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A BRIEF SUMMARY OF SCIENTIFIC HIGHLIGHTS:						
<i>See the following pages</i>						

Polar terrestrial ecosystems: ecology, diversity, and biogeography.
Special issue of *Acta Societatis Botanicorum Poloniae*

In 2017, Polish polar research celebrated the 60th anniversary of the Polish Polar Station in Hornsund, Svalbard and the 40th anniversary of the *Arctowski* Polish Antarctic Station in the King George Island. As meaningful landmarks in Polish Arctic and Antarctic studies, these anniversaries inspired a special issue of *Acta Societatis Botanicorum Poloniae*, the oldest Polish botanical journal, guest-edited by Bronisław Wojtuń and Michał Ronikier and published in 2018 (vol. 87 no. 4). The issue contains 14 articles, which provide a fair overview of botanical research carried out in the polar regions, aiming at better describing and understanding the biodiversity, ecology, and biogeography of these exceptional and fragile environments.

Six articles in the issue address diverse aspects related to the Antarctic biome. Three papers contribute to the basic knowledge of biodiversity and phytogeography of the southern polar region. Wierzgoń *et al.* report on two newly discovered rare moss species in the South Shetland Islands archipelago, one of the biologically richest regions of the Antarctic. Their findings are discussed in relation to rapid deglaciation processes and the possible population history. Bednarek-Ochyra *et al.* report a new moss genus recorded in the Subantarctic and discuss biogeographical implications of this finding invoking the moss's possible ancient origin dating back to Gondwana. The authors also provide a historical overview and an up-to-date account of moss diversity in the Subantarctic region. In turn, Alstrup *et al.* present an overview of diversity and taxonomy of a peculiar group of lichenicolous fungi in the South Shetland Islands, including several new taxa and a comprehensive identification guide. Ronikier *et al.*, by applying DNA sequence analysis, provide evidence for distinctness of *Didymodon gelidus*, an endemic moss of the austral polar region. This case study shows the utility of molecular tools in solving taxonomic problems in the polar regions, well illustrated by several Antarctic moss species, whose only gametophytic phase is known, limiting the availability of taxonomically relevant characters.

Two papers in the issue represent studies on Antarctic ecology. Koc *et al.* compared the effects of methanesulfonic acid, derived from marine ecosystems, on seed germination and morphophysiological changes in the seedlings of two *Colobanthus* species. Finally, Rudak *et al.* address the problem of non-native flora. As part of multifaceted studies of *Poa annua*, an alien vascular plant in the Antarctic, they examine the germination and seedling establishment of this species in the context of its invasion success in Antarctica.

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Galera H., Chwedorzewska K.J., Korczak-Abshire M., Wódkiewicz M. 2018. What affects the probability of biological invasions in Antarctica? Using an expanded conceptual framework to anticipate the risk of alien species expansion. *Biodiversity and Conservation* 27: 1789–1809.

The article is a theoretical work on the ecology of biological invasions in the Antarctic. Its novelty is the application of an existing unified conceptual framework, describing *post factum* the invasion history of *Opuntia stricta* var. *dillenii* in Kruger National Park, South Africa, to predict invasion by any species in the Antarctic and assess the probability of biological invasions in the future.

Mechanisms influencing the likelihood of invasion were analysed in Point Thomas Oasis on King George Island, West Antarctica. Of the three groups of factors distinguished in this framework, we focused on habitat invasibility and system context. Strong spatial isolation of the Point Thomas Oasis and human activities around the *Arctowski* Polish Antarctic Station, located in the oasis, enabled an assessment of key driving factors for a successful invasion. The resulting predictions provide that breaching of geographical and ecological barriers due to increased human penetration favors alien species invasions. Severe environmental conditions hamper the invasion success of many arrived propagules and the anticipated climate change may highly alter resistance of local community to invasions. An effective way of preventing invasions in Antarctica seems to lie in reducing propagule pressure and eliminating alien populations as early as possible.

