Géominpal Belgica
Découvertes géologiques, minéralogiques et paléontologiques en Belgique.

Special Paper: The living and fossil Neoselachii and Batoidei

Summary of the main Parasystematic subdivisions proposed in the Numbers 2, 3, 4 and Supplement to Number 4, with diverse general reflexions concerning their Evolution.

By

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View of the extern face of one lateral-anterior tooth of *Megaselachus megalodon* (AGASSIZ, 1843)

Provenance: Rumst (Antwerp Province, Belgium) – Antwerpen Sands Formation (Middle Miocene)

Determination Jacques Herman 1968 - Private Collection - Photo Jacques Herman.

HERMAN Jacques Editor **H**

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Plan of this Special Paper

In remembrance of the deceased field-friends
of the Senior Author:

Georges Annessens, **Michel Girardot**, **Jean-Claude Lepage**,
César Permentier, **Georges Wouters**
and
his father: Joël Herman

Their friend,
or his son,

Jacques Herman,
at Beigem,
the 5th January 2013

Jacques Herman

1. Summary

This Special Paper is an attempt to make the comprehension of the new conception of the *Parasystematic* Revision of the Neoselachii and the Batoidei proposed in the Series *Géominpal Belgica*, between November 2010 and December 2012 easier.

This Publication regroups also the different conceptions and approaches of the senior-author concerning the Evolution of the different marine animal groups.

After numerous last reflexions, the same approach is also valid for all the other Orders of marine animals and all the marine and continental vegetal Orders.

Keywords: Neoselachii, Batoidei, Systematic, Parasystematic, Evolution, Genetic, Plates Tectonic, Astro-physics.

2. Résumé

Ce *Special Paper* a pour but de rendre plus facile la compréhension des nouvelles conceptions de la Révision parasystématique des Neoselachii et des Batoidei proposées dans la Série *Géominpal Belgica*, entre novembre 2010 et décembre 2012.

Cette Publication réunit également les différentes conceptions et approches du senior-auteur en ce qui concerne l'Evolution des différents groupes d'animaux marins.

Après ultimes réflexions, la même approche est également valide pour tous les autres Ordres d'animaux marins et tous les Ordres de Végétaux marins ou continentaux.

Mots-clés: Neoselachii, Batoidei, Systématique, Parasystématique, Evolution, Génétique, Tectonique des Plaques, Astrophysique.

3. Samenvatting

Dit *Special Paper* heeft als bedoeling het begrip van de nieuwe *parasystematische* concepties van de Evolutie van de Neoselachii en de Batoidei, voorgesteld in de Reeks *Géominpal Belgica*, tussen november 2010 en december 2012, gemakkelijker te maken.

Deze Publicatie groepeert ook de verschillende benaderingen en concepties van de senior-auteur die de Evolutie van de andere groepen van mariene dieren betreffen.

Na ultieme redeneringen, is hetzelfde systeem ook geldig voor al de andere Orden van mariene dieren en al de marine en continentale Planten Orden.

Sleutelwoorden: Neoselachii, Batoidei, Systematiek, Parasystematiek, Evolutie, Genetica, Platen Tektoniek, Astrofysica.

4. Kurzfassung

Dieses *Special Paper* ist ein Versuch, es zu erleichtern, den neuen Begriff der *parasystematischen Revision* der Neoselachii und der Batoidei zu verstehen, so wie er in der Reihe *Géominpal Belgica* zwischen November 2010 und Dezember 2012 vorgestellt wurde.

Diese Veröffentlichung fasst auch die unterschiedlichen Vorstellungen und Anschauungen des Senior-Autors betreffs der Evolution der verschieden marinen Tiergruppen zusammen.

Als Resultat zahlreicher Überlegungen, ist dieselbe Betrachtungsweise auch auf alle Ordnungen von Meerestieren und auf alle Ordnungen mariner und terrestrischer Pflanzen anwendbar.

Schlüsselworten: Neoselachii, Batoidei, Systematik, Parasystematik, Evolution, Genetik, Plattentektonik, Astrophysik.

5. Introduction

The Summary and the Plan of this very short Publication are sufficiently explicit and need very few additional explanations.

The senior-author will only place in evidence the fact that the system of successive deductions he used for his revision proposals concerning the different Orders of the Neoselachii and Batoidei is also perfectly valid for all the other animal groups, primitive or more evolved.

6. Introduction

Le Résumé et le Plan de cette très courte Publication sont suffisamment explicites et nécessitent très peu d'explications supplémentaires.

Le senior-auteur désire seulement mettre en évidence le fait que le système de déductions successives dont il s'est servi pour ses propositions de révision concernant les différents Ordres des Neoselachii et des Batoidei est également parfaitement applicable à tous les autres groupes d'animaux, plus primitifs ou plus évolués.

