

**AN ANNOTATED BIBLIOGRAPHY OF PALEONTOLOGICAL AND SYSTEMATIC PAPERS
ON FISH-OTOLITHS, PUBLISHED SINCE 1968***

by

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The present paper constitutes a tentative to list all references of otolith publications posterior to, or not included in Weiler's 'Otolithi Piscium' (Fossilium Catalogus, Animalia, pars 117), published in 1968. After each reference, new species and/or illustrated recent otoliths are listed. Names of species are taken from the original publications, without evaluation of their validity. Finally an alphabetic, non-interpretative list of all fossil nominal species described since 1968 is given.

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INTRODUCTION

With the publication of volume 117 (*Otolithi Piscium*) of the 'Fossilium Catalogus' Weiler (1968) supplied an extremely valuable basic document for the palaeontological and systematic study of otoliths. In this work Weiler gave an almost complete list of papers on recent and fossil otoliths then published. Simultaneously with a systematic list of illustrations of recent otoliths the author gave his interpretation of all published fossil species.

A rather complete library on this subject was composed by one of us (D.N.) after thoroughly collecting all the literature that has appeared since 1968. The interest in otoliths has increased in the same period among palaeontologists and ichthyologists. Therefore the number of papers published after this date and their importance are almost equal to all those that appeared before.

The authors decided to compose the present paper because during their otolith studies they constantly felt the need of a complementary bibliography. At first a list of references was composed by B. Huyghebaert, based on the collection of papers brought together by D. Nolf. Together with the references of papers published after 1968 those papers were included that were published before 1968 but not mentioned by Weiler. Subsequently the list was completed with bibliographic data collected in the library of J. Fitch, during a visit of D. Nolf in 1977. Moreover some forty additional references, mainly concerning not well-known older publications could be added after checking all the headings 'otoliths' in the Check-list of fishes of the north-eastern Atlantic and of the Mediterranean (CLOFNAM), edited by Hureau & Monod (1973). Finally a tentative for completion with the 'Dean Bibliography of Fishes' and of the 'Zoological Record' proved to be very time-consuming but less fruitful. All in all this may give an impression of the degree of completeness of the list.

As expressed in the title of this paper the authors concentrated in the first place on palaeontological and systematic literature, but also included a number of references concerning fishery, as well as physiology, cristallography, chemical composition etc. of otoliths. In these related fields, however, the references given will probably be less complete.

Titles of unpublished theses (e.g. those of Cappetta, Kartas, Lafond-Grellety, Lamber, Nolf, Pointer, Salem, Stringer and others) are deliberately omitted. Though of several of these documents a considerable number of mimeographed copies was distributed among specialists it is the opinion of the authors that they may not be regarded as publications in the sense of art. 8 and 8a of the International Code of Zoological Nomenclature. Citing chapters on otoliths in general works, as e.g. the 'Traité de Zoologie' of Grassé, the 'Lehrbuch der Paläozoologie' of Müller, the 'History of Fishes' of Norman, etc. has been renounced.

Besides bibliographic references the authors also wanted to list all the fossil species introduced after 1968 and of illustrations of recent species. Probably otolithology has made most progress in this last field. For this reason each reference is followed by the headings 'new fossil species' and 'illustrated recent otoliths'. All species are cited with the names used by the concerning author, whether valid or not. The composition of the name is the same as in the paper concerned.

The authors decided not to compose a systematic list of the recent material, because illustrations of recent otoliths that are badly identified or cited with incorrect names are rather frequently found in literature. For the fossil species they restricted themselves to an alphabetical list of the nominal species. A systematic list would have been more useful, but would have required a revision of a considerable number of species, many of which would have been useless of unjustified. It would have been a job largely exceeding the scope of the present paper.

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Basically the abbreviations of names of periodicals are those used by the periodical itself. In cases where it fails to give such an abbreviation the one suggested by Fischer, 1974 is used (Abkürzungsverzeichnis zum Zitieren von erdwissenschaftlichen Zeitschriften. – Schweiz. geol. Komm.: 1 - 30).

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Illustrated recent otolith: *Pseudotolithus typus*, *P. senegalensis*, *P. brachygnathus*, *Corvina cameronensis*, *C. nigrita*, *Larimus peli*, *Sciaena mbizi*, *Umbrina canariensis*, *Ilisch dolloi*, *Ethmalosa fimbriata*, *Sardinella cameronensis*, *Arius* sp., *Pomadourys jubelini*, *Brachydeuterus auritus*, *Galeoides decadactylus*, *Trichiurus lepturus*, *Deprana africana*.

Farkas, B., 1938. Zur Kenntnis des Baues und der Funktion des Saccolithen der Knochenfische. – Verh. d. dtsh. Zool. Ges., 193 - 206, 5 fig.

Illustrated recent otolith: *Phoxinus laevis*.

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Fitch, J. E., 1951. Age composition of the Southern California catch of Pacific Mackerel 1939-40 through 1950-51. – Fish. Bull., 83: 3 - 73.

Illustrated recent otolith: *Pneumatophorus diego*.

Fitch, J. E., 1967. Fish remains recovered from a Corona del Mar, California, Indian Midden (Ora-190). – Calif. Fish and Game, 53 (3): 185 - 191, 1 fig.

Illustrated recent otolith: *Engraulis mordax*.

Fitch, J. E., 1968. Otoliths and other fish remains from the Timms Point Silt (Early Pleistocene) at San Pedro, California. – Los Angeles County Mus. Contrib. in Sci., 146: 1 - 29, 4 fig.

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Fitch, J. E., 1969c. Appendix A. Fish remains, primarily otoliths, from a Ventura, California, Chumash village site (VEN-3). – Mem. south. Calif. Acad. Sci., 8: 56 - 71, 19 fig.

Fitch, J. E., 1970. Fish remains, mostly otoliths and teeth, from the Palos Verdes Sand (Late Pleistocene) of California. – Los Angeles County Mus. Contrib. in Sci., 199: 1 - 41, 6 fig.

Fitch, J. E., 1971. Late Eocene fossils from Eua, Tonga. Teleost otoliths. – Geol. Surv. Prof. Pap., 640: G13 - G16.

Fitch, J. E., 1972. Fish remains, primarily otoliths, from a coastal Indian Midden (SLO-2) at Diablo Cove, San Luis Obispo County, California. – San Luis Obispo County Archaeol. Soc. occas. Pap., 7: 101 - 120, 4 fig.

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- Fitch, J. E. & L. W. Barker, 1972. The fish family Moridae in the Eastern North Pacific with notes on Morid otoliths, caudal skeletons, and the fossil record. - Fishery Bull., 70 (3): 565 - 584, 6 fig.
Illustrated recent otoliths: *Laemonema barbatulum*, *Tripterothycis gilchristi*, *Physiculus nematopus*, *P. rastrelliger*, *Pseudophycis bachus*, *Lotella callarias*, *Antimora microlepis*, *Microlepidium verecundum*, *Lepidion eques*, *Halargyreus johnsonii*, *Mora pacifica*, *Auchenoceros punctatus*, *Actuariolum* sp., *A. terakohensis*.
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Illustrated recent otoliths: *Diplospinus multistriatus*, *Paradiplospinus gracilis*, *Aphanopus carbo*, *Trichiurus nitens*, *Lepidopus xantusi*, *Assurger anzac*.
- Follett, W. I., 1965a. Fish remains in the archeological context. - Sacramento Antropol. Soc. Pap., 3: 36 - 46, pl. 1 - 5.
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- Gaemers, P. A. M., 1968. Wat zijn otolieten? - Meded. Werkgr. Tert. Kwart. Geol., 5 (1): 9 - 13, 2 fig.
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- Gaemers, P. A. M., 1971. Bonefish-otoliths from the Anversian (Middle Miocene) of Antwerp. - Leidse geol. Meded., 46: 237 - 267, pl. 1 - 9.
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Illustrated recent otolith: *Trisopterus esmarki*.
- Gaemers, P. A. M., 1972. Otoliths from the type locality of the Sands of Berg (Middle Oligocene) at Berg, Belgium. - Meded. Werkgr. Tert. Kwart. Geol., 9 (3-4): 73 - 85, pl. 1 - 3.
New fossil species: *Onos bergensis*, *Sebastes weileri*, *Eucitharus belgicus*.
- Gaemers, P. A. M., 1973. New otoliths from the Tertiary of the North Sea Basin. - Meded. Werkgr. Tert. Kwart. Geol., 10 (2): 58 - 75, pl. 1 - 2.
New fossil species: *Gadichthys undosus*, *Merlangiogadus decorus*, *Merlangius bifurcus*, *Gaidropsarus acuticaudatus*, *Tripterothycis multituberosus*, *Scorpaena edegemensis*, *Macruridarum irregularis*.
- Gaemers, P. A. M., 1974a; De betekenis en de taxonomische waarde van otolieten. - Het Zeepaard, 34 (3): 29 - 40, 7 fig.
- Gaemers, P. A. M., 1974b. Otolieten uit het Merksemien en Icenien van boring Ouwerkerk (Zeeland, Nederland). - Meded. Werkgr. Tert. Kwart. Geol., 11(3): 133 - 143, 1 fig., pl. 1.
- Gaemers, P. A. M., 1976a. New concepts in the evolution of the Gadidae (Vertebrata, Pisces) based on their otoliths. - Meded. Werkgr. Tert. Kwart. Geol., 13 (1): 3 - 32, 11 fig., 1 enclosure.
Illustrated recent otoliths: *Raniceps raninus*, *Brosme brosme*, *Molva molva*, *Gadus morhua*, *Pollachius virens*, *P. carbonarius*, *P. pollachius*, *Melanogrammus aeglefinus*, *Merlangius merlangus*, *Micromesistius poutassou*, *Trisopterus luscus*, *T. minutus*, *Neocolliolus esmarki*, *Gadichthys thori*, *Gadiculus argenteus*, *Boreogadus saida*.
- Gaemers, P. A. M., 1976b. New gadiform otoliths from the Tertiary of the North Sea Basin and a revision of some fossil and recent species. - Leidse geol. Meded., 49: 507 - 537, 2 fig., pl. 1 - 7.

Illustrated recent otoliths: *Pollachius virens*, *P. carbonarius*.

New fossil species: *Gadus parallelus*, *Trisopterus concavus*, *T. incognitus*, *Colliolus parvus*, *C. johannettae*, *C. schwarzhansi*, *Palaeoraniceps regularis*, *Molva primaeva*, *Brosme heinrichi*, ? *Macruridarum deurnensis*.

Gaemers, P. A. M., 1977. Recente en Jong-Kwartaire visresten van het Long Forties gebied, Noordelijke Noordzee. – Meded. Werkgr. Tert. Kwart. Geol., 14 (1): 21 - 40, pl. 1 - 2.

Illustrated recent otoliths: *Merlangius merlangus*, *Neocolliolus esmarki*, *Echiodon drummondi*, *Echelyopus cimbrius*, *Glyptocephalus cynoglossus*, *Molva molva*.

Gaemers, P. A. M., 1978a. Late Quaternary and Recent otoliths from the seas around southern Norway. – Meded. Werkgr. Tert. Kwart. Geol., 15 (3): 101 - 117, 3 fig., pl. 1 - 2.

Illustrated recent otoliths: *Notoscopelus kroeyeri*, *Notoscopelus elongatus*, *Gadichthys thori*, *Merlangius merlangus*.

Gaemers, P. A. M., 1978b. A biozonation based on Gadidae otoliths for the northwest European younger Cenozoic, with the description of some new species and genera. – Meded. Werkgr. Tert. Kwart. Geol., 15 (4): 141 - 161, 1 pl.

New fossil species: *Palaeoraniceps gramensis*, *Colliolus minutulus*, *Pseudocolliolus cuykensis*.

Gaemers, P. A. M., 1979a. Een interessante otolietenfauna afkomstig uit de Noordzee, 20 kilometer westelijk van Scheveningen. – Het Zeepaard, 39 (2): 31 - 46, pl. 1 - 2.

Gaemers, P. A. M., 1979b. Aanvullend otolietenmateriaal afkomstig uit de Noordzee, 20 kilometer westelijk van Scheveningen. – Het Zeepaard, 39 (3): 59 - 62.

Gaemers, P. A. M. & W. Schwarzhans, 1973. Fisch-Otolithen aus dem Pliozän von Antwerpen (Belgien) und Ouwkerk (Niederlande) und aus dem Plio-Pleistozän der Westerschelde (Niederlande). – Leidse geol. Meded., 49 (2): 207 - 257, 2 fig., pl. 1 - 10.

New fossil species: *Trisopterus elongatus*, *T. pliocenicus*, *Micromesistius hochti*, *Melanogrammus conjunctus*, *Trachinus angustus*, *Otophidium compactum*, *Ammodytes rostratus*, *Gobius ornatus*, (*Gobiidarum*) *modestus*, (*G.*) *dorsoconcavus*, (*G.*) *bicornutus*, (*G.*) *rectangularis*, *Onocottus asper*, *Gadichthys benedeni verticalis*, *Carapus nuntius elongatus*, *Ammodytes lanceolatus sculptus*.

Illustrated recent otoliths: *Micromesistius poutassou*, *Spondyllosoma cantharus*.

Gaemers, P. A. M. & V. W. M. Hinsbergh, 1978. Rupelian (Middle Oligocene) fish otoliths from the clay pit 'De Vliet' near Winterswijk, The Netherlands. – Scripta Geol., 46: 1 - 77, 3 fig., pl. 1 - 15.

New fossil species: *Clupeiformorum planus*, *Gadichthys altus*, *Palaeogadus compactus*, *Brotulidarum phaseoloides*, *Dentex kokeni*, *Paralabrax splendens*, *Acropomidarum martini*, *Carangidarum robustus*.

Gilbert, C. R., 1966. Western Atlantic Sciaenid fishes of the genus *Umbrina*. – Bull. Marine Sci., 16 (2): 230 - 258, 5 fig.

Illustrated recent otoliths: *Umbrina coroides*, *U. canosai*, *U. sinoloae*.

Gotshall, D. W., 1977. Stomach contents of northern California dungeness crabs, *Cancer magister*. – Calif. Fish and Game, 63 (1): 43 - 51, 2 fig.

Gottbehut, V., 1935. Otolithen und Labyrinth verschiedener Teleostier. – Jenaische Z. Naturw., 70 [N.F. 63] (1): 159 - 196, 23 fig.

Greenwood, P. H., 1970a. Skull and swimbladder connections in fishes of the family Megalopidae. – Bull. brit. Mus. nat. Hist., 19 (3): 121 - 135, 2 fig., pl. 1 - 3.

Illustrated recent otoliths: *Megalops cyprinoides*, *Tarpon atlanticus*.

Greenwood, P. H., 1970b. On the genus *Lycoptera* and its relationship with the family Hiodontidae (Pisces, Osteoglossomorpha). – Bull. brit. Mus. nat. Hist., 19 (8): 2 - 285, 10 fig.

Illustrated recent otoliths: *Hiodon alosoides*, *Lycoptera middendorffi*.

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Gregory, P. A. & T. Jow, 1976. The validity of otoliths as indicators of age of petrale sole from California. – Calif. Fish and Game, 62 (2): 132 - 140, 5 fig.

Illustrated recent otolith: *Eopsetta jordani*.

