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A rainbow pointed to the hidden treasures

Protection of articulated marine Jurassic reptiles of Svalbard

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Introduction

The Svalbard archipelago comprises all the islands within the administrative Svalbard quadrangle, i.e. between 74° and 81° N latitude and from 10° to 35° E longitude. The total land area comprises 62,700 km2. About 60% of this area is permanently covered by glaciers and inland ice caps.

These islands were effectively a “no-man’s land” until its status was formalised as part of negotiations following the end of World War I. The Treaty of February 9, 1920 defined the area of the archipelago and granted “full and absolute” sovereignty to Norway.
However, other parts of the treaty and its appended mineral law stipulate that citizens of the 40 signatory nations should have equal rights to claim, develop and exploit mineral resources of the area. This law, together with the archipelago’s varied geology, explains the multinational activity in the area today.

Early activities were centered on whaling, hunting and trapping, but scientists started to visit the islands in the

The plesiosaur skeleton

early part of the 19th century. Geological research has played an important role in the subsequent history of the archipelago.

The geological succession of Svalbard ranges from Pre-Cambrian metamorphic rocks through Palaeozoic, Mesozoic and Cenozoic fossiliferous sedimentary and volcanic rocks.

Svalbard with national parks and other large protected areas also indicating the area of the map on the next page (the square)

Protection of geological sites in Svalbard

Approximately two thirds of the area is protected as national parks and nature reserves. Geological criteria have, so to say, only been used in subordinate clauses. One exception is the just recently approved Festningen Geotope Conservation Area, where geological criteria were the main criteria. One of the main geoelements of the conservation area is the so-called "Festningen section", an almost continuous stratigraphic section through the entire geological record from the late Carboniferous to the early Tertiary. It was described in great detail in the early part of the 20th century, and has been used by many geologists as a stratigraphic reference section for their work in other parts of Svalbard (Dallmann 2004).

In addition to the protection of this area, recent findings of Jurassic marine reptiles in the Isfjorden area (central Spitsbergen, main island) have stimulated the discussion on whether additional areas should be protected, or whether certain fossils should be protected automatically.

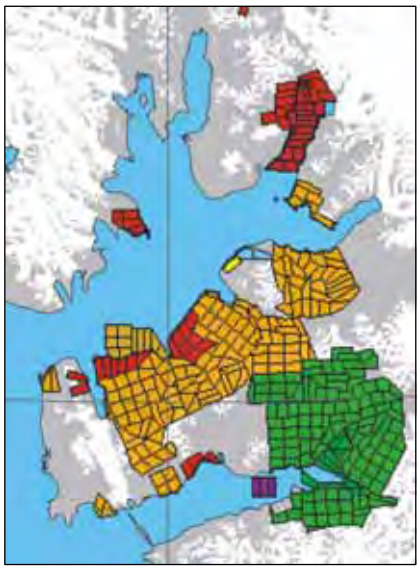
Plesiosaurian remains from these rocks have been recorded as early as 1914 when Wiman published a description of a vertebral centrum found south of Deltaneset near Janusfjellet (Wiman 1914). Discoveries and descriptions of marine reptiles date back as early as 1864 when Nordenskiöld discovered a number of fragmentary ichthyosaurian specimens from the Triassic. In 1873 E. Hulke provided the first description of two species of ichthyosaurs from Svalbard (Heintz 1964) and since then more fossils of marine reptiles, mainly of ichthyosaurs and plesiosaurs have been

Janusfjellet locality, displaying marine Jurassic, Cretaceous and top Tertiary sediments.

Discovered, along with tracks from dinosaurs. This makes Svalbard an exiting area for future palaeontological discoveries.

In 2001 assistant professor Sverre Ola Johnson from the Technical University in Trondheim (NTNU) and students found a well preserved limb and parts of the vertebrae of a plesiosaur in the Slottsmøya Member of the Agardhfjellet Formation (Jurassic, Volgian) at the mountain Janusfjellet. They realized that it would be impossible to excavate the specimen from the surrounding frost-cracked shale. They covered it with shale fragments and marked the location. The specimen was exposed again during subsequent student excursions, but Johnsen and excursion co-leader professor Jenö Nagy (University of Oslo) realized that the specimen would deteriorate after repeated exposures. They contacted palaeontologist assistant professor Jørn H. Hurum at the Natural History Museum, University of Oslo, and suggested that the specimen should be freed from the matrix and brought to a museum for professional conservation. Unconserved, the specimen would crumble due to repeated freezing and thawing during the cold winters and fairly temperate summers in Svalbard.

