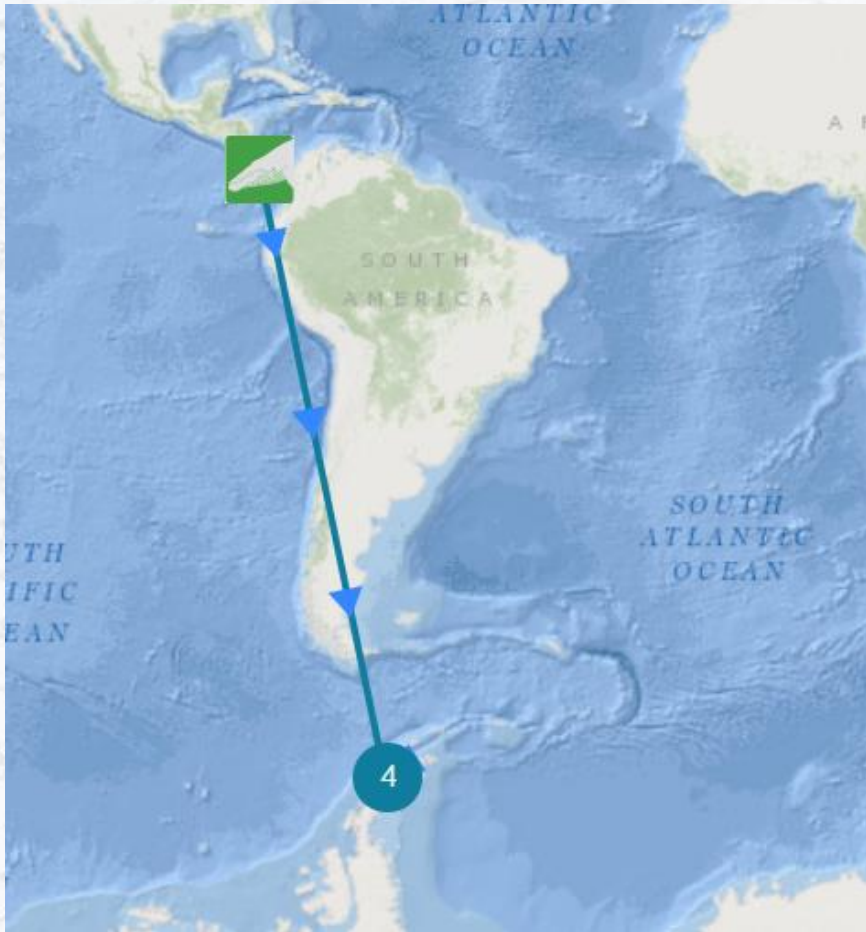
# Citizen Science on Board

- A typical PL day with Citizen Science: 15:07 Photographing whales for:



# Citizen Science on Board

- A typical PL day with Citizen Science: 18:30 Daily Recap



# What Do Our Guests Say?



*“I had heard of the beauty in Antarctica, but being a part of understanding it better really made an impact. It makes me want to be an ambassador for Antarctica and the environment in general!”*

*“Interesting to see science & tourism can work together!”*

*“Participation in citizen science allowed me to be more than just a tourist.”*

*“I became much more aware of my surroundings...”*

*“..more of an appreciation for the ecosystem here as well as an appreciation on the impact small choices can have literally at the end of the Earth.”*

