

| <b>MEMBER COUNTRY: POLAND</b>                      |                            |  |                   |                   |                       |                    |
|--|----------------------------|--|-------------------|-------------------|-----------------------|--------------------|
| <b>National Report to SCAR for years 2015/2016</b> |                            |  |                   |                   |                       |                    |
| <b>Activity</b>                                    | <b>Contact Name</b>        | <b>Address</b>   | <b>Telephone</b>  | <b>Fax</b>        | <b>Email</b>          | <b>web site</b>    |
| <b>National SCAR Committee</b>                     |                            |  |                   |                   |                       |                    |
| <b>President</b>                                   | Jacek Jania                | University of Silesia,<br>Department of Karst<br>Geomorphology, 60 Będzińska<br>st. 41-200 Sosnowiec, Poland   | (48-32) 291-72-01 | (48-32) 291-58-65 | jjania@cto.us.edu.pl  | www.wnoz.us.edu.pl |
| <b>SCAR Delegates</b>                              |                            |  |                   |                   |                       |                    |
| <b>Delegate</b>                                    | Wojciech Majewski          | Institute of Paleobiology, Polish<br>Academy of Sciences, 51/55<br>Twarda st., 00-818 Warszawa,<br>Poland  | (48-22) 697-88-53 | (48-22) 620-62-25 | wmaj@twarda.pan.pl    | www.paleo.pan.pl   |
| <b>Alternate Delegate</b>                          | Robert Bialik              | Institute of Biochemistry and<br>Biophysics, Polish Academy of<br>Sciences, Department of<br>Antarctic Biology, Pawinskiego<br>5a, 02-106 Warszawa, Poland | (48 22) 659 57 93 | (48 22) 592 21 90 | rbialik@ibb.waw.pl    | www.ibb.waw.pl     |
| <b>Standing Scientific Groups</b>                  |                            |  |                   |                   |                       |                    |
| <b>Life Sciences</b>                               |                            |  |                   |                   |                       |                    |
|  | Katarzyna<br>Chwedorzewska | Institute of Biochemistry and<br>Biophysics, Polish Academy of<br>Sciences, Department of<br>Antarctic Biology, Pawinskiego<br>5a, 02-106 Warszawa, Poland | (48 22) 659 57 95 | (48 22) 592 21 90 | kchwedorzewska@go2.pl | www.arctowski.pl   |
|  | Piotr Kukliński            | Institute of Oceanology, Polish<br>Academy of Sciences, 55<br>Powstańców Warszawy st., 81-<br>967 Sopot, Poland  | (48-58) 731-17-76 | (48-58) 551-21-30 | kuki@iopan.gda.pl     | www.iopan.gda.pl   |

|                          |                    |  |                              |                   |                           |                                   |
|--------------------------|--------------------|--|------------------------------|-------------------|---------------------------|-----------------------------------|
|                          | Maria Olech        | Jagiellonian University,<br>Department of Polar Studies<br>and Documentation, Institute of<br>Botany, 27 Kopernika st., 31-<br>501 Kraków, Poland          | (48-12) 421-02-77<br>ext. 26 | (48-12) 423-09-49 | olech@ib.uj.edu.pl        |                                   |
|                          | Jacek Siciński     | University of Łódź, Department<br>of Invertebrate Zoology &<br>Hydrobiology, 12/16 Banacha<br>st., 90-237 Łódź, Poland                                     | (48-42) 635-42-92            | (48-42) 635-44-40 | sicinski@biol.uni.lodz.pl | www.invertebrates.uni.lodz.pl/en/ |
| <b>Geosciences</b>       |                    |  |                              |                   |                           |                                   |
|                          | Aleksander Guterch | Institute of Geophysics, Polish<br>Academy of Sciences, 64<br>Księcia Janusza st., 01-452<br>Warszawa, Poland  | (48-22) 691-56-53            | (48-22) 691-59-15 | aguterch@igf.edu.pl       | www.igf.edu.pl                    |
|                          | Wojciech Majewski  | Institute of Paleobiology, Polish<br>Academy of Sciences, 51/55<br>Twarda st., 00-818 Warszawa,<br>Poland  | (48-22) 697-88-53            | (48-22) 620-62-25 | wmaj@twarda.pan.pl        | www.paleo.pan.pl                  |
| <b>Physical Sciences</b> |                    |  |                              |                   |                           |                                   |
|                          | Robert Bialik      | Institute of Biochemistry and<br>Biophysics, Polish Academy of<br>Sciences, Department of<br>Antarctic Biology, Pawinskiego<br>5a, 02-106 Warszawa, Poland | (48 22) 659 57 93            | (48 22) 592 21 90 | rbialik@ibb.waw.pl        | www.ibb.waw.pl                    |

