

# The Compleat Mesoangler

A Newsletter About Mesozoic Fishes

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## Giants of Paleoichthyology Remembered

### Dr. Bobb Schaeffer (1914-2004)

Remembered by John Maisey

Dr. Bobb Schaeffer, Curator Emeritus in the Department of Paleontology, American Museum of Natural History, New York, passed away June 2, 2004, at the age of 90. A few weeks later his wife Betty also passed away.

Bobb was one of the most prominent and well respected paleontologists of his generation. Official words and condolences have already appeared elsewhere, but a few facts deserve repeating here. Bobb came to the Museum in 1936 as a graduate student of William King Gregory, and in 1946 (after four years of military service) he was hired as an Assistant Curator in Vertebrate Paleontology, beginning more than 40 years at the Museum.

I corresponded with him during the 1970's, but only really got to know him after his retirement. Bobb was really helpful to me when

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Bobb Schaeffer (middle) with Stensiö (L) and Jarvik (R)



Rainer Zangerl (right) collecting Pennsylvanian sharks

### Dr. Rainer Zangerl (1912-2004)

Remembered by Hans-Peter Schultze

On December 27th, 2004, Dr. Rainer Zangerl died at the age of 92. Born in Winterthur, Switzerland he attended the University of Zürich and became a student of Dr. Bernhard Peyer, Professor of Paleontology. Peyer introduced Rainer to Middle Triassic vertebrate localities at the Swiss-Italian boundary (Monte San Giorgio-Besano). Rainer finished his Ph.D. thesis on nothosaurs of Mte San Giorgio in 1935. He immigrated to the US in 1936, because there were no positions available for paleontologists in Switzerland. Alfred Romer helped him get a one-year guest researcher position at Harvard. In 1937 he

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## Mesozoic Fishes 4

### Fourth International Meeting on Mesozoic Fishes - Systematics, Homology, and Character Definition Miraflores de la Sierra, Madrid, Spain

August 8–13, 2005 (includes arrival and departure days)

Our beloved meeting is fast approaching! For more information, see the Mesozoic Fishes web site ([www2.biology.ualberta.ca/wilson.hp/mesofish/](http://www2.biology.ualberta.ca/wilson.hp/mesofish/)) or send an e-mail to Francisco at: [francisco.poyato@uam.es](mailto:francisco.poyato@uam.es).

### **Bobb Schaeffer Remembered** (continued):

I arrived at the museum all those years ago. I remember that he and Malcolm McKenna came out to JFK airport to meet us off the plane and welcome us to this new and strange land. He continued to offer help and advice all the years we were together here (he hung around for almost twelve years!). For me, he was a great guide and mentor, and he and Betty also became my good friends. My one regret is that, despite having so many common professional interests, we never made a collaborative work (although we sometimes talked about it). But we would read each other's manuscripts and would discuss many things during the course of our research. There was always a degree of input and a bond between us that may not be apparent to the reader, but it's there all the same.

Bobb made many important scientific contributions during his long career, but to me his most impressive observations were about evolutionary development. He would sometimes write incredibly perceptive remarks based on the few facts that were available at the time, long before "evo-devo" became a respectable discipline! But his observations are usually buried like truffles, sometimes in the least likely places, so you have to root them out (but when you do, they are delicious!). Sometimes, he would pose questions that he himself could not answer, thereby promoting a real sense of scientific inquiry. I like to imagine how much he would have enjoyed reading about the latest discoveries in this field, which has really taken off in the past few years. So, whenever a new paper comes along, I file it with his old notes and papers partly to provide continuity, but also because I think he deserves it! Some of his old files, labelled "skeleton; development," "gill arches," or "limbs" now contain the latest works on evo-devo, as well as his personal notes and well-thumbed photocopies (with the really important bits neatly annotated in blue, red, or green pencil, saving me the trouble of wading through page after page (thanks, Bobb!)).

He made a tremendous contribution to the AMNH and in many ways he still does, with the legacy of his research, his library (which he donated to the AMNH on his retirement), and most of all his inspiration and encouragement. He is missed very much!

