

Citizen science:

examples of projects on Svalbard

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<http://www.iopan.gda.pl/>



Project on the use of glacier fronts by predators „Glaere”

1 . Which glaciers and how often are used by birds as a feeding ground ?

Equipment needed:

- photo camera
- GPS position
- Secchi disk
- notes

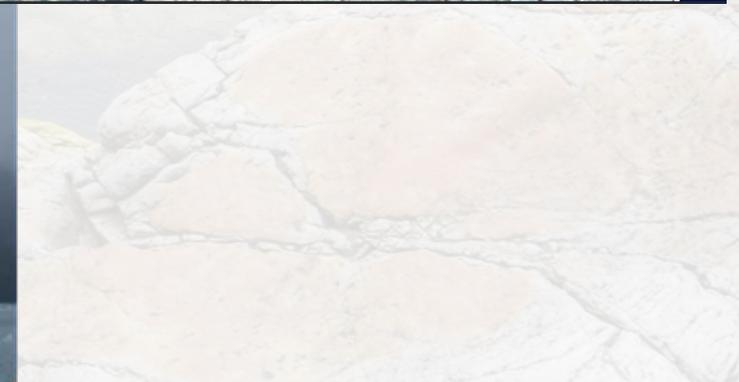
Yachts are sailing to tidal glacier bays, photos of the ice Cliff are collected from a distance about 200m, that allows to identify birds numer.

Participants:

- Citizen science glacier survey by norwegian yachtsman
- IOPAN- Poland
- NPI -Norway
- UG- Poland
- MFRI- Poland
- UNIS - Norway
- UiT - Norway



The screenshot shows the website for the GLAERE project. At the top, there is a navigation menu with links for HOME, PARTICIPANTS, DESCRIPTION, WORK, DISSEMINATION, CALENDAR, RESULTS, LINKS, and LITERATURE. Below the menu, the project title "GLAERE" is displayed in large letters, followed by the subtitle "Glaciers as Arctic Ecosystem Refugia". Logos for the Polish-Norwegian Research Programme and Norway Grants are also visible. A paragraph of text describes the project's goals: "This project will assess the importance of glacial bays as foraging areas for selected top predators and as habitats for cold water fauna in a quantitative manner. This assessment will be based on a combination of archival data and new data collected during this program. In this assessment, future scenarios in relation to the predicted fate of these glacial hotspots in Svalbard will be addressed, in addition to possible compensatory effects via the influences of river mouths and mudflats in areas where glaciers retreat onto land." Below the text are four photographs of glacier fronts. The first photo shows a boat on a glacier bay with the caption "photo J. M. Węszlawski". The second photo shows a close-up of a glacier front with the caption "photo Ch. Lydersen". The third and fourth photos are also close-ups of glacier fronts.