| Activity                           | Contact Name         | Address  | Telephone         | Fax               | Email                     | web site                          |
|------------------------------------|----------------------|--|-------------------|-------------------|---------------------------|-----------------------------------|
| <b>Scientific Research Program</b> |                      |  |                   |                   |                           |                                   |
| <b>PAIS</b>                        |                      |  |                   |                   |                           |                                   |
|                                    | Andrzej Gaździcki    | Institute of Paleobiology, Polish Academy of Sciences, 51/55 Twarda st., 00-818 Warszawa, Poland   | (48-22) 697-87-96 | (48-22) 620-62-25 | gazdzick@twarda.pan.pl    | www.paleo.pan.pl                  |
|                                    | Andrzej Tatur        | Warsaw University, Faculty of Geology, Department for Protection of Environment and Natural Resources, Żwirki i Wigury 93, 02-089 Warszawa, Poland | (48) 660-92-85-01 |                   | tatura@interia.pl         |                                   |
|                                    | Krzysztof Krajewski  | Institute of Geological Sciences, Polish Academy of Sciences, 51/55 Twarda st. 00-818 Warszawa, Poland   | (48-22) 697-87-26 | (48-22) 620-62-23 | kpkraj@twarda.pan.pl      | www.ing.pan.pl                    |
|                                    | Wojciech Majewski    | Institute of Paleobiology, Polish Academy of Sciences, 51/55 Twarda st., 00-818 Warszawa, Poland   | (48-22) 697-88-53 | (48-22) 620-62-25 | wmaj@twarda.pan.pl        | www.paleo.pan.pl                  |
| <b>AnT-ERA</b>                     |                      |  |                   |                   |                           |                                   |
|                                    | Jacek Siciński       | University of Łódź, Department of Invertebrate Zoology & Hydrobiology, 12/16 Banacha st., 90-237 Łódź, Poland                                      | (48-42) 635-42-92 | (48-42) 635-44-40 | sicinski@biol.uni.lodz.pl | www.invertebrates.uni.lodz.pl/en/ |
|                                    | Krzysztof Jażdżewski | University of Łódź, Department of Invertebrate Zoology & Hydrobiology, 12/16 Banacha st., 90-237 Łódź, Poland                                      | (48-42) 635-44-45 | (48-42) 635-44-40 | kryjaz@biol.uni.lodz.pl   | www.invertebrates.uni.lodz.pl/en/ |
|                                    | Krzysztof Pabis      | University of Łódź, Department of Invertebrate Zoology & Hydrobiology, 12/16 Banacha st., 90-237 Łódź, Poland                                      | (48-42) 635-42-93 | (48-42) 635-44-40 | cataclysta@wp.pl          | www.invertebrates.uni.lodz.pl/en/ |