John G. Maisey  
American Museum of Natural History  
New York, NY

**For more about Bobb Schaeffer** see SVP  
News Bulletin No. 187:pp. 21-22. ■

### **Rainer Zangerl Remembered** (continued):

married his fiancée Anne Kurz from Winterthur in Cambridge, Mass. Anne became a vital support throughout his life at home and in his research. Rainer moved in 1938 to Middlesex University (now Brandeis University) in Waltham, Mass., in 1939 to the University of Detroit, in 1942 to the University of Notre Dame, South Bend, Indiana, and finally in 1945 to the Field Museum of Natural History, Chicago, as Curator of Fossil Reptiles and Amphibians.

His research interest in amphisbaenids and turtles grew during this period. Rainer published an important paper on the methods of comparative anatomy in 1948. He next concentrated his research on fossil turtles. Thus he became the specialist on fossil and extant turtles (last monograph published on an extant sea turtle in 1988). While the turtle research was ongoing, he tried to find a vertebrate Lagerstätte comparable to that of Mte San Giorgio, returning to Europe several times to search other Triassic localities. The search was unsuccessful. Then in a curious way he found an important locality in front of his door. In 1950, Loren Woods, then Curator of (extant) Fishes at the Field Museum, suggested a trip to a quarry of his brother in southern Indiana so that Rainer could explain to him where to look for fossil fish. They discovered many fish remains in the black shales on the floor of the quarry. En route home Rainer discovered a small outcrop rich in fossil fish remains near Mecca, Indiana. That was the beginning of the paleoecological study of Pennsylvanian black shales finished in a monumental monograph in 1963 (Zangerl & Richardson, 1963).

In 1962, Rainer became the departmental Chief Curator (head of the Department of Geology). During that time Dwight Davis, the well-known anatomist at the Field Museum, asked him to help translate Hennig's 1950 book on phylogenetic systematics. Later, with Davis in declining health, Rainer took on the larger part of work. The translation (Hennig, 1966) became the nucleus for all our phylogenetic research today. Rainer then took on another translation project, the unfinished manuscript of a book on tooth histology by his former advisor, B. Peyer (Peyer, 1968).

In addition to these and other projects, Rainer shifted his research interests to the black shale fauna, the main components of which are the well known chondrichthyans, and a group he called "placoderms" (despite the admonition of

Denison, Curator of Fossil Fish at the Field Museum). These are the iniopterygians (Zangerl & Case, 1973), chondrichthyans with pectoral fins placed high on the flanks, and with many other features of the head unknown at the time. Black-shale fishes are flattened and Rainer interpreted them by taking exaggerated stereo-X-ray photos. He was a specialist in X-ray photography. Nevertheless, his interpretation of iniopterygians met with much reservation within the scientific community until the forms were discovered more three-dimensionally preserved at other localities. Rainer started with study of the more common elasmobranchs of the black shales, but even here he got immediately into contradiction with an authority. As participant of the Fourth Nobel Symposium in 1967 honoring E. Stensiö, he published in 1968 a description of a Paleozoic shark (*Holmesella*) and figured bone cells in the base of the scales. T. Ørvig, the authority on paleohistology at the time, had figured the scales of the same species without bone cells (they were retouched away on the photos, because sharks do not have bone tissue - the conventional wisdom at that time). Rainer also participate in the second symposium honoring Stensiö in 1972 in London. By then he was considered the specialist on Paleozoic sharks, presenting shark phylogeny in grade levels (pectoral "design"). With Denison's retirement in 1970, Rainer went from fossil reptiles to become Curator of Fossil Fishes. He compiled the knowledge of the Paleozoic sharks in volume 3A of the Handbook of Paleoiichthyology in 1981 after his retirement in 1974. He had one graduate student, the late Mike Williams, former curator at the Cleveland Museum of Natural History, who studied black shale chondrichthyans.