7. Introductie

De Samenvatting en het Plan van deze zeer korte Publicatie zijn voldoende expliciet en vragen heel weinig additionele verklaringen.

De senior-auteur wil alleen maar aantonen dat het systeem van opeenvolgende deducties die hij gebruikt heeft voor zijn revisie voorstellen betreffende de verschillende Orden van de Neoselachii en de Batoidei ook perfect geldig is voor al de andere dieren groepen, primitiever of meer geëvolueerd.

8. Biological Evolution

8.1. Explanations

Primo

It is only possible to colonise an area, if this area exists. Different facts which may be, geologically speaking, recent tectonic events are good examples of this evidence such as: the opening of the Red Sea, the opening of the Sea of Cortez, the opening of the Caspian Sea, the opening of the Great African Rift, the formation of the dead Sea and the formation of the Mindanao Trench.

Secundo

The populations of one specific taxon having the greatest and easiest possibilities to colonize these new and free areas are, of course, the populations of the taxon, or taxa, living nearby these places.

Tertio

These two evident deductions, always confirmed by the diverse Neoselachii, Batoidei, Holocephali and Teleostei populations allow us to date (more than approximately) the double evolution of these groups, primarily their horizontal dispersion, and secondarily their vertical progressive colonisation of deeper and deeper waters.

8.2. Conclusion

A combination of these three data gives us their phylogenetic trends.

8.3. The extremities of the geological longevity of one Family taxon

Paleontology offers plenty examples of different possibilities.

Neoselachii examples

Family Chlamydoselachidae GARMAN, 1884

The first fossils of this Family (*sensu stricto*) data from at least, at the beginning of the Eocene, *circa* 54 million years before now and it is still worldwide represented.

Family Ptychodontidae JAEKEL, 1998

This one appeared discretely in occidental Europa at the end of the Aptian, *circa* 114 million years before now and disappeared in the same area at the end of the Lower Campanian at *circa* 78 million years before now, which means an existence of only 34 million years.

8.4. The extremities of the geological longevity of one Generic taxon

Genus *Scyliorhinus* de BLAINVILLE, 1816

The first populations of the Genus *Scyliorhinus* initiated their colonisation of the North Atlantic at the end of the Upper Campanian, at *circa* 78 million years before now and are still represented by diverse living species.

That means that they survived two major critic transition periods: the Mesozoic-Caenozoic Transition and the Eocene-Oligocene Transition, in shallow waters.

8.5. The extremities of the geological longevity of one specific taxon

The two following examples, apparently generally admitted may be proposed as relative extremities.

Somniosus microcephalus **(BLOCH & SCHNEIDER, 1801)** and ***Cethorhinus maximus*** **(GUNNER, 1765)**

Their oldest populations dated from the beginning of the Miocene, which means *circa* 24,5 million years before now.

Carcharodon carcharias **(LINNAEUS, 1758)**

If the synonymy of *Carcharodon rondeletti* ***with*** *Carcharodon carcharias* is admitted, its oldest population dated from the beginning of the Pliocene, which means *circa* 5 million years before now.

9. Additional Reflexion

After compilation of diverse data*, it seems obvious that this deduction is also valid for all the marine or continental Bacteria, Invertebrata, Vertebrata, Algae, Plantae Orders.

*See: Additional Bibliography.

10. Odontological Evolution

Odontological evolution presents only two types: a slow and progressive type and a sudden disruptive one.

10.1. Progressive Evolution

This type of Evolution is represented by numerous lineages increasing progressively the size of their teeth and some particular dental-crown ornamentations, such as the power of their crown serrulation, the resorption or the development in height or in mass of their lateral cuspids.

Some good examples are lineages such as the series constituted by the continuous succession of the Genera: *Protoscapanorhynchus* - *Pseudoscapanorhynchus* – *Scapanorhynchus* – *Mitsukurina*, or the succession of the Genera: *Cretolamna* – *Otodus* – *Carcharocles* – *Megaselachus* and the succession of the Genera: *Cosmopolitodus* – *Carcharodon*.

These cases and plenty of others were detailed in the precedent numbers of *Géominpal Belgica* 2 to *Géominpal Belgica* 4 (Supplement).

10.2. Disruptive Evolution

This type of Evolution is represented by some lineages having been affected by repetitive genetic traumatisms.

Some good examples are lineages such as the series constituted by the brutal transition from the Genus *Eusphyra* to the Genus *Sphyrna* and the brutal transition from an unknown species of *Alopias* to the species *Cetorhinus parvus* and, later from this species to the species *Cetorhinus maximus*.

