

DR. MATHEWS PLAMOOTTIL

Principal, EKNM Govt. College, Elerithattu

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BIODATA AND SCIENTIFIC CONTRIBUTIONS OF DR. MATHEWS PLAMOOTTIL

Academic Qualifications

BSc Zoology: M. G. University, Kottayam, 1994-96.

MSc Zoology, M.G University, Kottayam, 1997-98.

(M.G University Rank)

NET, CSIR- UGC, Govt. of India, 2001.

PhD in Zoology, M. G. University, Kottayam, 2015.

Area of Interest

Freshwater fish Taxonomy

Academic Experience

Lecturer in Zoology: Govt. College, Kodencherry, 2007 Jan 22 - 2007 June 6

Assistant Professor in Zoology: Govt College, Chavara, 2007 June 7- 2021 September 3

Associate Professor in Zoology: Govt. College, Kottayam, 2021 Sept18- 2023 **Aug 13**

Principal: EKNM Govt. College, Elerithattu, 11 Sept 2023 onwards

Major Research Project

Govt. of India, Department of Science and Technology, SERB, Core Research Grant, 24.6 Lakhs, 2019-22

AWARDS / RECOGNITIONS RECEIVED

Sl. No	Name of Award	Awarding Agency	Year
1	Best Researcher Award	Kerala State Govt. Biodiversity Board	2015
2	SERB-CRG	DST- Govt of India	2019
3	Best Ecologist Award	Society for Educational and Scientific Research, Kerala	2016
4	Young Scientist of the Year Award	International Federation for Environment and Ecology, West Bengal	2017
5	Distinguished Researcher Award	SCIRE SCIENCE LTD,Kottayam	2017
6	Har Govind Ghorana Best Scientist Award	Tamil Nadu Scientific Research Organization, Pudukottai, TN	2017
7	Award for Excellence in Research Honorable Mention Certificate	EET-CRS-Uttar Pradesh	2017
8	Award of Excellence in Teaching and Research	International Association for Science and Technical Education, Avadi, Chennai	2017
9	Young Scientist Award	Applied Zoologists Association, Odisha Research	2017
10	Best Faculty Award	GRABS Educational and Charitable Trust, TN	
11	Fellow	Association for Advancement of Biodiversity Science, Karanataka	--
12	Fellow	Bose Science Society, Tamil Nadu	--
13	Fellow	Society for Educational & Scientific Research, Kerala	--

14	Fellow	International Academic Environmental Society, Bihar	a n c --
15	Fellow	Society of Education, Agra, UP	--
16	Life member	Indian Science Congress Association, Govt of India	
17	Life member	Marine Biological Association of India, Govt of India	
18	University Rank for MSc	M.G. University, Kerala	1999

LIST OF ALL RESEARCH ARTICLES PUBLISHED BY DR. MATHEWS PLAMOOTTIL

(Mathews Plamoottil is both first author & corresponding Author in all articles)

SCOPUS / WEB OF SCIENCE Indexed/ UGC CARE listed

1. **Plamoottil, M.** 2021. *Heteropneustes fuscus* (Siluriformes: Heteropneustidae), a new catfish species from Kerala, India Biodiversitas, (Scopus Indexed Journal), 22: (12) 87- 98.
2. **Plamoottil, M & Maji. D.** 2020. *Systemus gracilus* a new fish (cypriniformes: cyprinidae) species from west Bengal .Journal of Experimental Zoology India (Web of Science indexed Journal-UGC Journal No.7524). 23 (2): 1033-1038.
3. **Plamoottil, M & Johnson, R.** 2020. Synoptic notes on small Synonymic Cyprinoids of South India, Indian Journal of Applied & Pure Biology (Web of Science indexed Journal), 35 (2), 177-187.
4. **Plamoottil, M,** 2020. Synonymic cyprinoid fishes of west Bengal and Assam: an overview , Journal of Experimental Zoology India (Web of Science indexed Journal- UGC Journal No.7524),23 (1), 279-282.
5. **Plamoottil, M.** 2020. Rediscovery and Redescription of *Mystus keletius* (Valenciennes, 1839) Indian Journal of Applied& Pure Biology (Web of Science indexed Journal), 35 (2), 115-126.
6. **Plamoottil, M.** 2021. Systematic Notes on *Hypselobarbus carnaticus* (Cypriniformes: Cyprinidae) Collected From Bhavani River, Indian J. Applied & Pure Bio (Web of Science indexed Journal). 36 (1), 45-52.
7. **Plamoottil, M,** and Kumar, S. 2019. Fishery resource potential of Manimala River of Kerala, India, Journal of Advanced Zoology (SCOPUS indexed Journal- UGC Journal No. 26304), 40 (1): 22-26.
8. **Plamoottil, M.** 2021. Forgotten and insufficiently known large cyprinids of Kerala and adjacent states, Journal of Experimental Zoology, India (Web of Science indexed Journal-UGC Journal No.7524), 24 (1): 459- 464.
9. **Plamoottil, M & Vineeth, K.** 2020. A new cyprinid fish *Barilius cyanochlorus* from Kerala, India, Biodiversitas (SCOPUS indexed Journal),, 21 (11): 5389-5394.