In 2004 a group of palaeontologists and assistants, joined by two journalists from the Norwegian governmental broadcasting corporation (NRK) carried out one week's fieldwork at Janusfjellet. Based on maps and photos provided by Johnsen and Nagy, they were able to track the plesiosaur specimen and managed to free it from the matrix in five pieces. The specimen was wrapped in "field jackets", and brought back to the Natural History Museum. During the fieldwork the group discovered nine additional reptile specimens, including a much larger plesiosaur, and for the first



Map of claims, for reference see map previous page.

Field picture of ichthyosaurian skull

time in Svalbard an ichthyosaur with the skull preserved. Two of these were also wrapped in a "field jacket" and also brought back to the museum.

Restrictions on fieldwork in Svalbard

Prior to the 2004 fieldwork Hurum and Nakrem had contacted the governor's office, which is in charge of issuing dispensations for fieldwork implying activities that may cause environmental damage. Logistics were provided from the Norwegian Polar Institute, according to an application to the institute. Svalbard Museum was also contacted. A safety course was provided by the University Studies on Svalbard (UNIS), and the field party was quite sure that all official contacts were taken care of.

Returning from the field Nakrem and Hurum were approached by the Commissioner of Mines of Svalbard, who is in charge of surveying the prospecting and mining regulations, and we were notified that the fossils had been excavated from an area that was claimed for commercial fossil digging.

In 2000 the company Reistad Consult AS had registered two claims totalling 20 km^2 in the Janusfjellet-Wimanfjellet area, and given exclusive rights to work a fossiliferous shale (more precisely, a sideritic or phosphatised carbonate layer rich in ammonites) and by this all other geological resources inside the claims.

This case in not unique when interpreting Norwegian law. The "allemannsrett" (public admittance) secures people general access to uncultivated lands in Norway, but the right of ownership prevents unauthorised persons from removing geological material from other persons' land. This is also the case with claims in Svalbard. When a person is granted a claim, he or she has exclusive rights to all geological resources inside the claim, and the public does not have the right to collect specimens. In most cases an agreement with the owner would provide the permission to collect geological specimens, but concern arises when specimens of high commercial value are found. Confrontations may also come up, when the owner does not let researchers collect scientific material for unknown reasons.

The current case has caused concern, because the claim owner did not appreciate others collecting fossils in his claim area. The matter has though two aspects: scientific collecting may on one side impair his business, but might also make his fossils famous and subsequently result in an increased profit.

At the time of writing Nakrem and Hurum have not reached an agreement with Mr. Reistad, and a meeting with the Norwegian Ministry of Trade and Commerce (under which prospecting and mining is sorted), as well with Ministry of the Environment and Justice is planned. The fossils remain at the Natural History Museum in Oslo awaiting a final settlement of the case.

Towards a new legal framework?

The Ministry of the Environment has passed a press release stating that a law proposal on automatic protection of certain "fossils of special scientific value or interest" is currently under consideration. Such a protection may stop commercial digging of the mentioned fossils, whereas qualified scientific fieldwork usually would be granted permission. However, a claim- or land owner would still own the fossils, and possibly not give permission to scientists to take out and conserve fossils of special interest. It is up to the geological community in Norway to engage in the process and try to make sure that appropriate regulations will be attached to the law proposal, which would guarantee that scientific concerns are sufficiently met.