- Hansen, P. M., 1943. Capelin (*Mallotus villosus*). – Ann. biol., 1: 121 - 124, fig. 28a, 28b.
 Illustrated recent otolith: *Mallotus villosus villosus*.
- Hatai, K., 1966. Cenozoic fish otoliths and their stratigraphical significance. – Fossils, 11: 19 - 29, 4 fig.
- Hebig, W., 1978. Otolithen von *Cottus gobio* (L.) aus dem eem-interglazialen Travertin von Burgtonna (Thüringen) (Osteichthyes, Cottidae). – Zool. Abh. Mus. Tierk. Dresden, 35 (9): 141 - 160, 13 fig.
 Illustrated recent otolith: *Cottus gobio*.
- Hecht, T., 1977. A descriptive systematic study of the otoliths of the Neopterygean marine fishes of South Africa. Part I. Introduction. – Trans. roy. Soc. S. Afr., 43 (2): 191 - 197, 1 fig.
- Hecht, T. & A. Hecht, 1977. A descriptive systematic study of otoliths of the Neopterygean marine fishes of South Africa. Part II. The delimitation of Teleost orders, some systematic notes and a provisional new phyletic order sequence. – Trans. roy. Soc. S. Afr., 43 (2): 199 - 218, 37 fig.
 Illustrated recent otoliths: *Elops saurus*, *Gonorhynchus gonorhynchus*, *Sardinops ocellata*, *Bathylagus longirostris*, *Argyrolepeus sladeni*, *Tachysurus feliceps*, *Notacanthus sexspinis*, *Lampadena chavesii*, *Trachinocephalus myops*, *Chloropthalmus agassizi*, *Hemirhamphus far*, *Merluccius capensis*, *Genypterus capensis*, *Physiculus capensis*, *Trachipterus altivelis*, *Zeus faber*, *Antigonia rubescens*, *Diretmus argenteus*, *Monocentrus japonicus*, *Myripristis murdjan*, *Austroglossus pectoralis*, *Chascanopsetta lugubris*, *Nemipterus delagoae*, *Germo allalonga*, *Pachymetopon grande*, *Gobius nudiceps*, *Platycephalus scaber*, *Scorpaena natalensis*, *Trigla capensis*, *Dactyloptena orientalis*, *Ophisurus serpens*, *Ariosoma anago*, *Canthigaster margaritatus*, *Sphaeroides spengleri*, *Lophius piscatorius*, *Atherina breviceps*, *Argyrosoma argyrosoma*.
- Heinrich, W. D., 1969. Fischotolithen aus dem Obermiozän von Hohen Woos. – Geol. Z. geol. Wiss., 67 (1 - 111): 3 - 110, 11 fig., pl. 1 - 19.
 New fossil species: *Bonapartia spina*, *Hygophum? germanicum*, *Merlangius spatulatus miocenicus*.
- Heinrich, W. D., 1970. Nachweis der Teleostiergattung *Lepidorhombus* Günther, 1862 im Chatt von Malliss. – Geol., 19 (7): 883 - 887, 1 pl.
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- Hognestad, P. T., 1962. The Dealfish, *Trachipterus arcticus* Brännich, in North Norway. – Astarte, (21): 1 - 13.
 Illustrated recent otolith: *Trachipterus arcticus*.
- Holec, P., 1973. Fisch-Otolithen aus dem Oberen Baden (Miozän) des nordöstlichen Teiles des Wiener Beckens (Gebiet von Rohožník). – Geol. Zb. geol. carpathica, 24 (2): 393 - 414, 1 fig., pl. 1 - 6.
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- Holec, P., 1975b. Fisch-Otolithen aus dem Baden (Miozän) des nördlichen Teiles des Wiener Beckens und der Donau-Tiefebene. – Geol. Zb., geol. carpathica, 26 (2): 253 - 266, 1 fig., pl. 1 - 2.
 New fossil species: *Otolithus (Myctophidarus) acutirostrum*, *Micromesistius schwarzhansi*, *Antigonia postangusta*.
- Hourson, A. S., 1968. Abnormal cessation of growth in a herring otolith. – J. Fish. Res. Board Canada, 25 (11): 2503 - 2504.
- Hubbs, C. L. & W. I. Follett, 1978. Anatomical notes on an adult male of the deep-sea Ophidiid fish *Parabassogigas grandis* from off California. – Proc. Calif. Acad. Sci., IVth Ser., 41 (17): 385 - 399, 7 fig.
 Illustrated recent otolith: *Parabassogigas grandis*.
- Hubbs, C. L. & T. Iwamoto, 1977. A new genus (Mesobius), and three new bathypelagic species of Macrouridae (Pisces, Gadiformes) from the Pacific Ocean. – Proc. Calif. Acad. Sci., IVth Ser., 41 (7): 233 - 251, 11 fig.
 Illustrated recent otolith: *Mesobius berryi*.
- Hubbs, C. L. & N. J. Wilimovsky, 1964. Distribution and synonymy in the Pacific Ocean, and variation, of the Greenland Halibut, *Reinhardtius hippoglossoides* (Walbaum). – J. Fish. Res. Bd. Canada, 21 (5): 1129 - 1154, 5 fig.
 Illustrated recent otolith: *Reinhardtius hippoglossoides*.
- Huddleston, R. W. & L. W. Barker, 1978. Otoliths and other remains from the Chumbash Midden at Rincon Point (SBa-1) Santa Barbara - Ventura Counties, California. – Los Angeles County Mus., Contr. Sci., 289: 1 - 36, 8 fig.

- Hunger, R., 1939. Ueber Otolithen bei Palaeoniscus. – Pal. Z., 21 (3): 167 - 170, 4 fig.
- Hureau, J. C., 1962. Etude descriptive de l'otolithe (sagitta) de quelques Téléostéens antarctiques. – Bull. Soc. zool. France, 87 (5-6): 533 - 546, 6 fig.
 Illustrated recent otoliths: *Notothenia neglecta*, *Trematomus bernacchii*, *Gymnodraco acuticeps*, *Trematomus newnesi*, *T. borchgrevinki*, *T. hansonii*.
- Hureau, J. C., 1963. *Gymnodraco victori* n. sp., espèce nouvelle de la famille des Bathydraconidae (Téléostéens, Perciformes, Trachinoidei). Considérations biologiques et biogéographiques sur le genre *Gymnodraco*. – Bull. Mus. natl. Hist. nat. Paris, (2), 35 (4): 334 - 342, 4 fig.
 Illustrated recent otoliths: *Gymnodraco victori*, *G. acuticeps*.
- Hureau, J. C., 1964. Sur la probable identité des deux espèces du genre *Chaenichthys*, de la famille des Chaenichthyidae (Poissons à 'sang blanc'). – Bull. Mus. natl. Hist. nat. Paris, (2), 36 (4): 450 - 456, 2 fig.
 Illustrated recent otolith: *Chaenichthys rhinoceratus*.
- Huyghebaert, B. & D. Nolf, 1979. Otolithes de Téléostéens et biostratigraphie des Sables de Zonderschot (Miocène Moyen) de la Belgique. – Meded. Werkgr. Tert. Kwart. Geol., 16 (2): 59 - 100, 5 fig., pl. 1 - 6.
 New fossil species: *Echiodon heinzlini*.
 Illustrated recent species: *Gnathophis catalinensis*, *Pisoodonophis cruentifer*, *Ateleopus indicus*, *Dibranchius atlanticus*, *Mystriphis intertinctus*, *Notoscopelus caudispinosus*, *N. resplendens*, *N. kroyerii*, *Ophichthus triserialis*, *O. gomesii*, *Gadiculus argenteus*, *Trisopterus luscus luscus*, *T. luscus capelanus*, *Oligopus ater*, *Echiodon dentatus*, *Antigonia capros*, *Peristedion cataphractum*, *Pristigenys nipponia*, *Myoxocephalus quadricornis*, *Seriphus politus*, *Cynoscion striatus*, *Trachinus draco*, *T. lineolatus*, *Ammodytes lanceolatus*, *Buglossidium luteum*.
- Irie, T., 1955. The crystal tecture of the otolith of a marine Teleost *Pseudosciaena*. – J. Fac. Fish. Anim. Husb. Hiroshima Univ., 1 (1): 1 - 13, pl. 1 - 3.
 Illustrated recent otoliths: *Pseudosciaena manchurica*.
- Irie, T., 1957. On the forming season of annual rings (opaque and translucent zones) in the otoliths of several marine Teleosts. – J. Fac. Fish. Anim. Husb. Hiroshima Univ., 1 (3): 311 - 317, 2 fig., 1 pl.
 Illustrated recent otoliths: *Argyrosomus argentatus*, *Lateolabrax japonicus*, *Mylio macrocephalus*.
- Irie, T., 1960. The growth of the fish otolith. – J. Fac. Fish. Anim. Husb. Hiroshima Univ., 3 (1): 203 - 221, 8 fig., pl. 1 - 4.
 Illustrated recent otolith: *Lateolabrax japonicus*.
- Irie, T., 1967. Calcification of fish otolith caused by food and water. – Bull. jap. Soc. Sci. Fish., 33 (1): 24 - 26, 2 fig.
- Iwamoto, T., 1978. Eastern Pacific Macrourids of the genus *Coelorhynchus* Giorna (Pisces: Gadiformes), with description of a new species from Chile. – Proc. Calif. Acad. Sci., 41 (12): 307 - 337, 20 fig.
 Illustrated recent otoliths: *Coelorhynchus scaphopsis*, *C. canus*, *C. aconcagua*, *C. fasciatus*, *C. chilensis*.
- Jaquet, M., 1907a; Sur une forme jeune de Trigla. – Bull. Inst. océanogr. Monaco, (102): 5 p., 1 pl.
 Illustrated recent otoliths: *Helicolenus dactylopterus*, *Scorpaena scrofa*.
- Jonet, S., 1972-1973. Etude des otolithes des Téléostéens (Pisces) du Miocène des environs de Lisbonne. – Comunic. Serv. geol. Port., 56: 107 - 294, 14 fig., pl. 1 - 4.
 New fossil species: *Congermuraena weileri*, *Mugil pragalensis*, *Trachurus elegans*, *Jefitchia spinosa*, *Peristedion pulchrum*, *Eucitharus lusitanicus*, *Pseudorhombus helvecianus*.
 Illustrated recent otoliths: *Pagellus centrodonatus*, *P. belloti*, *Dentex macrophthalmus*, *Pagrus auriga*, *P. pagrus*, *Sparus auratus*.
- Jost, O., 1975. Fisch-Otolithen in Speiballen der Wasseramsel. – Natur u. Museum, 105 (9): 283 - 286, 3 fig.
 Illustrated recent otolith: *Cottus gobio*.
- Kändler, R., 1941. Untersuchungen über Fortpflanzung, Wachstum und Variabilität der Arten des Sandaals in Ost- und Nordsee, mit besonderer Berücksichtigung der Saisonrassen von *Ammodytes tobianus* L. – Kiel. Meeresforsch., 5 (1): 45 - 145.

Illustrated recent otoliths: *Ammodytes tobianus*, *A. marinus*.

Karrer, C., 1968. Ueber Erstnachweise und seltene Arten von Fischen aus dem Südatlantik (argentinisch-südbrasilianische Küste). – Zool. Jb. Syst., 95: 542 - 570, 9 fig.

Illustrated recent otoliths: *Allocyttus verrucosus*, *Xenolepidichthys dalgleishi*.

Karrer, C., 1971. Die Otolithen der Moridae (Teleostei, Gadiformes) und ihre systematische Bedeutung. – Zool. Jb. Syst., 98: 153 - 204, 20 fig.

Illustrated recent otoliths: *Mora mora*, *Halargyreus johnsonii*, *Antimora rostrata*, *Lepidion eques*, *L. lepidion*, *Physiculus capensis*, *Gadella maraldi*, *Tripteryphycis gilchristi*, *Brosmiculus imberbis*, *Laemonema barbatulum*, *L. laureysi*, *Salilota australis*, *Lotella rhacina*, *Pseudophycis barbatus*, *P. bacchus*, *P. breviusculus*, *Auchenoceros punctatus*.

Karrer, C., 1973a. Ueber Fische aus dem Südostatlantik. – Mitt. Zool. Mus. Berlin, 49 (1): 191 - 257, 29 fig.

Illustrated recent otoliths: *Yarella blackfordi*, *Photichthys argenteus*, *Triplophos hemingi*, *Symbolophorus veranyi*, *Lampanyctodes hectoris*, *Diaphus dumerili*, *D. taaningi*, *Evermannella balbo*, *Hoplostethus atlanticus*, *H. sp.*, *Taractes rubescens*, *Hyperoglyphe pringlei*, *Schedophilus huttoni*, *Diceratias wedli*.

Karrer, C., 1973b. Ueber das Vorkommen von Fischarten im Nordwestatlantik (Neufundland-Baffinland). – Fisch. Forsch. wiss. Schriftenr., 11 (1): 73 - 90, 32 fig.

Illustrated recent otoliths: *Alepocephalus bairdi*, *A. agassizi*, *Bathylagus euryops*, *Bathysaurus agassizi*, *Myctophum punctatum*, *Notoscopelus kroyeri*, *Lampanyctus macdonaldi*, *Scopelosaurus lepidus*, *Notolepis rissoi*, *Paralepis coregonoides*, *Gaidropsarus ensis*, *Phycis chesteri*, *Chiasmodon niger*, *Triglops nybelini*.

Kartas, F., 1971. Les Triglidæ de la mer Catalane. Distribution, croissance et reproduction. II. Genre *Lepidotrigla*, *Trigloporus lastoviza*, *Eutrigla gurnardus*. – Thèse Faculté Sciences Paris (mimeographed): 173 p., 41 fig.

Illustrated recent otolith: *Lepidotrigla dieuzeidei*.

Kostyuchenko, V. A., 1961. Vozrast i temp rosta bychkakryglyaka (*Neogobius melanostomus* Pallas) v Azovskom more. – Trudy vses. Azov. – Chermon. nauchno-issled. Inst. morsk. ryb. Khoz. Okeanogr., 19: 45 - 60.

Illustrated recent otolith: *Neogobius melanostomus*.

Kotthaus, A., 1952. *Hoplostethus islandicus*, nov. spec. (Acanthopterygia, Abt. Beryciformes, Familie Trachichthyidae) aus den südisländischen Gewässern. – Helgoländer wiss. Meeresunters., 4: 62 - 87, 2 fig.

Illustrated recent otolith: *Hoplostethus islandicus*.

Kotthaus, A., 1968. Fische des Indischen Ozeans. Ergebnisse der ichthyologischen Untersuchungen während der Expedition des Forschungsschiffes 'Meteor' in den Indischen Ozean, Oktober 1964 bis Mai 1965. A. Systematischer Teil, III. Ostariophysi und Apodes. – 'Meteor' Forsch.-Ergebnisse, D (3): 14 - 56, 52 fig.

Illustrated recent otoliths: *Anago anago*, *Ariosoma somaliense*, *Diploconger polystigmatus*, *Lemkea heterolinea*, *Pseudophichthys macroporis*, *Rhynchoconger ectenurus*, *Moringua microchir*, *Borodinula infans*, *Nettastoma elongatum*, *Myrophis lepturus*, *Robinsia catharinae*, *Arius sona*, *A. thalassinus*.

Kotthaus, A., 1969a. Fische des Indischen Ozeans.... IV. Syntognathi. – 'Meteor' Forsch.-Ergebnisse, D (4): 1 - 31, 22 fig.

Illustrated recent otolith: *Exocoetus volitans*.

Kotthaus, A., 1969b. Fische des Indischen Ozeans.... V. Solenichthyes und Anacanthini. – 'Meteor' Forsch.-Ergebnisse, D (4): 32 - 46, 20 fig.

Illustrated recent otoliths: *Bregmaceros atlanticus*, *B. nectabanus*, *B. arabicus*, *B. macclellandii*.

Kotthaus, A., 1970a. Fische des Indischen Ozeans.... VI. Anacanthini (2), Berycomorphi, Zeomorphi. – 'Meteor' Forsch.-Ergebnisse, D (5): 53 - 70, 22 fig.

Illustrated recent otoliths: *Physiculus peregrinus*, *Melanonus zugmayeri*, *Polymixia fusca*, *Myripristis berndti*, *Scopelogadus mizolepis*, *Melamphaes simus*, *M. danae*, *Antigonia rubescens*.

Kotthaus, A., 1970b. Fische des Indischen Ozeans.... VII. Percomorphi (1). – 'Meteor' Forsch.-Ergebnisse, D (6): 43 - 55, 17 fig.

Illustrated recent otoliths: *Epinephelus diacanthus*, *Flagelloseranus meteori*, *Pseudochromis punctatus*, *Grammistes sexlineatus*.

Kotthaus, A., 1970c. Fische des Indischen Ozeans.... VIII. Percomorphi (2). – 'Meteor' Forsch.-Ergebnisse, D (6): 56 - 75, 27 fig.

Illustrated recent otoliths: *Apogon semiornatus*, *Pristiapogon frenatus*, *Jaydia smithi*, *J. queketti*, *J. striata*, *Ostorhynchus fleurieu*, *O. endekataenia*, *O. nitidus*, *O. micromaculatus*, *Bentuviaichthys nigrimentum*, *Synagrops adeni*.

Kotthaus, A., 1972a. Die meso- und bathypelagischen Fische der 'Meteor'-Rossbreiten-Expedition 1970 (2. und 3. Fahrabschnitt). - 'Meteor' Forsch.-Ergebnisse, D (11): 1 - 28, 113 fig.

In this paper the author gives illustrations of 134 species of mesopelagic fishes from the surroundings of the Canary Islands. Although some specimens are somewhat affected by formalin and all specimens are photographed without previous coloration, this is a valuable document for the knowledge of otoliths of mesopelagic fishes of the north-east Atlantic.

Kotthaus, A., 1972b. Fische des Indischen Ozeans.... IX. Iniomi (Nachtrag: Fam. Myctophidae). - 'Meteor' Forsch.-Ergebnisse, D (12): 12 - 35, 25 fig., pl. 1 - 2.

Illustrated recent otoliths: *Electrona rissoi*, *Benthoosema suborbitale*, *B. fibulatum*, *Hygophum proximum*, *Myctophum aulolaternatum*, *M. nitidulum*, *M. brachygnathum*, *M. selenops*, *Symbolophorus evermanni*, *S. rufinus*, *Notolychnus valdiviae*, *Paralampanyctus ater*, *Lampanyctus nobilis*, *L. intricarius*, *L. alatus*.

Kotthaus, A., 1973. Fische des Indischen Ozeans.... X. Percomorphi (3). - 'Meteor' Forsch.-Ergebnisse, D (16): 17 - 32, 16 fig.

Illustrated recent otoliths: *Bathyclupea hoskynii*, *Pelontrus morgansi*, *Xenanthias intermedius*, *Chelidoperca occipitalis*.

Kotthaus, A., 1974a. Die Fische des Indischen Ozeans.... XI. Percomorphi (4). - 'Meteor' Forsch.-Ergebnisse, D (17): 33 - 54, 25 fig.

Illustrated recent otoliths: *Acropoma japonicum*, *Lactarius lactarius*, *Selar crumenophthalmus*, *Lutianus kasmira*.

Kotthaus, A., 1974b. Fische des Indischen Ozeans.... XII. Percomorphi (5). - 'Meteor' Forsch.-Ergebnisse, D (18): 44 - 54, 10 fig.

Illustrated recent otolith: *Nemipterus japonicus*.

Kotthaus, A., 1975. Fische des Indischen Ozeans.... XVI. Percomorphi (6). - 'Meteor' Forsch.-Ergebnisse, D (21): 30 - 53, 21 fig.

Illustrated recent otoliths: *Otolithes cuvieri*, *Johnieops dussumieri*.

Kotthaus, A., 1976. Fische des Indischen Ozeans.... XVII. Percomorphi (7). - 'Meteor' Forsch.-Ergebnisse, D (23): 45 - 61, 15 fig.