10. **Plamoottil, M** & Vineeth. K. Rediscovery and redescription of *Capoeta puckelli* Day after one and half century,. Journal of Experimental Zoology, India, (Web of Science Indexed- UGC Journal No.7524), 24 (2): 1305-1309.
11. **Plamoottil, M** & Johnson, R. 2020. Taxonomic notes on *Puntius* species of south India, Egyptian Academic Journal of Biological Sciences- Zoology, (Web of Science Indexed), 12 (1): 93- 106.
12. **Plamoottil, M** & Vineeth, K. 2020. Discovery of a new teleost fish *Puntius ocellus* from Kerala, India Egyptian Academic Journal of Biological Sciences- Zoology, (Web of Science Indexed), 12 (2): 93- 102
13. **Plamoottil, M.** 2020. *Puntius sanctus*, a new fish (Cypriniformes: Cyprinidae) species from Tamil Nadu, India, Bioscience Research (Scopus indexed), 17 (1): 560-567.
14. **Plamoottil, M** & Debargya Maji, 2020. Taxonomic notes on *Puntius chola*. Journal of Experimental Zoology, India, (Web of Science Indexed- UGC Journal No.7524), 23: 47-51.
15. **Plamoottil, M.** 2019, Taxonomic notes on *Puntius dorsalis* (Jerdon, 1849). University Journal of Zoology, Rajshahi, west Bengal, (SCOPUS indexed Journal), 37: 43-47.
16. **Plamoottil, M.** 2019. *Puntius kyphus* (Cypriniformes: Cyprinidae) a new cyprinoid fish species from Kerala, India, Journal of Experimental Zoology India (Web of science indexed- UGC Journal No.7524), 22: 713-718.
17. **Plamoottil, M** & Vineeth, K. 2020. Rediscovery of *Gobio augraoides* Jerdon firstly after its description in 1849.Journal of Experimental Zoology, India (Web of Science Indexed- UGC Journal No.7524), 23 (2): 1039-1042.
18. **Plamoottil, M.** 2020. *Hypselobarbus procerus* a new cyprinid fish species from Kerala, India. Uttarpradesh Journal of Zoology (Web of Science indexed-UGC listed at the time of publication), 42 (24): 696-705.
19. **Plamoottil, M.** 2022.Taxonomic notes on native cyprinoid fishes of southern Karnataka, India, Egyptian Academic Journal of Biological Sciences. Zoology (Web of Science indexed), 14(1): 119-134.
20. **Plamoottil, M.** 2022.*Osteochilichthys elegans*, a new cyprinid fish from Kerala, India, Bioscience Research (SCOPUS indexed),19 (2): 974-990 .
21. **Plamoottil, M,** 2021. *Osteochilichthys formosus*, a new cyprinid fish from Kerala, India, Bioscience Research (SCOPUS Indexed Journal) ,19 (3): 1311-1320.