|                            |  |                   |                   |                           |                                   |
|----------------------------|--|-------------------|-------------------|---------------------------|-----------------------------------|
| Magda Błażewicz-Paszkowycz | University of Łódź, Department of Invertebrate Zoology & Hydrobiology, 12/16 Banacha st., 90-237 Łódź, Poland                                  | (48-42) 635-42-97 | (48-42) 635-44-40 | magdab@biol.uni.lodz.pl   | www.invertebrates.uni.lodz.pl/en/ |
| Anna Jażdżewska            | University of Łódź, Department of Invertebrate Zoology & Hydrobiology, 12/16 Banacha st., 90-237 Łódź, Poland                                  | (48-42) 635-44-42 | (48-42) 635-44-40 | ajazdz@biol.uni.lodz.pl   | www.invertebrates.uni.lodz.pl/en/ |
| Katarzyna Chwedorzewska    | Institute of Biochemistry and Biophysics, Polish Academy of Sciences, Department of Antarctic Biology, Pawinskiego 5a, 02-106 Warszawa, Poland | (48 22) 659 57 95 | (48 22) 592 21 90 | kchwedorzewska@go2.pl     | www.arctowski.pl                  |
| Małgorzata Korczak-Abshire | Institute of Biochemistry and Biophysics, Polish Academy of Sciences, Department of Antarctic Biology, Pawinskiego 5a, 02-106 Warszawa, Poland | (48 22) 659 57 94 | (48 22) 592 21 90 | korczakm@gmail.com        | www.arctowski.pl                  |
| <b>AntEco</b>              |  |                   |                   |                           |                                   |
| Jacek Siciński             | University of Łódź, Department of Invertebrate Zoology & Hydrobiology, 12/16 Banacha st., 90-237 Łódź, Poland                                  | (48-42) 635-42-92 | (48-42) 635-44-40 | sicinski@biol.uni.lodz.pl | www.invertebrates.uni.lodz.pl/en/ |
| Krzysztof Jażdżewski       | University of Łódź, Department of Invertebrate Zoology & Hydrobiology, 12/16 Banacha st., 90-237 Łódź, Poland                                  | (48-42) 635-44-45 | (48-42) 635-44-40 | kryjaz@biol.uni.lodz.pl   | www.invertebrates.uni.lodz.pl/en/ |
| Krzysztof Pabis            | University of Łódź, Department of Invertebrate Zoology & Hydrobiology, 12/16 Banacha st., 90-237 Łódź, Poland                                  | (48-42) 635-42-93 | (48-42) 635-44-40 | cataclysta@wp.pl          | www.invertebrates.uni.lodz.pl/en/ |

|   |                            |  |                   |                   |                         |                                   |
|---|----------------------------|--|-------------------|-------------------|-------------------------|-----------------------------------|
|   | Magda Błażewicz-Paszkwyc   | University of Łódź, Department of Invertebrate Zoology & Hydrobiology, 12/16 Banacha st., 90-237 Łódź, Poland                                  | (48-42) 635-42-97 | (48-42) 635-44-40 | magdab@biol.uni.lodz.pl | www.invertebrates.uni.lodz.pl/en/ |
|   | Anna Jazdzewska            | University of Łódź, Department of Invertebrate Zoology & Hydrobiology, 12/16 Banacha st., 90-237 Łódź, Poland                                  | (48-42) 635-44-42 | (48-42) 635-44-40 | ajazdz@biol.uni.lodz.pl | www.invertebrates.uni.lodz.pl/en/ |
|   | Katarzyna Chwedorzewska    | Institute of Biochemistry and Biophysics, Polish Academy of Sciences, Department of Antarctic Biology, Pawinskiego 5a, 02-106 Warszawa, Poland | (48 22) 659 57 95 | (48 22) 592 21 90 | kchwedorzewska@go2.pl   | www.arctowski.pl                  |
|   | Małgorzata Korczak-Abshire | Institute of Biochemistry and Biophysics, Polish Academy of Sciences, Department of Antarctic Biology, Pawinskiego 5a, 02-106 Warszawa, Poland | (48 22) 659 57 94 | (48 22) 592 21 90 | korczakm@gmail.com      | www.arctowski.pl                  |
|   | Wojciech Majewski          | Institute of Paleobiology, Polish Academy of Sciences, 51/55 Twarda st., 00-818 Warszawa, Poland   | (48-22) 697-88-53 | (48-22) 620-62-25 | wmaj@twarda.pan.pl      | www.paleo.pan.pl                  |
| <b>EXPERT GROUPS</b>                    |                            |  |                   |                   |                         |                                   |
| Geological heritage and Geoconservation | Robert Bialik              | Institute of Biochemistry and Biophysics, Polish Academy of Sciences, Department of Antarctic Biology, Pawinskiego 5a, 02-106 Warszawa, Poland | (48 22) 659 57 93 | (48 22) 592 21 90 | rbialik@ibb.waw.pl      | www.ibb.waw.pl                    |

