Ophiuroid collection of ZIN as information base of fundamental biological investigation

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BOOK OF ABSTRACTS

Editor: TOMASZ BORSZCZ

Sopot, 17-19 September 2016

Institute of Oceanology, Polish Academy of Sciences

INVITATION LETTER

DEAR COLLEAGUES, FRIENDS AND MENTORS,

It is with the greatest pleasure and honour that we invite you officially to participate in the 9th European Conference on Echinoderms (thereafter ECE) in 2016 in Poland. This will be the first echinoderm meeting in Poland and is titled "***Echinoderms: from ossicles to the big picture***". Echinoderm research in Poland has more than 150 years of rich tradition that continues to the present day. Two years ago in Portsmouth (UK) during the successful 8th ECE, Tomasz Borszcz was honoured by the acceptance of a proposal to organise the next meeting in Poland. In early August of 2015 year, the idea was approved by the Director of the Institute of Oceanology, Prof. Janusz Pempkowiak, to whom we are thankful for a kind reception, promise of support and valuable advice. The 2016 meeting will be held under the umbrella of the Marine Ecology Department at the Institute of Oceanology in Sopot (Poland) with the endorsement of the Head, Prof. Jan Marcin Węsławski. At the Institute of Oceanology in Sopot, being a part of the Polish Academy of Sciences (PAS), we have a uniquely friendly, vibrant, international atmosphere that facilitates reseach and social communication. It is my goal to spread these impressions on the very special moment the Conference takes place in September 2016. The main idea is to have you all here, presenting your results, discussing future plans, exchanging material and ideas while spending time in friendly climate surrounded by colleagues and friends. The three day conference will be preceded by a short, half-day pre-conference field trip (optional), an Ice-breaker party with food (the same day), three days of scientific sessions (Saturday-Monday) and an optional, longer (4 days) fieldtrip/excursion '***The Phanerozoic Record of Polish Echinoderms***'. During the conference, one social activity is planned for each evening, including a 'gala dinner', campfire in the forest and a sightseeing tour of historic Gdańsk. This is a fantastic opportunity for early career scientists to meet new colleagues, chat about their research ideas and establish productive collaborations. Also, it is a perfect opportunity for a good friends to reunite in a casual yet still scientific ground.

The purpose of 9th ECE meeting is to link all scientific disciplines related to echinoderms and everyone around the world, irrespective of academic degree or age is welcome to contribute a talk or poster or just come, listen, ask a question and be a part of the vibrant echinoderm community. During the 2016 ECE, the echinoderm alphabet will include anatomy, archaeology, aquaculture, behaviour, biology, biomineralogy, biomimetics, biochemistry, cell biology, conservation, crystallography, databases, development, diagenesis, diversity, ecology, environment, evolution, extinctions, fisheries, continuing through geochemistry, genetics, geology, geography, global changes, history of research, hydrology, ichnology, immunology, marine sciences, molecular biology, morphology and morphometrics, paleontology, physiology, polar research, radioactivity, reproduction, sedimentary record, statistics and data modelling, systematics, taphonomy, taxonomy to zoology and beyond. All living and extinct echinoderm classes are expected to be covered, with scientific sessions on more than 20 general topics, including both local and global approaches and of course, proposals for special/thematic sessions with a pre-arranged convenor are cordially welcome!

See you in Poland!