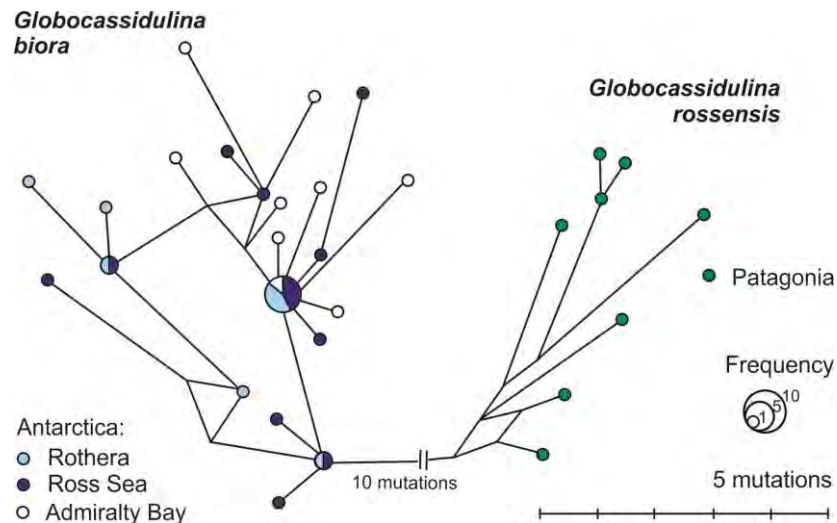
The unified conceptual framework has a great potential as a universal tool for assessing the probability of invasions. The analysis of such a specific system, i.e. terrestrial ecosystems in the maritime Antarctic, gave the opportunity to explore the relationship between the factors that make up the external context and the specific features of Antarctic habitats that are crucial for the region's vulnerability to invasion. The framework opens up wider possibilities in analyzing invasions taking place in different systems and with multiple taxa.



Tourists visiting *Arctowski* Station in the austral summer. Photo by M. Wódkiewicz.

Majda A., Majewski W., Mamos T., Grabowski M., Godoi M.A., Pawłowski J. 2018. Variable dispersal histories across the Drake Passage: The case of coastal benthic Foraminifera. *Marine Micropaleontology* 140: 81–94.

For the first time, SSU rDNA sequences of benthic foraminifera were analyzed across the Drake Passage. The molecular population structures of eight taxa with the same or similar morphotypes in shallow waters of West Antarctica and southern Patagonia suggest presence of several molecular operational taxonomic units (MOTUs) indicating cryptic species. Recent gene flow across the Drake Passage is likely in two species/MOTU but not in the remaining majority of taxa.



Haplotype networks constructed using SSU sequences of benthic foraminiferal genus *Globocassidulina*. Note very different topologies in Antarctic and Patagonian species reflecting different histories during Pleistocene glaciations.

The molecular population structures of different taxa, shown by haplotype networks, is highly variable, indicating different dispersal histories. Antarctic species/MOTUs show star-like topologies reflecting bottle neck and post-glacial demographic and/or spatial expansion from limited refugia on the Antarctic continental shelf. Some Patagonian species/MOTUs show reticulate topologies suggesting more steady and prolonged evolution, while others show star-like topologies that could reflect impact of South American glaciations.

The time-calibrated Bayesian phylogenetic reconstruction suggests that the isolation between Antarctic and Patagonian species/MOTUs postdates the Eocene/Oligocene boundary. Large differences in divergence times between the examined foraminifera support the hypothesis that separation of ecosystems on the opposite sides of the Drake Passage was a gradual process that started >30 Ma. Not surprisingly, it seems that the shallow-water monothalamids were the first to be impacted. Among the calcareous forms, the majority of the divergence ages were at 15 Ma or younger, suggesting that the mid-Miocene was the most important period concerning the separation between Antarctic and Patagonian shallow-water benthic biota.

Clearly, more geographically extensive sampling, including sub-Antarctic locations, is capable of providing deeper insight into foraminiferal evolutionary patterns. They reflect a unique history of Antarctic biota that were strongly impacted by geographical and environmental isolation and repeating glaciations.

PUBLICATION LIST FOR 2018

Life sciences

Genetics, ecology and physiology of Antarctic and sub-Antarctic terrestrial organisms