| <b>SCADM</b>                          |  |  |                           |                   |                           |  |
|---------------------------------------|--|--|---------------------------|-------------------|---------------------------|--|
|                                       | Katarzyna Chwedorzewska  | Institute of Biochemistry and Biophysics, Polish Academy of Sciences, Department of Antarctic Biology, Pawinskiego 5a, 02-106 Warszawa, Poland | (48 22) 659 57 95         | (48 22) 592 21 90 | kchwedorzewska@go2.pl     | www.arctowski.pl                                       |
| <b>NATIONAL ANTARCTIC DATA CENTRE</b> |  |  |                           |                   |                           |  |
|                                       | Institute of Biochemistry and Biophysics, Polish Academy of Sciences, Department of Antarctic Biology, Pawinskiego 5a, 02-106 Warszawa, Poland |  | (48-22) 846 33 83         | (48-42) 846-19-12 | zba@arctowski.pl          | <a href="http://www.arctowski.pl">www.arctowski.pl</a> |
|                                       | Department of Polar Studies and Documentation, Institute of Botany, Jagiellonian University, 27 Kopernika st., 31-501 Kraków, Poland           |  | (48-12) 421-02-77 ext. 26 | (48-12) 423-09-49 | olech@ib.uj.edu.pl        |  |
| <b>SCAR-MarBIN (RAMS editors)</b>     |  |  |                           |                   |                           |  |
|                                       | Jacek Siciński   | University of Łódź, Department of Invertebrate Zoology & Hydrobiology, 12/16 Banacha st., 90-237 Łódź, Poland                                  | (48-42) 635-42-92         | (48-42) 635-44-40 | sicinski@biol.uni.lodz.pl | www.invertebrates.uni.lodz.pl/en/                      |
|                                       | Ryszard Ligowski   | University of Łódź, Department of Invertebrate Zoology & Hydrobiology, 12/16 Banacha st., 90-237 Łódź, Poland                                  | (48-42) 635-44-43         | (48-42) 635-44-40 | ligowski@biol.uni.lodz.pl | www.invertebrates.uni.lodz.pl/en/                      |
|                                       | Magda Błażewicz-Paszkowycz   | University of Łódź, Department of Invertebrate Zoology & Hydrobiology, 12/16 Banacha st., 90-237 Łódź, Poland                                  | (48-42) 635-42-97         | (48-42) 635-44-40 | magdab@biol.uni.lodz.pl   | www.invertebrates.uni.lodz.pl/en/                      |
|                                       | Kasia Błachowiak-Samołyk   | Institute of Oceanology, Polish Academy of Sciences, 55 Powstańców Warszawy st., 81-967 Sopot, Poland  | (48-58) 731-17-77         | (48-58) 551-21-30 | kasiab@iopan.gda.pl       | www.iopan.gda.pl                                       |
|                                       | Piotr Kukliński  | Institute of Oceanology, Polish Academy of Sciences, 55 Powstańców Warszawy st., 81-967 Sopot, Poland  | (48-58) 731-17-76         | (48-58) 551-21-30 | kuki@iopan.gda.pl         | www.iopan.gda.pl                                       |

|                        |   |                   |                   |                        |                 |
|------------------------|---|-------------------|-------------------|------------------------|-----------------|
| Anna Rocka             | Institute of Parasitology, Polish Academy of Sciences, 51 Twarda st., 00-818 Warszawa, Poland | (48-22) 751-17-14 | (48-22) 620-62-27 | abroczy@poczta.onet.pl | www.ipar.pan.pl |
| Krzysztof Zdzitowiecki | Institute of Parasitology, Polish Academy of Sciences, 51 Twarda st., 00-818 Warszawa, Poland | (48-22) 697-89-81 | (48-22) 620-62-27 | kzdzit@twarda.pan.pl   | www.ipar.pan.pl |

