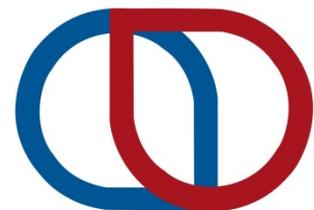


DWARF WP7 :Synthesis of the Results, Transfer of Knowledge and Public Outreach

WP leader: prof. Jan Marcin Węstawski

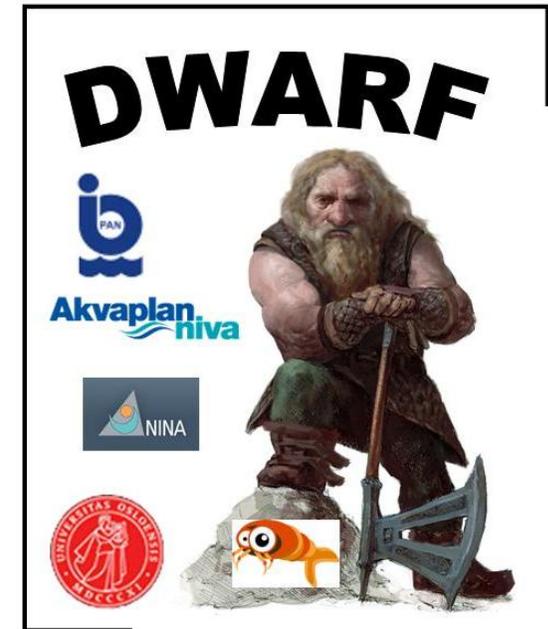
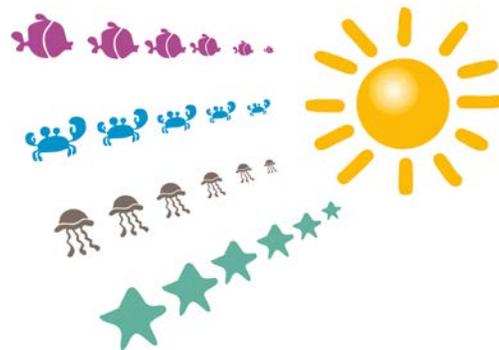
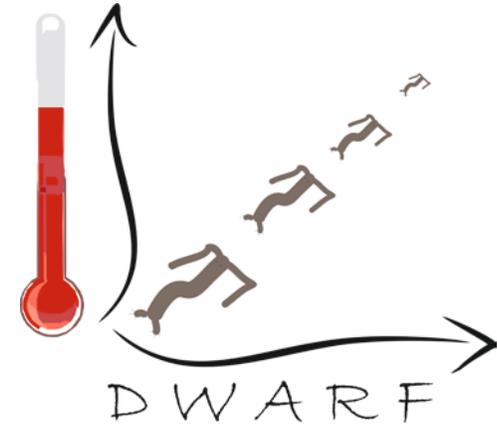
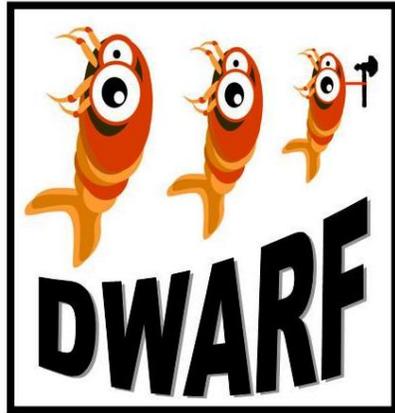


POLISH-NORWEGIAN
RESEARCH
PROGRAMME



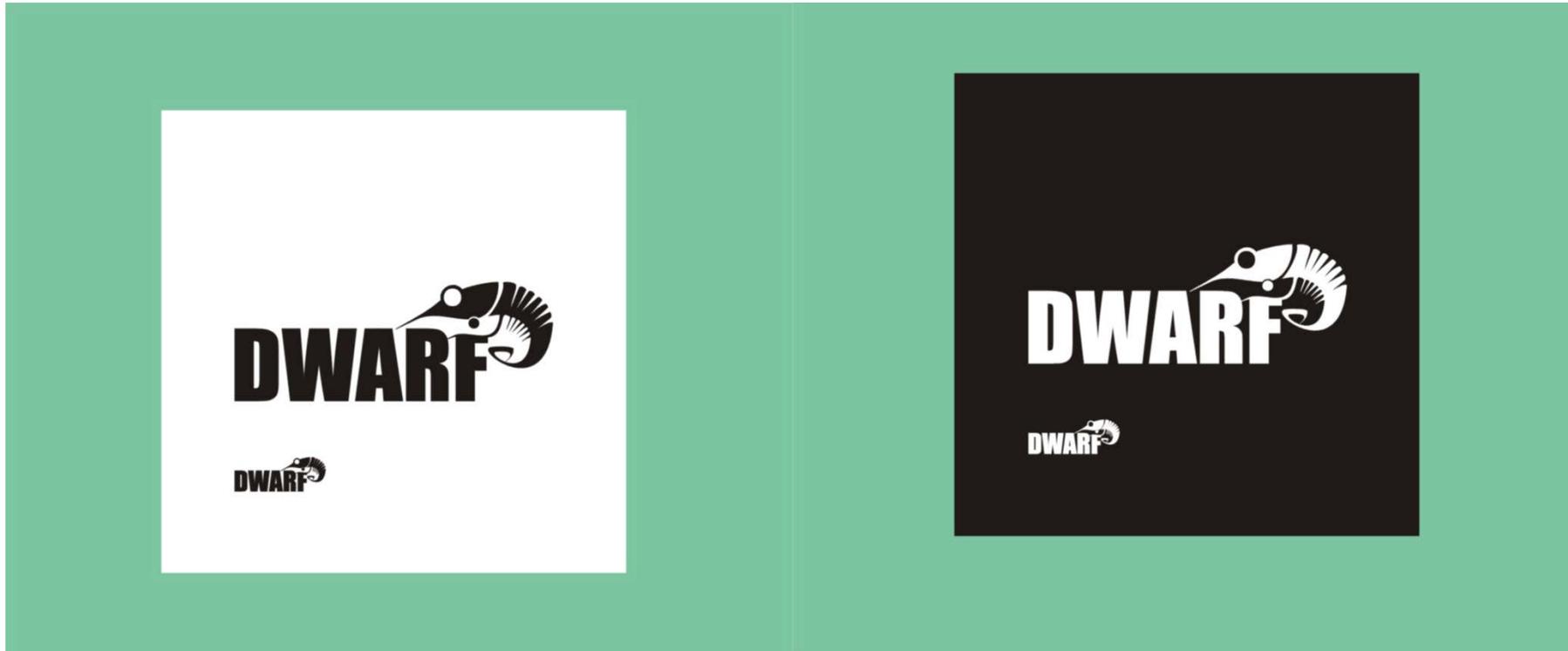
DWARF WP 7 – in 2014:

- PROJECT LOGO



DWARF WP 7 – in 2014:

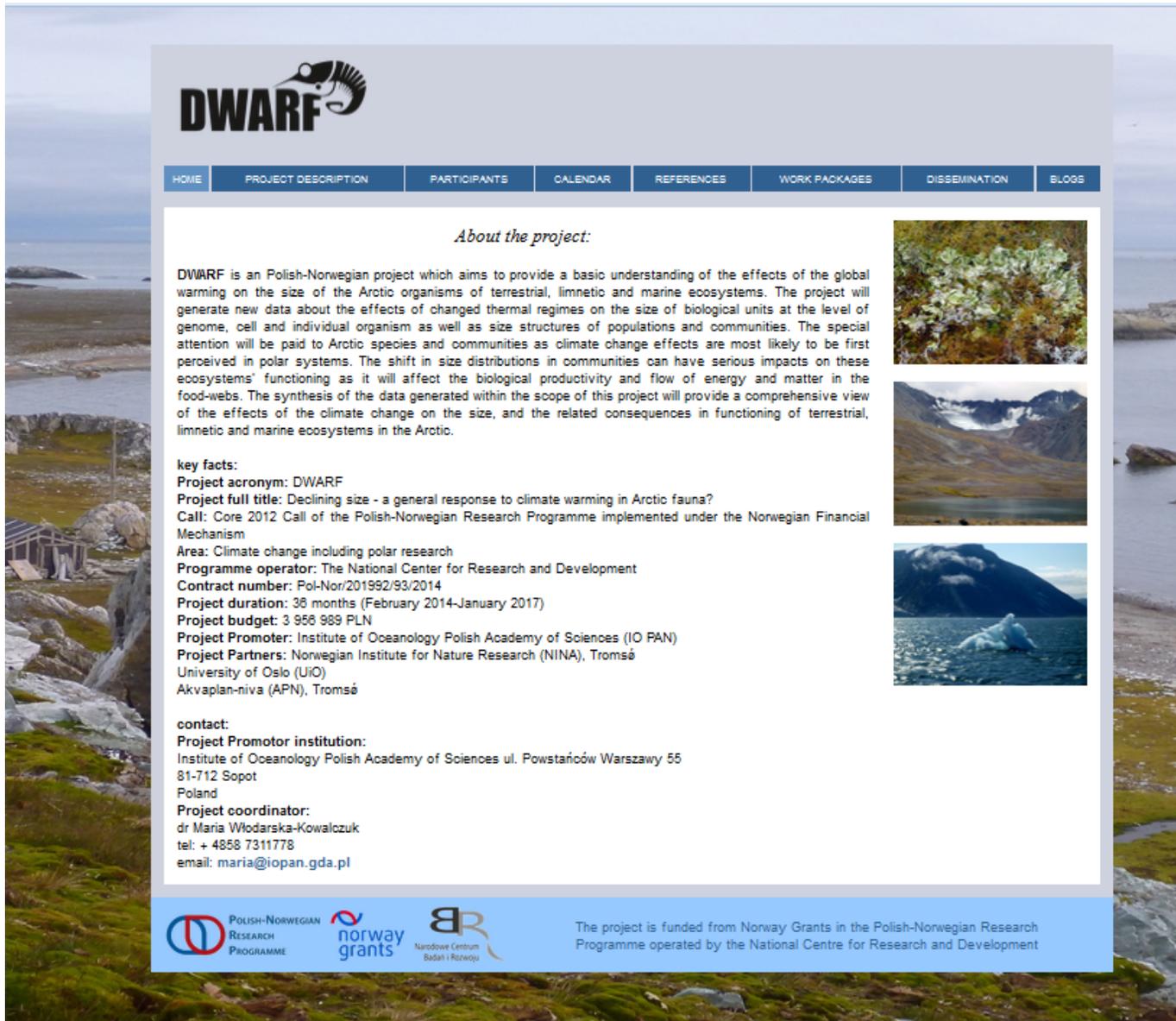
- PROJECT LOGO



Author: Michał Czub

DWARF WP 7 – in 2014:

- PROJECT web-site: <http://www.iopan.gda.pl/projects/Dwarf/index.html>



DWARF

HOME PROJECT DESCRIPTION PARTICIPANTS CALENDAR REFERENCES WORK PACKAGES DISSEMINATION BLOGS

About the project:

DWARF is an Polish-Norwegian project which aims to provide a basic understanding of the effects of the global warming on the size of the Arctic organisms of terrestrial, limnetic and marine ecosystems. The project will generate new data about the effects of changed thermal regimes on the size of biological units at the level of genome, cell and individual organism as well as size structures of populations and communities. The special attention will be paid to Arctic species and communities as climate change effects are most likely to be first perceived in polar systems. The shift in size distributions in communities can have serious impacts on these ecosystems' functioning as it will affect the biological productivity and flow of energy and matter in the food-webs. The synthesis of the data generated within the scope of this project will provide a comprehensive view of the effects of the climate change on the size, and the related consequences in functioning of terrestrial, limnetic and marine ecosystems in the Arctic.

key facts:
Project acronym: DWARF
Project full title: Declining size - a general response to climate warming in Arctic fauna?
Call: Core 2012 Call of the Polish-Norwegian Research Programme implemented under the Norwegian Financial Mechanism
Area: Climate change including polar research
Programme operator: The National Center for Research and Development
Contract number: Pol-Nor/201992/93/2014
Project duration: 36 months (February 2014-January 2017)
Project budget: 3 958 989 PLN
Project Promoter: Institute of Oceanology Polish Academy of Sciences (IO PAN)
Project Partners: Norwegian Institute for Nature Research (NINA), Tromsø University of Oslo (UiO) Akvaplan-niva (APN), Tromsø

contact:
Project Promotor institution:
Institute of Oceanology Polish Academy of Sciences ul. Powstańców Warszawy 55
81-712 Sopot
Poland
Project coordinator:
dr Maria Włodarska-Kowalczyk
tel: + 4858 7311778
email: maria@iopan.gda.pl





 POLISH-NORWEGIAN RESEARCH PROGRAMME  norway grants  Narodowe Centrum Badań i Rozwoju

The project is funded from Norway Grants in the Polish-Norwegian Research Programme operated by the National Centre for Research and Development

DWARF WP 7 – in 2014:

- PROJECT web-site: <http://www.iopan.gda.pl/projects/Dwarf/index.html>

HOME	PROJECT DESCRIPTION	PARTICIPANTS	CALENDAR	SPECIES GALLERY	DISSEMINATION	BLOGS
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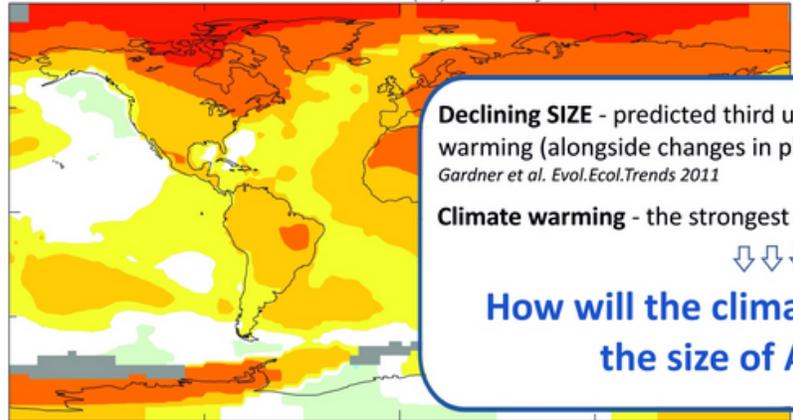
- Abstract
- Objectives
- Methods
- Working plan
- Work packages
 - WP 1
 - WP 2
 - WP 3
 - WP 4
 - WP 5
 - WP 6
 - WP 7
- References

Abstract

Body size is a fundamental biological unit that is closely coupled to key ecological properties and processes. Decline in organisms' body-size has been recently predicted to be "the third universal response to global warming" (alongside changes in phenology and distribution of species) in both aquatic and terrestrial systems. The main goal of the project is to test hypothesis that **elevated temperatures will induce size reductions in a large range of animals in the Arctic**. This will be achieved by exploring variability of size of biological structures at different levels (genome, cell, body, population and community) in response to changing thermal regimes. The study will focus on a selected range of animal taxa (invertebrates and fish) in terrestrial, limnetic and marine habitats. Organism size changes in response to past climate changes will be documented for Foraminifera in Holocene sediments.