1. Androsiuk P., Jastrzębski J.P., Pauksto Ł., Okorski A., Pszczołkowska A., Chwedorzewska K.J., Koc J., Górecki R., Giełwanowska I. 2018. The complete chloroplast genome of *Colobanthus apetalus* (Labill.) Druce: genome organization and comparison with related species. *PeerJ* 6: e4723.
2. Ciok A., Budzik K., Zdanowski M.K., Gawor J., Grzesiak J., Decewicz P., Gromadka R., Bartosik D., Dziewit Ł. 2018. Plasmids of psychrotolerant *Polaromonas* spp. isolated from Arctic and Antarctic glaciers – diversity and role in adaptation to polar environments. *Frontiers in Microbiology* 9: 1285.
3. Romaniuk K., Ciok A., Decewicz P., Uhrynowski W., Budzik K., Nieckarz M., Pawłowska J., Zdanowski M.K., Bartosik D., Dziewit L. 2018. Insight into heavy metal resistome of soil psychrotolerant bacteria originating from King George Island (Antarctica). *Polar Biology* 41: 1319.
4. Koc J., Androsiuk P., Chwedorzewska K.J., Cuba-Díaz M., Górecki R., Giełwanowska I. 2018. Range-wide pattern of genetic variation in *Colobanthus quitensis*. *Polar Biology* 41: 2467–2479.
5. Koc J., Wasilewski J., Androsiuk P., Kellmann-Sopyła W., Chwedorzewska K., Giełwanowska I. 2018. The effect of methanesulfonic acid on seed germination and morphophysiological changes in the seedlings of two *Colobanthus* species. *Acta Societatis Botanicorum Poloniae* 87: 3601.
6. Kochman-Kędziora N., Noga T., Olech M., Van De Vijver B. 2018. Freshwater diatoms of the Ecology Glacier foreland, King George Island, South Shetland Islands. *Polish Polar Research* 39: 393–412.
7. Kochman-Kędziora N., Pinseel E., Rybak M., Noga T., Olech M., Van De Vijver B. 2018. *Pinnularia subcatenaborealis* sp. nov. (Bacillariophyta) a new chain-forming diatom species from King George Island (Maritime Antarctica). *Phytotaxa* 364: 259–266.
8. Krishnan A., Convey P., Gonzalez M., Smykla J., Alias S.A. 2018. Effects of temperature on extracellular hydrolase enzymes from soil microfungi. *Polar Biology* 41: 537–551.
9. Nowak P., Harańczyk H., Kijak P., Marzec M., Fitas J., Lisowska M., Baran E., Olech M.A. 2018. Bound water behaviour in *Cetraria aculeata* thalli during freezing. *Polar Biology* 41: 865–876.
10. Ronikier M., Saługa M., Jiménez J.A., Ochyra R., Stryjak-Bogacka M. 2018. Multilocus DNA analysis supports *Didymodon gelidus* (Musci, Pottiaceae) as a distinct endemic of the austral polar region. *Acta Societatis Botanicorum Poloniae* 87: 3609
11. Saługa M., Ochyra R., Żarnowiec J., Ronikier M. 2018. Do Antarctic populations represent local or widespread phylogenetic and ecological lineages? Complicated fate of bipolar moss concepts with *Drepanocladus longifolius* as a case study. *Organisms Diversity & Evolution* 18: 263–278.

Biological invasions and distribution patterns on land

12. Alstrup V., Olech M., Węgrzyn M.H., Wietrzyk-Pełka P. 2018. The lichenicolous fungi of the South Shetland Islands, Antarctica: species diversity and identification guide. *Acta Societatis Botanicorum Poloniae* 87: 3607.
13. Bednarek-Ochyra H., Plášek V., Guo S.-L. 2018. A brief survey of bryological studies in the Subantarctic, including *Macrocoma tenue* (Orthotrichaceae), a moss genus and species newly found in Îles Kerguelen. *Acta Societatis Botanicorum Poloniae* 87: 3597.
14. Dornelas M., Antão L.H., Moyes F., et al. 2018. BioTIME: A database of biodiversity time series for the Anthropocene. *Global Ecology and Biogeography* 27: 760–786.