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Norwegian Polar Institute, geology: http://npolar.no/geonet/
Commissioner of Mines of Svalbard: http://www.bergvesenet.no/

The IV International Symposium ProGEO (September 2005)

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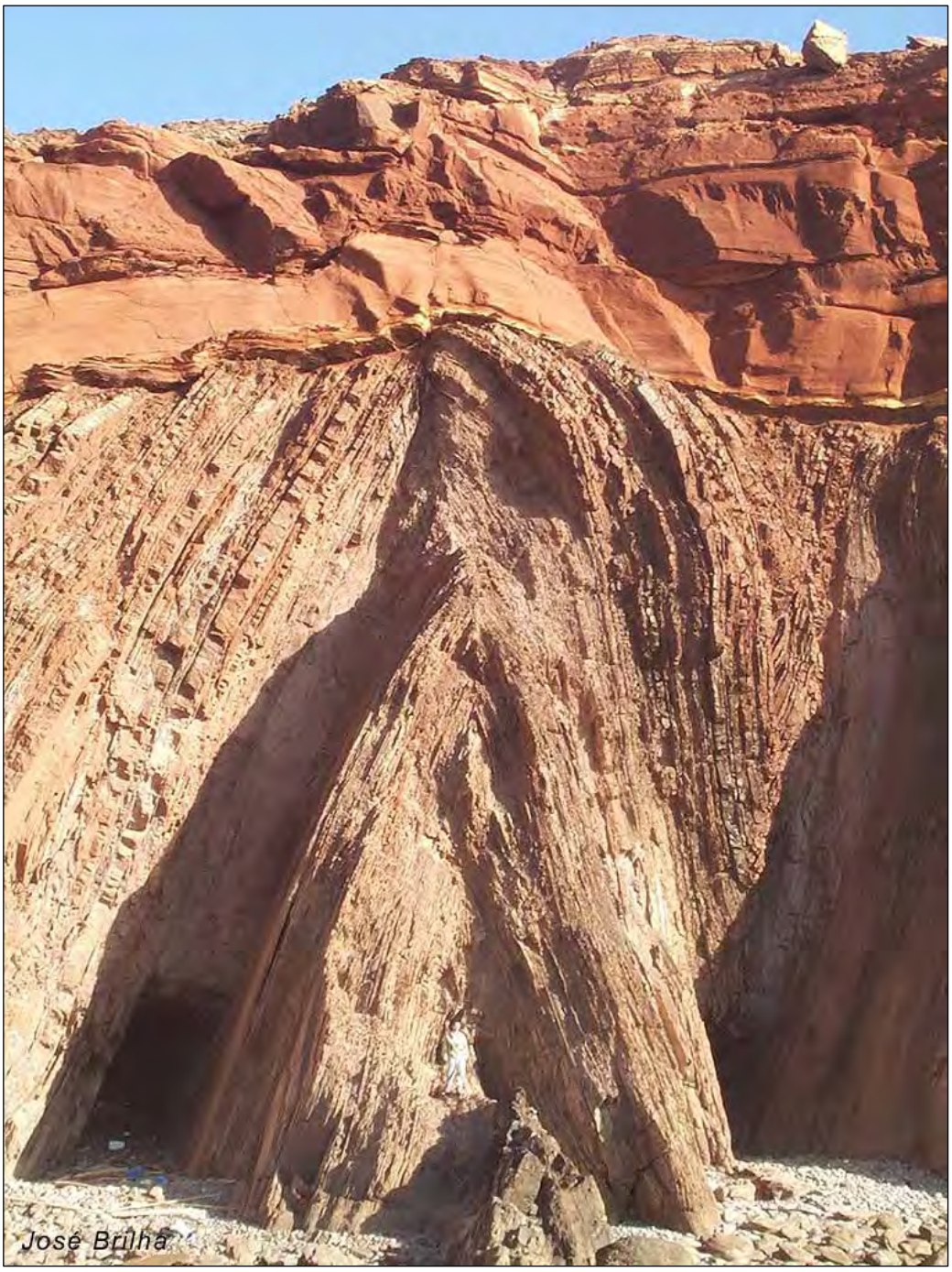
The preparation of the next IV International Symposium ProGEO continues at a normal speed. As many of you already know, the Symposium will be held in September 13-16, 2005 at the University of Minho (Braga, Portugal). The symposium organization is an cooperation between ProGEO and the local Earth Sciences Centre. Braga is a medium-size town located in the north of Portugal hosting the University of Minho with about 17 thousand students distributed between two campuses.

Presently, the Organizing Committee has received one hundred pre-registrations being about 30% from Portugal and about 40% from ProGEO members. The second circular will be distributed during January 2005 advertising all the necessary information for the formal registration, rates, abstracts submission, accommodation, field trips, etc. Four post-symposium field trips will be proposed. The main aim is to show some aspects of the rich Portuguese geodiversity and also several geoconservation initiatives. All field trips will be based on some of the fourteen frameworks with international relevance that Portuguese geologists recently defined in a manuscript submitted to Episodes.