FOREWORD

The response to conference invitation held at the Institute of Oceanology (PAS) in Sopot (Poland) meet the planned capacity and expectations. No doubt, the first echinoderm conference in Poland will score a success and will be a trully international event. In total, 63 attendes registered from 21 countries and 4 continents with variable frequencies. Participants represent 41 institutions, which provide excellent coverage much beyond the Europe. Male:female ratio is 60:40 while early career versus established scientists is also naturally structured. Participants contributed 71 abstracts which are published in this volume. They proposed more talks than posters with 7 keynote talks selected by the Organizer and one opening talk by himself on the history of echinoderm research in Poland. Keynote talks were chosen (it wasn't that simple given the overall quality of submitted abstracts) based principally on merit criteria as well as expected widest reach (interest) and strong publication record of speakers. These encompass diverse research themes, including quantitative taphonomy (Kowalewski et al.), phylogeny across echinoderm clasess (Ausich & Sumrall), phylogenetic applications of arm plates of ophiuroids (Thuy & Stohr), discovery of chemosynthetic fossil crinoids (Oji et al.), regeneration of brittle-stars (Czarkwiani et al.), molecular insight into echinoid speciation (Kroh et al.) and … outreach activities related to echinoderms (Czub). The other talks in general sense, revolve around exciting research lines and bring novelties to studies of echinoderms.

The conference, will be preceded by the short trip with several participants in the field. The post-conference 4 days long excursion attracted 14 participants and will follow the c. 1500km route established in July 2016 based on inspection of more than 20 outcrops in Poland and more than 2500 kilometers drive. Informal advisory comitee helped throughout the preprations, form early days of planing and drafting till now. I used the opportunity to acknowledge them here in an alphabetic order: Dr Sabine Stohr (NRM Stockholm), Magdalena Łącka MSc (IO PAS Sopot), Dr Monika Kędra (IO PAS Sopot), Ms. Teresa Grande MSc (IO PAS Sopot), Marko Manojlovic (U. California USA), Tomasz Jankowski MSc (IO PAS Sopot), Michał Czub MSc (IO PAS Sopot), Maciej Malinowski MSc (Wejherowo), Bartosz Witalis MSc (MIR Gdynia), Ms. Malgorzata Górka (IO PAS Sopot), Andrzej Skiepko (AS FISHING COMPLEX Gdynia), Marcin Wichorowski MSc (IO PAS Sopot), Dr Piotr Bałazy (IO PAS Sopot), Dr Andy Gale (U. Portsmouth UK), Dr Alex Ziegler (U. Bonn Germany), Dr Andreas Kroh (NHM Vienna), Dr Mike Reich (LMU Munich), Dr Ben Thuy (NHM Luxembourg), Dr Michał Rakociński (U Silesia Sosnowiec), Prof. Janusz Pempkowiak (IO PAS Sopot), Regina Terlecka MSc, Joanna Potrykus MSc, Prof. Jan Marcin Węsławski (IO PAS Sopot) and Prof. Piotr Kukliński (IO PAS Sopot) among many others. Each person and institution is cordially acknowledged.

TWO RESEARCHERS OF ECHINODERMS AND BUTTERFLIES: AUSTIN CLARK AND ALEXANDER DJAKONOV [poster]

Smirnov I.[1], **Smirnov A.**[1], **Pawson D.**[2], **Pawson-Vance D.**[2]

[1] Zoological Institute of the Russian Academy of Sciences, St.-Petersburg, Russia.
[2] Department of Invertebrate Zoology, National Museum of Natural History, Smithsonian Institution, Washington DC, USA.

* **e-mail**: smiris@zin.ru

Key words: history, zoologists, anniversaries

In the beginning of 20-th century study of various groups of animals by zoologists was not a rarity. But that two scientists on different continents studied of echinoderms and butterflies, should draw our attention. Certainly, the role of accident in their fates was very great, but the aesthetic element probably was present at a choice of these two groups of animals too. And if Alexander Djakonov began studying animals with butterflies but only then circumstances forced it to borrow of echinoderms Austin Clark began the scientific biography with studying birds, then was switched to research of crinoids and others echinoderms, and already at mature age began to collect and describe butterflies.

Austin Hobart Clark (17.12.1880 - 28.10.1954) who in 2015 turned 135 years, having acted per 1908 in Smithsonian Institution (Washington, DC, USA) and becoming subsequently the curator of echinoderms collection at the National Museum of Natural History (NMNH), has lead huge work on formation of a collection which for today is one of most representative meetings of echinoderms in the World.