Less spectacular, but geologically also significant, is the sudden acquisition of a serrulation on all the cutting edges of the teeth of all the populations of one specific taxon such as the *transition* from the morphotype *Pseudocorax laevis* to the morphotype *Pseudocorax affinis*, or from the morphotype *Otodus obliquus* to the morphotype *Otodus subserratus*.

11. Variations of the Time units

It is another surprising ancient conception of the Universe-Time space which deeply impregnates and influences the reflexions of many scientific researchers. It is a fallacious supposition and certitude that our common time units were and are constant.

11.1. Increase of the duration of the year and its consequences

General Data

Most recent astrophysical observations seem to confirm that the estimations proposed during the beginning of the 1970s remain valid. 650 million years ago the Earth effectuated its solar circumvolution in, approximately, 300 of our actual days.

Implications for living forms

If true, this means that the seasons were shortened. The seasonal succession process remains always particularly important in the two Polar Regions. On latitudes where polar night practically lasts sixth months, the vegetal production was virtually nil.

11.2. Possible variations of the lunar cycle, the distance Earth-Moon and its consequences

A shorter Earth-Moon distance implies a more important lunar attraction effect, manifesting itself by different effects such as a more important amplitude of the sea-tides and the possibility for all the continental forms of life to produce larger forms of life, such as huge dinosaurs (e.g.: *Brontosaurus* MARSH, 1869* from the Jurassic Period) and huge trees (e.g.: *Metasequoia* MIKI, 1941**).

*Genus *Apatosaurus* MARSH, 1867 is its official scientific name, but for an unknown reason *Brontosaurus* remains its most popular name.

For the Genus *Apatosaurus*: See Bibliography: BAKKER, 1998, DODSON, BEHRENSMEYER, BAKKER & McINTOSH 1980, DODSON, BEHRENSMEYER, BAKKER & McINTOSH 1980, KRISTINA 1999, PIERSON 2009, SCOTT 2001, STEVENS & PARRISH 1999 and TAYLOR, WEDEL & NAISH 2009.

** Genus *Metasequoia* MIKI, 1941 is the scientific name of this tree having ancestors from the Upper Cretaceous.

For the Genus *Metasequoia*: See Bibliography: FARJON, 2005, WILLIAMS, JOHSON, Le PAGE, VANN, & SWEDA 2003, Le PAGE, JAMES, & YANG, Eds. 2005.

11.3. Increase of the duration the day and its consequences

Most recent astrophysical observations seem to confirm that the estimations proposed during the beginning of the 1970s remain valid. 650 million years ago the Earth effectuated its daily rotation in, approximately, 20 of our actual hours.

If true, this means that the daily insolation time was shorter and that the global oxygen production was lower than the actual* one.

*Before the human frenetic deforestation activities.

12. Geological and paleontological data

or

Importance of the Plates Tectonic

The consequences of the successive Plates Tectonic events were, or remain, generally completely ignored by the large majority of biologists and paleontologists. They describe their new Cambrian taxa meticulously, but forget that the northern side of the Euregio Meuse-Rhine* was located, at this Era, nearby Sidney and oriented to the South.

*Massif including the Anglo-Belgian Basin. The most comprehensible explanation and illustration of this 650-million-year trip is furnished by Martin Bless and Cristina Fernandez-Narvaiza. (See Bibliography: BLESS & FERNANDEZ-NARVAIZA, 2000).

So, when authors wrote: *Eostegostoma angusta*, new Orectolobidae from the Lede Sands Formation discovered at Neder-Okkerzeel (Province of Flemish Brabant, Belgium), they forgot that the real position of the typelocality, Neder-Okkerzeel, of this new taxon was located in Egypt, approximately near the temple of Abu Simbel.

13. Genetic data or evidence of repetitive genetic aggressions

The frequent perturbations of the genetic code of diverse taxa are more and more evident. The simultaneous sudden apparition of a fanoncular filter-type feeding in two Vertebrata groups as different as some populations of the Family Alopiidae (Neoselachii, Chondrichthyes) and some populations of Odontoceta (Cetacea, Mammalia) is unique in the vertebrate paleontological evolution.

Astrophysics possible origin

The inversions of the terrestrial magnetic field, which happen at a repetitive, apparently metronomic rhythm, seem to have been the responsible origins of all the deep genetic perturbations that all the living forms in the terrestrial* biosphere underwent.

*Life being, more and more frequently, supposed to have existed on Mars, there exists no reason that the same troubles have not affected the primitive possible biosphere of this Planet.

Einstein, one of the first persons convinced by the Plates Tectonic Theory, proposed (in the 1960s) that during the paroxysm of one complete terrestrial magnetic field inversion* the core of the Earth and particularly the magmatic convection cells were also perturbed.