After Rainer's retirement the Zangerls moved into the house they had built with their own hands over a period of years at Hajji Hollow, 8 miles W of Rockville, Indiana, where the Mecca quarry shales outcrop. His wife did not permit him to excavate there, so they started work at a new locality in the southern part of Indiana near Bethel. This was again a very rich fossil fish Lagerstätte in the Pennsylvanian black shales. The excavated specimens were removed to Hajji Hollow, and then distributed freely to museums and institutions that were interested enough to send someone to pick up material.

Rainer achieved much in his 92 years: he had become a well-known turtle specialist, a great comparative anatomist, a specialist in X-radiography of fossils and their interpretation, a

recognized paleohistologist, and a well-known Paleozoic shark specialist. He made the first great compilation of one Lagerstätte in all of its paleo-ecological aspects. He and E. Yockelson (US National Museum) organized the first of the ongoing North American Paleontological Conventions in Chicago in 1969. He was honored by the Paleontology Society with its Presidential award in 1996, and by the Society of Vertebrate Paleontology with the Romer-Simpson medal in 2003.

#### References

- Hennig, W. 1950.** Grundzüge einer Theorie der phylogenetischen Systematik. 370 pp. Deutscher Zentralverlag, Berlin.
- Hennig, W.** (Davis/Zangerl translators) 1966. Phylogenetic Systematics. VI + 263 pp. University of Illinois Press, Urbana.
- Peyer, B.** (Zangerl translator) 1968. Comparative Odontology. XIV + 347 pp. University of Chicago Press, Chicago & London.
- Zangerl, R.** 1948. The methods of comparative anatomy and its contribution to the study of evolution. *Evolution* 2(4): 351-374.
- Zangerl, R.** 1968. The morphology and developmental history of the scales of the Paleozoic sharks *Holmesella* and *Orodus*. IN Ørvig, T., Nobel Symposium 4: Current Problems of Lower Vertebrate Phylogeny. Pp. 339-412. Almqvist & Wiksell, Stockholm.
- Zangerl, R.** 1981. Chondrichthyes I, Paleozoic Elasmobranchii. IN Schultze, H.-P. (ed.), Handbook of Paleoiichthyology. Volume 3A: VI + 115 p. Fischer Verlag, Stuttgart & New York.
- Zangerl, R. & Case, G.** 1973. Iniopterygia, a new order of chondrichthyan fishes from the Pennsylvanian of North America. *Fieldiana: Geology Memoirs* 6: IX + 67 pp.
- Zangerl, R. & Richardson, E. S. Jr.** 1963. The paleoecological history of two Pennsylvanian Black Shales. *Fieldiana: Geology Memoirs* 4: XII + 352 pp.

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**For more about Rainer Zangerl** see SVP News Bulletin No. 188, pp. 57-60. ■

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## Mesozoic Fish Tales: News from Readers

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**Halloween Treat, October 31, 2004, for Großvater Pfeil.** Born to Markus Pfeil, son of Friedrich Pfeil, a son, named Maximillan Pfeil. Grandpa Fritz Pfeil is doing well and was showing pictures of his first grandchild to anyone who ventured close to his book booth at the SVP meeting in Denver. ■

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## New Members:

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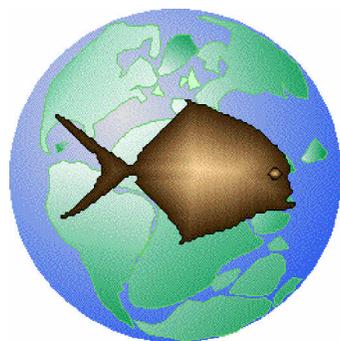
**Caine S.,** Woodhead Croft, New Aberdour, NR, Fraserburgh, Aberdeenshire, AB43 7LQ Scotland, UK. *Tel:* 01346 561 408; *E-mail* [caine@gobi99.freeseerve.co.uk](mailto:caine@gobi99.freeseerve.co.uk)

*Interests:* Working as a professional model maker and painter, specially in extinct fishes.