Illustrated recent otolith: *Cirrhitichthys aureus*.

Kotthaus, A., 1977a. Fische des Indischen Ozeans.... XIX. Percomorphi (9). - 'Meteor' Forsch.-Ergebnisse, D (25): 24 - 44, 22 fig.

Illustrated recent otolith: *Benthodesmus spec.*

Kotthaus, A., 1977b. Fische des Indischen Ozeans.... XX. Pleuronectiformes (Heterosomata). - 'Meteor' Forsch.-Ergebnisse, D (26): 1 - 20, 24 fig.

Illustrated recent otolith: *Symphurus? gilesi*.

Kotthaus, A., 1979. Fische des Indischen Ozeans.... XXI. Diverse Ordnungen. - 'Meteor' Forsch.-Ergebnisse, D (28): 6 - 54, 62 fig.

Illustrated recent otoliths: *Echiodon sp.*, *Pyramodon ventralis*, *Diaphus problematicus*, *D. malayanus*, *D. garmani*, *D. jenseni*, *D. phillipsi*, *D. fragilis*, *D. parri*, *D. brachycephalus*.

Lafond-Grellety, J., 1963. Les otolithes de l' Helvétien de Sallespisse (Basses-Pyrénées). - P.V. Soc. linnéenne Bordeaux, 100: 141 - 158, pl. 1 - 2.

New fossil species: *Cottus parascorpius*.

Lafond-Grellety, J. & M. Vigneaux, 1964a. Interprétation stratigraphique des otolithes du Miocène inférieur et moyen du bassin aquitain occidental. - C.R. Soc. géol. France, 1: 28 - 30, Paris.

Lafond-Grellety, J. & M. Vigneaux, 1964b. Paléontologie. - Considérations paléoécologiques sur les otolithes de l' Helvétien de Sallespisse (Basses-Pyrénées). - C.R. Acad. Sc. Paris, 258: 2138 - 2140.

Lanckneus, J. & D. Nolf, 1979. Les otolithes des Téléostéens redoniens de Bretagne (Néogène de l' Ouest de la

- France). – Bull. Inst. Géol. Bassin Aquitaine (sous-pressé), pl. 1 - 4.
 New fossil species: 'genus aff. *Ogilbia*' *heinzlini*, *Ophiodon springeri*, *Diplodus racheboeufi*.
 Illustrated recent otoliths: *Conger conger*, *Trisopterus capelanus*, *Oligopus ater*, *Ophidion barbatum*, *Atherina presbyter*, *Pagellus bogaraveo*, *P. erythrinus*, *Trachurus picturatus*, *Argyrosoma regia*, *Diplodus vulgaris*, *Trachinus vipera*, *Arnoglossus imperialis*, *Ammodytes lanceolatus*.
- Lavenberg, R. J. & J. E. Fitch, 1966. Annotated list of fishes collected by midwater trawl in the Gulf of California, march-april 1964. – Calif. Fish and Game, 52 (2): 92 - 110, 6 fig.
 Illustrated recent otoliths: *Lampanyctes leucopsarus*, *L. parvicauda*, *L. regali*, *Ceratoscopelus townsendi*.
- Lea, R. N. & J. E. Fitch, 1972. *Sebastes rufinanus*, a new Scorpaenid fish from Californian waters. – Copeia, 3: 423 - 427, 2 fig.
 Illustrated recent otolith: *Sebastes rufinanus*.
- Le Roy, L. W., 1939. Some small Foraminifera, Ostracoda and otoliths from the Neogene ('Miocene') of the Rokantapanoei area, Central Sumatra. – Natkd. Tijdschr. Nederlandsch-Indië, 99: 215 - 296, pl. 1 - 14.
- Letaconnoux, R., 1951. Contribution à l'étude des espèces du genre *Trachurus* et spécialement du *Trachurus trachurus* (L.). – Mém. Off. Sc. Pêch. marit., 15: 679., 35 fig.
 Illustrated recent otolith: *Trachurus trachurus*.
- Macer, C. T., 1966. Sand eels (Ammodytidae) in the south-western North Sea; their biology and fishery. – Fish. Invest., Lond., (2) 24 (6): 1 - 55.
 Illustrated recent otolith: *Ammodytes marinus*.
- Maiskii, V. N., 1963. Materialy po biologii bychka-sirmana *Neogobius syrman* (Nordmann). – Trudy vses. nauchno-issled. morsk. ryb. Khoz. Okeanogr., 6: 95 - 103.
 Illustrated recent otolith: *Neogobius syrman*.
- Malz, H., 1975. Mit Hilfe von Otolithen den Fischen auf der Spur. – Natur u. Museum, 105 (6): 186 - 191, 6 fig.
- Malz, H., 1978a. Massengrab fossiler 'Ohrsteine'. – Umschau, 78 (1): 27 - 28, 2 fig.
- Malz, H., 1978b. Aquitane Otolithen-Horizonte im Untergrund von Frankfurt am Main. – Senckenb. lethaea, 58 (6): 451 - 471, 4 fig., 1 pl.
 New fossil species: *Otolithus (Percidarum) moenus*.
- Malz, H., 1978c. Vergleichend-morphologische Untersuchungen an aquitanen Fisch-Otolithen aus dem Untergrund von Frankfurt am Main. – Senckenb. lethaea, 59 (4-6): 441 - 481, 4 fig., pl. 1 - 6.
 New fossil species: *Aphanius (Aphanius) chios*, *Dapalis bartensteini*.
 Illustrated recent otoliths: *Aphanius (Aphanius) sophiae*, *A. (A.) anatoliae*, *A. (A.) chantrei*, *A. (Kosswigichthys) asquamatus*, *A. (A.) iberus*.
- Martini, E., 1968. Fisch-Otolithen aus Geschieben in Norddeutschland. – Geschiebesammler, 2 (3-4): 63 - 70, 1 fig., pl. 1 - 2.
- Martini, E., 1974. Quaternary fish otoliths from sites 242 and 246 - leg 25, deep sea drilling project. – Init. Rep. Deep Sea Drill. Proj., 25: 647 - 655, 1 fig., pl. 1 - 3.
 Illustrated recent otolith: *Symbolophorus californiensis*.
- Maurin, C., 1954. Les merlus du Maroc et leur pêche. – Bull. Inst. Pêch. marit. Maroc, 2: 7 - 65, 26 fig.
 Illustrated recent otolith: *Merluccius merluccius*.
- May, A. W., 1964. An asymmetrical pair of cod otoliths. – J. Fish. Res. Board Can., 21 (2): 413 - 414.
- McIntosh, W. C. & E. E. Prince, 1890. On the development and life-histories of the Teleostean food and other fishes. – Trans. R. Soc. Edinb., 35, 3, (19): 665 - 944, 3 fig., pl. 1 - 28.
 Illustrated recent otolith: *Myoxocephalus scorpius scorpius*.
- Menzel, H., 1979. Die Fischfauna aus dem Mittelmiozän von Twistringen. – Abh. Naturw. Verein Bremen. 39: 83 - 127, 2 fig., pl. 1 - 9.
 Illustrated recent otoliths: *Clupea harengus*, *Anguilla anguilla*, *Gadus morhua*.
- Messieh, S. N., 1972. Use of otoliths in identifying herring stocks on the Southern Gulf of St. Lawrence and adjacent waters. – J. Fish. Res. Board of Canada, 29 (8): 1113 - 1118, 7 fig.
- Miller, P. J., 1961. Age, growth, and reproduction of the rock goby, *Gobius paganellus* L., in the Isle of Man. – J.

- mar. biol. Ass. U.K., 41: 737 - 769.
 Illustrated recent otolith: *Gobius paganellus*.
- Miller, P. J., 1963. Taxonomy and biology of the genus *Lebetus* (Teleostei - Gobioidae). - Bull. Br. Mus. nat. Hist., Zool., 10: 205 - 256.
 Illustrated recent otolith: *Lebetus scorpioides*.
- Miller, P. J., 1969. Systematics and biology of the leopard-spotted goby, *Gobius ephippiatus* (Teleostei: Gobiidae), with description of a new genus and notes on the identity of *G. macrolepis* Kolombatović. - J. mar. biol. Ass. U.K., 49: 831 - 855.
 Illustrated recent otolith: *Thorogobius ephippiatus*.
- Miller, P. J., 1971b. A revision of Mediterranean gobiid genus *Chromogobius* (Teleostei - Perciformes). - J. Zool., Lond., 164: 305 - 334.
 Illustrated recent otolith: *Chromogobius quadrivittatus*.
- Miller, P. J., 1973a. The identity of *Gobius affinis* Kolombatovic, with notes on the systematics and biology of *Pomatoschistus pictus* (Malm). - Annali Mus. civ. nat. Giacomo Doria;
 Illustrated recent otolith: *Pomatoschistus pictus pictus*.
- Miller, P. J. & E. Tortonese, 1968. Distribution and systematics of the gobiid fish *Odondebuenia balearica* (Pellegrin & Fage). - Annali Mus. civ. Stor. nat. Giacomo Doria, 77: 342 - 358.
 Illustrated recent otolith: *Odondebuenia balearica*.
- Mina, M. Y. & G. J. Tokareva, 1967. [On the otolith structure of *Gadus morhua callarias* L. in the Southeastern Baltic Sea]. - Vop. Ikhtiol., 7 (2): 326 - 337, 12 fig. (in Russian).
 Illustrated recent otolith: *Gadus morhua callarias*.
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 Illustrated recent otoliths: *Johnius carutta*, *Johnieops dussumieri*, *Kathala axillaris*, *Nibea diacanthus*, *Pennahia aneus*, *Atrubucca nibe*, *Chrysochir aureus*, *Otolithes ruber*, *Otolithoides biaurates*, *Panna microdon*, *Macrospinos cuja*.
- Mombeck, F., 1971. Notes on the distinction of Northwest Atlantic Hakes, *Merluccius albidus* and *M. bilinearis*. - I.C.N.A.F. Res. Bull., 8: 87 - 89, 3 fig.
 Illustrated recent otoliths: *Merluccius atlanticus*, *M. (M.) mediterraneus*, *M. albidus*, *M. bilinearis*, *M. (M.) capensis*, *M. (M.) paradoxus*, *M. hubbsi*.
- Morović, D., 1953. Sur la détermination des muges adriatiques d'après la forme de l'otolith sagitta. - Bilješke. Notes, 9: 1 - 7, 3 fig.
 Illustrated recent otoliths: *Mugil cephalus*, *M. capito*, *M. labeo*, *M. auratius*, *M. saliens*.
- Morris, R. W. & L. R. Kittleman, 1967. Piezoelectric property of otoliths. - Science, 158: 368 - 370, 2 fig.
 Illustrated recent otolith: *Trematomus bernarchii*.
- Mugiya, Y., 1966. Calcification in fish and shell-fish. - VI. Seasonal change in calcium and magnesium concentrations of the otolith fluid in some fish, with special reference to the zone formation of their otolith. - Bull. Jap. Soc. Scient. Fisheries, 32 (7): 549 - 557.
- Mugiya, Y., 1972. On aberrant sagittas of Teleostean fishes. - Jap. J. Ichthyology, 19 (1): 11 - 14, 6 fig.
 Illustrated recent otoliths: *Theragra chalcogramma*, *Cleisthenes pinetorum herzensteini*, *Salmo gairdnerii irideus*.
- Müller, A., 1977. Beiträge zur Kenntnis der Fauna des Rupel der südlichen Leipziger Tieflandsbucht. Teil III: Weitere Fischreste aus verschiedenen Horizonten der Leipziger Rupelserie. - Abh. u. Ber. Naturkundl. Mus. 'Mauritianum' Altenburg, 10: 115 - 148, pl. 1 - 9.
- Nafpaktitis, B. G. & J. R. Paxton, 1968. Review of the lanternfish genus *Lampadena* with a description of a new species. - Los Angeles County Mus. Contrib. Sci., 138: 1 - 29, 10 fig.
 Illustrated recent otoliths: *Lampadena speculigera*, *L. luminosa*, *L. urophaos*, *L. sp.*, *L. notialis*, *L. dea*, *L. chavesi*, *L. anomala*, *Taaningichthys bathyphilus*.
- Nielsen, J. G., 1965. On the genera *Acanthonus* and *Typhlonus* (Pisces, Brotulidae). - Galathea Rep., 8: 33 - 47, 10 fig., pl. 11 - 13.

- Illustrated recent otoliths: *Acanthonus armatus*, *Typhlonus nasus* (The captions of the two figures have been shifted).
- Nielsen, J. G., 1969. Systematics and biology of the Aphyonidae (Pisces, Ophidioidea). – *Galathea Rep.*, 10: 7 - 90, pl. 1 - 4.
- Illustrated recent otolith: *Barathronus affinis*.
- Nielsen, J. G., 1971. Ergebnisse der Forschungsreisen des FFS 'Walther Herwig' nach Südamerika. XVI. Redescription of the genus *Selachophidium* (Pisces, Brotulidae) with two new species. – *Arch. Fischereiwiss.*, 22 (1): 17 - 33, 14 fig.
- Illustrated recent otoliths: *Selachophidium guentheri*, *S. americanum*.
- Nielsen, J. G., 1977. The deepest living fish *Abyssobrotula galathea*, a new genus and species of oviparous ophiroids (Pisces, Brotulidae). – *Galathea Rep.*, 14: 41 - 48, 9 fig.
- Illustrated recent otolith: *Abyssobrotula galathea*.
- Nijssen, H., 1964. Otoliths of the wolf-fishes (genus *Anarrhichas* Linnaeus, 1758) from the Northern Atlantic (Pisces, Perciformes). – *Beaufortia*, 11 (146): 179 - 183, 3 fig.
- Illustrated recent otoliths: *Anarrhichas lupus lupus*, *A. denticulatus*, *A. minor*.
- Nolf, D., 1970a. De geremaneerde eocene visfauna in de basis van het Pleistoceen te Merelbeke. – *Natuurwet. Tijdschr.*, 51 (1969): 111 - 124, 1 pl.
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- New fossil species: *Trachichtodes weileri*, *Rhomboplites casieri*.
- Nolf, D., 1973a. Deuxième note sur les Téléostéens des Sables de Lede (Eocène belge). – *Bull. Soc. belge Géol. Paléont. Hydrol.*, 81 (1-2) (1972): 95 - 109, 1 pl.
- New fossil species: *Jordanicus lisus*, *Platycephalus fluctuosus*, *Epinephelus postangulatus*, *Spicara arambourgi*, *Pristigenys caduca*, *Pagrosomus meldertensis*, *Pneumatophorus euodus*, *Parastromateus tavernei*, *Mupus confinis*, *Psettodes collatus*, *?Bothus semen*, *Ot. (inc. sed.) acutirostrum*.
- Illustrated recent otoliths: *Jordanicus gracilis*, *Spicara alcedo*, *S. vulgaris*, *Pristigenys alta*, *Pagrosomus major*, *Pneumatophorus cephalus*, *Parastromateus niger*, *Mupus ovalis*.
- Nolf, D., 1973b. Sur la faune ichtyologique des formations du Panisel et Den Hoorn (Eocène belge). – *Bull. Soc. belge Géol. Paléont. Hydrol.*, 81 (1) (1972): 111 - 138, pl. 1 - 3.
- New fossil species: *Neobithites tuberculatus*, *Sirembo tumidus*, *Psettodes oedelemensis*.
- Illustrated recent otoliths: *Brosomphycis marginata*, *Sirembo imberbis*, *Platycephalus bassensis*, *P. insidiator*.
- Nolf, D., 1973c. Les otolithes du Calcaire Grossier à Fercourt (Eocène du Bassin de Paris). – *Bull. Soc. belge Géol. Paléont. Hydrol.*, 81 (1-2) (1972): 139 - 157, pl. 1 - 2.
- New fossil species: *?Hoplobrotula sulcata*, *Genypterus rectangularis*, *Lutianus lerichei*, *?Caesio concavissimus*, *Pomacanthus fitchi*, *?Centropyge kotthausi*, *?Neoditrema fercourtensis*, *Exallias vectensis*, *Psettodes spinosus*.
- Nolf, D., 1974. Sur les otolithes des Sables de Grimmeringen (Oligocène Inférieur de Belgique). – *Bull. Inst. r. Sci. nat. Belg.*, 48 (11) (1972): 1 - 22, 1 pl.
- New fossil species: *Raniceps altus*, 'genus aff. *Brosomphycis*' *brevis*, *Otophidium caudatum*, 'genus *Ophidiidarum*' *ornatissimus*, 'genus aff. *Neobythites*' *spina*, *Monomitopus grimmeringensis*.
- Nolf, D., 1975a. Les poissons fossiles de la formation d' Auvers (Eocène du Bassin de Paris). – *Biol. Jb. Dodonaea*, 42 (1974): 142 - 158, 1 fig., pl. 1 - 2.
- New fossil species: *Trachichthodes pattersoni*, *Orthopristsis goodyi*, *Stromateus brailioni*.
- Illustrated recent otoliths: *Ogilbia ventralis*, *Hoplobrotula armata*, *Trachichthodes affinis*, *Sparus auratus*.
- Nolf, D., 1975b. Révision des types d' otolithes de poissons fossiles décrites par F. Priem en 1906. – *Bull. Mus. natl. Hist. nat. Paris*, (3^e ser) 47 (342): 205 - 212, 1 pl.
- Nolf, D., 1976. Les otolithes des Téléostéens néogènes de Trinidad. – *Eclogae geol. Helv.*, 69 (3): 703 - 742, 5 fig., pl. 1 - 12.
- Illustrated recent otoliths: *Anchoa hepseta*, *A. mitchilli*, *Cetengraulis edentulus*, *Ilischa africana*, *Ophistonema ogilium*, *Arius felis*, *A. spixii*, *Selenaspis herzbergi*, *Yarella blackfordi*, *Diaphus dumerili*, *D. taaningi*, *D. termophilus*, *Porichthys notatus*, *Perulibatrachus rossignoli*, *Thalassophryne natterei*, *Gadella maraldi*, *Brotula barbata*,

Lepophidium prorates, *L. microlepis*, *Neobythites malayanus*, *N. fasciatus*, *Neanthias accraensis*, *Epigonus trewavasae*, *Ctenosciaena gracilicirrus*, *Cynoscion arenarius*, *Isopisthus parvipinnis*, *Larimus fasciatus*, *L. breviceps*, *Macrodon ancylodon*, *Nebria microps*, *Pachypops fourcroi*, *Plagioscion squamosissimus*, *Polyclemus brasiliensis*, *Sigmurus vermicularis*, *Bathyclupea hoskynii*, *Opistognathus aurifrons*, *Citharichthys stygmaeus*, *Symphurus nigrescens*.