The project will be structured along work-packages reflecting habitat and organism type, and will involve field sampling, experimental studies, body-, cell- and genome size analysis, deep sequencing of genomes for selected taxa as well as the size distributions in whole communities. Biomass size spectra in animal communities will be based on data derived from direct measurements of organisms in collected samples, and from a high-resolution Laser Optical Plankton Counter survey. Biomass size spectra will be used to assess the secondary production of studied communities. Environmental drivers of the possible climate warming impacts on biological sizes and possible effects at various organization levels, taxonomic groups and habitats will be determined. The synthesis of the data generated within the scope of this project will provide a comprehensive view of the effects of the climate change on the size, and the related consequences in functioning of terrestrial, limnetic and marine ecosystems in the Arctic.

Annual J-D 2006-2012 L-OTI(°C) Anomaly vs 1951-1980 0.58



Declining SIZE - predicted third universal response to climate warming (alongside changes in phenology and species distributions)
Gardner et al. Evol.Ecol.Trends 2011

Climate warming - the strongest effects in Arctic regions

⇓⇓⇓

How will the climate warming affect the size of Arctic biota?

-4.1 -4 -2 -1 -0.5 -0.2 .2 .5 1 2 4 4.1

DWARF WP 7 – in 2014:

- PROJECT web-site: <http://www.iopan.gda.pl/projects/Dwarf/index.html>

The screenshot shows the DWARF project website. The left sidebar contains a navigation menu with the following items: HOME, Abstract, Objectives, Methods, Working plan, Work packages (WP 1 to WP 7), and Reference. The main content area has a top navigation bar with HOME, PROJECT DESCRIPTION, PARTICIPANTS, CALENDAR, SPECIES GALLERY, DISSEMINATION, and BLOGS. Below this, the 'Working plan' section is titled and contains the following text:

Abstract

Objectives

Methods

Working plan

Work packages

- WP 1
- WP 2
- WP 3
- WP 4
- WP 5
- WP 6
- WP 7

References

References

Working plan

The work in the project will be organised in **7 work packages** that will cover all necessary actions to achieve goals of the proposal:

WP1 will focus on the size patterns in terrestrial ectotherms. The study will be conducted on selected species of Collembola (springtails) and the dung fly – *Scatophaga furcata*. The population on Svalbard and mainland Norway will be sampled and analysed with respect to body, cell and genome size. Thermal reaction norms for the same parameters in *S. furcae* will be studied experimentally by rearing animals originated from selected populations on homogenised dung at different temperatures.

The flowchart illustrates the project structure:

- WP6 DATA BASE and LITERATURE SURVEY on relationships between genome-, cell and body size and temperature (or habitat)
- WP1 TERRESTRIAL FAUNA
- WP2 LIMNETIC FAUNA
- WP3 MARINE PELAGIC FAUNA
- WP4 MARINE BENTHIC FAUNA
- WP5 Paleontological Record of Size Distribution in Foraminifera
- WP7 Synthesis of the Results, Transfer of Knowledge, Public Outreach

The flowchart shows WP6 at the top, with a downward arrow pointing to WP7. On the left, WP1 through WP5 are listed in boxes, with arrows pointing to the right towards the WP7 box. The WP7 box contains the following text: INTEGRATION, MANAGEMENT, SYNTHESIS, DISSEMINATION, and PUBLIC OUTREACH.

DWARF WP 7 – in 2014:

- PROJECT web-site: <http://www.iopan.gda.pl/projects/Dwarf/index.html>

HOME PROJECT DESCRIPTION PARTICIPANTS CALENDAR SPECIES GALLERY DISSEMINATION BLOGS

Abstract
Objectives
Methods
Working plan
Work packages
References

WP2: Limnetic Fauna
Leader: Dr. Martin-A. Svenning (NINA)

Objectives:

- to analyse body size, cell size (when possible) and genome size in representative populations and sub-populations (Arctic charr (*Salvelinus alpinus*) and macrocrustaceans *Lepidurus arcticus*, *Mysis relicta* and *Gammarachanthus loricatus*) on Svalbard for comparison with selected populations on mainland Norway to obtain a maximum thermal gradient (as a “space-for-time” analogue of temperature effects)
- to compare the size distributions in migratory and stationary populations of Arctic charr (to test for the role of size vs temperature also on cell- and genome size)
- to perform experiments with one or two of the three invertebrates raised under two different temperature regimes, and analysed for the same parameters
- to perform deep-sequencing on populations with contrasting cell- or genome size to reveal the underlying drivers for genome expansion or reduction.

SAMPLING/ MATERIALS

- gillnets
- net-hauls
- *temperature
- *food availability
- temperature

LAB ANALYSIS

- body size measurements
- cell-, genome- size analysis
- deep-sequencing
- env. conditions
- Database

RESULTS

- relationship between major organism metrics (genome-, cell- and body size) and ambient temperature
- experimental verification of thermal responses under experimental conditions
- Manuscripts
- Presentations

Gammarachantus loricatus

resident Svalbard Arctic char

DWARF WP 7 – in 2014:

- PROJECT web-site: <http://www.iopan.gda.pl/projects/Dwarf/index.html>

The image shows a screenshot of the DWARF project website. The website has a blue header with navigation tabs: HOME, PROJECT DESCRIPTION, PARTICIPANTS, CALENDAR, SPECIES GALLERY, DISSEMINATION, and BLOGS. The main content area is divided into two columns. The left column contains a vertical menu with links to Abstract, Objectives, Methods, Working plan, Work packages (WP 1-7), and Reference. The right column displays the 'Books' section, listing several scientific publications. At the bottom, there is a section for 'Scientific papers' and a footer with the text 'ACIA (2006) Arctic Climate Impact Assessment - Scientific Report. Cambridge University Press, Cambridge'.

HOME PROJECT DESCRIPTION PARTICIPANTS CALENDAR SPECIES GALLERY DISSEMINATION BLOGS

Abstract
Objectives
Methods
Working plan
Work packages
WP 1
WP 2
WP 3
WP 4
WP 5
WP 6
WP 7
Reference

Abstract
Objectives
Methods
Working plan
Work packages
WP 1
WP 2
WP 3
WP 4
WP 5
WP 6
WP 7
References

Books

John Tyler Bonner, 2006, Why Size Matters: **From Bacteria to Blue Whales**. Princeton University Press. pp191.

Alan Hildrew, Dave Rafaelli, Ronni Edmonds-Brown, 2007, **Body Size. The Structure and Function of Aquatic Ecosystems**. Cambridge University Press. pp 343

Robert Henry Peters, 1986, **The Ecological Implications of Body Size**, Cambridge University Press,

Knut Schmidt-Nielsen, 1984, **Why is Animal Size so Important?**, Cambridge University Press,

Thomas McMahon, John Tyler Bonner, 1983, On Size and Life, Scientific American Books - W. H. Freeman & Co., pp 255

James H. Brown, Geoffrey B. West, 2000, **Scaling in Biology**, Oxford University Press, pp366

Andrea Belgrano, Ursula M. Scarler, Jennifer Dunne, Robert E. Ulanowicz, 2005, **Aquatic Food Webs. An Ecosystem Approach**, Oxford University Press pp262.

S.R. Kerr, L.M. Dickie, 2001, **The Biomass Spectrum. A Predator-Prey Theory of Aquatic Production** Columbia University Press, pp320.