**Carnevale, Dr. Giorgio** Dipartimento di Scienze della Terra, Università degli Studi di Pisa, via S. Maria, 53, I-56100 Pisa, Italy *Tel:* 0039-050-2215841; *E-mail* [carnevale@dst.unipi.it](mailto:carnevale@dst.unipi.it)

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*Interests:* My present research interests focus on the teleosts of the Middle and Upper Cretaceous of central Montana. Recent collecting activities in the area around the Judith River in Fergus County of central Montana have yielded



a large number of scales and spines. I have found very little in the literature that would contribute to identification of this material and would enjoy discussions with others regarding

these specimens.

**Friedman, Virginia J.** 1535 Montebello Dr., Suisun City, California, 94585-3009 USA. *Tel:* 1 (707) 422-8178; *E-mail:* [friedmanhvj@aol.com](mailto:friedmanhvj@aol.com)

*Interests:* I have a general interest in Mesozoic fishes, especially mid-Cretaceous teleosts and Chondrichthyes. During field work, I have encountered a rather diverse marine ichthyofauna including the oldest record of saurodontid fish in North America (Stewart & Friedman, 2001, JVP 21(3):104A.), and also some unusual rostra of Plethodidae Loomis, 1900, ?*Thryptodus* sp., Cretaceous, late Cenomanian, Eagle Ford Group, Britton Formation, Camp Wisdom Member, Dallas–Fort Worth area, USA. Collector: Virginia Friedman, 2002.

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*Interests:* I am a Ph.D. student at the Institute of Geology and Mineralogy of the University of

Cologne. I am interested in Mesozoic elasmobranchs, especially Cretaceous sharks. At the moment I am working on a project about the oxygen isotopic composition of fossil sharks' teeth (mainly from the Upper Cretaceous of NW Europe) with the aim to reconstruct palaeo-seawater temperatures. ■

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## Address Updates:

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## Squish Fisch Fiche: Recent Publications

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**Alvarado-Ortega, J., González-Rodríguez, K., Blanco-Piñón, A., Espinosa-Arrubarrena, L., & Ovalles-Demián, E.** In press. Mesozoic Osteichthyans of México. Topics on Geobiology (Studies on Mexican Paleontology), Kluwer Academic Publishers B. V.

**Arratia, G. 2003.** *Leptolepis*, *Paraleptolepis* (Teleostei) and a new fish name. Mitt. Mus. Nat. kd. Geowiss. Reihe **6**:157-159.

**Arratia, G. 2004.** The earliest teleosts with special reference to Triassic and Jurassic 'Pholidophoriforms' p. 11. In: Richter, M., & Smith, M. M. (editors.). Abstracts For Talks and Posters, 10<sup>th</sup> International Symposium on Early Vertebrates/Lower Vertebrates. Universidade Federal do Rio Grande do Sul, Gramado, Brazil.

**Arratia, G. 2004.** Mesozoic halecostomes and the early radiation of teleosts. pp. 279-315. In: Arratia, G., and Tintori, A. (editors). Mesozoic Fishes 3—Systematics, Paleoenvironments and Biodiversity. Proceedings of the International Meeting, Serpiano, 2001. Verlag Dr. Friedrich Pfeil, München, Deutschland.

**Arratia, G., López-Arbarello, A., Prasad, G. V. R., Parmar, V. & Kriwet, J. 2004.** Late Cretaceous-Paleocene percomorphs (Teleostei)

from India—early radiation of Perciformes. pp. 635-664. In: Arratia, G., Wilson, M. V. H., and Coutier, R. (eds.). Recent Advances in the Origin and Early Radiation of Vertebrates—Honoring Hans-Peter Schultze. Verlag Dr. Friedrich Pfeil, München, Deutschland.

**Arratia, G., Scasso, R. A., & Kiessling, W. 2004.** Late Jurassic fishes from Longing Gap, Antarctic Peninsula. Journal of Vertebrate Paleontology. Vol. **24**(1):41-55.