Nolf, D., 1977. Les otolithes des Téléostéens de l' Oligo-Miocène belge. - Ann. Soc. r. Zool. Belg., 106 (1) (1976): 3 - 117, pl. 1 - 18.

New fossil species: *Anguilla rouxi*, *Lophius casieri*, 'genus *Lophiidarum*' *gibbosus*, *Gadiculus deurnensis*, *Molva iizukai*, 'genus *Gadidarum*' *lerichei*, *Diplacanthopoma tortonesei*, 'genus aff. *Pontinus*' *foreyi*, 'genus aff. *Lepidotrigla*' *ringelei*, 'genus *Triglidarum*' *giganteus*, 'genus aff. *Liparis*' *minusculeus*, *Morone daimeriesi*, *Spicara kugleri*, *Pagellus weitzmani*, 'genus *Sparidarum*' *whiteheadi*, 'genus *Trichiuridarum*' *wongratanai*, *Lepidorhombus angulosus*.

Illustrated recent otoliths: *Sardinella aurita*, *Anguilla anguilla*, *A. marmorata*, *Gnatopsis mystax*, *Gonorhynchus greyi*, *Argentina sphyraena*, *Saurida tumbil*, *S. parri*, *Myctophum humboldti*, *M. punctatum*, *Diaphus terrophilus*, *D. theta*, *D. dumerili*, *D. taaningi*, *Notoscopelus elongatus*, *Merluccius merluccius*, *Molva dipterygia*, *M. molva*, *M. elongata*, *Gadiculus argenteus*, *G. thori*, *Micromesistius poutassou*, *Merlangius merlangus*, *Trisopterus esmarki*, *T. luscus luscus*, *Phycis blennioides*, *Raniceps raninus*, *Brosmophycis marginata*, *Diplacanthopoma brachysoma*, *Hoplobrotula armata*, *Carapus drummondi*, *Coryphaenoides acrolepis*, *C. rupestris*, *Coelorrhynchus occa*, *C. carminatus*, *Gadomus longifillius*, *Nezumia stelligidolepis*, *N. aequalis*, *Malacocephalus occidentalis*, *Hymenocephalus italicus*, *Cypselurus heterus*, *Pontinus macrocephalus*, *Lepidotrigla cadmani*, *Trigla lyra*, *T. lucerna*, *T. gumardus*, *Peristedion cataphractum*, *Liparis liparis*, *Centropomus pectinatus*, *Morone saxatilis*, *M. americana*, *Epinephelus bleekeri*, *Neanthias accraensis*, *Trachurus picturatus*, *Leiognathus insidiator*, *Pagellus centrodontus*, *P. erythrinus*, *Spondylusoma cantharus*, *Dentex maroccanus*, *Argyrosoma hololepidota*, *Umbrina cirrhosa*, *Sciaena umbra*, *Cepola rubescens*, *Benthodesmus tenuis*, *Lepidorhombus whiffiagonus*, *Acropoma japonica*.

Nolf, D., 1978a. Les otolithes de Téléostéens des Formations de Landen et de Heers (Paléocène de la Belgique). - Geologica et Paleontologica, 12: 223 - 234, 1 fig., pl. 1 - 2.

New fossil species: *Raniceps hermani*, *Ogilbia lapierrei*, *Ophidiidarum bulbus*, *Pomadasyidarum gullentopsi*. Illustrated recent otoliths: *Raniceps raninus*, *Petrotyx hopkinsi*, *Isacia conceptionis*, *Xenistius californiensis*, *Serranus cabrilla*.

Nolf, D., 1978b. Les otolithes des Téléostéens du Plio-Pleistocène belge. - Géobios, 11 (4): 517 - 557, 2 fig., pl. 1 - 7. New fossil species: *Ophidion springeri*, *Uranoscopus septentrionalis*.

Illustrated recent otoliths: *Lophiomus setigerus*, *Gadiculus argenteus*, *Merluccius albidus*, *Trisopterus capelanus*, *T. minutus*, *Ophidion barbatum*, *Raniceps raninus*, *Trisopterus luscus*, *Agonus cataphractus*, *Stereolepis doederleini*, *Uranoscopus scaber*, *Trachinus draco*, *Ammodytes lanceolatus*, *Pomatoschistus minutus*, *Gobius niger*, *Arnoglossus laterna*, *Lepidorhombus boscii*, *Pleuronectes platessa*, *Boreogadus saida*, *Limanda ferruginea*, *Microchirus variegatus*.

Nolf, D., 1979a. Contribution à l' étude des otolithes des poissons, VI. A propos de quelques relations possibles dans le super-ordre des Acanthoptérygiens. - Biol. Jb. Dodonaea, 46 (1978): 158 - 171, 7 fig.

Illustrated recent otoliths: *Polymixia japonica*, *P. berndti*, *Monodactylus argenteus*, *Diretmus* cf. *pauciradiatus*, *Bathyclupea hoskynii*, *Hoplostethus mediterraneus*, *Kurtus gulliveri*, *Holocentrus rufus*, *Sillaginodes punctatus*, *Adioryx diadema*, *Haemulon plumieri*, *Psammoperca waigiensis*, *Centropomus nigrescens*, *Argyrozona argyrozona*, *Lutianus synagris*, *Serranus cabrilla*, *Centrarchops chapini*, *Hoplichthys hasweli*, *H. acanthopleurus*, *Gobius cruentatus*, *Mesogobius batrachocephalus*, *Ostracoberyx dorygenys*, *Pristigenys nipponia*, *Pempheris oualensis*, *Priacanthus meeki*, *Malacanthus plumieri*, *Parupeneus chrysonemus*.

Nolf, D., 1979b. Reconstructie van fossiele visfaunas aan de hand van otolieten. - In: J. de Coninck, A. Gautier, J. de Heinzelin, V. Meeus-de Groote & D. Nolf, 1979. Richtlijnen van onderzoekingen in het laboratorium voor paleontologie van de Rijksuniversiteit Gent. - Biol. Jb. Dodonaea, 46 (1978): 18 - 30.

Nolf, D., 1979c. Contribution à l' étude des otolithes des poissons. I. Morphologie comparée des otolithes (sagittae) des *Dentex* de la Méditerranée et de l' Atlantique tropical africain. - Bull. Inst. r. Sci. nat. Belg., 51 (9): 1 - 14,

2 fig., 1 pl.

Illustrated recent otoliths: *Dentex angolensis*, *D. maroccanus*, *D. macrophthalmus*, *D. congoensis*, *D. dentex*, *D. gibbosus*, *D. nufar*, *D. canariensis*, *D. barnardi*.

Nolf, D., 1979d. Contribution à l'étude des otolithes des poissons, II. Sur l'importance systématique des otolithes (sagittae) des Batrachoididae. – Bull. Inst. r. Sci. nat. Belg., 51 (10): 1 - 11, 6 fig.

Illustrated recent otoliths: *Perca fluviatilis*, *Serranus cabrilla*, *Gadus morhua*, *Raniceps raninus*, *Halobatrachus didactylus*, *Perulibatrachus rossignoli*, *Coelorhynchus* sp., *Merluccius albidus*, *Peristedion cataphractum*, *Minous versicolor*, *Chitonotus pugetensis*, *Icelus spatulus*, *Malacocottus kincaidi*, *Lophius piscatorius*, *L. americanus*, *Scorpaena scrofa*, *Sebastes helvomaculatus*, *S. marinus*, *S. mentella*, *S. viviparus*.

Nolf, D., in print. Contribution à l'étude des otolithes des poissons, III. Arguments nouveaux pour le classement des poissons Ophidioides dans l'ordre des Gadiformes. – Bull. Inst. r. Sci. nat. Belg.,

Illustrated recent otoliths: *Gadus morhua*, *Genypterus blacodes*, *Trachyrhynchus trachyrhynchus*, *Merlangius merlangus*, *Trisopterus luscus*, *Brotula barbata*, *Hymenocephalus italicus*, *Phycis phycis*, *Lepophidium cervinum*, *Lycodes diapterus*, *Blennius ocellaris*, *B. sanguinolentus*.

Nolf, D., in print. Contribution à l'étude des otolithes des poissons, IV. A propos des Moridae. – Bull. Inst. r. Sci. nat. Belg.

Illustrated recent otoliths: *Lepidion lepidion*, *Mora pacifica*, *Raniceps raninus*, *Coelorhynchus* sp., *Carapus acus*, *Tripterygion gilchristi*, *Echiodon drummondi*, *Laemonema barbatulum*.

Nolf, D. & Cappetta, 1976. Observations nouvelles sur les otolithes des Téléostéens du Calcaire Grossier (Eocène du Bassin de Paris). – Géobios, 9 (3): 251 - 277, 2 fig., pl. 1 - 2.

New fossil species: *Muraenesox spatulus*, Genus *Synodontidarum intermedius*, Genus *Ophidiidarum spinosus*, *Chanda bohlkei*, *Mene sekharani*.

Illustrated recent otoliths: *Muraenesox cinereus*, *M. talabon*, *Saurida recta*, *S. tumbil*, *S. parri*, *Aulopus cadenati*, *Platycephalus macracanthus*, *Chanda ambassis*, *Paralabrax nebulifer*, *Mene maculata*, *Mullus surmuletus*, *Sphyræna pinguis*, *Solea solea*.

Nolf, D. & H. Lapiere, 1977. Les otolithes de Téléostéens des sables coquilliers du Bois-Gouët (Eocène de Bretagne). – Biol. Jb. Dodonaea, 44 (1976): 256 - 268, pl. 1 - 2.

New fossil species: *Atherina margereli*, *Ammodytes vasseuri*.

Illustrated recent otoliths: *Monocentris japonicus*, *Atherina presbyter*, *Kuhlia rupestris*, *Emmelichthys nitidus*, *Orthopristis chrysoptera*, *O. ruber*, *Xenistius californiensis*, *Ammodytes lanceolatus*.

Nolf, D. & H. Lapiere, 1979. Otolithes de poissons nouveaux ou peu connus du Calcaire Grossier et de la Formation d'Auvers (Eocène du Bassin parisien). – Bull. Mus. natl. Hist. nat. Paris, sect. C (4^o ser.), 1 (n^o 2): 79 - 125, 1 fig., pl. 1 - 6.

New fossil species: 'genus *Clupeidarum*' *schultzi*, 'genus *Caproidarum*' *sonodae*, 'genus *Chandidarum*' *inflatus*, 'genus *Chandidarum*' *steurbauti*, *Morone eschmeyer*, 'genus aff. *Gazza*' *pentagonalis*, 'genus *Leiognathidarum*' *bercherensis*, *Orthopristis trewavasae*, *Parapristipoma bavayi*, *Pagellus folletti*, *Toxotes wheeleri*, *Cepola massiva*, 'genus *Opisthognathidarum*' *bloti*, 'genus *Blenniidarum*' *blondeaui*, *Haliophis colletti*, *Callionymus lerenardi*, 'genus *Bothidarum*' *biaculeatus*, 'genus *Soleidarum*' *schultzei*.

Illustrated recent otoliths: *Osmerus eperlanus*, *Pterothrissus gisu*, *Gymnothorax saxicola*, *G. nigromarginatus*, *Arndha zebra*, *Notacanthus mosleyi*, *N. sexspinis*, *Rhinomuraena quaesita*, *Paraconger californiensis*, *Chirocentrus dorab*, *Etrumeus sadina*, *Konosirus punctatus*, *Pellona harroweri*, *P. hoevenii*, *Arius planus*, *Siremba imberbis*, *Capros aper*, *Chanda nalu*, *Velifer hypselopterus*, *Moharra rhombea*, *Leiognathus rivulatus*, *Gazza minuta*, *Gerres argyreus*, *Leiognathus splendens*, *Haemulon flavolineatum*, *H. plumieri*, *H. aurolineatum*, *H. bonariensis*, *H. parrai*, *H. sciurus*, *Parapristipoma octolineatum*, *Pagellus natalensis*, *Toxotes jaculator*, *Blennius sanguinolentus*, *Atrosalarias fuscus*, *Opisthognathus rhomaleus*, *Congrogadus subducens*, *Haliophis guttatus*, *Callionymus richardsoni*, *C. lyra*.

Nolf, D. & J. Martinell, in print. Otolithes de Téléostéens du Pliocène des environs de Figueras (Catalogne). – Geologica et Paleontologica,

New fossil species: *Ariosoma coheni*, *Gnathophis kanazawai*.

Illustrated recent otoliths: *Panturichthys mauritanicus*, *Harengula clupeola*, *Electrona risso*, *Myctophum punc-*

tatum, *Ceratoscopelus maderensis*, *Diaphus metopoclampus*, *Diaphus holti*, *D. rafinesquei*, *D. mollis*, *D. fragilis*, *D. problematicus*, *Micromesistius poutassou*, *Belone belone*, *Parascombrops pseudomicrolepis*, *Polydactylus virginicus*.

Nolf, D. & E. Steurbaut, 1979. Les otolithes de Téléostéens des faluns sallomaciens d'Orthez et de Sallespisse (Miocène Moyen d'Aquitaine méridionale, France). - *Paleontographica*, Abt. A, 164 (1 - 3): 1 - 23, 2 fig., pl. 1 - 5.

New fossil species: *Ilisha nijsseni*, *Diplodus karrerae*.

Illustrated recent otoliths: *Ilisha africana*, *Sardinella longiceps*, *S. anchovia*, *Sprattus sprattus*, *Hyporhamphus melanochir*, *Arrhamphus sclerolepis*, *Trachurus mediterraneus*, *Morone labrax*, *Brachydeuterus auritus*, *Diplodus annularis*, *D. senegalensis*, *Pomadasys incisus*, *Pagellus erythrinus*, *Pagrus pagrus*, *Dentex (Cheimerius) gibbosus*, *Argyrosoma regia*, *Galeoides decadactylus*, *Polynemus plebeius*, *Sphyræna piscatorum*, *Trachinus draco*, *Acen-trogobius koumansii*, *Gobius geniporus*, *Arnoglossus imperialis*.

Nolf, D. & L. Taverne, 1978. Contribution à l'étude des otolithes des poissons, V. L'origine des Sciaenidae (Teleostei, Perciformes). - *Biol. Jb. Dodonaea*, 45 (1977): 150 - 161, 5 fig.

Illustrated recent otoliths: *Plectrypops lima*, *Myripristis jacobus*, *M. murdjan*, *Otolithes ruber*, *Johnnieops aneus*, *Pteroscion peli*, *Pseudotolithus elongatus*, *P. senegalensis*, *Umbrina cirrhosa*, *U. roncadorensis*, *Argyrosoma hololepidota*, *Cynoscion virescens*, *Ctenosiaena gracilicirrhus*, *Holocentrus rufus*, *Adioryx rubrum*.

Ohe, F., 1976a. Fossil otoliths of Sciaenid fishes from the Tertiary and Quaternary formations, Tobai district, central Japan and their paleontological vicisitudes. - *Mizunami Fossil Mus. Bull.*, 3: 73 - 97, 5 fig., pl. 23 - 24.

New fossil species: *Paleosciaena mizunamiensis*.

Ohe, F., 1976b. Comparative material to the fossil fishes from the Tertiary formations in Tokai region, Japan: the otoliths of the deep water fishes of the Seas of Enshu and Kumano. - *Bull. Asahino Senior High School.*, 3: 105 - 126, 58 fig.

Illustrated recent otoliths: *Chlorophthalmus albatrossis*, *Ateleopus japonica*, *Beryx splendens*, *Gephyroberyx japonicus*, *Hoplostethus mediterraneus*, *Polymixia japonica*, *Zen itea*, *Parazen pacificus*, *Zenion pacificum*, *Rexea solandri*, *Leiognathus rivulatus*, *Psenopsis anomala*, *Upeneus bensasi*, *Cepola schlegelii*, *Branchiostegus japonicus auratus*, *Epigonus atherinoides*, *Apogon lineatus*, *Apogonichthys carinatus*, *Neoscombrops analis*, *Priacanthus boops*, *Acropoma japonicus*, *A. hanedai*, *Scombrops boops*, *Quinquarius japonicus*, *Malakichthys wakiai*, *M. elegans*, *Nippon spinosus*, *Chelidoperca hirundinaceae*, *Musterichthys gracilis*, *Owstonia grammodon*, *Neobythites fasciatus*, *N. siviculus*, *Homostolus japonicus*, *Uranoscopus japonicus*, *Triacanthodes anomalus anomalus*, *Setarches longimanus*, *Chascanopsetta lugubris*, *Physiculus japonica*, *Chaunax fimbriatus*.