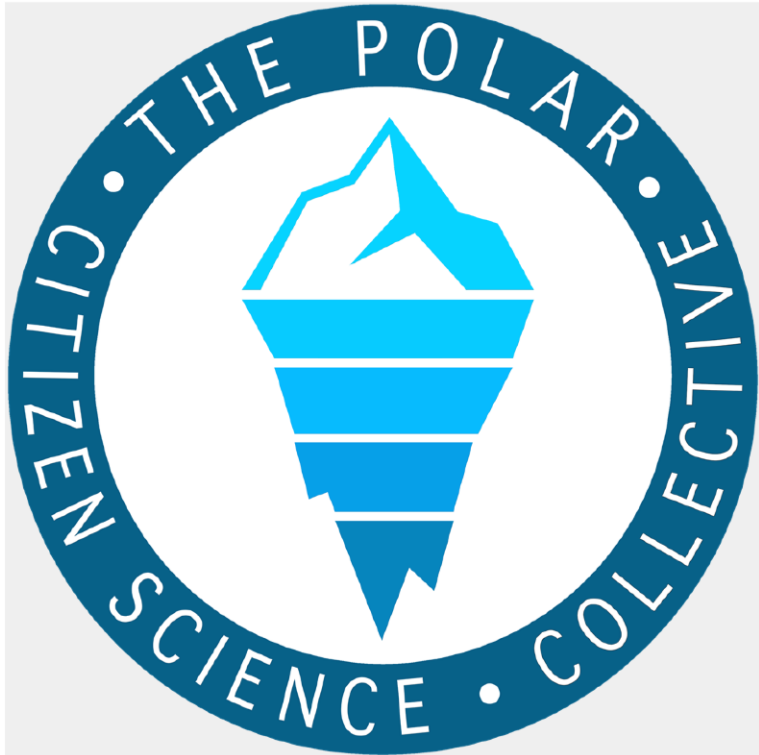
*“..gives the travel more purpose..”*

# Why Are We Successful?

- Every PL employee is embracing Citizen Science – it is the PL Culture
- All guides leading projects are trained & enthusiastic
- Off-season Citizen Science Coordinator
- Stand-alone activity offered on each trip
- Intimate, personal group experience



# Our Collaborators



WOODS HOLE  
**OCEANOGRAPHIC**  
INSTITUTION

Our Ocean. Our Planet. Our Future.



# The Polar Citizen Science Collective



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[Log in](#)

## Start your training today...

Get involved, contribute to science and join the collective effort!

The Polar Collective supports a range of projects that have been selected to fit into the unique modes of tourism operations in the polar regions. These projects are most successful when lead by field staff. We therefore developed the below training courses specifically for guides in collaboration with each project's Lead Scientist/Principal Investigator. They cover what you need to know to collect high quality data in the field while engaging and educating guests along the way.

To learn more about each training course and to get started, click on the course options below!

 <p>ANTARCTIC, ARCTIC</p> <h3>Happywhale</h3> <p>Collaborating globally to understand and protect marine mammals through photo-ID. Training time: ~45 min</p> <p> land, ship, small boat</p> <p><a href="#">More Info</a></p>	 <p>ANTARCTIC, ARCTIC</p> <h3>Secchi Disk Study</h3> <p>Help study long-term changes of phytoplankton. Training time: ~30 min</p> <p> small boat, yacht</p> <p><a href="#">More Info</a></p>	 <p>ANTARCTIC, ARCTIC</p> <h3>GLOBE Clouds</h3> <p>Learn to take cloud observations for NASA. Training time: 1-1.5 hrs</p> <p> land, ship, small boat</p> <p><a href="#">More Info</a></p>
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- Connect operators, guides and scientists
- Helps us select citizen science projects well suited to our itineraries
- Provides guide training & support to ensure data is being collected accurately
- One of the founders is our own lead CSC
- PL first to sign Partner Agreement

# Woods Hole Oceanographic Institute



WOODS HOLE  
**OCEANOGRAPHIC**  
INSTITUTION

Our Ocean. Our Planet. Our Future.