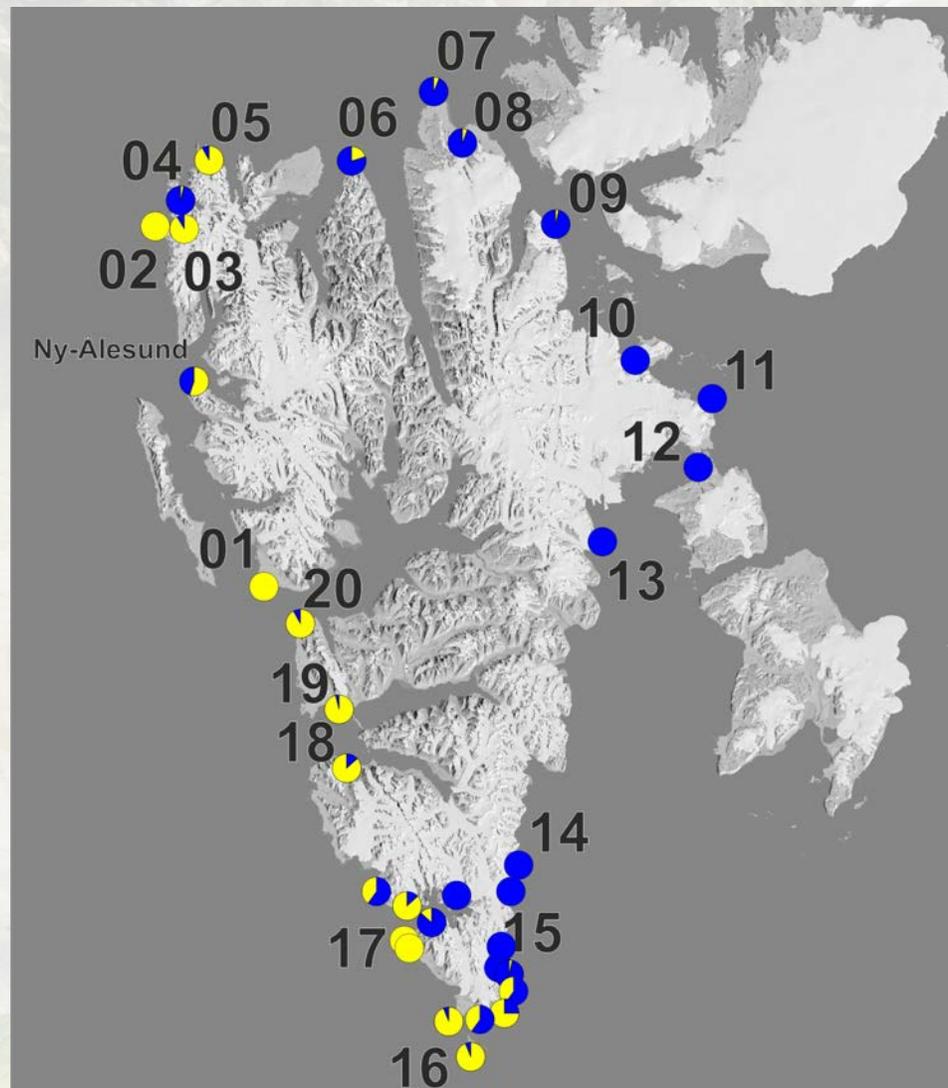
Example of water transparency (Secchi disc) and seabird observations near the glacier cliffs – performed from yachts – to check how often and which glaciers are visited by wildlife