15. Korczak-Abshire M., Zmarz A., Rodzewicz M., Kycko M., Karsznia I., Chwedorzewska K.J. 2018. Study of fauna population changes on Penguin Island and Turret Point Oasis (King George Island, Antarctica) using an unmanned aerial vehicle. *Polar Biology* 42: 217.
 16. Galera H., Chwedorzewska K.J., Korczak-Abshire M., Wódkiewicz M. 2018. What affects the probability of biological invasions in Antarctica? Using an expanded conceptual framework to anticipate the risk of alien species expansion. *Biodiversity and Conservation* 27: 1789–1809.
 17. Gryz P., Gerlée A., Korczak-Abshire M. 2018. New breeding site and records of King Penguin (*Aptenodytes patagonicus*) on the King George Island (South Shetlands, Western Antarctic). *Polar Record* 54: 275–283.
 18. Hinke J.T., Barbosa A., Emmerson L.M., Hart T., Juárez M.A., Korczak-Abshire M., Milinevsky G., Santos M., Trathan P.N., Watters G.M., Southwell C. 2018. Estimating nest-level phenology and reproductive success of colonial seabirds using time-lapse cameras. *Methods in Ecology and Evolution* 9: 1853–1863.
 19. Navrotska D., Andreev I., Betekhtin A., Rojek M., Parnikoza I., Myryuta G., Poronnik O., Miryuta N., Szymanowska-Pułka J., Grakhov V., Ivannikov R., Hasterok R., Kunakh V. 2018. Assessment of the molecular cytogenetic, morphometric and biochemical parameters of *Deschampsia antarctica* from its southern range limit in maritime Antarctic. *Polish Polar Research* 39: 525–548.
 20. Rudak A., Galera H., Znój A., Chwedorzewska K.J., Wódkiewicz M. 2018. Seed germination and invasion success of *Poa annua* L. in Antarctica. *Acta Societatis Botanicorum Poloniae* 87: 3606.
 21. Parnikoza I., Rozok A., Convey P., Veslelski M., Esefeld J., Ochyra R., Mustafa O., Braun C., Peter H.-U., Smykla J., Kuhakh V., Kozeretska I. 2018. Spread of the Antarctic vegetation by the kelp gull: comparison of two maritime Antarctic regions. *Polar Biology* 41: 1143–1155.
 22. Potocka M., Krzemińska E. 2018. *Trichocera maculipennis* (Diptera) - an invasive species in Maritime Antarctica. *PeerJ* 6: e5408.
 23. Wierzoń M., Suchan T., Ronikier M. 2018. Two additions to the moss flora of the South Shetland Islands in the maritime Antarctic. *Acta Societatis Botanicorum Poloniae* 87: 3598.
 24. Wódkiewicz M., Chwedorzewska K.J., Bednarek P.T., Znój A., Androsiuk P., Galera H. 2018. How much of the invader's genetic variability can slip between our fingers? A case study of secondary dispersal of *Poa annua* on King George Island (Antarctica). *Ecology and Evolution* 8: 592–600.
 25. Zmarz A., Rodzewicz M., Dąbski M., Karsznia I., Korczak-Abshire M., Chwedorzewska K.J. 2018. Application of UAV BVLOS remote sensing data for multi-faceted analysis of Antarctic ecosystem. *Remote Sensing of Environment* 217: 375–388.
- Diversity and functioning of the Antarctic marine ecosystem*
26. Jóźwiak P., Pabis K., Jażdżewska A., Siciński J. 2018. Taxonomic surrogacy in the diversity assessment of the soft-bottom macrofauna along a depth gradient of an Antarctic fjord. *Polish Polar Research* 39: 505–524.
 27. Krzeminska M., Kuklinski P. 2018. Biodiversity patterns of rock encrusting fauna from the shallow sublittoral of the Admiralty Bay. *Marine Environmental Research* 139: 169–181.
 28. Krzeminska M., Siciński J., Kuklinski P. 2018. Biodiversity and biogeographic affiliation of Bryozoa from King George Island (Antarctica). *Systematics and Biodiversity* 16: 576–586.
 29. Majda A., Majewski W., Mamos T., Grabowski M., Godoi M.A., Pawłowski J. 2018. Variable dispersal histories across the Drake Passage: The case of coastal benthic Foraminifera. *Marine Micropaleontology* 140: 81–94.
 30. Mohammed A., Abdul-Wahab M.F., Hashim M., Omar A.H., Md Reba M.N, Muhamad Said M.F., Soeed K., Alias S.A., Smykla J., Abba M.,

Ibrahim Z. 2018. Biohydrogen production of by Antarctic psychrotolerant *Klebsiella* sp. ABZ11. *Polish Journal of Microbiology* 67: 283–290.

31. Moreau C., Mah C., Agüera A., Améziiane N., Barnes D., Crokaert G., Eléaume M., Griffiths H., Guillaumot C., Hemery L.G., Jażdżewska A., Jossart Q., Laptikhovsky V., Linse K., , Neill K., Sands C., Saucède T., Schiaparelli S., Siciński J., Vasset N., Danis B. 2018. Antarctic and Sub-Antarctic Asteroidea database. *ZooKeys* 747: 141–156.