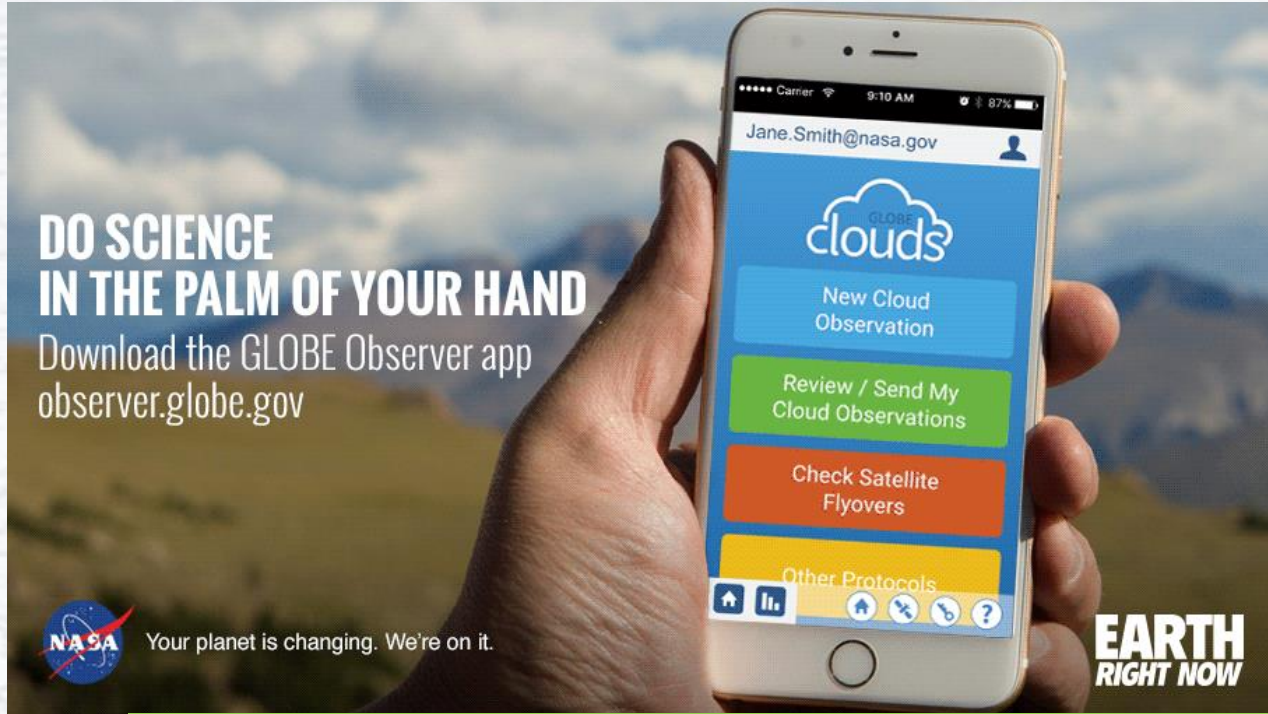


Dr. Daniel P. Zitterbart

*“The collaboration with PL allows WHOI scientists reliable and repeated access to the Antarctic peninsula, which is crucial for long-term climate change impact monitoring programs. Using MS Seaventure as a science platform significantly adds to science infrastructure resources and enables us to answer scientific research questions that would be difficult to address using federal research vessels.”*

# The Polar Latitudes Citizen Science Family

- Citizen Science doesn't stop when you leave the ship



**PL Keepsake - links to websites and information to keep our guests engaged and participating in CS post voyage**

# The Polar Latitudes Citizen Science Family

## PL Happywhale Page

- Follow PL whales
- Follow whales of their voyage

The screenshot shows the Happywhale website for Polar Latitudes. The top navigation bar includes links for Home, Browse, Stats, Submit Images, About, Name Your Whale, and Support Us, along with a search icon and the Happywhale logo. The main content area is divided into several sections:

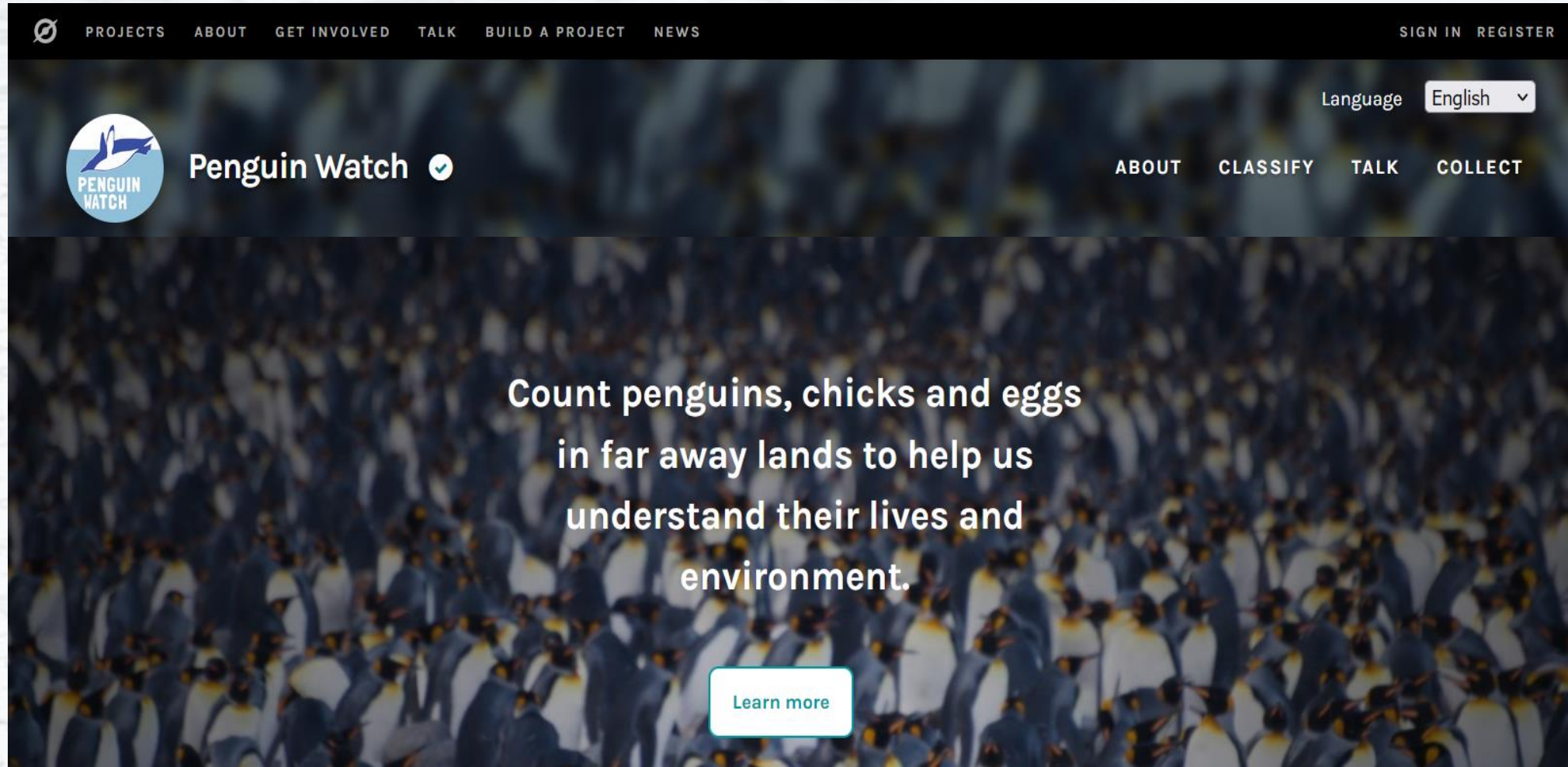
- Polar Latitudes**: Features the Polar Latitudes logo and statistics: Voyages (59), Encounters (461), Identified (308), and Individuals (297). It also lists 17 species and includes a "Log My Trip" button and a "Followers 20" section with a "Follow" button.
- Contact**: Provides contact information: WEBSITE (polar-latitudes.com), EMAIL (hayley@polar-latitudes.com), and PHONE (1 802-698-8479 ext 5).
- Map Info**: A table showing summary statistics:

Map Info	
Total	Visible
461 Encounters	461
297 Individuals	297
17 Species	17

The central feature is a map of the Antarctic region, showing the Argentine Basin, Scotia Sea, and Drake Passage. The map is overlaid with numerous blue circular markers, each containing a number (e.g., 2, 9, 5, 21, 7, 4, 13, 334, 49, 10). Small whale icons are also scattered across the map. The map includes standard navigation controls like zoom in (+), zoom out (-), and a globe icon.



# The Polar Latitudes Citizen Science Family



The screenshot shows the Penguin Watch website interface. At the top, there is a navigation bar with links for PROJECTS, ABOUT, GET INVOLVED, TALK, BUILD A PROJECT, and NEWS. On the right side of the navigation bar, there are links for SIGN IN and REGISTER. Below the navigation bar, there is a header section with the Penguin Watch logo on the left, which consists of a blue circle containing a white penguin silhouette and the text 'PENGUIN WATCH'. To the right of the logo is the text 'Penguin Watch' followed by a checkmark icon. On the far right of the header, there is a language dropdown menu set to 'English' and a secondary navigation bar with links for ABOUT, CLASSIFY, TALK, and COLLECT. The main content area features a large background image of a dense colony of penguins on ice. Centered over this image is the text: 'Count penguins, chicks and eggs in far away lands to help us understand their lives and environment.' Below this text is a white button with a teal border and the text 'Learn more'.

# The Polar Latitudes Citizen Science Family



Polar Latitudes

August 17 · 🌐

Our Citizen Science program is complimentary and open to everyone on board who wants to help us with real-world scientific research 🧪 🌱

There are a number of projects you can take part in, so be sure to check out the sign-up sheets when you board the ship.