William A. Calder III, 1984, Size, Functions, and Life History, Harvard University Press, pp431

Felisa A. Smith, S. Kathleen Lyons, 2013, **Animal Body Size. Linking Pattern and Process across Space, Time, and Taxonomic Group**. pp280, University of Chicago Press.

Scientific papers

ACIA (2006) Arctic Climate Impact Assessment - Scientific Report. Cambridge University Press, Cambridge

DWARF WP 7 – in 2014:

- PROJECT web-site: <http://www.iopan.gda.pl/projects/Dwarf/index.html>



The screenshot shows the DWARF project website. At the top left is the DWARF logo, which includes a stylized insect. To the right of the logo are the Polish flag and a Facebook icon. Below these is a navigation menu with the following items: HOME, PROJECT DESCRIPTION, PARTICIPANTS, CALENDAR, SPECIES GALLERY, DISSEMINATION, and BLOGS. The main content area is titled 'Participants' and features a list of names on the left and a detailed profile for Hans Petter Leinaas on the right. The profile includes a photograph of Hans Petter Leinaas, a man with glasses wearing a light-colored shirt, and text describing his background and role in the project.

DWARF

Wersja polska 

HOME PROJECT DESCRIPTION PARTICIPANTS CALENDAR SPECIES GALLERY DISSEMINATION BLOGS

Participants

Dr Maria Włodarska-Kowalczyk (IO PAN)

Prof. **Hans Petter Leinaas** (UiO)

Prof. **Dag Olav Hessen** (UiO)

Dr Martin-A. Svenning (NINA)

Dr Paul Renaud (APN NIVA)

Dr Sławomir Kwaśniewski (IO PAN)

Joanna Pawłowska (IO PAN)

Prof. **Jan Marcin Węśławski** (IO PAN)

Dr Katarzyna Błachowiak-Samołyk (IO PAN)

Hans Petter Leinaas

Hans Petter Leinaas is a professor at the Department of Biosciences at the University of Oslo (UiO). His main research activity is on life history adaptations in ectotherms. He is currently studying the effect of temperature on growth and development rates, its implications for age and size at maturity, and the effect of temperature on body size, cell size and genome size. The objective of this approach is to better understand in role of phenotypic plasticity and microevolution of these traits in the adaptation to environments of contrasting climate conditions, and its implications for climate change and species invasion. Most of his research has been on springtails (Collembola), but he is also working on marine and intertidal systems, in particular on crustaceans. His study on adaptation to different climate conditions, has involved field work on polar areas (Svalbard, Greenland, the subantarctic Marion Island) and in temperate areas in Europe and South Africa.



He received his Ph.D. at UiO in 1982, worked for about 10 years at the Norwegian Institute for Nature Research (NINA), and became a professor at UiO in 1995. He has been the leader of a number of research projects funded by the Norwegian Research Council and UiO.

In the DWARF project he is responsible for WP 1, but will collaborate closely with WP 2 and 3 (Hessen and Svenning).

affiliation: Department of Bioscience, University of Oslo
e-mail: h.p.leinaas at ibv.uio.no

DWARF WP 7 – in 2014:

- PROJECT web-site: <http://www.iopan.gda.pl/projects/Dwarf/index.html>

The screenshot displays the DWARF project website. At the top left is the DWARF logo. To the right are the Polish flag and a Facebook icon labeled 'Wersja polska'. Below the logo is a navigation menu with links: HOME, PROJECT DESCRIPTION, PARTICIPANTS, CALENDAR, SPECIES GALLERY, DISSEMINATION, and BLOGS.

Participants

- Dr Maria Włodarska-Kowalczyk (IO PAN)**
- Prof. Hans Petter Leinaas (UiO)**
- Prof. Dag Olav Hessen (UiO)**
- Dr Martin-A. Svenning (NINA)**
- Dr Paul Renaud (APN NIVA)**
- Dr Sławomir Kwaśniewski (IO PAN)**
- Joanna Pawłowska (IO PAN)**
- Prof. Jan Marcin Węśławski (IO PAN)**
- Dr Katarzyna Błachowiak-Samołyk (IO PAN)**

Hans Petter Leinaas
Hans Petter Leinaas is a professor at the University of Oslo, Norway, where he works in the Department of Evolutionary Biology. He is an expert in ectotherm development, temperature-dependent evolution, and microevolution in response to climate change. Most of his research is focused on studying adaptation in polar areas and temperate zones.

He received his PhD from the Norwegian Institute of Technology in 1995. He has been a member of the Norwegian Academy of Sciences and Letters since 2008.

In the DWARF project, he is responsible for the **affiliation:** h.p.leinaas@iuh.uio.no

Participants

- Dr Maria Włodarska-Kowalczyk (IO PAN)**
- Prof. Hans Petter Leinaas (UiO)**
- Prof. Dag Olav Hessen (UiO)**
- Dr Martin-A. Svenning (NINA)**
- Dr Paul Renaud (APN NIVA)**
- Dr Sławomir Kwaśniewski (IO PAN)**
- Joanna Pawłowska (IO PAN)**
- Prof. Jan Marcin Węśławski (IO PAN)**
- Dr Katarzyna Błachowiak-Samołyk (IO PAN)**

Norwegian Institute of Nature Research (NINA) is Norway's leading institution for applied ecological research and a key research institute in Europe. NINA perform short and long-term research and commissioned applied research to facilitate the implementation of international conventions, decision-support systems, and management regulations. It also performs consultancies for industry and management authorities, and we work to enhance public awareness and to promote conflict resolution.

NINA has well equipped laboratories and research facilities at nine locations in Norway. The institute offers broad-based ecological expertise covering the genetic, population, species, ecosystem and landscape level, in terrestrial, freshwater, and coastal marine environments. NINA's activities are focused on environmental research emphasizing the interaction between human society, natural resources and biodiversity. The institute's research in the natural and social sciences, and its collaborative networks in Norway and abroad, enable it to provide management agencies, industry and civil society with top-notch information and advisory services on all aspects of natural resource management and the sustainable use of renewable resources.



NINA office in FRAM - High North Research Centre for Climate and the Environment building in Tromsø (wikipedia commons)



View of the Museum Polaria in Tromsø (wikipedia commons)

DWARF WP 7 – in 2014:

- PROJECT web-site: <http://www.iopan.gda.pl/projects/Dwarf/index.html>

Calendar – **input from all partners needed**

DATE	EVENT	DOWNLOADS	PHOTOS
21-24th October 2014	Arctic in Rapid Transition (ART) science workshop. ISTAS: Integrating spatial and temporal scales in the changing Arctic System: towards future research priorities, Brest, France. DWARF was represented by Mikołaj Mazurkiewicz and Barbara Górška	"DWARF - Declining size - a general response to climate warming in Arctic fauna? - A Polish - Norwegian Research Project." - presentation	
25th July-11th August 2014	Sampling campaign in west Spitsbergen fjords (part of the AREX 2014 cruise of r/v Oceania)	Sampling campaign blog	
15-19th June 2014	Sampling campaign in Ulsfjorden (part of the AREX 2014 cruise of r/v Oceania)	Sampling campaign blog	
12-13th June 2014	Larwood Symposium. Sopot, Poland. DWARF was represented by Ania Stępień and Piotr Kukliński	Symposium Programme photo gallery: GALLERY	

DWARF WP 7 – in 2014:

- Facebook page: <https://www.facebook.com/PROJECT.DWARF>

input from all partners needed

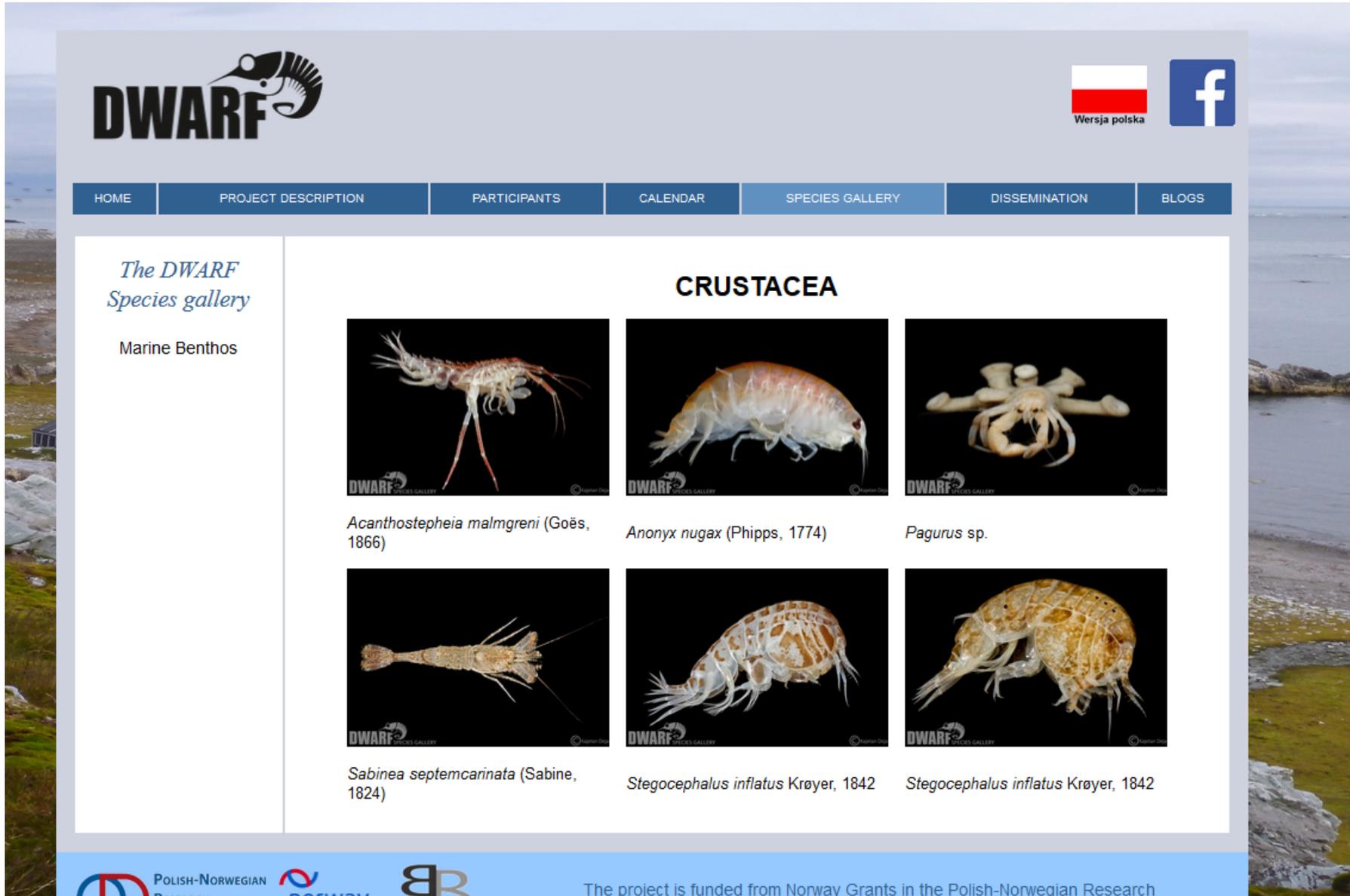
The image shows a screenshot of the DWARF Polish - Norwegian Research Project Facebook page. The page header features the project title and navigation tabs: Strona, Wiadomości, Powiadomienia, Statystyki, and Posty. The main banner displays the title "Declining size - a general response to climate warming in Arctic fauna?" with logos for the Polish-Norwegian Research Programme and Norwegian grants. Below the banner is the DWARF logo and the text "DWARF Polish - Norwegian Research Project" and "Strona internetowa o nauce".

The page layout includes a "LUDZIE" section showing 160 likes, a "Zdjęcia / film" section with a grid of photos, and a "POSTY NA STRONĘ" section. A post from the project is visible, dated 15 March 2014, with the text: "A recent New Scientist report on invertebrates dwelling in the unique habitats and the survey lead by our colleague - Krzysztof Zawierucha (UAM): <http://www.newscientist.com/.../dn27161-icy-pools-are-oases-f...>".

On the right side, there is a gallery of images showing research activities. The top row shows three close-up photos of bryozoans. Below that, a post from the project dated 9 October 2014 states: "DWARF Polish - Norwegian Research Project dodał(a) 5 nowych zdjęć — z użytkownikiem Ania Stępień. 9 października 2014". The text continues: "Two of our colleagues Gosia Nowak and Ania Stępień are now in Náttúrufræðistofnun Íslands (Icelandic Institute of Natural History). They are working very hard, investigating museum's enormous collections of Bryozoans. Soon we should also have some photos of animals." Below this text is a large photo of a laboratory table covered with numerous small containers and equipment. At the bottom right, there are more photos showing laboratory equipment and storage containers.

DWARF WP 7 – in 2014:

- Species gallery on project web-site:



The screenshot displays the DWARF Species Gallery website. At the top left is the DWARF logo, and at the top right are the Polish flag and a Facebook icon. A navigation bar contains links for HOME, PROJECT DESCRIPTION, PARTICIPANTS, CALENDAR, SPECIES GALLERY, DISSEMINATION, and BLOGS. The main content area is titled "The DWARF Species gallery" and "Marine Benthos". The central section is titled "CRUSTACEA" and features six images of crustaceans, each with a caption and a DWARF logo watermark. The specimens are: *Acanthostepheia malmgreni* (Goës, 1866), *Anonyx nugax* (Phipps, 1774), *Pagurus* sp., *Sabinea septemcarinata* (Sabine, 1824), *Stegocephalus inflatus* Krøyer, 1842, and another *Stegocephalus inflatus* Krøyer, 1842. The footer includes logos for the Polish-Norwegian Research Centre and the University of Bergen, along with the text "The project is funded from Norway Grants in the Polish-Norwegian Research".

DWARF

Wersja polska

HOME PROJECT DESCRIPTION PARTICIPANTS CALENDAR SPECIES GALLERY DISSEMINATION BLOGS

The DWARF Species gallery

Marine Benthos

CRUSTACEA

Acanthostepheia malmgreni (Goës, 1866)

Anonyx nugax (Phipps, 1774)

Pagurus sp.