Galinha Quarry in the Serras de Aire e Candeeiros Natural Park (field trip B).

Field trip A will be focused in the Douro region (North Portugal). The Alto Douro Wine Region, inscribed in the UNESCO World Heritage List, is well known for the vineyards of the worldwide famous Porto Wine. This field trip will be based in two frameworks: *River network, rañas and Appalachian-type landscapes of the Hesperic massif and Ordovician fossils from Valongo Anticline*. Some stops in the International Douro Natu-

Douro canyon in the International Douro Natural Park (field trip A).



Telheiro beach in the Sudoeste Alentejano e Costa Vicentina Natural Park (field trip C).

ral Park will present the spectacular Douro canyon.

Field trip B will show the Jurassic diversity of central Portugal. Some sites with heritage value are known worldwide. They include the Bajocian GSSP (Cabo Mondego section) and the largest Middle Jurassic dinosaur tracksite (Galinha Quarry in the Serras de Aires e Candeeiros Natural Park). With a well-defined strategy, the Galinha Quarry is probably the best geoconservation example in Portugal. This field trip is focused on three frameworks: *Jurassic record in the Lusitanian Basin, Dinosaurs of western Iberia, and Karst systems of Portugal.*

Field trip C will allow the visit to the most touristic region in Portugal (Algarve, South Portugal) but focusing on the geodiversity of the area. In fact, stops will allow the observation of a wide variety of outcrops (Paleozoic - Cenozoic). Based on two frameworks, *Low coasts of Portugal and Meso-Cenozoic of the Algarve*, this field trip will show the "other side" of Algarve.

Finally, field trip D will be the most "radical" one. Participants are invited to go to the Azores Archipelago right in the middle of the Atlantic Ocean. This spectacular group of nine volcanic islands is just small outcrops of the gigantic Mid-Atlantic Ridge, which splits

Capelinhos volcano, Faial Island, Azores (field trip D).

nearly the entire Atlantic Ocean north to south. It is planned visits to three islands where extraordinary examples of the volcanic landforms and rocks can be seen together with some geoconservation initiatives. This field trip is based on *The Azores Archipelago in the America-Eurasia-Africa triple junction* framework.

The Organizing Committee of the IV International Symposium ProGEO expects that these four field trips strengthen your interest in participate in this event and invite all to come to Braga next September.

The EU Manifesto on Earth Heritage and geodiversity, a strive for better EU policy

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On the 18th of November 2004 the EU Manifesto on Earth Heritage and Geodiversity was presented to the DG Environment of the European Commission, mrs. Catherine Day, and the DG of the Dutch ministry for the Environment VROM, mrs. Marjan Sint. The presentation was given at the "Joint Conference of the Dutch EU Presidency and the European Commission for the Environment". While presenting the Manifesto we were flanked by prof. Blum president of the European Confederation of Soil Science Societies, prof. Nortcliff president of the International Union of Soil Sciences, and dr. Albert Oost on behalf of the European Federation of Geologists. We were handing over the Manifesto as its initiators and Dutch representatives of the European Federation of Geologists and the International Geographical Union.

Subsequently Three Dutch student organisations in earth sciences gave a short film presentation showing five characteristic Dutch landscapes and their threats. It met with great interest.

The student Pieter Pauw introducing the short film presentation of the three student organisations Geovusie, Chaos and Drift about five internationally and nationally relevant Dutch landscapes and their threaths.

The handing over of the EU Manifesto to mrs. Day (right hand) and mrs.Sint (left hand)

The Manifesto stresses that earth heritage and geodiversity need more and better protection and that they should be an integral part of land use planning. These values add quality to our landscapes and living environments, and create possibilities for recreation and tourism, apart from having a scientific significance. The Manifesto also emphasizes the importance of an official position for earth heritage and geodiversity in EU policy. It requests the DG's, the EU government and the scientific representatives present at the Join Conference to incorporate Earth heritage and geodiversity in the Soil Strategy. It refers to the Recommendation on geoheritage added to the EU Landscape Strategy that was accepted in May 2004 by the Council of Europe, an advisory body to the EU.