Ohe, F., 1976c. Comparative recent material to the fossil fishes from the Tertiary formations in Tokai region, Japan: The otoliths of the deep water fishes of the Seas of Kumano and Enshu. - 'Kaseki notomo', Rep. pub. Fossil Soc., 14: 17 - 22, 23 fig.

Illustrated recent otoliths: *Pterothrissus gissu*, *Yarella elongata*, *Hypomesus japonicus*, *Polyipnus stereope*, *Aulopus japonicus*, *Neoscopelus macrolepidotus*, *N. microchir*, *Diaphus elucens*, *Ateleopus japonicus*, *Ophichthus urolophus*, *Beryx decadactylus*, *Zalantias azumanus*, *Epinephelus septemfasciatus*, *Malakichthys elegans*, *Caranx equula*, *Sebastes scythropus*, *Helicolenus hilgendorfi*, *Coelorhynchus kamoharai*, *C. kishinouei*, *Coryphaenoides nasutus*, *Hymenocephalus striatissimus*, *Ventrifossa garmani*.

Ohe, F., 1976d. Comparative recent material to the fossil fishes from the Tertiary formations in Tokai region, Japan (3): The otoliths of the deep water fishes of the Seas of Kumano and Enshu. - 'Kaseti notomo', Rep. pub. Fossil Soc., 15: 9 - 15, 40 fig.

Illustrated recent otoliths: *Anago anago*, *Conger japonica*, *Macrohamphosus japonicus*, *Xenolipidichthys dalgleishi*, *Storomateoides sinensis*, *Psenopsis anomala*, *Taius tumifrons*, *Parapersis aurantica*, *P. minasedna*, *P. sexfasciata*, *Champsodon guentheri*, *C. snyderi*, *Hexagrammos otakii*, *Uranoscopus oligolepis*, *Synchiropus altivelis*, *Chaeturichthys hexanema*, *Acanthogobius flavimanus*, *Antigonia capros*, *Macrorhamphosodes uradoi*, *Neosebastes entaxis*, *Bembras japonicus*, *Lepidotrigla microptera*, *L. güntheri*, *Peristedion orientale*, *Satyrichthys amiscus*, *Kareius bicoloratus*, *Poecilopsetta plinthus*.

Ohe, F., 1977a. Otoliths from Dainichi sand and Hosoya tuffaceous beds of Kakegawa Group (Pliocene), Shizouka Prefecture, Central Japan. - 'Kaseki notomo', Tokai Fossil Soc., 16: 13 - 19, 56 fig.

- Ohe, F., 1977b. Otoliths of coastal fishes of Ise Bay and Kumanonada. – Bull. Asahino Senior High School., 4: 149 - 158, 51 fig.
 Illustrated recent otoliths: *Amphiprion xanthurus*, *Chrysiptera hollisi*, *Amphiprion ocellaris*, *Duymaeria flagellifera*, *Choerodon azurio*, *Prionurus microlepidotus*, *Chaetodon nippon*, *C. vagabundus*, *Stephenolepis cirrifer*, *Lagocephalus lunaris*, *Canthigaster rivulatus*, *Fugu rubripes*, *Pterois lunulata*, *Sebasticus marmoratus*, *Sebastes inermis*, *Scorpaena neglecta miostoma*, *Inimicus japonicus*, *Hoplichthys fasciatus*, *Pseudoblennius percoides*, *Pseudoblennius cottides*, *Hippoglossoides dubius*, *Pleuronectes* sp., *Zebrias japonicus*, *Zebrias* sp., *Cynoglossus joyneri*, *Spratelloides japonicus*, *Saurida tumbil*, *Synodus variegatus*, *Chlopsis fierasfer*, *Conger myriaster*, *Conger* sp., *Hippocampus takakurei*, *Fistularia petimba*, *Lepidocybium flavobrunneum*, *Rachycentron canadum*, *Parupeneus indicus*, *Histioporus typus*, *Apogon endekataenia*, *Priacanthus macracanthus*, *Micropterus salmoides*, *Aulacocephalus temminckii*, *Epinephelus fasciatus*, *Sacura margaritacea*, *Erythrocles schlegeli*, *Haplochromis nigripinnis*, *Goniistius zebra*, *G. zonatus*, *Bembrops filodorsalis*, *Calliurichthys japonicus*, *Dascyllus trimaculatus*.
- Ohe, F. & Y. Araki, 1973. Some Miocene fish otoliths from the Yakuoji Formation, Tsu, Mie Prefecture. – Sci. Rep. Tohoku Univ. Geol., 6: 407 - 413, pl. 49.
 New fossil species: *Diaphus angulatus*, *D. hataii*, *Lampanyctus kuboensis*, *Hygophum rotundum*, *Notacanthus circulus*, *Coelorhynchus yakuojiensis*.
- Ojaveer, E., 1962. [On differentiation on the herring seasonal races in the North Eastern Baltic by means of otoliths]. Jzv. – Akad. Nauk. Est. SSR, ser. biol., 11 (3): 193 - 208, 3 fig., 2 microph. (in Russian, with English summary).
 Illustrated recent otolith: *Clupea harengus membras*.
- Pana, I., 1977. Problems arisen by the appearance of the new otoliths species and their stratigraphical implications. Examples of Dacian otoliths from S. Dobrudja. – An. Univ. Bucuresti, Geol., 26: 105 - 124, 4 fig., pl. 1 - 5.
 New fossil species: *Gobius gibbosus*, *Sciaena moguntiniiformis*, *Corvina rumana*, *C. dobrogica*, *C. dacica*.
- Pana, I. & D. Pana, 1978. La valeur biostratigraphique des otolithes pliocènes. – Rev. Roum. Géol. Géophys. et Géogr., Géologie, 22: 103 - 119, 2 fig.
- Panella, G., 1971. Fish otoliths: daily growth layers and periodical patterns. – Science, 173: 1124 - 1127, 2 fig.
 Illustrated recent otolith: *Merluccius bilinearis*.
- Palmork, K. H. & M. E. U. Taylor, 1963. The crystal structure of aberrant otoliths. – Acta Chem. Scand., 17 (5): 1457 - 1458, 2 fig.
- Pinkas, L., M. S. Oliphant & I. L. K. Iverson, 1971. Food habits of Albacore, bluefin tuna, and Bonito in California Waters. – Fish Bull., 152: 3 - 105, 50 fig.
 Illustrated recent otoliths: *Engraulis mordax*, *Cololabis saira*, *Tarletonbeania crenularis*.
- Post, A. & T. Hecht, Results of the research cruises of the F.R.V. 'Walt Herwig' to South America, 49. The otoliths of *Diretmus Johnson*, 1863 (Osteichthyes, Beryciformes, Diretmidae). – Mitt. Hamburg Zool. Mus. Inst., 74: 165 - 170, 3 fig.
 Illustrated recent otoliths: *Diretmus argenteus*, *D. pauciradiatus*.
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 Illustrated recent otoliths: *Trigla lucerna*, *Aspitrigla cuculus*, *Eutrigla gurnardus*, *Trigloporus lastoviza*.
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- Illustrated recent otolith: *Brachydeuterus auritus*.
- Rannou, M., J. G. Nielsen & J. C. Hureau, 1975. Note sur quelques Aphyonidae de l' Atlantique Nord (Téléostéens, Ophidioides). – Bull. Mus. natl. Hist. nat. Paris (3^e sér.), 247 (1974): 1249 - 1257, 4 fig.
- Illustrated recent otoliths: *Aphyonus gelatinosus*, *Leucochlamys galathea*.
- Rannou, M. & C. Thiriot-Quievreux, 1975. Structure des otolithes d' un Macrouridae (poisson gadiforme) bathyal. Etude au microscope électronique à Balayage. – Ann. Inst. Océanogr., Paris, 1975, 51 (2): 195 - 201.
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- New fossil species: *Myctophum rossiae*, *Hygophum agatense*, *Gadus robustus*, *Glyptorhynchus triangulus*, *Holocentrus? weileri*, *Bauzaia tuberosa*, *B. ornatissima*, *Porichthys pedemontanus*.
- Rosenblatt, H. & A. Bell, 1976. Osteology and relationships of the roosterfish, *Nematistius pectoralis* Gill. – Los Angeles County Mus. Contrib. in Sci., 279: 1 - 23. 18 fig.
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- New fossil species: *Apogonidarum ventrolobatus*, *Callionymus schuermanni*, *Bothidarum rhomboides*, *Trachinus gaemersi*.
- Schwarzahns, W., 1974. Die Otolithen-Fauna des Chatt A und B (Oberoligozän, Tertiär) vom Niederrhein, unter Einbeziehung weiterer Fundstellen. – Decheniana, 126 (1/2): 91 - 132, 78 fig., pl. 1 - 3.
- New fossil species: *Notogenous brevirostris*, *Trisopterus kasselensis*, *Macrurus rectangularis*, *Serranus krefeldensis*, *Mupus neumanni*, *Pagrus gaemersi*, *Scombridarum bisculptatus*, *Bothidarum weileri*, inc. sed. *tenuicauda*.
- Schwarzahns, W., 1976. Die fossilen Otolithen der Gattung Bathycongrus (Meer-Aale; Congridae, Pisces). – Senckenb. Lethaea, 56 (6): 469 - 477, 4 fig.
- New fossil species: *Bathycongrus twistringenensis*.
- Illustrated recent otolith: *Congermuraena bowersi*.
- Schwarzahns, W., 1977. Otolithen aus dem Unteroligozän (Tertiär) von Hückelhoven (Kreis Heinsberg, Nordrhein-Westfalen). – Decheniana, 130: 268 - 292, 34 fig.
- New fossil species: *Osmeridarum rectidorsalis*, *?Saurida indansi*, *Phycis praecognatus*, *Bregmaceros oblongus*, inc. sed. *spinus*.

- Schwarzahns, W., 1978. Otolith-morphology and its usage for higher systematical units with special reference to the Myctophiformes s.l. – Meded. Werkgr. Tert. Kwart. Geol., 15 (4): 167 - 185, 9 fig., pl. 1 - 3.
 Illustrated recent otoliths: *Elops hawaiiensis*, *Megalops cyprinoides*, *Chlorophthalmus nigripinnis*, *C. agassizi*, *Aulopus curtirostris*, *Saurida tumbil*, *S. undosquamis*, *Synodus variegatus*, *S. luciopes*, *Trachinocephalus myops*, *Bathypterois longifilis*, *Scopelosaurus harryi*, *S. lepidus*, *Ipnops* sp., *Harpodon translucens*, *Benthalbella macropinna*, *Sudis jayakara*, *Omosudis lowei*, *Paralepis atlanticus*, *Diaphus rafinesquei*, *Neoscopelus microchir*, *N. macrolepidotus*, *Aphyonus gelatinosus*, *Onuxodon margaretferae*, *Lepophidium prorates*, *Neobythites marginatus*, *Dipulus caecus*, *Holcomycteronus pterotus*, *Genypterus blacodes*, *Brotula barbata*, *Phycis* sp., *Gadiculus argenteus*, *Coelorhynchus carminatus*, *Hymenocephalus* sp., *Chalinura leptolepis*, *Bathygadus novus*.
- Schwarzahns, W., 1979. Otolithen aus dem Unter-Pliozän von Süd-Sizilien und aus der Toscana. – Berliner geowiss. Abh., 1978 (A) 8: 1 - 52, 4 fig., pl. 1 - 13.
 New fossil species: *Myctophum unicum*, *Diaphus crassus*, *Gymnoscopelus fitchi*, *Hygophum agrigentensis*, *Hygophum? orcianensis*, *Electrona anfossimosnai*, *Micromesistius boscheineni*, *Nezumia contemplata*, *Heptocara pauper*, *Brotulidarum cetonaensis*, *Gobius truncatus*, *Citharopsettodes angustus*.
 Illustrated recent otoliths: *Myctophum aurolaternatum*, *M. punctatum*, *Symbolophorus evermanni*, *Benthosema glaciale*, *B. fibulata*, *Diaphus theta*, *Lobianchia dosleini*, *L. gemellari*, *Gymnoscopelus fraseri*, *Ceratoscopelus townsendi*, *Hygophum atratum*, *Triphoturus mexicanus*, *Protomyctophum crockeri*, *Gadiculus argenteus argenteus*, *Coelorhynchus carminatus*, *C. scaphopsis*, *C. fasciatus*, *C. coelorhynchus*, *C. australis*, *Lepidorhynchus denticulatus*, *Ventrifossa occidentalis*, *Nezumia bairdi*, *N. convergens*, *N. nigromaculata*, *N. aequalis*, *N. orbitalis*, *Coryphaenoides acrolepis*, *Macrourus berglax*, *Coryphaenoides rupestris*, *Hymenocephalus striatissimus*, *H. italicus*, *H. sp.*, *Albatrossia pectoralis*, *Trachyrhynchus trachyrhynchus*.
- Scuderi, I., 1957. Sui caratteri morfologici dell' Engraulis del 'Lago Verde'. – Boll. Pesca Piscic. Idrobiol., 12 (2): 232 - 264, 7 fig.
 Illustrated recent otolith: *Engraulis encrasicolus*.
- Sieber, R. & E. Weinfurter, 1967. Otolithen aus tiefen Gosauschichten Österreichs. – Ann. Naturhistor. Mus. Wien, 71: 353 - 361, pl. 1.
 New fossil species: *Otolithus (Percidarum) transitus*, *O. (inc. sed.) weinbergeri*.
- Skalkin, V. A., 1961. Otolity treskovykh ryb (sem. Gadidae) dalnevostotchnykh morei (The otoliths of Gadidae from seas of the Far East). – Vopr. Ikhtiologii, 1, 2 (19): 286 - 289.
 Illustrated recent otoliths: *Eleginus gracilis*, *Gadus morhua macrocephalus*, *Theragra chalcogramma*.
- Skalkin, V. A., 1963. Otolity nekotorrykh ryb dalnevostotchnykh moree (The otoliths of some fishes from seas of the Far East). – Jzv. tikho-ok. naoutch. éd. Inst. ryb. Khoz. okeanog., 49: 159 - 199, 46 fig., pl. 1 - 9.
 Illustrated recent otoliths: *Clupea harengus pallasii*, *Engraulis japonicus*, *Oncorhynchus gorbusha*, *Salvelinus leucomaenis*, *S. malma*, *Hypomesus olidus*, *Leuciscus brandti*, *Gasterosteus aculeatus*, *Cololabis saira*, *Trichiurus japonicus*, *Sebastes taczanowskii*, *S. alutus*, *Sebastolobus alascanus*, *Anoplopoma fimbria*, *Hexagrammus octogrammus*, *Pleurogrammus azonus*, *Myoxocephalus* sp., *M. verrucosus*, *Hemitripterus villosus*, *Gymnancistrus herzensteini*, *Triglops beani*, *Icelus spiniger*, *Artediellus pacificus*, *Podothecus acipenserinus*, *P. gilberti*, *Liparis pulchellus*, *Hippoglossoides elassodon elassodon*, *Atherestes evermanni*, *A. stomias*, *Hippoglossus stenolepis*, *Lepidopsetta bilineata*, *Limanda aspera*, *Liopsetta obscura*, *Glyptocephalus stelleri*, *Stichaeus grigorjevi*, *S. nozawae*, *Bathymaster signatus*, *Lycodes plearis arcticus*, *Hypoptychus dybowski*, *Coryphaenoides* sp.
- Smigielska, T., 1973. Fish otoliths from the Lower Tortonian deposits at Niskowa near Nowy Sacz. – Ann. Soc. Géol. Pol., 43 (1): 3 - 40, 5 fig., pl. 1 - 5.
 New fossil species: *Otolithus (Cottidarum) modestus*, *Arnoglossus inconspicuous*.
- Spratt, J. D., 1975. Anomalous otoliths from the northern anchovy, *Engraulis mordax*. – Calif. Fish and Game, 61 (4): 235 - 236, 1 fig.
- Stancu, J., 1970. Otolitele sarmatiene de la Soceni (Banat-România). – Dări Seamă Ședint., 16 (3) (1968-1969): 5 - 24, 4 fig., pl. 1 - 11.
- Staubert, E., 1979a. Otolithes de Téléostéens de quelques formations continentales d' âge Aquitanien du midi de la France. – Bull. Soc. belge Géologie, 87 (3): 179 - 188, 1 pl.
 New fossil species: 'genus *Umbridarum*' *ringeadei*, 'genus *Cyprinodontidarum*' *angulosus*, 'genus *Cyprinodontoi-*

deorum' *labretensis*, 'genus *Cyprinodontoideorum*' *obesus*.

Illustrated recent otoliths: *Umbra krameri*, *Lebistes reticulatus*, *Umbra pygmaea*.

Steurbaut, E., 1979b. Les otolithes de Téléostéens des Marnes de Saubrigues (Miocène d' Aquitaine méridionale, France). - *Palaeontographica*, Abt. A (166): 48 - 91, pl. 1 - 12.

New fossil species: 'Genus aff. *Lemkea*' *saubriguensis*, 'Genus aff. *Valenciennellus*' *kotthausi*, *Saurida rectilineata*, *Symbolophorus meridionalis*, *Diaphus cahuzaci*, *D. poignantae*, *Adioryx ostialis*, *Myripristis verus*, 'Genus aff. *Lepidotrigla*' *postdorsalis*, 'Genus *Triglidarum*' *parvulus*, *Neoscombrops flexuosus*, *Dentex* (*Polysteganus*) *nolfi*, *Bembrops vandeveldeae*, 'Genus *Perciformorum*' *wheeleri*.