**Arratia, G., M. V. H. Wilson, & R. Cloutier (eds.). 2004.** Recent Advances in the Origin and Early Radiation of Vertebrates—Honoring Hans-Peter Schultze. Verlag Dr. Friedrich Pfeil, München, Deutschland, 703 pp.

**Bonde, N. 2004.** An Early Cretaceous (Ryazanian) fauna of "Purbeck-Wealden type" at Robbedale, Bornholm, Denmark. pp. 507-528. In: Arratia, G., and Tintori, A. (editors). Mesozoic Fishes 3—Systematics, Paleoenvironments and Biodiversity. Proceedings of the International Meeting, Serpiano, 2001. Verlag Dr. Friedrich Pfeil, München, Deutschland.

**Brito, P. M., Meunier, F. J., & Clement, G. 2004.** The calcified air bladder of *Axelrodichthy araripensis* (Actinistia: Mawsonidae). p. 39 In: Richter, M., & Smith, M. M. (editors). Abstracts For Talks and Posters, 10<sup>th</sup> International Symposium on Early Vertebrates/Lower Vertebrates. Universidade Federal do Rio Grande do Sul, Gramado, Brazil.

**Bürgin, T. 2004.** †*Eosemionotus ceresiensis* sp. nov., a new semionotiform fish (Actinopterygii, Halecostomi) from the Middle Triassic of Monte San Giorgio (Southern Switzerland). pp. 239-251. In: Arratia, G., and Tintori, A. (editors). Mesozoic Fishes 3—Systematics, Paleoenvironments and Biodiversity. Proceedings of the International Meeting, Serpiano, 2001. Verlag Dr. Friedrich Pfeil, München, Deutschland.

**Cavin, L., & Forey, P.L. 2004.** New mawsoniid coelacanth (Sarcopterygii: Actinistia) remains from the Cretaceous of the Kem Kem beds,

Southern Morocco. pp. 493-506 *In*: Arratia, G., and Tintori, A. (editors). *Mesozoic Fishes 3—Systematics, Paleoenvironments and Biodiversity*. Proceedings of the International Meeting, Serpiano, 2001. Verlag Dr. Friedrich Pfeil, München, Deutschland.

**Chang, M., & Miao, D. 2004.** An overview of Mesozoic fishes in Asia. pp. 535-563 *In*: Arratia, G., and Tintori, A. (editors). *Mesozoic Fishes 3—Systematics, Paleoenvironments and Biodiversity*. Proceedings of the International Meeting, Serpiano, 2001. Verlag Dr. Friedrich Pfeil, München, Deutschland.

**Coates, M. I. 2004.** Arms, armour, convergence and conservatism in a Lower Carboniferous Hybodont shark. pp. 13-14 *In*: Richter, M., & Smith, M. M. (editors). *Abstracts For Talks and Posters, 10<sup>th</sup> International Symposium on Early Vertebrates/Lower Vertebrates*. Universidade Federal do Rio Grande do Sul, Gramado, Brazil.

**Diedrich, C. 2001.** Großammoniten-Kolke, Bioturbation und Fische im Cenoman/Turon-Grenzbereich von NW-Deutschland. A1 Teutoburger Wald. pp. 1-24. *In*: 3,5 Milliarden Jahre Biodiversität, Gemeinsame Jahrestagung der Paläontologischen Gesellschaft und der Gesellschaft für Biologische Systematik, 17. bis 21. September 2001 in Oldenburg (Oldb.) am Standort Naturwissenschaften Oldenburg-Wechloy der Carl von Ossietzky Universität. Carl von Ossietzky Universität, Oldenburg, Deutschland, 67 pp.