Sabinea septemcarinata (Sabine, 1824)

Stegocephalus inflatus Krøyer, 1842

Stegocephalus inflatus Krøyer, 1842

POLISH-NORWEGIAN RESEARCH CENTRE

UNIVERSITY OF BERGEN

The project is funded from Norway Grants in the Polish-Norwegian Research

DWARF WP 7 – in 2014:

- Species gallery on project web-site:



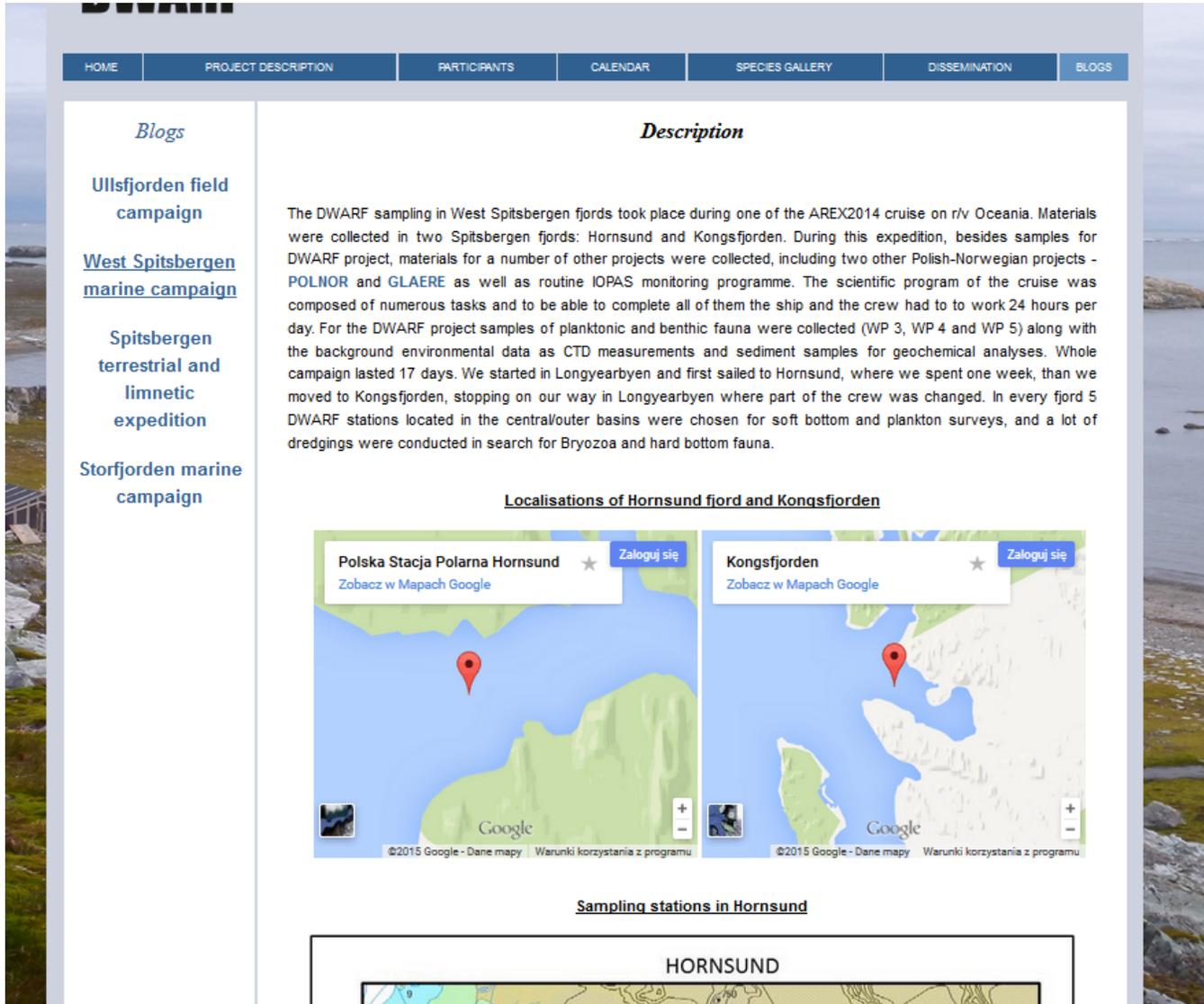
The screenshot displays the DWARF Species Gallery website. At the top left is the DWARF logo, which includes a stylized scud. To the right of the logo are the Polish and Norwegian flags and a Facebook icon. Below the logo is a navigation menu with the following items: HOME, PROJECT DESCRIPTION, PARTICIPANTS, and a partially visible 'GALLERY'. The main content area is titled 'The DWARF Species gallery' and 'Marine Benthos'. It features a grid of species images. Two species are visible in the grid:

- Acanthostepheia malmgreni* (Goës, 1866)
- Sabinea septemcarinata* (Sabine, 1824)

A large, detailed image of a scud is shown on the right side of the page, set against a black background. The scud is shown in profile, facing left, with its long antennae and legs clearly visible. At the bottom of the page, there is a footer with logos for the Polish-Norwegian Research Centre and the University of Wrocław, along with the text: 'The project is funded from Norway Grants in the Polish-Norwegian Research'. A copyright notice for '© Kajetan Deja' is also present in the bottom right corner.

DWARF WP 7 – in 2014:

- 4 Fieldwork blogs – at web page



The screenshot shows a website for the DWARF project. At the top, there is a navigation menu with the following items: HOME, PROJECT DESCRIPTION, PARTICIPANTS, CALENDAR, SPECIES GALLERY, DISSEMINATION, and BLOGS. On the left side, there is a sidebar titled "Blogs" containing four links: "Ullsfjorden field campaign", "West Spitsbergen marine campaign", "Spitsbergen terrestrial and limnetic expedition", and "Storfjorden marine campaign". The main content area is titled "Description" and contains a paragraph of text. Below the text, there is a section titled "Localisations of Hornsund fjord and Kongsfjorden" which includes two Google Maps. The first map shows "Polska Stacja Polarna Hornsund" with a red pin and a "Zaloguj się" button. The second map shows "Kongsfjorden" with a red pin and a "Zaloguj się" button. Below the maps, there is a section titled "Sampling stations in Hornsund" which includes a map of Hornsund.

Blogs

- Ullsfjorden field campaign
- [West Spitsbergen marine campaign](#)
- Spitsbergen terrestrial and limnetic expedition
- Storfjorden marine campaign

Description

The DWARF sampling in West Spitsbergen fjords took place during one of the AREX2014 cruise on r/v Oceania. Materials were collected in two Spitsbergen fjords: Hornsund and Kongsfjorden. During this expedition, besides samples for DWARF project, materials for a number of other projects were collected, including two other Polish-Norwegian projects - POLNOR and GLAERE as well as routine IOPAS monitoring programme. The scientific program of the cruise was composed of numerous tasks and to be able to complete all of them the ship and the crew had to work 24 hours per day. For the DWARF project samples of planktonic and benthic fauna were collected (WP 3, WP 4 and WP 5) along with the background environmental data as CTD measurements and sediment samples for geochemical analyses. Whole campaign lasted 17 days. We started in Longyearbyen and first sailed to Hornsund, where we spent one week, then we moved to Kongsfjorden, stopping on our way in Longyearbyen where part of the crew was changed. In every fjord 5 DWARF stations located in the central/outer basins were chosen for soft bottom and plankton surveys, and a lot of dredgings were conducted in search for Bryozoa and hard bottom fauna.