Illustrated recent otoliths: *Lemkea heterolinea*, *Promyllantor macroporis*, *Mauroliscus muelleri*, *Vinciguerrina poweria*, *V. lucetia*, *Symbolophorus veranyi*, *Diaphus debilis*, *Lobianchia dofleini*, *Bolinichthys supralateralis*, *Diaphus dumerili*, *Bolinichthys indicus*, *Diaphus metopoclampus*, *D. garmani*, *Gadiculus argenteus*, *Physiculus huloti*, *P. roseus*, *P. kaupi*, *P. argyropastus*, *P. rastrelliger*, *P. peregrinus*, *Leuresthes tenuis*, *Atherinopsis californiensis*, *Brotula barbata*, *Gephyroberyx darwini*, *Adioryx hastatus*, *Antigonia capros*, *Pristigenys nipponia*, *Parascombrops philippinensis*, *P. microlepis*, *Synagrops japonicus*, *Epigonus telescopus*, *Dactyloptena papilio*, *Pagellus coupei*, *Bembrops greyi*, *B. heterurus*, *Lesueurigobius saenzoi*, *L. friesii*, *Acentrogobius koumansii*, *Lepidopus caudatus*, *Hyperoglyphe japonicus*, *Paraplagusia japonica*.

Steurbaut, E., in print. Deux nouveaux gisements à otolithes de Téléostéens, dont une espèce nouvelle, dans l' Aquitanien continental du Midi de la France. - *Géobios*, short notes.

New fossil species: 'Genus *Cyprinodontidarum*' *feistae*.

Steurbaut, E. & J. Herman, 1978. Biostratigraphie et poissons fossiles de la formation de l' Argile de Boom (Oligocène Moyen du bassin belge). - *Géobios*, 11 (3): 297 - 325, 3 fig., pl. 1 - 3.

New fossil species: 'Genus *Gadidarum*' *ensiformis*.

Illustrated recent otolith: *Trisopterus luscus*.

Stinton, F. C., 1968. On the study of Tertiary fish otoliths. - *Mém. B.R.G.M.*, 58: 153 - 162, 1 pl.

Illustrated recent otoliths: *Esox lucius*, *Pterothrissus gissu*, *Hilia* sp., *Netuma thalassina*, *Merluccius vulgaris*, *Trachichthodes affinis*, *Beryx decadactylus*, *Lutianus maltzani*, *Pelamys sarda*.

Stinton, F. C., 1973. Fish otoliths from the English Cretaceous. - *Paleontology*, 16 (2): 293 - 305, 1 fig., pl. 31.

New fossil species: *Megalops bicrenulatus*, *Albula obesa*, *Osmerus lobatus*, *Sphaeronchus rotundus*.

Illustrated recent utriculiths: *Notopterus notopterus*, *Gaterin gaterinus*, *Essox lucius*.

Stinton, F. C., 1975. Fish otoliths from the English Eocene, I. *Palaeontogr. Soc. [Monogr.]*: 1 - 56, 12 fig., pl. 1 - 3.

New fossil species: *Albula raphiodon*, *A. hantoniensis*, *A. marginalis*, *A. incurvata*, *Pterothrissus protensus*, *P. cristatus*, *P. leiodus*, *Anguilla annosa*, *Muraena prima*, *Moringua explicata*, *Nettastoma crenulatum*, *Conger productus*, *C. extensus*, *Astroconger crassus*, *A. ellipticus*, *Paraconger calvus*, *Lemkea glabra*, *L. aftonensis*, *Promyllantor impletus*, *P. fastigatus*, *P. guttulus*, *P. similis*, *Gnathophis obesus*, *Uroconger incisurus*, *U. emarginatus*, *Echelus contractus*, *E. crenulatus*, *Ophichthus sphaeroides*, *Myrichthys brevis*.

Illustrated recent otoliths: *Dinoperca petersi*, *Gaterin picus*, *Centropyge heraldi*, *C. flavissimus*, *C. nox*, *C. bispinosus*, *C. bicolor*, *C. multispinis*, *C. argii*, *C. tibicen*, *C. vroliki*, *Elops saurus*, *E. affinis*, *E. hawaiiensis*, *Megalops ciprinoides*, *Albula vulpes*, *Lepisosteus osseus*, *Pterothrissus gissu*, *P. bellocci*, *Anguilla vulgaris*, *Muraena helena*, *Moringua hawaiiensis*, *Gymnothorax rueppelli*, *Muraenesox cymbium*, *Nettastoma melanura*, *Astroconger myriaster*, *Muraenesox talabon*, *Conger conger*, *C. acutus*, *Paraconger notialis*, *Lemkea heterolinea*, *Promyllantor macroporis*, *Gnathophis mystax*, *Uroconger lepturus*, *U. validus*, *Echelus vulgaris*, *Ophichthus zophochir*, *O. roseus*, *Myrichthys maculosus*.

Stinton, F. C., 1977a. Fish otoliths from the English Eocene, II. *Palaeontogr. Soc. [Monogr.]*: 57 - 126, 12 fig., pl. 4 - 8.

New fossil species: *Chirocentrus exilis*, *Stolephorus productus*, *S. furculus*, *Alosa incisa*, *Pomolobus circularis*, *Harengula similis*, *H. regularis*, *Sardinella spatiosa*, *S. extensa*, *Opisthonema collatum*, *Dussumieria amussa*, *Etrumeus undatus*, *Heterotis acutangulus*, *Chanos compressus*, *Palaeosox densus*, *Umbra valida*, *Alepocephalus novus*, *Osmerus sculptus*, *O. delicatulus*, *O. colwellensis*, *Ichthyococcus subregularis*, *Aulopus sinuosus*, *Chlorophthalmus elongatus*, *Synodus bisectus*, *Saurida tenuis*, *Polymixia? rhomboidalis*, *P.serta*, *Merluccius nodosus*, *M. apicalis*, *Gadus varians*, *Raniceps elegans*, *Lepidion tuberculatum*, *Trachyrincus minusculus*, *Coelorinchus triquetrus*, *Hymenocephalus fimbriatus*, *Dinematichthys brevisulcus*, *Ogilbia centrota*, *Neobythites constrictus*,

Dermatopsis astrictus, *Neobythites angustus*, *N. scabrosus*, *N. laevis*, *Monomitopus costatus*, *Oligopus gibbosus*, *O. bulbiformis*, *Sirembo convexus*, *Hoplobrotula panda*, *H. undulata*, *H. spissa*, *Xiphiurus nodosus*, *Encheliophis triangularis*.

Illustrated recent otoliths: *Chirocentrus dorab*, *Setipinna taty*, *Stolephorus commersonnii*, *Alosa alosa*, *Pomolobus pseudoharengus*, *Clupea harengus*, *Harengula pensacola*, *Sardinella eba*, *Opisthonema oglinum*, *Dussumieria acuta*, *Etrumeus micropus*, *Dorosoma chacunda*, *Heterotis niloticus*, *Chanos chanos*, *Tachysurus thalassinus*, *Galeichthys felis*, *Umbra limi*, *Argentina silur*, *Alepocephalus tenebrosus*, *Osmerus eperlanus*, *Hypomesus pretiosus*, *Ichthyococcus irregularis*, *Aulopus filamentosus*, *Synodus foetens*, *Saurida tumbil*, *Chlorophthalmus agassizi*, *Polymixia nobilis*, *Merluccius vulgaris*, *Gadus morhua*, *Microgadus proximus*, *Trisopterus luscus*, *Molva vulgaris*, *Raniceps raninus*, *Bregmaceros atripinnis*, *Lepidion eues*, *Trachyrincus trachyrincus*, *Coelorinchus coelorinchus*, *Hymenocephalus italicus*, *Dinematichthys ilucoeteoides*, *Ogilbia cayorum*, *Brosmophycis marginatus*, *Dermatopsis macrodon*, *Neobythites sivicolus*, *Monomitopus metriostoma*, *Selachophidium guentheri*, *Dicrolene introniger*, *Oligopus robustus*, *Brotula multibarbata*, *Sirembo imberbis*, *Hoplobrotula armata*, *Lepophidium ceruinum*, *Xiphiurus capensis*, *Encheliophis gracilis*.

Stinton, F. C., 1977b. Teleost otoliths from the Harefield Beds (Paleocene: Oldhaven Formation) at Bignell's Corner, Herts. - Tertiary Res., 1 (4): 119 - 125, 1 pl.

New fossil species: *Anguilla pectinata*, *Hoplobrotula protensa*.

Stinton, F. C., 1978. Fish otoliths from the English Eocene, III. - Palaeontogr. Soc. [Monogr.]: 127 - 189, pl. 9 - 12.

New fossil species: *Lophius papillosus*, *Antennarius excavatus*, *A. validus*, *A. curvatus*, *A. hamatus*, *A. falcatus*, *Ogcocephalus cirrhosus*, *O. glyptosus*, *Chaunax semiangulatus*, *Hemiramphus ovalis*, *H. subcircularis*, *H. mosaicus*, *Pranesus densus*, *Trachichthys abditus*, *Hoplostethus densus*, *Paratrachichthys angulatus*, *P. cirratus*, *Gephyroberyx hexagonalis*, *Centroberyx rotundus*, *C. elegans*, *C. crenulatus*, *Monocentris cristata*, *Beryx nova*, *Holocentrus extenuatus*, *Myripristis sinuatus*, *M. depressus*, *Capros exiguus*, *C. incisus*, *Chana antiqua*, *Scorpaena regularis*, *Sebastodes perangustus*, *Scorpaenodes recurvus*, *Notosthes flexuosus*, *Paracentropogon annectens*, *Minous excavatus*, *M. carinatus*, *Prionotus contiguus*, *P. tortuosus*, *Trigla? gibbosa*, *Lepidotrigla selsiensis*, *Chelidonichthys curvatus*, *Peristedion prominens*, *Podothecus costulatus*, *Dactyloptena crenata*, *D. orbicularis*, *D. lobata*, *Centropomus annectens*, *Lates delicatulus*, *Chanda rhomboides*, *C. ovalis*, *C. fimbriata*, *C. convexa*, *C. pentagonalis*, *C. lobata*, *C. turgida*, *Dapalis vectensis*, *Morone crassa*, *Centrogenys ornatus*, *Epinephelus nodosus*, *E. constrictus*, *E. plicatus*, *E. exacutus*.

Stinton, F. C. & D. Kissling, 1968. Quelques otolithes de téléostéens de la Molasse oligocène de Suisse occidentale. - C.R. des Séances, S.P.H.N. Genève (N.S.), 3 (3): 140 - 154, 4 fig., 1 pl.

New fossil species: *Cyprinodon subtrigonus*, *C. dentifer*, *Dapalis carinatus*, *D. rhomboidalis*, *Gobius sectus*, *Lepidogobius bifidus*.

Stinton, F. C. & H. S. Torrens, 1968. Fish otoliths from the Bathonian of southern England. - Paleontology, 11 (2): 246 - 258, 14 fig.

New fossil species: *Gyrosteus subdeltoideus*, *Sphaeromachus dorsetensis*, *S. circularis*, *Pholidophorus paradoxicus*, *P. prae-elops*, *Leptolepis tenuirostris*, *L. densus*, *L. roddenensis*, *Archengraulis productus*, *Cleidogonia antiqua*.

Sulak, K. J., 1977. *Aldrovandia oleosa*, a new species of the Halosauridae, with observations on several other species of the family. - Copeia, 1: 11 - 20, 8 fig.

Illustrated recent otoliths: *Aldrovandia oleosa*, *A. phalacra*.

Takahashi, M., 1976. Some Miocene fish otoliths from the Mizunami Group, Central Japan. - Bull. Mizunami Foss. Mus., 3: 55 - 72, pl. 16 - 22.

Takahashi, M., 1977. Some Pliocene fish otoliths from the Dainichi Sands, Kakegawa Group, Central Japan. - Bull. Mizunami Foss. Mus., 4: 97 - 118, pl. 23 - 29.

Takai, T., 1959. Studies on the morphology, ecology and culture of the important apodal fishes, *Muraenesox cinereus* (Forsk.) and *Conger myriaster* (Brevoort). - Contr. Shimonoseki College Fish., 285: 8 - 340, 153 fig., 14 pl.

Illustrated recent otoliths: *O. leptognathus*, *Muraenesox cinereus*, *M. yamaguchiensis*, *Anago anago*, *Alloconger anagoides*, *A. shiroanago shiroanago*, *Congrus megastomus*, *Conger myriaster*, *Conger japonicus*, *Rhyncho-*

cymba nystromi nystromi, *Rhynchocymba nystromi ginanago*, *Rhynchoconger ectenura*, *Promyallantor nezumi*, *Japonoconger sivicola*, *Congrina retrotincta*, *Uroconger lepturus*.

Taverne, L., 1968. Ostéologie du genre *Gnathonemus* Gill sensu stricto [*Gnathonemus petersii* (Gthr) et espèces voisines] (Pisces Mormyriiformes). - Ann. Mus. r. Afrique Cent., (sér. in-8°), (Sci. Zool.), 170: 1 - 91, 44 fig., pl. 1 - 4.

Illustrated recent otolith: *Gnathonemus petersii*.

Taverne, L., 1969. Etude ostéologique des genres *Boulengeromyrus* Taverne et Géry, *Genyomyrus* Boulenger, *Petrocephalus* marcusen (Pisces Mormyriiformes). - Ann. Mus. r. Afrique Cent., (sér. in-8°), (Sci. Zool.), 174: 1 - 85, 46 fig., pl. 1 - 2.

Illustrated recent otoliths: *Petrocephalus bane*, *Genyomyrus donnyi*, *Boulengeromyrus knoeffleri*.

Taverne, 1971. Ostéologie des genres *Marcusenius* Gill, *Hippopotamyrus* Pappenheim, *Cyphomyrus* Myers, *Pollimyrus* Taverne et *Brienomyrus* Taverne (Pisces Mormyriiformes). - Ann. Mus. r. Afrique Cent., (sér. in-8°), (Sci. Zool.), 188: 1 - 144, 80 fig., pl. 1 - 3.

Illustrated recent otoliths: *Cyphomyrus psittacus*, *Marcusenius cyprinoides*.

Taverne, L., 1972. Ostéologie des genres *Mormyrus* Linné, *Mormyrops* Müller, *Hyperopisus* Gill, *Isichthys* Gill, *Myomyrus* Boulenger, *Stomatorhinus* Boulenger et *Gymnarchus* Cuvier. Considérations générales sur la systématique des poissons de l'ordre des Mormyriiformes. - Ann. Mus. r. Afrique Cent., (sér. in-8°), (Sci. Zool.), 200: 1 - 194, 116 fig., pl. 1 - 2.

Illustrated recent otoliths: *Gymnarchus niloticus*, *Stomatorhinus puncticulatus*, *Myomyrus macrops*, *Isichthys henryi*, *Hyperopisus occidentalis tenuicauda*, *Mormyrops deliciosus*, *Mormyrus rume*.

Taverne, L., 1974. L'ostéologie d'*Elops* Linné, C., 1766 (Pisces Elopiformes) et son intérêt phylogénétique. - Acad. r. Belg., Mém. Cl. Sci. Collect. in-8°, (sér. 2), 41 (2): 5 - 98, 40 fig., 1 pl.

Illustrated recent otolith: *Elops lacerta*.

Taverne, L., 1974. Sur la sagitta des Mormyridae (Pisces Osteoglossomorphes). - Rev. Zool. afr., 88 (2): 281 - 285, 2 fig.

Illustrated recent otoliths: *Marcusenius macrolepidotus*, *Campylomormyrus tamandua*, *Petrocephalus bane*, *Pantodon buchholzi*.

Taverne, L., 1975. A propos de trois Téléostéens fossiles déterminés erronément comme Ostéoglossides, Cearana Jordan, D. S. et Branner, J. C., 1908, Eurychis Jordan, D. S., 1924 et Genartina Frizzell, D. L. et Dante, J. H., 1965. - Ann. Soc. r. Zool. Belg., 105 (1-2): 15 - 30, 8 fig.

Taverne, L., 1977. Ostéologie, phylogénèse et systématique des Téléostéens fossiles et actuels du super-ordre des Ostéoglossomorphes. Première partie. Ostéologie des genres *Hiodon*, *Eohiodon*, *Lycoptera*, *Osteoglossum*, *Scleropages*, *Heterotis* et *Arapaima*. - Acad. r. Belg., Mém. Cl. Sci., Collect. in-8°, (sér. 2), 42 (3): 5 - 235, 146 fig.

Illustrated recent otoliths: *Arapaima gigas*, *Heterotis niloticus*, *Scleropages formosus*, *Osteoglossum bicirrhosum*, *Hiodon alosoides*.

Taverne, L., 1978. Ostéologie, phylogénèse et systématique des Téléostéens fossiles et actuels du super-ordre des Ostéoglossomorphes. Deuxième partie. Ostéologie des genres *Phareodus*, *Phareoides*, *Brychaetus*, *Musperia*, *Pantodon*, *Singida*, *Notopterus*, *Xenomystus* et *Papyrocranus*. - Acad. r. Belg., Mém. Cl. Sci., Collect. in-8°, (sér. 2), 42 (6): 4 - 213.

Illustrated recent otoliths: *Papyrocranus afer*, *Xenomystus nigri*, *Notopterus notopterus*, *Pantodon buchholzi*.

Tilak, J., 1963. Studies on the comparative morphology of the otoliths of Indian siluroids. - Geol. Anz., 173 (3): 181 - 201.

Trewavas, E., 1977. The sciaenid fishes (Croakers or Drums) of the Indo-West-Pacific. - Trans. zool. Soc. Lond. (1977), 33: 259 - 541, 61 fig., pl. 1 - 14.