**Everhart, M. J. 2004.** First record of the hybodont shark genus, *Polyacrodus* sp., (Chondrichthyes; Polyacrodontidae) from the Kiowa Formation (Lower Cretaceous) of McPherson County. *Kansas Academy of Science, Transactions*, **107**(1/2):39-43

**Everhart, M. J. 2004.** Late Cretaceous interaction between predators and prey. Evidence of feeding by two species of shark on a mosasaur. *PalArch*, **1**(1):1-7

**Everhart, M.J., & Caggiano, T. 2004.** An associated dentition and calcified vertebral centra of the Late Cretaceous elasmobranch,

*Ptychodus anonymus* Williston 1900. *Paludicola*, **4**(4):125-136

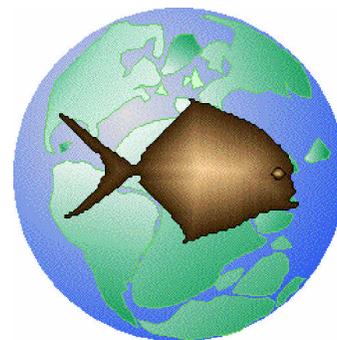
**Everhart, M.J., & Darnell, M.K. 2004.** Occurrence of *Ptychodus mammillaris* (Elasmobranchii) in the Fairport Chalk Member of the Carlile Shale (Upper Cretaceous) of Ellis County, Kansas. *Kansas Academy of Science, Transactions*, **107**(3-4):126-130

**Fielitz, C. 2004.** The phylogenetic relationships of the †Enchodontidae (Teleostei: Aulopiformes). pp. 619-634 *In*: Arratia, G., Wilson, M. V. H., and Coutier, R. (eds.). *Recent Advances in the Origin and Early Radiation of Vertebrates—Honoring Hans-Peter Schultze*. Verlag Dr. Friedrich Pfeil, München, Deutschland.

**Filleul, A., & Maisey, J. G. 2004.** Redescription of *Santanichthys diasii* (Otophysi, Characiformes) from the Albian of the Santana Formation and comments on its implications for Otophysan relationships. p. 20 *In*: Richter, M., & Smith, M. M. (editors). *Abstracts For Talks and Posters, 10<sup>th</sup> International Symposium on Early Vertebrates/Lower Vertebrates*. Universidade Federal do Rio Grande do Sul, Gramado, Brazil.

**Forey, P. L. 2004.** A three-dimensional skull of a primitive clupeomorph from the Cenomanian English Chalk, and implications for the evolution of the clupeomorph acusticolateralis system. pp. 405-427 *In*: Arratia, G., and Tintori, A. (editors). *Mesozoic Fishes 3—Systematics, Paleoenvironments and Biodiversity*. Proceedings of the International Meeting, Serpiano, 2001. Verlag Dr. Friedrich Pfeil, München, Deutschland.

**Gallo, V., & Brito, P. M. 2004.** An overview of Brazilian semionotids. pp. 253-264 *In*: Arratia, G., and Tintori, A. (editors). *Mesozoic Fishes 3—Systematics, Paleoenvironments*



and Biodiversity. Proceedings of the International Meeting, Serpiano, 2001. Verlag Dr. Friedrich Pfeil, München, Deutschland.

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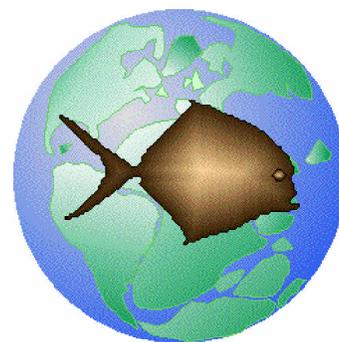
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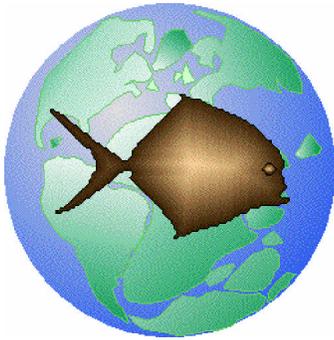
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More than 1,500 references dealing with North American Mesozoic fishes are arranged in groups dealing with fossil assemblages from different geologic intervals and different geographic regions of North America.