Localisations of Hornsund fjord and Kongsfjorden

Polska Stacja Polarna Hornsund [Zaloguj się](#)
[Zobacz w Mapach Google](#)

Kongsfjorden [Zaloguj się](#)
[Zobacz w Mapach Google](#)

Sampling stations in Hornsund

HORNSUND

DWARF WP 7 – in 2014:

- 4 Fieldwork blogs – at web page

HOME PROJECT DESCRIPTION

Blogs

Ullsfjorden field campaign

[West Spitsbergen marine campaign](#)

Spitsbergen terrestrial and limnetic expedition

Storfjorden marine campaign

The DWARF were collected DWARF project POLNOR are composed of day. For the the background campaign last moved to K DWARF station dredgings w

Pols
Zoba

HOME PROJECT DESCRIPTION PARTICIPANTS CALENDAR SPECIES GALLERY DISSEMINATION BLOGS

Blogs

Ullsfjorden field campaign

West Spitsbergen marine campaign

Spitsbergen terrestrial and limnetic expedition

[Storfjorden marine campaign](#)

Diary (13.08. - 25.08.2014)

DAY 1: Off to Hornsund

After a farewell of 'West Spitsbergen Campaign' crew we sailed off to Hornsund. There we collected sediment samples for molecular analyses of modern and ancient foraminifera at four stations located along the fjord's axis. The living foraminifera were chosen for DNA sequencing, to create a database of modern foraminifera DNA sequences from Svalbard. Moreover, we picked surface sediment samples for environmental DNA analysis.

DAY 2: Storfjorden, here we are!

After 12 hours of sailing we reached Storfjorden, a fjord on the East coast of Spitsbergen. We planned to take sediment samples for benthic fauna and geochemical analyses. Unfortunately, we were not fortunate with the weather. At the outer station (ST1) waves were too high to take samples. Luckily, inside the fjord weather conditions allowed us to take macrofauna Van Veen grab samples and box corer sediment samples for meiofauna, foraminifera, geochemical and molecular analyses. We also did some dredging to collect calcifying organisms for POLNOR project.



DAY 3: gravity corer

DWARF WP 7 – in 2014:

- 4 Fieldwork blogs – at web page

The image shows a screenshot of the DWARF website's 'Blogs' section. The page is divided into two columns. The left column contains a list of blog titles: 'Ullsfjorden field campaign', 'West Spitsbergen marine campaign', 'Spitsbergen terrestrial and limnetic expedition', and 'Storfjorden marine campaign'. The right column displays the content of a blog titled 'DAY 1: Off to Hornsund'. The text describes the departure for molecular analyses of foraminifera and the selection of sites in Svalbard. Below the text, there is a large photograph of a fjord with mountains in the background, captioned 'Bockfjord'. At the bottom of the page, there is a smaller photograph of a person on a boat, captioned 'Dinner preparations'. The website's navigation menu includes 'HOME', 'PROJECT DESCRIPTION', 'PARTICIPANTS', 'CALENDAR', 'SPECIES GALLERY', 'DISSEMINATION', and 'BLOGS'.

Blogs

- [Ullsfjorden field campaign](#)
- [West Spitsbergen marine campaign](#)
- [Spitsbergen terrestrial and limnetic expedition](#)
- [Storfjorden marine campaign](#)

The DWARF were collected from the DWARF project POLNOR and composed of day. For the the background campaign last moved to K. DWARF standard dredgings were

Blogs

- [Ullsfjorden field campaign](#)
- [West Spitsbergen marine campaign](#)
- [Spitsbergen terrestrial and limnetic expedition](#)
- [Storfjorden marine campaign](#)

DAY 1: Off to Hornsund

After a farewell of West Spitsbergen for molecular analyses of foraminifera were chosen in Svalbard. Moreover, we picked

DAY 2: Storfjorden, Bockfjord

After 12 hours of sailing we collected samples for benthic fauna at the outer station (ST1) waves were macrofauna Van Veen grab for molecular analyses. We also

DAY 3: gravity corer

Spitsbergen terrestrial and limnetic expedition

Bockfjord

Dinner preparations

DWARF WP 7 – in 2014:

- Project T-shirt



DWARF WP 7 – in 2014:

- Project presented at conferences:
 - Polish Polar Symposium
 - Larwood Symposium (Bryozoa)
 - Polish-Norwegian Program Conference (Warsaw)
 - Arctic in Rapid Transition Worskhop (France)



DWARF WP 7 – in 2014:

- Popular science lecture – available at web page:
 - J.M. Węsławski „The Big Animals in the Sea and on Land” (in Polish)



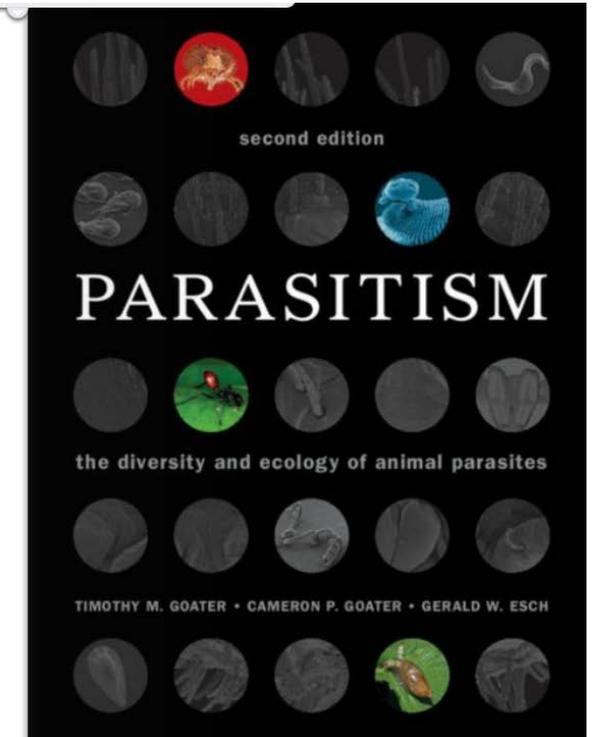
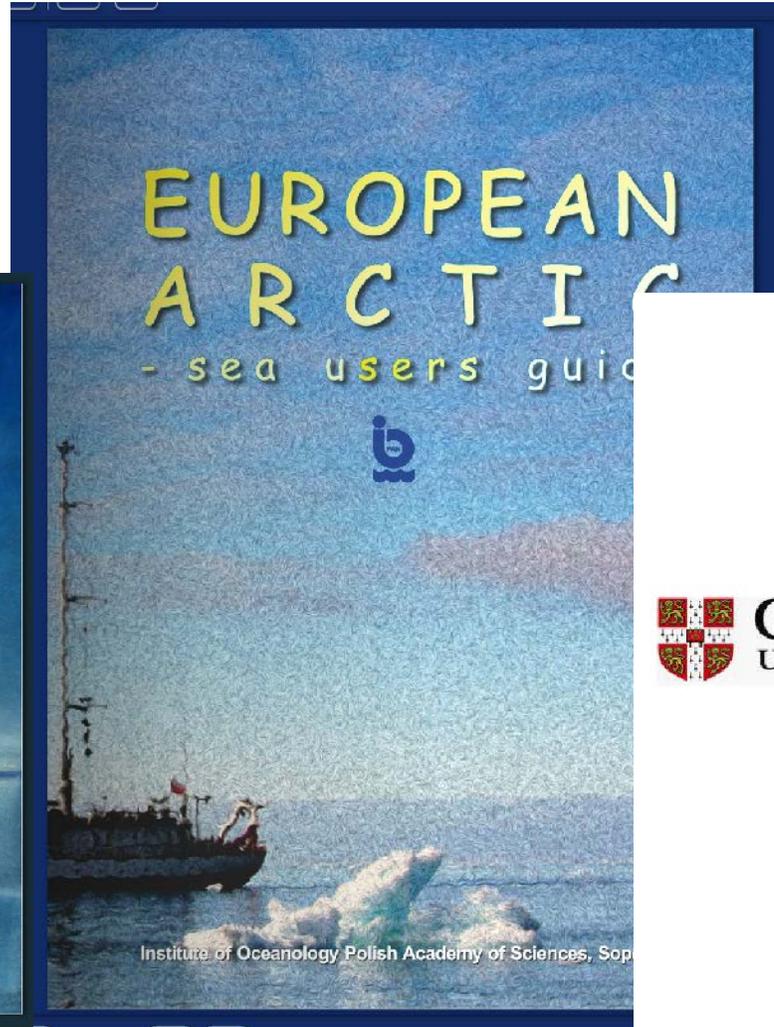
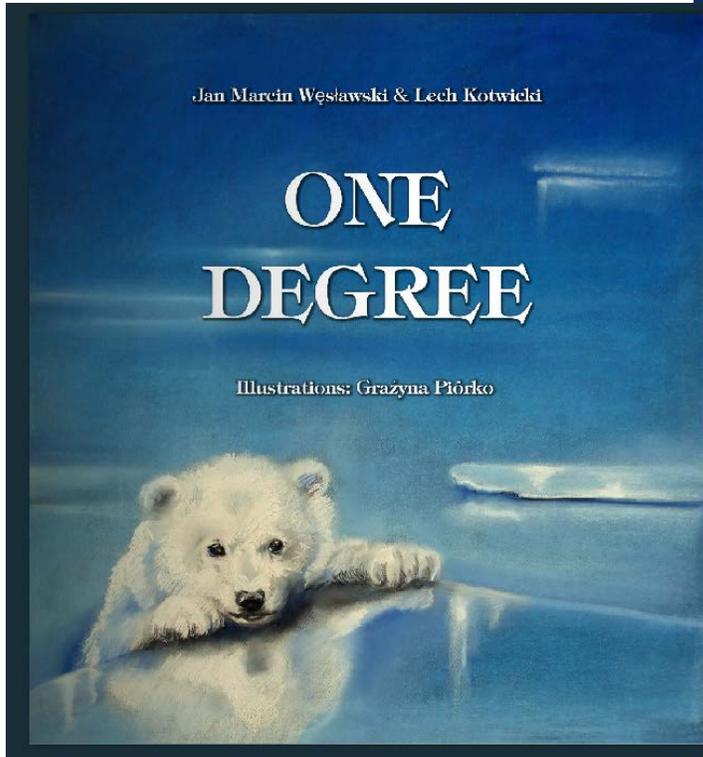
Duże zwierzęta w morzu i na lądzie