*In such circumstances, the Van Allen Rings are completely destroyed, the radio-activity and the ionisation were at maximal level.

Einstein supposed that the consequence of such perturbations could be that the general superficial landscape of the Earth may have been more or less modified.

The senior-author supposes that they may have induced important deformations of the remnant plates and significant modifications of all the hydrographical networks. This proposition could explain some incomprehensible modifications of some superficial river erosion process.

14. The choice of the different subdivision ranks of the Neoselachii and the Batoidei

The selected ranks for the new subdivisions of these two Groups of primitive Vertebrata concerned are the following: Super-Orders, Orders, Families, Genera and species.

Terms such as Sub-Order, Sub-Family, Sub-Genus or sub-species were not used because they evoke military subdivisions such as Sub-Officer or Sub-Lieutenant.

Terms such as *Cohort*, *Sub-Cohort*, *Tribe* and *Sub-Tribe* have, maybe, a nostalgic colonial charm but also conjure up another deep racist type of classification of Humanity. It remains possible to add *Clan* and *Club*.

Therefore, the senior-author opted for the subdivisions of these two primitive Vertebrata groups, only for the terms Super-Order, Order, Family, Genus and species.

This option also allows the conservation of some Super-Orders and Orders already proposed, though seriously revised and restricted.

15. Recapitulation of the proposed subdivisions of the Neoselachii and Batoidei

15.1. Generalities

Complete list of the new taxa proposed and the revised taxa, proposed in *Géominpal Belgica* 1 (Revised Edition), *Géominpal Belgica* 2, *Géominpal Belgica* 2 (Supplement), *Géominpal Belgica* 2 (End) and *Géominpal Belgica* 2 (Erratum), *Géominpal Belgica* 3, *Géominpal Belgica* 4 and *Géominpal Belgica* 4 (Supplement).

15.2.The new Classification of the Chondrichthyes proposed the following Super-Orders

Here follows an Index allowing finding all the new or revised taxa of Neoselachii and Batoidei proposed in the different *Géominpal Belgica*, from *Géominpal Belgica* 1(Revised Edition) to *Géominpal Belgica* 4 (Supplement), in their PDF version. Some additional comments are presented before this Index.

16. Index of all the new taxa and revised taxa proposed

16. 1. Presentation of the Index

From the ***Géominpal Belgica* 1 (Revised Edition)** to ***Géominpal Belgica* 4 (Supplement)**

In **bold**: The number of the *Géominpal Belgica* concerned and in normal type-letter: The page number.

Unusual abbreviations: Rev. means Revised Edition and Sup. Means Supplement.

16. 2. Index

16. 3. Last Comments

The odontological arguments justifying the revision of their generic composition are exposed in detail in the first four *Géominpal Belgica*.

The argumentation justifying the proposal of the three first new familial taxa, the Family Eoscymnorhinidae HERMAN & VAN DEN EECKHAUT, 2010, the Family Galeocerdidae HERMAN & VAN DEN EECKHAUT, 2010 and the Family Triaenodonidae HERMAN & VAN DEN EECKHAUT, 2010 were given in *Géominpal Belgica* 1, respectively: p.: 41, p.: 52 and p.: 53.

On the generic level, only the Genus *Orpodon* CAPPETTA & NOLF, 2005 was suppressed because junior-synonym of the Genus *Carcharhinoides* AMEGHINO, 1901.

The senior-author has observed, in a private collection, some teeth of the Genus *Usakias** ZHELEZKO & KOSLOV, 1999 in the Brussels Sands Formation (Lower Lutetian) from Neder-Okkerzeel (Province of Flemish Brabant, Belgium). This represents a new element for the Belgian Eocene fauna.

The odontological conception of the Genus *Usakias* ZHELEZKO & KOSLOV, 1990 is well defined, but the senior author considers that the multiple other new species attributed to this Genus only represent different populations of one largely distributed medium-sized great predator.

16.4. The Future

Finishing this long list, the senior-author realizes that future discoveries will increase and modify his *Odontological Parasystematic Conception*, but he hopes that the fundamental principle of the mixing of all the data furnished by Biology, Paleontology, Geology, Genetics and Astrophysics will survive in the Works of his followers.

Astrophysics, the last evocated, is generally forgotten, but its metronomic implacability makes it indifferent to the human kind.

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18.4. Geomagnetic and Astrophysics data

Comment

For the most Catastrophic conception of the Evolution: See: Plotnick, 1980 and Raup, 1985. In complete objectivity, the 45 years of personal paleontological observations of the senior-author seem to give reason to their point of view.

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