MAGNUS_ZAREMBA_2016																		
Lodowiec	Date	Time_close	temp.water_close	temp.water_off	temp.air_close	temp.air_off	salinity_off_surface_bot	salinity_close_surface_b	Secchi [m]_close	Secchi [m]_off	Depth [m]	Sill presence	Width [km]	Exposure	Number of Rissa tridact			
Nordenskioldbreen	2016-07-30	20.20	7	5.9	8	7.8	26.7	27.1	2.5	2	70	No	6.03	medium sheltered	46			
Tunabreen	2016-07-31	14.15	7	7.2	8.1	8.8	28	28.2	1.3	0.40	40	low	3.68	medium sheltered	0			
Aavatsmarkbreen	2016-08-04	11.10	5.6	5.8	6.4	5.5	32.1	32.1	1.7	2	64	medium	4.33	very sheltered	0			
Magdalenafjorden	2016-08-06	10.00	4	3.6	4.3	5.6	33.9_34.3	33.8	1.1	1.7	120	low	0.992	open coast	104			
Smeerenburgfjorden	2016-08-06	14.20	5.6	5.5	7.1	5.9	32_34.6	32.9_34.8	1.5	1.7	113	low	4.88	medium sheltered	772			
Kollerbreen	2016-08-07	18.40	6	6	4.5	4.6	29.7_33.7	30.1_35	2	2	94	medium	1.45	medium sheltered	0			
Lillehoekbreen	2016-08-07	8.10	3.6	3.8	3.6	4.6	30_34.9	33.5_34.7	1.4	1.5	189	No	13.2	medium sheltered	0			
Mayerbreen	2016-08-07	15.30	5.9	5.8	5.1	4.7	29_34.9	28.8_34.9	2.1	2.1	76	No	0.444	medium sheltered	150			
Tinayrebreen	2016-08-07	20.30	5.9	5.7	4.2	4.1	29.8_34.5	30.1_34.8	0.30	1	83	No	1.31	medium sheltered	0			
Kongsfjorden	2016-08-08	14.00	3.6	3	4.4	3.3	29_34.7	29_34.9	0.10	0.10	36	low	4.5	open coast	0			
Olsokbreen	2016-08-11	X	X	4.5	X	4.4	33.3_33.8	33	X	2	26	high	5.27	open coast	0			
Borebreen	13/14.08.2016	23.55	5.9	5.6	5.1	5.1	29_34.5	29.8_34.4	0.10	0.60	32	high	5.35	medium sheltered	0			
Esmarkbreen	2016-08-13	19.30	6.5	7.4	6.8	7.4	30_35	27.8_34.3	0.05	0.80	23	high	5.56	medium sheltered	20			
NOR_2016																		
Nordenskioldbreen	2016-08-30	21.00					28.9	25.5	0.30	x	70	No	6.03	medium sheltered	0			
Tunabreen	2016-08-31	01.10					28.8	28.6	1.6	x	40	low	3.68	medium sheltered	0			
Aavatsmarkbreen	2016-08-27	15.40					31.8	31.5	1.1	x	64	medium	4.33	very sheltered	20			
Kollerbreen	2016-08-29	13.50					29.7	30.1	0.90	x	94	medium	1.45	medium sheltered	0			
Lillehookbreen	2016-08-29	12.45					30	33.5	1.5	x	189	No	13.2	medium sheltered	0			
Mayerbreen	2016-08-29	14.30					29	28.8	1.6	x	76	No	0.444	medium sheltered	236			
Tinayrebreen	2016-08-29	15.20					29.8	30.1	0.60	x	83	No	1.31	medium sheltered	0			
Borebreen	2016-08-30	12.45					29.9	30	1.7	x	32	high	5.45	medium sheltered	9			
Esmarkbreen	2016-08-26	21.50					29.3	29.2	0.40	x	23	high	3.13	medium sheltered	0			
Blomstrandbreen	2016-08-28	17.00					29.1	28.9	1.1	x	37	medium	2.7	medium sheltered	0			
Conwaybreen	2016-08-28	16.30					28.9	28.9	0.50	x	27	high	1.81	very sheltered	0			
Kongsbreen N	2016-08-28	15.00					30.1	30	2.1	x	75	high	2.1	very sheltered	0			
Kongsbreen S	2016-08-28	16.15					30.2	30	0.60	x	36	high	3.79	very sheltered	3			
Kronebreen	2016-08-28	14.30					30.8	30.6	0.15	x	36	high	4.3	medium sheltered	0			
Fjortende jilibreen	2016-08-29	16.40					30	29.2	1.1	x	69	medium	2.82	medium sheltered	0			
Dahlbreen	2016-08-27	14.15					32	32.1	0.30	x	65	No	2.62	very sheltered	68			
Osbornbreen	2016-08-27	13.00					31	30.6	0.30	x	82	low	4.64	very sheltered	311			
Konowbreen	2016-08-27	12.00					31.1	30.8	1.4	x	82	low	2.14	very sheltered	240			
Gaffelbreen	2016-08-27	11.10					31.3	31	1.1	x	50	low	1.1	very sheltered	32			
Harnetbreen	2016-08-26	22.30					30.5	30.2	2	x	64	low	0.839	very sheltered	0			
Nansenbreen	2016-08-30	12.20					29.5	29.5	0.50	x	30	high	4.08	medium sheltered	0			
Sefströmbreen	2016-08-30	17.50					28.1	28.1	0.50	x	31	high	3.81	very sheltered	231			
Sveabreen	2016-08-30	16.00					28.3	28.2	0.50	x	73	high	3.74	medium sheltered	1704			
Wahlenbergbreen	2016-08-30	14.30					29	29	0.10	x	62	high	2.15	medium sheltered	1			
NOR_2015																		
Lillehøgbreen	2015-08-31	11.30							2	x	189	No	13.2	medium sheltered	65			
Kollerbreen	2015-08-31	13.15							1.3	x	94	medium	1.45	medium sheltered	61			
Mayerbreen	2015-08-31	13.40							0.75	x	76	No	0.444	medium sheltered	127			
Tinayrebreen	2015-08-31	14.20							0.15	x	83	No	1.31	medium sheltered	488			
Fjortende Julibreen	2015-08-31	15.30							1.1	x	69	medium	2.82	medium sheltered	193			
Blomstrandbreen	2015-08-31	16.45							1.65	x	37	medium	2.7	medium sheltered	11			
Conwaybreen	2015-08-31	17.30							0.50	x	27	high	1.81	very sheltered	0			
Kongsbreen Nord	2015-08-31	17.50							1.75	x	75	high	2.1	very sheltered	13			
Kongsbreen Sar	2015-08-31	18.55							0.95	x	36	high	3.79	very sheltered	0			
Kronebreen	2015-08-31	19.30							0.15	x	36	high	4.3	medium sheltered	187			
Aavatsmarkbreen	2015-09-01	10.30							0.90	x	30	medium	4.25	very sheltered	No photo			
Dahlbreen	2015-09-01	11.30							0.45	x	65	No	2.62	very sheltered	No photo			
Osbornbreen	2015-09-01	13.35							2.5	x	82	low	4.64	very sheltered	No photo			
Konowbreen	2015-09-01	13.05							1.8	x	82	low	2.14	very sheltered	No photo			

Svalbard Intertidal Project

Localisation and habitat description of sampling sites at which *Gammarus oceanicus* and *Gammarus setosus* individuals

- 20 x20 cm frame
- bottle
- fixative
- GPS position
- date and time marked



boreal (yellow) crustacean and Arctic, (blue) species distribution

Plastic debris on Arctic shores

Is European Arctic collects vast amount of plastic that drifts with Atlantic Water Current?