Jan Marcin Węsławski, IOPAN, Sopot



DWARF WP 7 – plans for 2015:

- Popular science book – Dag Hessen & Marcin Węśławski:
 - Concept and timetable
 - Start writing



DWARF WP 7 – plans for 2015:

- Public lectures
- ‚scientific picnics & festivals’



DWARF WP 7 – plans for 2015:

Education and art. – children involvement

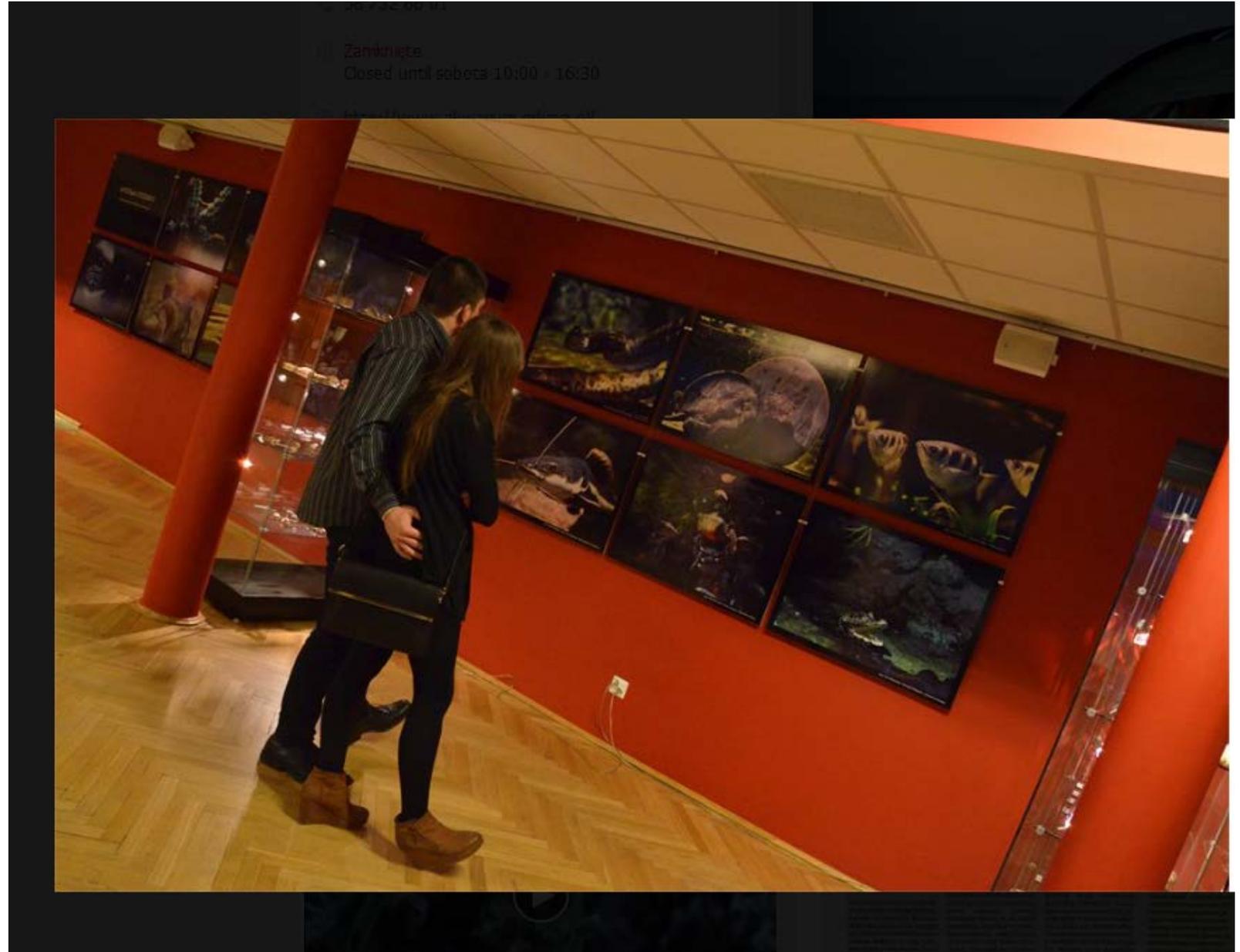


DWARF WP 7 – plans for 2015:

Exhibitions in museums

Gdynia Aquarium (450.000 visitors)

NFM Arctic projects exhibition
8- 30 Nov. 2015



DWARF WP 7 – Milestones :

M 7.1 Specification of the website M2 - **OK**

M 7.2 KickOff Meeting M2 - **OK**

M 7.3 Working meetings M19, M31

M 7.4 Specification (contents and authors) for the popular science book M 12 - **to be done soon**

M 7.5 DWARF synthesis manuscript prepared M 35

DWARF WP 7 – Deliverables:

D 7.1 Website launch M3 - **OK**

D 7.2 Detailed information and promotion plan M6 – **OK (ready after this meeting)**

D 7.3 Quality and evaluation plan M6 - **OK**

D 7.4 Progress report on dissemination M12, M24, M36 - **OK (M12, in the annual report 2014)**

D 7.5 KickOff and working meetings reports M2, M19, M31 - **OK (M2)**

D 7.6 Internal mid-term monitoring Progress report M18

D 7.7 Popular science book M 30

D 7.8 Set of lessons scenarios downloadable from the project web-site M30

D 7.9 DWARF synthesis manuscript submitted M36