## A BRIEF SUMMARY OF SCIENTIFIC HIGHLIGHTS:

### Life Sciences

#### Ecology of Antarctic and sub-Antarctic terrestrial habitats

Chwedorzewska K.J., Giełwanowska I., Olech M., Wódkiewicz M., Molina-Montenegro M.A., Galera H. 2015. *Poa annua* L. in the maritime-Antarctic - an overview. *Polar Record* 51(6): 637-643. Ciesielski S., Górniak D., Możejko J., Świętecki A., Grzesiak J., Zdanowski M. 2014. The diversity of bacteria isolated from Antarctic freshwater reservoirs possessing the ability to produce polyhydroxyalkanoates. *Current Microbiology* 69: 594-603. Giełwanowska I., Pastorczyk M., Lisowska M., Węgrzyn M., Gorecki R.J. 2014. Cold stress effects on organelle ultrastructure in polar Caryophyllaceae species. *Polish Polar Research* 35: 627-646. Molina-Montenegro M.A., Carrasco-Urra F., Acuña-Rodríguez I., Osés R., Chwedorzewska K.J. 2014. Assessing the importance of human activities for the establishment of the invasive *Poa annua* in the Antarctica. *Polar Research* 33: 21425. Pastorczyk M., Giełwanowska I., Lahuta L.B. 2014. Changes in soluble carbohydrates in polar Caryophyllaceae and Poaceae plants in response to chilling. *Acta Physiologiae Plantarum* 36: 1771-1780. Wolicka D., Zdanowski M.K., Żmuda-Baranowska M.J., Poszytek A., Grzesiak J. 2014. Sulphate reducing activity detected in soil samples from Antarctica, Ecology Glacier forefield, King George Island. *Polish Journal of Microbiology* 63: 443-450. Wódkiewicz M., Ziemiański M., Kwiecień K., Chwedorzewska K.J., Galera H. 2014. Spatial structure of the soil seed bank of *Poa annua* L. - alien species in the Antarctica. *Biodiversity and Conservation* 23: 1339-1346. Androsiuk P., Chwedorzewska K.J., Szandar K., Giełwanowska I. 2015. Genetic variation of the *Colobanthus quitensis* from King George Island (Antarctica). *Polish Polar Research* 36(3): 281-295. Czerwik-Marcinkowska J., Massalski A., Olech M., Wojciechowska A. 2015. Morphology, ultrastructure and ecology of *Muriella decolor* (Chlorophyta) from subaerial habitats in Poland and the Antarctic. *Polish Polar Research* 36: 163-174. Galera H., Chwedorzewska K.J., Wódkiewicz M. 2015. Response of *Poa annua* to extreme conditions? Comparison of morphological traits between populations from cold and temperate climate conditions. *Polar Biology* 38(10): 1657-1666. Giełwanowska I., Pastorczyk M., Kellmann-Sopyła W., Górniak D., Górecki R.J. 2015. Morphological and Ultrastructural Changes of Organelles in Leaf Mesophyll Cells of the Arctic and Antarctic Plants of Poaceae Family Under Cold Influence. *Arctic, Antarctic, and Alpine Research* 47: 17-25. Giełwanowska I., Kellmann-Sopyła W. 2015. Generative reproduction of Antarctic grasses, the native species *Deschampsia antarctica* Desv. and the alien species *Poa annua* L. *Polish Polar Research* 36(3): 261-279. Gryz P., Korczak-Abshire M., Gerlée A. 2015. First record of the Austral Negrigo (Aves: Passeriformes) from the South Shetlands, Antarctica. *Polish Polar Research* 36(3): 297-304. Grzesiak J., Zdanowski M.K., Górniak D., Świętecki A., Aleksandrak-Piekarczyk T., Szatraj K., Sasin-Kurowska J., Nieckarz M. 2015. Microbial community changes along the Ecology Glacier ablation zone (King George Island, Antarctica). *Polar Biology* 38(12): 2069-2083. Kellmann-Sopyła W., Lahuta L.B., Giełwanowska I., Górecki R.J. 2015. Soluble carbohydrates in developing and mature diaspores of polar Caryophyllaceae and Poaceae. *Acta Physiologiae Plantarum* 37: 118. Kellmann-Sopyła W., Giełwanowska I. 2015. Germination capacity of five polar Caryophyllaceae and Poaceae species under different temperature conditions. *Polar Biology* 38(10): 1753-1765. Prus W., Fabiańska M.J., Łabno R. 2015. Geochemical markers of soil anthropogenic contaminants in polar scientific stations nearby (Antarctica, King George Island). *Science of the Total Environment* 518-519: 266-279. Zmarz A., Korczak-Abshire, M., Storbvold R., Rodzewicz M., and Kędzińska I. 2015. Indicator species population monitoring in Antarctica with UAV. *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*. XL-1/W4: 189-193. Domaciuk M., Leszczuk A., Szczuka E., Kellmann-Sopyła W., Koc J., Giełwanowska I. 2016. Female sporogenesis in the native Antarctic grass *Deschampsia antarctica* Desv. *Polish Polar Research* 37: 289-302.