Illustrated recent otoliths: *Bahaba chaptis*, *Umbrina canariensis*, *Kathala axillaris*, *Otolithoides pama*, *O. biau-ritus*, *Panna microdon*, *Boesemania microlepis*, *Pennahia macrophthalmus*, *Argyrosomus hololepidotus*, *A. amoyensis*, *Pterolithus maculatus*, *P. lateoides*, *Otolithes ruber*, *Chrysochir aureus*, *Daysciaena albida*, *Austro-nibea oedogenys*, *Paranibea semiluctuosa*, *Nibea maculata*, *N. semifasciata*, *N. soldado*, *Sonorolux fluminis*, *Johnius coitor*, *Sciaena umbra*, *Macrospinoso cuja*, *Bahaba taipingensis*, *Pennahia macrocephalus*, *P. pawak*, *P. argentata*, *Megalonibea fusca*, *Argyrosomus japonicus*, *A. miiuy*, *Atrubucca nibe*, *A. trewavasae*, *Afroscion thor-*

pei, *Protonibea diacanthus*, *Dendrophysa russelli*, *Nibea albiflora*, *Larimichthys crocea*, *L. polyactis*, *Collichthys lucidus*, *C. niveatus*, *Johnius coitor*, *Atractoscion aequidens*, *Pseudotolithus brachygnathus*, *P. senegalensis*, *P. (Pinnacorvina) epipercus*, *P. (Hostia) moorii*, *P. (Fonticulus) elongatus*, *Miracorvina angolensis*, *P. (P.) senegalensis*, *Pteroscion peli*.

Voigt, E., 1928. Ueber einen Gadidenotolithen und einige andere unbeachtete Fossilien aus der Schreibkreide von Rügen. – Cbl. Mineral. Geol. Paläont., B (6): 377 - 381, 4 fig.
New fossil species: *Otolithus (Gadidarum) rugiae*.

Weiler, W., 1929. *Prolebias praecursor* n. sp. aus den Süßwasserschichten des Cyrenenmergels im Mainzer Becken. – Notizbl. Ver. Erdkd. u. Hess. Geol. L.A. (5-F.), 12: 110 - 111, pl. 6.

Weiler, W., 1968. Die Otolithen der bathypelagischen Familie Melamphaidae und ihre systematische Bedeutung (Pisces). – Senckenbergiana biol., 49 (3/4): 223 - 230, 7 fig.

Illustrated recent otoliths: *Scopeloberyx robustus*, *Poromitra crassiceps*, *Sio nordenskjöldii*, *Scopelogadus* sp., *Melamphaes lugubris*, *Scopelogadus mizolepis bispinosus*, *Melamphaes acanthomus*.

Weiler, W., 1968. Otolithi Piscium (Neubearbeitung). – Fossilium Catalogus, I. Animalia, 117: 1 - 196.

Weiler, W., 1969. Fisch-Otolithen aus der Unter-Kreide der Umgebung von Hannover und aus dem Unter-Eozän von Fehmarn. – Senckenb. Lethaea, 50 (4): 357 - 366, 8 fig.

Weiler, W., 1971a. *Palealbula ventralis* n. sp. (Pisces, Clupeiformes) aus dem Neocom (Unter-Hauterive) von Englebostel bei Hannover. – Senckenb. Lethaea, 52 (1): 1 - 3, 3 fig.

New fossil species: *Palealbula ventralis*.

Weiler, W., 1971b. Fisch-Otolithen aus dem Jungtertiär Süd-Siziliens. – Senckenb. Lethaea, 52 (1): 5 - 37, pl. 1 - 2.

New fossil species: *Diaphus praerafinesquii*, *Carapus praeimberbis*, *Neoscombrops praeannectens*.

Illustrated recent otoliths: *Hygophum benoiti*, *Ceratoscopelus townsendi*, *C. maderensis*, *Diaphus rafinesquii*, *Electrona carlsbergi*, *E. crockeri*, *E. rissoi*, *E. subaspera*, *Hygophum atratum*, *H. hygomi*, *Benthosema panamense*, *B. glaciale*, *Lampanyctus crocodilus*, *Neoscombrops annectens*.

Weiler, W., 1972a. Fische. In: F. Doebl, H. Mowahed-Awal, P. Rothe, V. Sonne, H. Tobien, H. Weiler & W. Weiler, 1972. Ein 'Aquitani'-Profil von Mainz-Weisenau (Tertiär, Mainzer Becken). Mikrofaunistische, sedimentpetrographische und geochemische Untersuchungen zu einer Gliederung. – Geol. Jb., A5: 75 - 81, pl. 15.

New fossil species: *Morone brevis*.

Illustrated recent otoliths: *Argentina sphyraena*, *A. sp.*, *A. silus*, *A. striata*, *A. sialis*, *Glossanodon semifasciatus*.

Weiler, W., 1972b. Fisch-Otolithen aus der unteren Kreide Niedersachsens. – Ber. Naturhist. Ges., 116: 71 - 79, 5 fig.

New fossil species: *Palealbula gracilis*, *Otolithus* (inc. sed.) *rostratus*, *O.* (inc. sed.) *pockrandti*.

Weiler, W., 1973. Erster Nachweis von Otolithen der Familie Umbridae (Pisces) im Tertiär des Mainzer Beckens, mit Bemerkungen über die phyletischen Beziehungen innerhalb der Unterordnung Esocoidei. – Senckenb. Lethaea, 5 (6): 455 - 467, 14 fig.

New fossil species: *Paleumbra moguntina*, *P. ? acutirostris*.

Illustrated recent otoliths: *Umbra krameri*, *U. limi*, *Novumbra hubbsi*.

Weinfurter, E., 1967. Die miozäne Otolithenfauna von St. Veit an der Triesting, NO. – Ann. Naturhistor. Mus. Wien, 71: 381 - 393, pl. 1 - 2.

New fossil species: *?Smerdis kühni*.

Weitzman, S. H., 1954. The osteology and the relationships of the South American Characid fishes of the subfamily Gasteropelecinae. – Stanford Ichth. Bull., 4 (4): 213 - 263, 18 fig.

Illustrated recent otolith: *Carnegiella vesca*.

Weitzman, S. H., 1962. The osteology of *Brycon meeki*, a generalized Characid fish, with an osteological definition of the family. – Stanford Ichth. Bull., 8 (1): 3 - 77, 21 fig.

Illustrated recent otolith: *Brycon meeki*.

Weitzman, S. H., 1967b. The osteology and relationships of the Astronethidae, a family of oceanic fishes. – Dana Rep., (71): 1 - 54, 31 fig.

Illustrated recent otolith: *Astronesthes niger*.

Weitzman, S. H., 1974. Osteology and evolutionary relationships of the Sternoptychidae, with a new classification of Stomatoid families. – Bull. amer. Mus. nat. Hist., 153 (3): 331 - 478, 113 fig.

Illustrated recent otoliths: *Spirinchus thaleichthys*, *Vinciguerria lucetia*, *Polymetme corythaeola*, *Thorophos nexilis*, *Maurolicus muelleri*, *Danaphos oculatus*, *Valenciennellus tripunctulatus*, *Argyripnus* sp., *A. atlanticus*, *Sonoda megalophthalma*, *Polyipnus asteroides*, *P. aquavitus*, *Ichthyococcus irregularis*, *Argyropelecus aculeatus*, *A. affinis*, *Sternoptyx diaphana*.

Wigley, R. L. & F. C. Stinton, 1973. Distribution of macroscopic remains of recent animals from marine sediments off Massachusetts. – Fishery Bull., 71 (1): 1 - 40, 26 fig.

ADDENDUM

Dartevelle, E. & E. Casier, 1959. Les poissons fossiles du Bas-Congo et du régions voisines (Troisième partie). – Ann. k. mus. Belg. Congo, (3) 2 (3): 257 - 568, pl. 23 - 39.

New fossil species: *Otolithus (Merlucciidarum) signeuxae*.

McCosker, J. E., 1977. The osteology, classification, and relationships of the eel family Ophichthidae. – Proc. Calif. Acad. Sci., Ser. 4, 41 (1): 1 - 123, 45 fig.

Illustrated recent otoliths: *Ophichthus triserialis*, *O. zophochir*, *Ophisurus serpens*, *Echiophis intertinctus*, *Ethadophis merenda*, *Myrichthys xystrurus*, *Echelus pachyrhynchus*, *Aplathophis chauliodus*, *Myrophis vafer*.

Pomerol, C., 1973. Stratigraphie et paléogéographie. Ere cénozoïque (Tertiaire et Quaternaire). Paris (Doin), 269 pp. In this general treatise, Pomerol figured 8 photographs of otoliths from the collection Stinton, on page 122. Among them, *Lactarius amplus* (fig. 4.11.8) is new. Authorship of this species belongs to Pomerol, as stated by Stinton (1978, p. 181).

Schwarzahns, W. & W. Weiler, 1971. Ein ungewöhnlicher Fund von Otolithen 'in situ' aus dem mitteloiozänen Meeressand des Mainzer Beckens. – Senckenb. Lethaea, 52 (5/6): 529 - 535, 5 fig.

New fossil species: *Trigla hemmoorensis*.

Illustrated recent otoliths: *Pterygotrigla polyommata*, *Prionotus carolinus*.

Stinton, F. C. & D. Nolf, 1970. A Teleost otolith fauna from the Sands of Lede, Belgium. – Bull. Soc. belge Géol., Paléont., Hydrol., 78 (3-4): 219 - 234, 1 pl.

New fossil species: *Anguilla rectangularis*, *Gymnothorax diagonalis*, *Moringua fissura*, *Lepophidium aequalis*, *Hoplobrotula lerichei*, *Antigonia angusta*, *Platycephalus aculeatus*, *Apogon arambourgi*, *Ambassis electilis*, *Serranus (Serranellus) delicatulus*, *Centropristes exsculptus*, *Lagodon pectinoides*, *Oblada joneti*.

N.B. The new fossil species mentioned in the addendum have already been incorporated in the alphabetical list.

ALPHABETICAL LIST OF FOSSIL NOMINAL SPECIES DESCRIBED SINCE 1968

All species are arranged in alphabetical order of generic names, disregarding the possible prefix 'Otolithus' or 'genus'. The spelling is the same as in the original publication. It is stressed that insertion in this list does not mean that the authors regard a name as valid or correct.

Acropomidarum martini Gaemers & Hinsbergh, 1978

Adioryx ostialis Steurbaut, 1979b

Albula hantoniensis Stinton, 1975

Albula incurvata Stinton, 1975

- Albula marginalis* Stinton, 1975
Albula obesa Stinton, 1973
Albula raphiodon Stinton, 1975
Alepocephalus novus Stinton, 1977a
Alosa incisa Stinton, 1977a
Ambassis electilis Stinton & Nolf, 1970
Ammodytes lanceolatus sculptus Gaemers & Schwarzhans, 1973
Ammodytes rostratus Gaemers & Schwarzhans, 1973
Ammodytes vasseuri Nolf & Lapierre, 1977
Anguilla annosa Stinton, 1975
Anguilla pectinata Stinton, 1977b
Anguilla rectangularis Stinton & Nolf, 1970
Anguilla rouxi Nolf, 1974
Antennarius curvatus Stinton, 1978
Antennarius excavatus Stinton, 1978
Antennarius falcatus Stinton, 1978
Antennarius hamatus Stinton, 1978
Antennarius validus Stinton, 1978
Antigonia angusta Stinton & Nolf, 1970
Antigonia postangusta Holec, 1975b
Aphanius (Aphanius) chios Malz, 1978c
Aphanius moraviae Brzobohatý, 1969
Apogon arambourgi Stinton & Nolf, 1970
Apogonidarum ventrolobatus Schwarzhans, 1973
Archengraulis productus Stinton & Torrens, 1968
Archyloplecus weinfurteri Brzobohatý & Schultz, 1978
Ariosoma coheni Nolf & Martinell, in press
Arnoglossus inconspicuous Smigielska, 1973
Astroconger crassus Stinton, 1975
Astroconger ellipticus Stinton, 1975
Atherina magereli Nolf & Lapierre, 1977
Aulopus sinuosus Stinton, 1977a

Bathycongrus twistringenensis Schwarzhans, 1976
Bauzaia ornatissima Robba, 1970
Bauzaia tuberosa Robba, 1970
Bembrops vandeveldeae Steurbaut, 1979b
Beryx nova Stinton, 1978
'genus *Blenniidarum*' *blondeau* Nolf & Lapierre, 1979
Benthosema fitchi Brzobohatý & Schultz, 1978
Bonapartia spina Heinrich, 1969
'genus *Bothidarum*' *biaculeatus* Nolf & Lapierre, 1979
Bothidarum rhomboides Schwarzhans, 1973
Bothidarum weileri Schwarzhans, 1974
? *Bothus semen* Nolf, 1973a
Bregmaceros oblongus Schwarzhans, 1977
Brosme heinrichi Gaemers, 1976b
Brosme tejkali Brzobohatý & Schultz, 1978
'genus aff. *Brosmophycis*' *brevis* Nolf, 1974

Brotulidarum cetonaensis Schwarzhans, 1979
Brotulidarum phaseoloides Gaemers & Hinsbergh, 1978

? *Caesio concavissimus* Nolf, 1973c
Callionymus lerenardi Nolf & Lapierre, 1979
Callionymus schuermanni Schwarzhans, 1973
'genus *Caproidarum*' *sonodae* Nolf & Lapierre, 1979
Capros exiguus Stinton, 1978
Capros incisus Stinton, 1978
Carangidarum robustus Gaemers & Hinsbergh, 1978
Carapus nuntius elongatus Gaemers & Schwarzhans, 1973
Carapus praeimberbis Weiler, 1971b
Centroberyx crenulatus Stinton, 1978
Centroberyx elegans Stinton, 1978
Centroberyx rotundus Stinton, 1978
Centrogenys ornatus Stinton, 1978
Centropomus annectens Stinton, 1978
Centropistes exsculptus Stinton & Nolf, 1971b
? *Centropyge kotthausi* Nolf, 1973c
Cepola massiva Nolf & Lapierre, 1979
Chana antiqua Stinton, 1978
Chanda bohlkei Nolf & Cappetta, 1976
Chanda convexa Stinton, 1978
Chanda fimbriata Stinton, 1978
Chanda lobata Stinton, 1978
Chanda ovalis Stinton, 1978
Chanda pentagonalis Stinton, 1978
Chanda rhomboides Stinton, 1978
Chanda turgida Stinton, 1978
'genus *Chandidarum*' *inflatus* Nolf & Lapierre, 1979
'genus *Chandidarum*' *steurbauti* Nolf & Lapierre, 1979
Chanos compressus Stinton, 1977a
Chaunax semiangulatus Stinton, 1978
Chelidonichthys curvatus Stinton, 1978
Chirocentrus exilis Stinton, 1977a
Chlorophthalmus elongatus Stinton, 1977a
Citharopsettodes angustus Schwarzhans, 1979
Cleidogonia antiqua Stinton & Torrens, 1968
Clupea bonii Anfossi & Mosna, 1971
'genus *Clupeidarum*' *schultzi* Nolf & Lapierre, 1979
Ot. (Clupeidarum) singularis Brzobohatý, 1969
Clupeiformorum planus Gaemers & Hinsbergh, 1978
Coelorhynchus yakuojiensis Ohe & Araki, 1973
Coelorinchus triquetrus Stinton, 1977a
Colliolus johannettae Gaemers, 1976b
Colliolus minutulus Gaemers, 1978b
Colliolus parvus Gaemers, 1976b
Colliolus schwarzhansi Gaemers, 1976b