Learn more about our Citizen Science program: <https://bit.ly/3PwgyfJ>



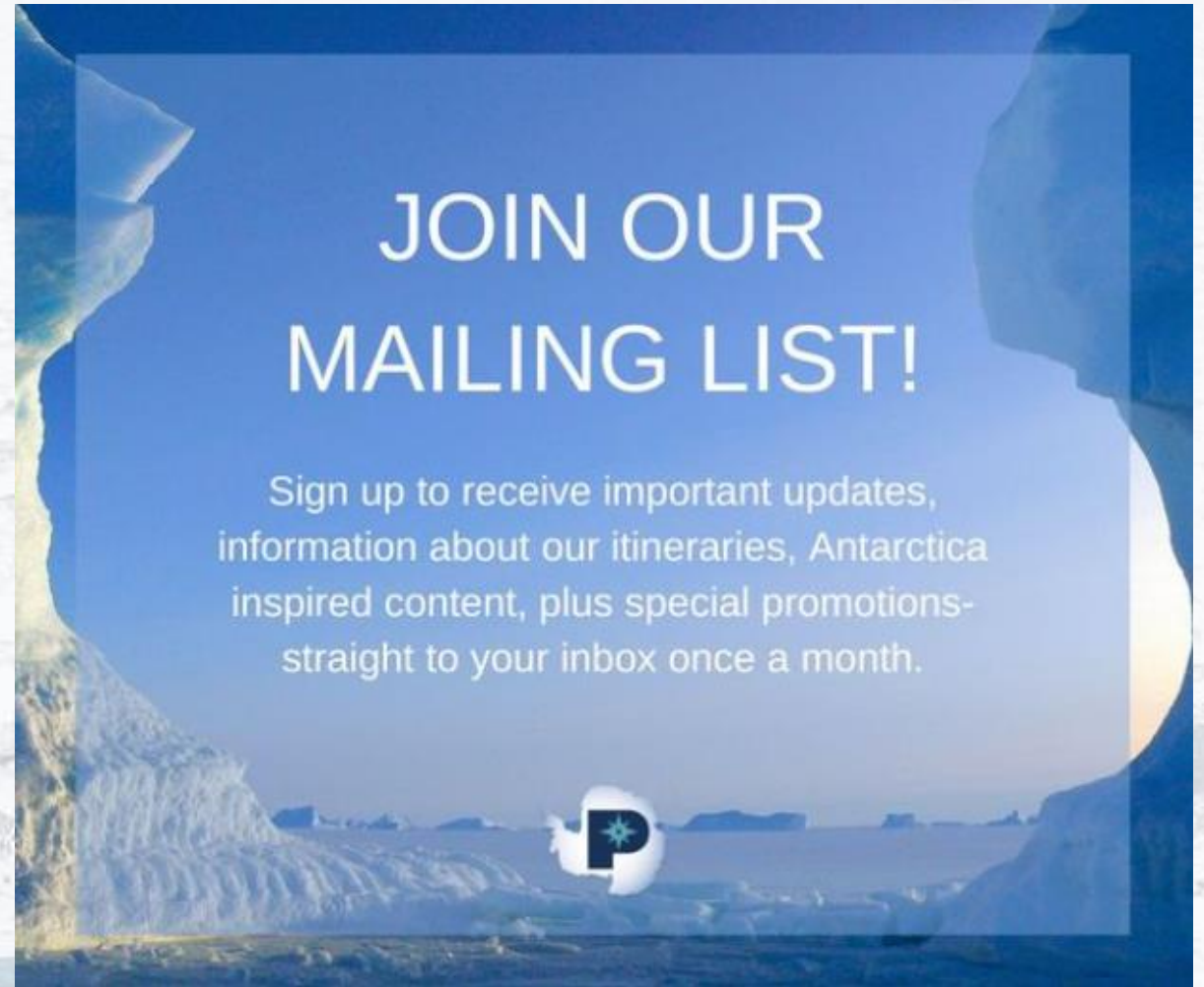
👍❤️ Conny Bartl, Chris Dunham and 35 others

4 Comments

👍 Like

💬 Comment

➦ Share



# The Future of Citizen Science in Antarctica?

Citizen Science is all about:

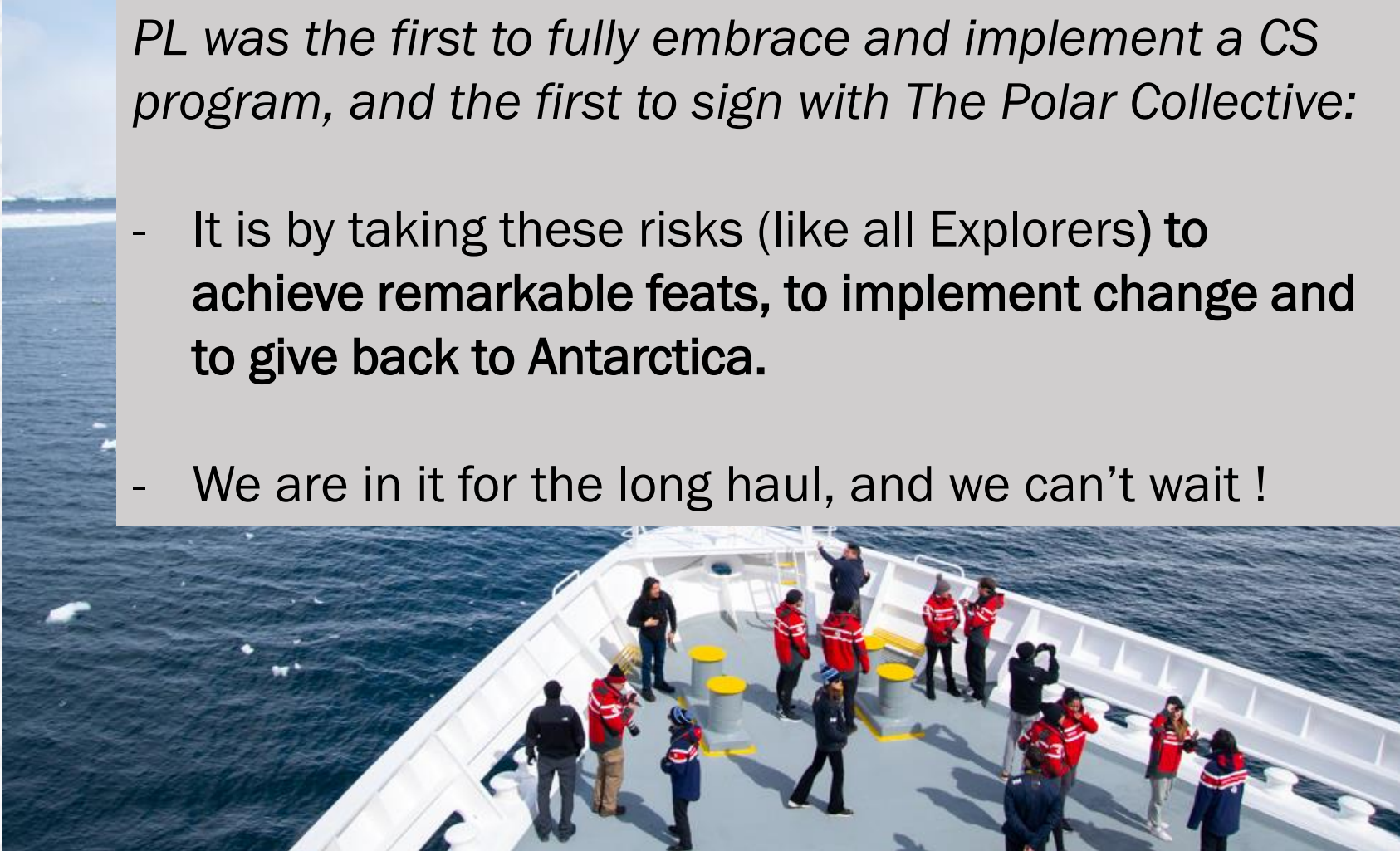
- Being outside as much and as long as possible
- Taking the time: nature and science requires it
- Experiencing intimate moments in nature (and with wildlife) in small groups of like-minded people.



# The Future of Citizen Science in Antarctica?

*PL was the first to fully embrace and implement a CS program, and the first to sign with The Polar Collective:*

- It is by taking these risks (like all Explorers) to achieve remarkable feats, to implement change and to give back to Antarctica.
- We are in it for the long haul, and we can't wait !







WILL YOU EXPLORE WITH US?



















































































































































































































































































































































