### **Studies on the diversity and functioning of the Antarctic marine ecosystem**

Kim J.H., Jążdżewska A., Choi H.G., Kim W. 2014. The first report on Amphipoda from Marian Cove, King George Island, Antarctic. *Oceanological and Hydrobiological Studies* 43(1): 106-113. Kuklinski P., Balazy P. 2014. Scale of temperature variability in the maritime Antarctic intertidal zone. *Journal of Sea Research* 85: 542-546. Loxton J., Kuklinski, P., Barnes, D.K.A., Najorka, J., Spencer Jones, M., Porter, J.S. 2014. Variability of Mg-calcite in Antarctic bryozoan skeletons across spatial scales. *Marine Ecology Progress Series* 507: 169-180. Laskowski Z., Jeżewski W., Zdzitowiecki K. 2014. Changes in digenean infection of the Antarctic fish *Notothenia coriiceps* in Admiralty Bay, King George Island, over three decades. *Polish Polar Research* 35: 513-520. Nędzarek A., Tórz A., Rakusa-Suszczewski S., Bonisławska M. 2014. Nitrogen and phosphorus release during fish decomposition and implications for the ecosystem of maritime Antarctica. *Polar Biology* 38(5): 733-740. Pabis K., Hara U., Presler P., Siciński J. 2014. Structure of bryozoan communities in an Antarctic glacial fjord (Admiralty Bay, South Shetlands). *Polar Biology* 37: 737-751. Schloss I.S.R., Wasilowska A., Dumont D., Almandoz G.O., Hernando, M.P. Michaud-Tremblay C.A., Saravia L., Rzepecki M., Monien P., Monien D., Kopczyńska E.E., Bers V., Ferreyra G.A. 2014. On the phytoplankton bloom in coastal waters of southern King George Island (Antarctica) in January 2010: An exceptional feature? *Limnology and Oceanography* 59: 195-210. Figuerola B., Kuklinski P., Taylor P.D. 2015. Depth patterns in Antarctic bryozoan skeletal Mg-calcite: Can they provide an analogue for future environmental changes? *Marine Ecology Progress Series* 540: 109-120. Majewska R., Kuklinski P., Balazy P., Yokoya N.S., Paternostro Martins A., De Stefano M. 2015. A comparison of epiphytic diatom communities on *Plocamium cartilagineum* (Plocamiales, Florideophyceae) from two Antarctic areas. *Polar Biology* 38: 189-205. Majewski W., Bowser S.S., Pawłowski J. 2015. Widespread intra specific homogeneity of coastal Antarctic benthic foraminifera. *Polar Biology* 38: 2047-2058. Pabis K., Błażewicz-Paszkowycz M., Józwiak P., Barnes DKA. 2015. Tanaidacea of the Amundsen and Scotia Seas: an unexplored diversity. *Antarctic Science* 27: 19-30. Pabis K., Kędra M., Gromisz S. 2015. Distinct or similar? Soft bottom polychaete diversity in Arctic and Antarctic glacial fjords. *Hydrobiologia* 724: 279-294. Pabis K., Józwiak P., Lorz A.N., Schnabel K., Błażewicz-Paszkowycz M. 2015. First insights into the deep-sea tanaidacean fauna of the Ross Sea – species richness and composition across the shelf break, slope and abyss. *Polar Biology* 38: 1429-1437. Pabis K., Sobczyk R. 2015. Small-scale spatial variation of soft-bottom polychaete biomass in an Antarctic glacial fjord (Ezcurra Inlet, South Shetlands): comparison of sites at different levels of disturbance. *Helgoland Marine Research* 69: 113-121. Wasilowska A., Kopczyńska E.E., Rzepecki M. 2015. Temporal and spatial variation of phytoplankton in Admiralty Bay, South Shetlands: the dynamics of summer blooms shown by pigment and light microscopy analysis. *Polar Biology* 38: 1249-1265. Zemko K., Pabis K., Siciński J., Błażewicz-Paszkowycz M. 2015. Diversity and abundance of isopod fauna associated with holdfasts of the brown alga *Himantothallus grandifolius* in Admiralty Bay, Antarctic. *Polish Polar Research* 36: 405-416. Bielecka L., Jerzak B., Złoch I. 2016. Species composition, seasonal abundance and population structure of chaetognaths in Admiralty Bay (Antarctic). *Polish Polar Research* 37: 303-324. Krzeminska M., Kuklinski P., Najorka J., Iglowska A. 2016. Skeletal Mineralogy Patterns of Antarctic Bryozoa. *Journal of Geology* 124(3): 411-422.