Geosciences

Post-LGM records

32. Bart P.J., DeCesare M., Rosenheim B.E., Majewski W., McGlannan A. 2018. A centuries-long delay between a paleo-ice-shelf collapse and grounding-line retreat in the Whales Deep Basin, eastern Ross Sea, Antarctica. *Scientific Reports* 8: 12392.
33. Majewski W., Bart P.J., McGlannan A.J. 2018. Foraminiferal assemblages from ice-proximal paleo-settings in the Whales Deep Basin, eastern Ross Sea, Antarctica. *Palaeogeography, Palaeoclimatology, Palaeoecology* 493: 64–81.
34. Prothro L.O., Simkins L.M., Majewski W., Anderson J.B. 2018. Glacial retreat patterns and processes determined from integrated sedimentology and geomorphology records. *Marine Geology* 395: 104–119.

Physical Sciences

Proglacial environments

35. Petlicki M. 2018. Subglacial topography of an icefall inferred from repeated terrestrial laser scanning. *IEEE Geoscience and Remote Sensing Letters* 15: 1461–1465.

36. Podgórski J., Pętlicki M., Kinnard C. 2018. Revealing recent calving activity of a tidewater glacier with terrestrial LiDAR reflection intensity. *Cold Regions Science and Technology* 151: 288–301.
37. Pudełko R., Angiel P.A., Potocki M., Jędrejek A., Kozak M. 2018. Fluctuation of glacial retreat rates in the Eastern part of Warszawa Icefield, King George Island, Antarctica, 1979–2018. *Remote Sensing* 10: 892.
38. Szumińska S., Czapiewski S., Szopińska M., Polkowska Ż. 2018. Analysis of air mass back trajectories with present and historical volcanic activity and anthropogenic compounds to infer pollution sources in the South Shetland Islands (Antarctica). *Bulletin of Geography. Physical Geography Series* 15: 111–137.

Antarctic hydrology, soils and other environments

39. Krogulec E., Krogulec T., Małecki J., Pietrzykowski P., Dobaka P. 2018. Hydrogeological characteristics of aquifer near Arctowski Polish Antarctic Station on King George Island (South Shetland Islands), Antarctica. *Polar Science* 16: 68–77.
40. Łachacz A., Kalisz B., Giełwanowska I., Olech M., Chwedorzewska K.J., Kellmann-Sopyła W. 2018. Nutrient abundance and variability from Antarctic soils in the coastal of King George Island. *Journal of Soil Science and Plant Nutrition* 18: 294–311.
41. Smykla J., Porazinska D.L., Iakovenko N.S., Devetter M., Drewnik M., Hii S.Y., Emslie S.D. 2018. Geochemical and biotic factors influencing diversity and distribution patterns of soil microfauna across ice-free coastal habitats in Victoria Land, Antarctica. *Soil Biology and Biochemistry* 116: 265–276.
42. Smykla J., Szarek-Gwiazda E., Drewnik M., Knap W., Emslie S.D. 2018. Natural variability of major and trace elements in non-ornithogenic Gelisols at Edmonson Point, northern Victoria Land, Antarctica. *Polish Polar Research* 39: 19–50.

43. Sziło J., Bialik R. 2018. Grain size distribution of bedload transport in a glaciated catchment (Baranowski Glacier, King George Island, Western Antarctica). *Water* 10: 360.
44. Szopińska M., Szumińska D., Bialik R.J., Chmiel S., Plenzler J., Polkowska Ż. 2018. Impact of a newly-formed periglacial environment and other factors on fresh water chemistry at the western shore of Admiralty Bay in the summer of 2016 (King George Island, Maritime Antarctica). *Science of the Total Environment* 613–614: 619–634.
45. Szufa K.M., Mietelski J.W., Anczkiewicz R., Sala D., Olech M.A. 2018. Variations of plutonium isotopic ratios in Antarctic ecosystems. *Journal of Radioanalytical and Nuclear Chemistry* 318: 1511–1518.

Other

46. Rodzewicz M., Goraj Z., Tomaszewski A. 2018. Design and testing of three tailless unmanned aerial vehicle configurations built for surveillance in Antarctic environment. *Proceedings of the Institution of Mechanical Engineers, Part G. Journal of Aerospace Engineering* 232: 2598–2614.