Needs:

- to assess the scale of the problem
- what kind of plastic
- how many plastic objects

Methods:

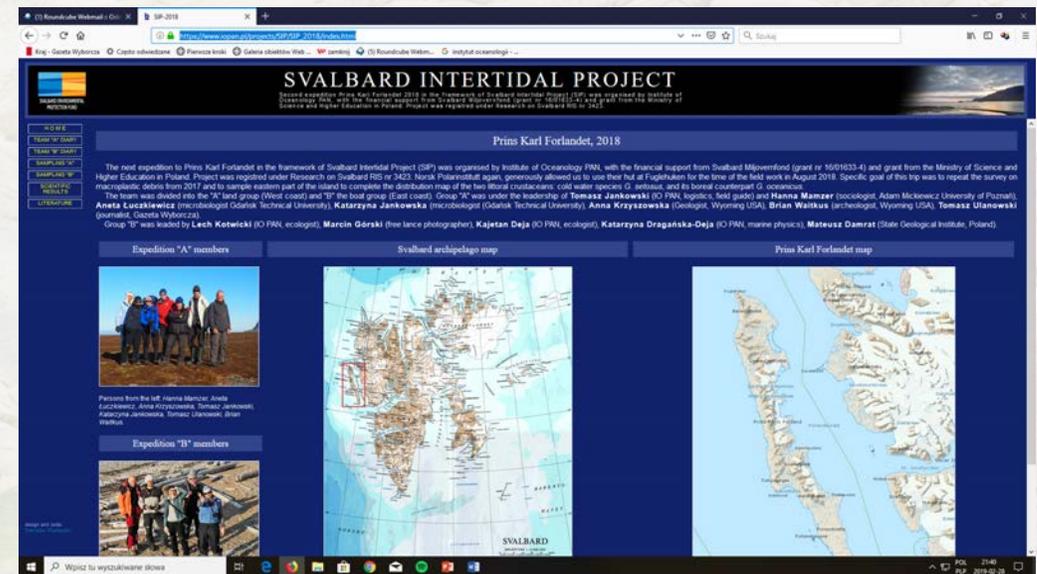
- mark 50x50cm square on the high water mark
- make a photo documentation
- mark geographic position
- mark date and time

Especially important are 5mm in diameter industrial plastic bits known as „nurdle”

Goal - distribution and amount of plastic on Svalbard shores



Examples of photos from Prins Karl Forlandet, documenting plastic at high water mark



https://www.iofan.pl/projects/SIP/SIP_2018/index.html

Change in intertidal zone due to the ice retreat

Brown algae (blader wreck and alike) are colonising once barren coast.

Methods:

- mark 50x50cm square on the low tide
- make a photo documentation from a 1m distance
- mark geographic position
- mark date and time



SVALBARD INTERTIDAL PROJECT

Expedition Sorkapland 2008: Institute of Oceanology PAS & Svalbard Environmental Fund
Syssemmannen ref. nr 4705 SSF Project 2008/00193-2 a.522-08, Census of Marine Life - Arctic Ocean Biodiversity project

17: Stone City

latitude 76.57.734, longitude 15.56.359

IMG_5951 IMG_5952 IMG_5953 IMG_5954 IMG_5955

IMG_5957 IMG_5958 IMG_5959 IMG_5960

IMG_5962 IMG_5963 IMG_5964 StoneCity

Important issues/challenges:

Methodology is simple with minimal space for mistake

- one common methodology for all participants

Results are delivered to professional open-access repository

- data provider shall see his own effort and final effect
- better access for all interested (decision-makers, guest users etc.)

Key issue is the repetition and high number of data

- regularity in uploading data

Increase access to the tour operators



IOPAN role in a cruise expedition environment monitoring programme?

- provide unify methodology for data collecting
- give access for data storage
- access to scientific consultations and basic data analysis
- have an access to the new research points/areas
- have a repeatable data set from different seasons