A.H. Clark has described 489 new echinoderm species (403 crinoids, 55 brittle stars, 27 starfishes and 4 sea urchins), but he also became famous for studying of birds, peripatuses and butterflies (67 publications). His 218 publications on echinoderms include the well-known monography on crinoids.

Austin Clark was an active popularizer of a science and has published about dozen books and approximately 300 clauses on various questions of natural sciences. But from all its surprising achievements in a science, Austin Clark will be remembered, first of all, as the researcher of crinoids (this complex group of echinoderm animals) and, certainly, as the founder of a huge collection of echinoderms in NMNH.

Alexander Mikhailovich Djakonov (17.01.1886 - 01.04.1956) who in 2016 turned 130 years from the date of his birth and 60 years from the date of his death, - the largest expert on echinoderms in Russia.

A.M. Djakonov after studying at the St.-Petersburg University in 1912 held a post of the zoologist in the Zoological Museum and organized the Branch of Echinoderms. He has described 138 new echinoderm species and subspecies. The results of his scientific researches have been published in 95 works, including its on hydrobiology, mainly on echinoderms - 44 works, and on entomology, mainly on butterflies - 41. Among them fundamental monographies on sea urchins and starfishes, and also identification keys of northern sea echinoderms, Far East seas echinoderms, sea stars and brittle stars of faunas of the USSR seas, large reports on butterflies of Leningrad region, on moths of Minusinsk and Kamchatka regions.

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OPHIUROID COLLECTION OF ZIN AS INFORMATION BASE OF FUNDAMENTAL BIOLOGICAL INVESTIGATION [poster]

Smirnov I., Ananjeva N., Pugachev O., Khalikov R., Lobanov A.

Zoological Institute of the Russian Academy of Sciences, St.-Petersburg, Universitetskaja nab. 1, Russia.

* **e-mail:** smiris@zin.ru

Key words: computerization, digitalization, brittle stars

Zoological Institute of the Russian Academy of Science (ZIN) possesses one of the world's largest zoological collections. In this year works on creation of databases and information retrieval systems on a biological diversity are 30 years in ZIN.

One of the most urgent scientific problems, and also necessary condition of modernization of zoological collections and algorithms of their research, is a development of intelligence systems on a biodiversity and development of bases of creation of structure for those systems with the subsequent integration in the international distributed information retrieval systems.

Now ZIN has started realization of a concrete fundamental problem which consists in development of algorithm of digitalization materials of the fund collection of the Zoological Institute considering specificity of their storage for separate systematic groups (http://www.zin.ru/Collections/Ophiuroidea/index_en.html).

Take into account huge volume of this collection (more than 60 million units of storage and ten thousand copies of primary types), at the first stage of work are expedient to be limited to a number modelling таксонов, concerning to the basic classes of fauna. The basic attention is supposed to be concentrated on the type specimens, which scientific names being carrier species and subspecies.

In 1914 it was created V invertebrates' branch to which the collection of echinoderms related. Some ophiuroid specimens were collected in 1842. Unique materials have been received for 160 years of researches in different parts of the World Ocean. As the data source for an information retrieval system the collections serve. Except for cleanly scientific, historical and cognitive aspect similar work receives the important ecological sounding. In process of accumulation of collections for enough great time intervals («monitoring collections»), there is an opportunity to trace changes in sea ecosystems which occur under influence of global climatic, local hydrological and anthropogenous influences.

With usage of available ZIN server infrastructure and a created intelligence system of collection samples, expansion of a point of the publication of data on a portal of Global information facilities on a biological diversity or GBIF and the subsequent selective publication of ZIN collection data on this portal becomes possible (http://ipt.zin.ru:8080/ipt/resource?r=zin_ophiuridae).

The planned integrated intelligence system will allow to collect full enough information on an available biodiversity of Russia where each component – collections and an information databank about specimens will carry its specific functions, and system as a whole, can adequately serve needs of a biological science and technology according to modern principles and standards of world zoological collections.

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