### **International projects**

*A novel approach to monitoring the impact of climate change on Antarctic ecosystems (MONICA)* (project No 197810 in the Research Programme of the EEA/Norway Grants Framework). Participants: IBB PAS, Northern Research Institute Tromsø, Warsaw University of Technology. Project leader: K. Chwedorzewska (IBB PAS). Fixed-wing Unmanned Aerial Vehicles are used to collect geospatial environmental data such as abundance and distribution of penguin colonies, or mapping vegetation communities and colonization processes on the moraines left by retreating glaciers.

## **Geosciences**

### **Seismic investigations of the crustal structure of the South Shetland Islands, West Antarctica**

Janik T., Grad M., Guterch A., Środa P. 2014. The deep seismic structure of the Earth's crust along the Antarctic Peninsula - A summary of the results from Polish geodynamical expeditions, *Global and Planetary Change* 123: 213-222. Okoń J., Gizejewski J., Janik T. 2016. New geological interpretation of multi-channel seismic profiles from the Pacific Margin of the Antarctic Peninsula. *Polish Polar Research* 37: 243–268.

### **Cenozoic glaciations and biota evolution: evidence from West Antarctica**

Mozer A., Pecskey Z., Krajewski K.P. 2015. Eocene age of the Baranowski Glacier Group at Red Hill, King George Island, West Antarctica. *Polish Polar Research* 36(4): 307-324. Adamonis S., Hara U., Concheyro A. 2015. Late Cenozoic Bryozoa from diamictites of Cape Lamb, Vega Island, Antarctic Peninsula. *Polish Polar Research* 36(4): 325-341. Hara U. 2015. Bryozoan internal moulds from the La Meseta Formation (Eocene) of Seymour Island, Antarctic Peninsula. *Polish Polar Research* 36(1): 25-49. Hryniewicz K., Gaździcki A. 2016. A new sediment-dwelling pholadid bivalve from the Oligocene of King George Island, West Antarctica. *Acta Palaeontologica Polonica* 61(4).

### **Applied micropaleontology**

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### **Antarctic fossil penguins: evolutionary trends**

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