**Download here:**

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## Future Meetings:

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### 9th Symposium on Mesozoic Terrestrial Ecosystems and Biota

June 2006. Manchester UK

University of Manchester, June 27 – 29, 2006

A short pre-meeting field trip to either the Cretaceous localities on the Isle of Wight or the Middle Jurassic of the Yorkshire Coast is planned, as is a longer post-meeting field trip including a range of classic Triassic, Jurassic, and Cretaceous deposits in Oxfordshire, the Bristol Channel, Devon, and Dorset.

Key dates

March 2005 call for abstracts (2nd Circular). June 2005 deadline for abstract submission. September 2005 Deadline for short paper submission and payment of registration fee/field trip deposits. November 2005 return of edited short papers to delegates. January 2006 deadline for receipt of final (revised) versions of short papers.

For further information, please consult our website homepage [mac.com/paulselden/MTE/](http://mac.com/paulselden/MTE/)

If you are interested in attending the meeting, please contact either Paul Barrett or Susan Evans  
[p.barrett@nhm.ac.uk](mailto:p.barrett@nhm.ac.uk) [s.e.evans@ucl.ac.uk](mailto:s.e.evans@ucl.ac.uk)

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Various vertebrate paleontological symposia.  
Abstract Deadline February 28, 2005.

### European Association of Vertebrate Palaeontologists (EAVP)

Third Meeting, Hessisches Landesmuseum, Darmstadt, Germany, July 18-23, 2005

First Circular (pdf file) available here:

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### Proposed Symposium:

Biom mineralisation in Fish Bones and Teeth:  
from Microscopy to Design of Materials

Organizers: Anne Kemp and Gilles Cuny  
(University of Queensland and Geological Museum, University of Copenhagen).

We plan a symposium on fish biom mineralisation emphasising new analytical techniques such as high resolution TEM and molecular biology,

placing the new work in the context of results from more conventional analyses such as light and electron microscopy and biochemistry. This symposium is part of a major project to analyse fish biom mineralisation in more detail, and explore commercial applications of the structures and processes discovered.

If interested in participating, either as part of the Fisheries Biology Congress in Newfoundland in 2006, or as a separate symposium in Europe in 2008, e-mail Gilles [gilles@savik.geomus.ku.dk](mailto:gilles@savik.geomus.ku.dk) or Anne at [a.kemp@mailbox.uq.edu.au](mailto:a.kemp@mailbox.uq.edu.au). ■

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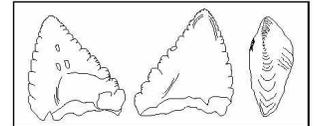
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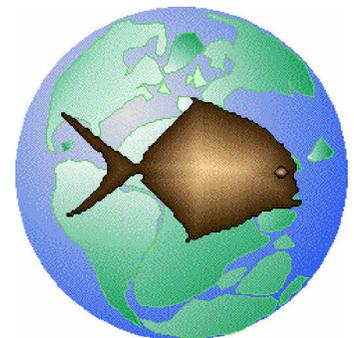
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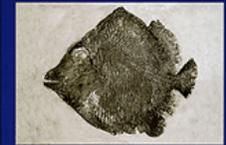
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The first discoveries of Early Paleozoic fishes took place in Scotland and in the Baltic area at the beginning of the 19<sup>th</sup> century. The first early vertebrate remains recorded from Scotland were of Carboniferous age and are now referred to the sarcopterygians *Rhizodus* and *Agonostichus*. Later, discoveries of additional Scottish and Baltic localities made these regions (and also European workers) the main source of information on early vertebrates for a long time. This situation reached its most important development with the contributions of E. STENBOM and other Swedish and Danish colleagues, who organized important collecting expeditions (e.g., Podolia and Spitzbergen). New material from these localities and others (e.g., Devonian localities of eastern Canada) allowed STENBOM and his followers (the so-called Swedish School) to produce some fascinating morphological work and to propose hypotheses about the origin of early tetrapods that still today are a source of discussion.

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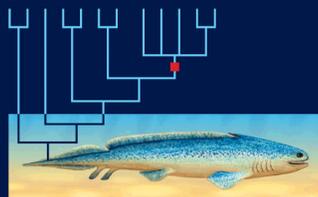
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