- Conger durus* Aoki, 1968
Conger ellipticus Aoki, 1971
Conger extensus Stinton, 1975
Conger productus Stinton, 1975
Congermuraena weileri Jonet, 1972-73
Otolithus (Congridarum) bellus Aoki, 1968
Otolithus (Congridarum) rhombicus Aoki, 1971
Corvina dacica Pana, 1977
Corvina dobrogica Pana, 1977
Corvina rumana Pana, 1977
Otolithus (Cottidarum) jizodoensis Aoki, 1971
Otol. (Cottidarum) modestus Smigielska, 1973
Cottus parascorpius Lafond-Grellety, 1963
Otolithus (Crangidarum) calidus Aoki, 1968
Cyprinodon dentifer Stinton & Kissling, 1968
Cyprinodon subtrigonus Stinton & Kissling, 1968
 'genus *Cyprinodontidarum*' *angulosus* Steurbaut, 1979a
 'genus *Cyprinodontidarum*' *feistae* Steurbaut, in press
 'genus *Cyprinodontoideorum*' *labretensis* Steurbaut, 1979a
 'genus *Cyprinodontoideorum*' *obesus* Steurbaut, 1979a
- Dactyloptena crenata* Stinton, 1978
Dactyloptena lobata Stinton, 1978
Dactyloptena orbicularis Stinton, 1978
Dapalis bartensteini Malz. 1978c
Dapalis carinatus Stinton & Kissling, 1968
Dapalis rhomboidalis Stinton & Kissling, 1968
Dapalis vectensis Stinton, 1978
Dentex kokeni Gaemers & Hinsbergh, 1978
Dentex (Polystegarus) nolfi Steurbaut, 1979b
Dermatopsis astrictus Stinton, 1977a
Diaphus angulatus Ohe & Araki, 1973
Diaphus cahuzaci Steurbaut, 1979b
Diaphus crassus Schwarzhans, 1979
Diaphus hataii Ohe & Araki, 1973
Diaphus italicus Anfossi & Mosna, 1971
Diaphus poignanteae Steurbaut, 1979b
Diaphus praeraefinesquii Weiler, 1971b
Dinematichthys brevisulcus Stinton, 1977a
Diplacanthopoma tortonesei Nolf, 1977
Diplodus karrerae Nolf & Steurbaut, 1979
Diplodus racheboeufi Lanckneus & Nolf, 1979
Dussumieria amussa Stinton, 1977a
- Echelus contractus* Stinton, 1975
Echelus crenulatus Stinton, 1975
Echiodon heinzlini Huyghebaert & Nolf, 1979
Electrona anfossimosnai Schwarzhans, 1979
Encheliophis triangularis Stinton, 1977a
- Epinephelus constrictus* Stinton, 1978
Epinephelus exacutus Stinton, 1978
Epinephelus nodosus Stinton, 1978
Epinephelus plicatus Stinton, 1978
Epinephelus postangulatus Nolf, 1973a
Etrumeus undatus Stinton, 1977a
Eucitharus belgicus Gaemers, 1972
Eucitharus lusitanicus Jonet, 1972-73
Exallias vectensis Nolf, 1973c
Gadichthys altus Gaemers & Hinsbergh, 1978
Gadichthys benedeni verticalis Gaemers & Schwarzhans, 1973
Gadichthys undosus Gaemers, 1973
Gadiculus deurnensis Nolf, 1977
 'genus *Gadidarum*' *ensiformis* Steurbaut & Herman, 1978
 'genus *Gadidarum*' *lerichei* Nolf, 1977
Otolithus (Gadidarum) rugiae Voigt, 1928
Gadus parallelus Gaemers, 1976b
Gadus robustus Robba, 1970
Gadus varians Stinton, 1977a
Gadus wansinensis Casier, 1943
Gaidropsarus acuticaudatus Gaemers, 1973
 'genus aff. *Gazza*' *pentagonalis* Nolf & Lapierre, 1979
Genypterus rectangularis Nolf, 1973c
Gephyroberyx hexagonalis Stinton, 1978
Glyptorhynchus triangulus Robba, 1970
Gnathophipis kanazawai Nolf & Martinell, in press
Gnathophipis obesus Stinton, 1975
(Gobiidarum) bicornutus Gaemers & Schwarzhans, 1973
(Gobiidarum) dorsoconcaus Gaemers & Schwarzhans, 1973
(Gobiidarum) modestus Gaemers & Schwarzhans, 1973
(Gobiidarum) rectangularis Gaemers & Schwarzhans, 1973
Gobius arenosus Aoki, 1971
Gobius copiosus Aoki, 1968
Gobius gibbosus Pana, 1977
Gobius ingens Aoki, 1968
Gobius notoensis Aoki, 1967
Gobius ornatus Gaemers & Schwarzhans, 1973
Gobius puellaris Aoki, 1968
Gobius rarus Aoki, 1971
Gobius rusticus Aoki, 1967
Gobius sectus Stinton & Kissling, 1968
Gobius truncatus Schwarzhans, 1979
Gobius urbanus Aoki, 1968
Gymnoscopeus fitchi Schwarzhans, 1979
Gymnothorax diagonalis Stinton & Nolf, 1970
Gyrosteus subdeltoideus Stinton & Torrens, 1968

- Haliophis colletti* Nolf & Lapierre, 1979
Harengula regularis Stinton, 1977a
Harengula similis Stinton, 1977a
Hemiramphus mosaicus Stinton, 1978
Hemiramphus ovalis Stinton, 1977a
Hemiramphus subcircularis Stinton, 1978
Heptocara pauper Schwarzhans, 1979
Heterotis acutangulus Stinton, 1977a
Holocentrus extenuatus Stinton, 1978
Holocentrus? weileri Robba, 1970
Hoplobrotula lerichei Stinton & Nolf, 1970
Hoplobrotula panda Stinton, 1977a
Hoplobrotula protensa Stinton, 1977b
Hoplobrotula spissa Stinton, 1977a
?Hoplobrotula sulcata Nolf, 1973c
Hoplobrotula undulata Stinton, 1977a
Hoplostethus densus Stinton, 1978
Hygophum agatense Robba, 1970
Hygophum agrigentensis Schwarzhans, 1979
Hygophum? germanicum Heinrich, 1969
Hygophum? orcianensis Schwarzhans, 1979
Hygophum rotundum Ohe & Araki, 1973
Hygophus intermedius derthonensis Anfossi & Mosna, 1969b
Hymenocephalus fimbriatus Stinton, 1977a

Ichthyococcus subregularis Stinton, 1977a
Ilisha nijssenii Nolf & Steurbaut, 1979
Ot. (inc. sed.) acutirostrum Nolf, 1973a
Otolithus (inc. sed.) pockrandti Weiler, 1972b
Otolithus (inc. sed.) rostratus Weiler, 1972b
Ot. (inc. sed.) rzechaki Brzobohatý, 1969
inc. sed. spinosus Schwarzhans, 1977
inc. sed. tenuicauda Schwarzhans, 1974
Otol. (inc. sed.) weinbergeri Sieber & Weinfurter, 1967

Jefitchia spinosa Jonet, 1972-73
Jordanicus lisus Nolf, 1973a

Lactarius amplus Pomerol, 1973
Lagodon pectinoides Stinton & Nolf, 1970
Lampanyctus apenninicus Anfossi & Mosna, 1971
Lampanyctus kuboensis Ohe & Araki, 1973
Lates delicatulus Stinton, 1978
'genus Leiognathidarum' bercherensis Nolf & Lapierre, 1979
Lemkea aftonensis Stinton, 1975
Lemkea glabra Stinton, 1975
'Genus aff. Lemkea' saubriguensis Steurbaut, 1979b
Lepidion tuberculatum Stinton, 1977a

Lepidogobius bifidus Stinton & Kissling, 1968
Lepidorhombus angulosus Nolf, 1977
Lepidorhombus subtriangularis Heinrich, 1970
'Genus aff. Lepidotrigla' postdorsalis Steurbaut, 1979b
'genus aff. Lepidotrigla' ringelei Nolf, 1977
Lepidotrigla selsiensis Stinton, 1978
Lepophidium aequalis Stinton & Nolf, 1970
Leptolepis densus Stinton & Torrens, 1968
Leptolepis roddenensis Stinton & Torrens, 1968
Leptolepis tenuirostris Stinton & Torrens, 1968
'genus aff. Liparis' minusculus Nolf, 1977
'genus Lophiidarum' gibbosus Nolf, 1977
Lophius casieri Nolf, 1977
Lophius papillosus Stinton, 1978
Lutianus lerichei Nolf, 1973c

Macruridarum irregularis Gaemers, 1979
?Macruridarum deurnensis Gaemers, 1976b
Macrurus rectangularis Schwarzhans, 1974
Megalops bicrenulatus Stinton, 1973
Melanogrammus conjunctus Gaemers & Schwarzhans, 1973

Mene sekharini Nolf & Capetta, 1976
Merlangiogadus decorus Gaemers, 1973
Merlangius bifurcus Gaemers, 1973
Merlangius spatulatus miocenicus Heinrich, 1969
Otolithus (Merlucciidarum) signeuxae Dartevelle & Casier, 1959

Merluccius nodosus Stinton, 1977a
Merluccius apicalis Stinton, 1977a
Micromesistius boscheineni Schwarzhans, 1979
Micromesistius hochti Gaemers & Schwarzhans, 1973
Micromesistius schwarzhansi Holec, 1975b
Minous carinatus Stinton, 1978
Minous excavatus Stinton, 1978
Molva iizukai Nolf, 1977
Molva primaeva Gaemers, 1976b
Monocentris cristata Stinton, 1978
Monomitopus costatus Stinton, 1977a
Monomitopus grimmertingensis Nolf, 1974
Moringua explicata Stinton, 1975
Moringua fissura Stinton & Nolf, 1970
Morone brevis Weiler, 1972a
Morone crassa Stinton, 1978
Morone daimeriesi Nolf, 1977
Morone eschmeyerii Nolf & Lapierre, 1979
Mugil pragalensis Jonet, 1972-73
Mupus confinis Nolf, 1973a
Mupus neumanni Schwarzhans, 1974
Muraena prima Stinton, 1975

- Muraenesox spatulus* Nolf & Cappetta, 1976
Otolithus (Myctophidarum) acutirostrum Holec, 1975b
Otolithus (Myctophidarum) aemilinus Anfossi & Mosna, 1972
Otolithus (Myctophidarum) makutaensis Aoki, 1971
Myctophum oroseinum Dieni, 1968
Myctophum polygonium Aoki, 1971
Myctophum rossiae Robba, 1970
Myctophum spinatum Aoki, 1971
Myctophum unicum Schwarzhans, 1979
Myctophum vastus Aoki, 1971
Myrichthys brevis Stinton, 1975
Myripristis depressus Stinton, 1978
Myripristis sinuatus Stinton, 1978
Myripristis verus Steurbaut, 1979b
- Nettastoma crenulatum* Stinton, 1975
Neobithites tuberculatus Nolf, 1973b
Neobythites angustus Stinton, 1977a
Neobythites constrictus Stinton, 1977a
Neobythites laevis Stinton, 1977a
Neobythites scabrosus Stinton, 1977a
 'genus aff. *Neobythites*' *spina* Nolf, 1974
Neoditrema fercourtensis Nolf, 1973c
Neoscombrops flexuosus Steurbaut, 1979b
Neoscombrops praeannectens Weiler, 1971b
Nezumia contemplata Schwarzhans, 1979
Nibea gemma Aoki, 1968
Notacanthus circulus Ohe & Araki, 1973
Notogenous brevirostris Schwarzhans, 1974
Notosthes flexuosus Stinton, 1978
- Oblada joneti* Stinton & Nolf, 1970
Ogcocephalus cirrhosus Stinton, 1978
Ogcocephalus glyptosus Stinton, 1978
Ogilbia centrota Stinton, 1977a
 'genus aff. *Ogilbia*' *heinzlini* Lanckneus & Nolf, 1979
Ogilbia lapierrei Nolf, 1978a
Oligopus bulbiformis Stinton, 1977a
Oligopus gibbosus Stinton, 1977a
Onocottus asper Gaemers & Schwarzhans, 1973
Onos bergensis Gaemers, 1972
Ophichthus sphaeroides Stinton, 1975
Ophidiidarum bulbis Nolf, 1978a
 'genus *Ophidiidarum*' *ornatissimus* Nolf, 1974
 'Genus *Ophidiidarum*' *spinosus* Nolf & Cappetta, 1976
Ophidion springeri Nolf, 1978b
Ophiodon springeri Lanckneus & Nolf, 1979
Opisthonema collatum Stinton, 1977a
 'genus *Opisthognathidarum*' *bloti* Nolf & Lapierre, 1979
- Orthopristis goodyi* Nolf, 1975a
Orthopristis trewavasae Nolf & Lapierre, 1979
Osmeridarum rectidorsalis Schwarzhans, 1977
Osmerus colvellensis Stinton, 1977a
Osmerus delicatulus Stinton, 1977a
Osmerus lobatus Stinton, 1973
Osmerus sculptus Stinton, 1977a
Otophidium caudatum Nolf, 1974
Otophidium compactum Gaemers & Schwarzhans, 1973
- Pagellus folletti* Nolf & Lapierre, 1979
Pagellus weitzmani Nolf, 1977
Pagrosomus meldertensis Nolf, 1973a
Pagrus gaemersi Schwarzhans, 1974
Palaeogadus compactus Gaemers & Schwarzhans, 1978
Palaeoranicus grammus Gaemers, 1978b
Palaeoranicus regularis Gaemers, 1976b
Palaeosox densus Stinton, 1977a
Palaeumbra? acutirostris Weiler, 1973
Palaeumbra moguntina Weiler, 1973
Palealbula gracilis Weiler, 1972b
Palealbula ventralis Weiler, 1971a
Paleosciaena mizunamiensis Ohe, 1976a
Paracentropogon annectens Stinton, 1978
Paraconger calvus Stinton, 1975
Paralabrax splendens Gaemers & Hinsbergh, 1975
Parapristipoma bavayi Nolf & Lapierre, 1979
Parastromateus tavernei Nolf, 1973a
Paratrachichthys angulatus Stinton, 1978
Paratrachichthys cirratus Stinton, 1978
Otol. (Percidarum) moenus Malz, 1978b
Otol. (Percidarum) transitus Sieber & Weinfurter, 1967
 'Genus *Perciformorum*' *wheeleri* Steurbaut, 1979b
Peristedion prominens Stinton, 1978
Peristedion pulchrum Jonet, 1972-73
Pholidophorus paradoxicus Stinton & Torrens, 1968
Pholidophorus prae-elops Stinton & Torrens, 1968
Phycis praecognatus Schwarzhans, 1977
Platycephalus aculeatus Stinton & Nolf, 1970
Platycephalus fluctuosus Nolf, 1973a
Pneumatophorus euodus Nolf, 1973a
Podothecus costulatus Stinton, 1978
Polymixia? rhomboidalis Stinton, 1977a
Polymixia serti Stinton, 1977a
Pomacanthus fitchi Nolf, 1973c
Pomadasyidarum gullentopsi Nolf, 1978a
Pomolobus circularis Stinton, 1977a
 'genus aff. *Pontinus*' *foreyi* Nolf, 1977
Porichthys pedemontanus Robba, 1970
Pranesus densus Stinton, 1978

Prionotus contiguus Stinton, 1978
Prionotus tortuosus Stinton, 1978
Pristigenys caduca Nolf, 1973a
Prolebias senesi Brzobohaty & Stancu, 1974
Promyllantor fastigatus Stinton, 1975
Promyllantor guttulus Stinton, 1975
Promyllantor impletus Stinton, 1975
Promyllantor similis Stinton, 1975
Psettodes collatus Nolf, 1973a
Psettodes oedelemensis Nolf, 1973b
Psettodes spinosus Nolf, 1973c
Pseudocolliolus cuykensis Gaemers, 1978b
Pseudorhombus helvecianus Jonet, 1972-73
Pterothrissus cristatus Stinton, 1975
Pterothrissus leiodus Stinton, 1975
Pterothrissus protensus Stinton, 1975

Raniceps altus Nolf, 1974
Raniceps elegans Stinton, 1977a
Raniceps hermani Nolf, 1978a
Rhomboplites casieri Nolf, 1970

Sardinella extensa Stinton, 1977a
Sardinella spatiosa Stinton, 1977a
?Saurida indansi Schwarzhans, 1977
Saurida rectilineata Steurbaut, 1979b
Saurida tenuis Stinton, 1977a
Sciaena moguntiniiformis Pana, 1977
Otolithus (Sciaenidarum) clarus Aoki, 1971
Scombridarum biscalptatus Schwarzhans, 1974
Scorpaena edegemensis Gaemers, 1973
Scorpaena regularis Stinton, 1978
Scorpaenodes recurvus Stinton, 1978
Sebastes weileri Gaemers, 1972
Sebastodes perangustus Stinton, 1978
Otolithus (Serranidarum) anesakiensis Aoki, 1971
Serranus delicatulus Stinton & Nolf, 1970
Serranus krefeldensis Schwarzhans, 1974
Sirembo convexus Stinton, 1977a
Sirembo tumidus Nolf, 1973c
?Smerdus kühni Weinfurter, 1967
‘genus *Soleidarum*’ *schultzei* Nolf & Lapierre, 1979
Otolithus (Sparidarum) babai Aoki, 1968
‘genus *Sparidarum*’ *whiteheadi* Nolf, 1977
Spicara kugleri Nolf, 1977
Spicara arambourgi Nolf, 1973a
Sphaeronchus circularis Stinton & Torrens, 1968
Sphaeronchus dorsetensis Stinton & Torrens, 1968
Sphaeronchus rotundus Stinton, 1973
Stolephorus furculus Stinton, 1977a

Stolephorus productus Stinton, 1977a
Stromateus brailloni Nolf, 1975
‘Genus *Synodontidarum*’ *intermedius* Nolf & Capetta, 1976
Synodus bisectus Stinton, 1977a
Symbolophorus haereticus Brzobohaty & Schultz, 1978
Symbolophorus meridionalis Steurbaut, 1979b

Toxotes wheeleri Nolf & Lapierre, 1979
Trachichthodes pattersoni Nolf, 1975a
Trachichthodes weileri Nolf, 1970
Trachichthodes abditus Stinton, 1978
Trachinus angustus Gaemers & Hinsbergh, 1973
Trachinus gaemersi Schwarzhans, 1973
Trachurus elegans Jonet, 1972-73
Trachyrincus minusculus Stinton, 1977a
‘genus *Trichiuridarum*’ *wongratanai* Nolf, 1977
Trigla? gibbosa Stinton, 1978
Trigla hemmoorensis Schwarzhans & Weiler, 1971
‘genus *Triglidarum*’ *giganteus* Nolf, 1977
‘Genus *Triglidarum*’ *parvulus* Steurbaut, 1979b
Tripterophycis multituberosus Gaemers, 1973
Tripterophycis multituberosus moravicus Brzobohaty & Schultz, 1978
Trisopterus antwerpensis Gaemers, 1971
Trisopterus concavus Gaemers, 1976b
Trisopterus elongatus Gaemers & Schwarzhans, 1973
Trisopterus incognitus Gaemers, 1976b
Trisopterus kasselensis Schwarzhans, 1974
Trisopterus pliogenicus Gaemers & Schwarzhans, 1973

Umbra valida Stinton, 1977a
‘genus *Umbridarum*’ *ringeadei* Steurbaut, 1979a
Uranoscopus septentrionalis Nolf, 1978b
Uroconger emarginatus Stinton, 1975
Uroconger incisurus Stinton, 1975

‘Genus aff. *Valenciennellus*’ *kotthausi* Steurbaut, 1979b

Xiphiurus nodosus Stinton, 1977a