In the short speech before handing over the Manifesto we mentioned the fact that the concept of soil being part of a system of climate, geology and topography has its roots in the Russian school of Soil Science of the 19th century. From this perspective, including geoheritage and geodiversity in the Soil Strategy is a minor step. This broad view of soil is also favoured by our Dutch ministry of the environment VROM.

We explained our preference for the word Earth heritage, encompassing more than geological heritage. Earth heritage for the subscribers of the Manifesto is an acceptable and neutral term including geology, geomorphology, soils and related processes. We also discarded several other suggestions, for example the use of the word rural dwellers, which in our language means vagabonds.

Some geologists are not too happy with the idea of geoheritage being part of the Soil Strategy. Also some soil scientists think that including fossils and rock structures in the Soil Strategy is stretching the concept of soil too thin. In The Netherlands geology usually has its focus on genesis and earth materials and gives little attention to geomorphology, with hardly any link to soils. Yet, in the early eighties it was the soil policy and law that gave first protection to earth heritage in several Dutch provinces, and protect it up to the present day. The concept of soil in the Soil Policy should be seen broader than the concept of soil as the upper part of the regolith.

It is very important that many organisations of geologists, geographers and soil scientists supported the Manifesto. The fact that the European as well as international organisations signed, makes the request even stronger. For now, we are looking into the possibility of organizing an EU workshop, firstly to investigate the steps to take in the Soil Strategy procedure, and then to study the other possibilities of EU legislation and support programmes. The ProGEO country-based geoheritage overview, which hopefully will be published within the next months, will certainly assist this process.

Proceedings of the second Polish Conference about geoconservation.

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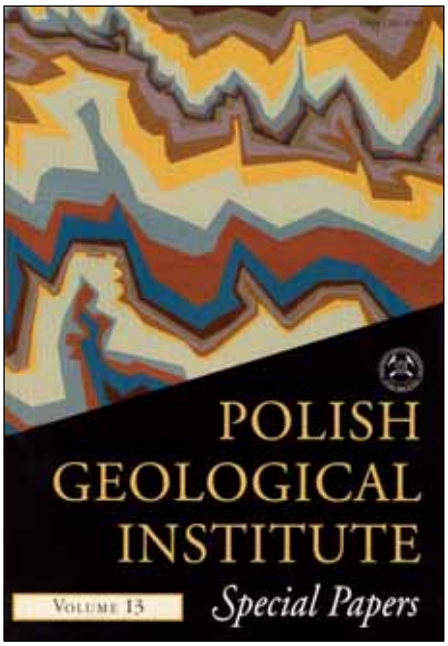
Proceedings of the Conference "Geological Heritage Concept, Conservation and Protection Policy in Central Europe" (Cracow, Poland 2003) were published in the issue – Polish Geological Institute Special Papers, Volume 13, Warszawa 2004, distributed by this Institute (Rakowiecka 4, 00-975 Warszawa, Poland). The Conference was organised October 3-4. 2003 in Cracow under the guidance of European Community by the Polish Geological Institute Centre of Excellence: Research on Abiotic Environment (REA) in cooperation with Polish members of ProGEO from the



Institute of Nature Conservation of the Polish Academy of Sciences, Cracow.

It is the second issue, the first dealing with the conference in 1997 (this journal, vol. 2, 1999). Most important geosites and geoparks protected and proposed for protection, the progress on the creation of databases, as well as the link with other programmes integrating the geo- and biodiversity conservation, were the main interest during on both meetings. Aims and results of the Second Conference in Cracow in 2003 were presented in ProGEO News no. 1. 2004. The new published proceedings consists of 29 papers (212 pages), which cover four thematic topics:

- scientific papers presenting problems of geosites selection and new proposals for the establishment of representative geosites in eight countries (Poland, Ukraine, Belarus, Bulgaria, Russia, Lithuania, Estonia, Serbia);
- scientific review works presenting the protected sites and areas;
- scientific review and methodological information concerning classification of geosites and geoparks;
- relations between geosites and ecological networks.

Results of both conferences published in the two mentioned volumes reflect the considerable progress in geoconservation within several countries and the noticeable activity of the ProGEO Central European Working Group.

For all questions concerning membership, payment and payment procedures, please contact the treasurer:

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