22. **Plamoottil, M. & Vineeth, K.** 2021. Discovery of a new cyprinid fish, *Hypselobarbus nitidus*- from Kerala, India, Egyptian Journal of Aquatic Biology and Fisheries (SCOPUS Indexed Journal), 26 (2): 511 – 528 .
23. **Plamoottil, M. & Kumar, P.B.** 2022. Biographic notes on earlier overseas fish taxonomists of south India, Journal of Experimental Zoology, India (Web of Science Indexed Journal- UGC Journal No.7524) , 25 (1): 147- 154.
24. **Plamoottil, M.** 2022. Rediscovery of *Barilius rugosus* Day (Cypriniformes: Cyprinidae) firstly after its description in 1867. Indian Journal of Applied and Pure Biology (Web of Science Indexed Journal), 37(1), 91-101.
25. **Plamoottil, M. and Kumar, P. B.** 2021. Trends in Fisheries Production with emphasis on Aquaculture Fish Production: A Comparative Analysis of India and China. Egyptian Journal of Aquatic Biology and Fisheries (SCOPUS Indexed Journal) , 26 (1): 40- 45.
26. **Plamoottil, M. and Kumar, P. B.** 2022. The Prospects and Problems of Rural Household Based Aquaculture: A Study of Selected Fish Farming Households in Kerala, Egyptian Journal of Aquatic Biology & Fisheries (SCOPUS Indexed Journal), 26(2): 61-84.
27. **Plamoottil, M & Johnson, R.** 2022. Systematic notes on some cyprinid fishes collected from Kasargod district of Kerala, India, Egyptian Journal of Aquatic Biology and Fisheries (SCOPUS Indexed Journal), 26(5): 939 – 954.
- 28.**Plamoottil, M.** 2018. Taxonomic notes on estuarine fishes collected from lower reaches of Manimala River. *Journal of Experimental Zoology, India*, .(Web of Science Indexed- UGC Journal No.7524)) 21(1): 453-456.
- 29.**Plamoottil, M.** and Suvarnakumar. G. 2017. Notes on distribution of fishes in Manimala River. *Journal of Advanced Zoology*. (SCOPUS Indexed-UGC Journal No. 26304) 38.1): 14- 21.
30. **Plamoottil, M & Abraham, N. P,** 2014. *Macrognathus fasciatus* (Synbranchiformes; Mastacembelidae), a new fish species from Kerala, India. *Journal of Experimental Zoology, India*.(Web of Science Indexed- UGC Journal No.7524), 17: 49-54.
31. **Plamoottil, M & Abraham, N. P,** 2013. Indigenous fishing methods of Manimala River, Kerala, India. *Journal of Advanced Zoology* (SCOPUS Indexed- UGC Journal No. 26304), 34 (2), 92- 102.

- 32. Plamoottil, M.** and Abraham, N. P, 2013. Rediscovery of *Pristolepis malabarica* after one and half century. *Journal of Advanced Zoology* (SCOPUS Indexed- UGC Journal No. 26304), 34 (1), 28- 35
- 33. Plamoottil, M.** & Abraham, N. P, 2013 *Mystus indicus* and *M. heoki*, two new cat fishes from Kerala, India. *Biosystematica* (Peer Reviewed Taxonomy Journal), 7(1); 43-58.
- 34. Plamoottil, M.** & Abraham, N. P, 2012. *Glyptothorax elankadensis*, a new species of sisorid fish from Manimala River, Kerala, India. *Biosystematica*(Peer Reviewed Taxonomy Journal),, 6 (2), 17- 25.
- 35. Plamoottil, M.**, Pooja S and Ardra S. K. 2019. Taxonomic notes on some freshwater fishes collected from Chavara of Kerala, India, *Journal of Experimental Zoology India* (Web of Science Indexed- UGC Journal No.7524), 22 {1}. 139-144.
- 36. Plamoottil, M.** 2018. Rediscovery of *Leuciscus stigma* after one and a half century. *Journal of Applied Zoological researches*, 29 (1): 238- 242. (UGC Journal No21458)
- 37. Plamoottil, M.** 2017. Rediscovery of *Gobius malabaricus* Day from its type locality after one and a half century. *Journal of Applied Zoological researches*, 28 (2): 238- 242. (UGC Journal No21458).
- 38. Plamoottil, M.** 2017. Preliminary taxonomic studies on *Sillago* species of Kollam district of Kerala, India. *International Journal of research Studies in Biosciences*, 5 (6): 4-9. UGC Journal No. 21458).
- 39. Plamoottil, M.** 2016. *Puntius euspilurus*, a new fish species from Kerala, India, *International Journal of Research Studies in Biosciences*, 4 (9): 1-6. UGC Journal No. 21458)
- 40. Plamoottil, M.** 2017. Taxonomic notes on channa species collected from Thiruvalla, Kerala. *International Journal of research Studies in Biosciences*, 5 (7): 13- 17. UGC Journal No. 21458)
- 41. Plamoottil, M.** 2014. *Pristolepis spentacantha*, a new species of fish from Kerala, India, *International Journal of Scientific Research*, 3 (5): 552- 554. (UGC Journal no, 49217)
- 42. Plamoottil, M.** 2018. Taxonomic notes on native cyprinoid fishes of southern Kerala. *Advances in Bioresearch*, 9 (1): 240-248 (UGC Journal no. 1244).
- 43. Plamoottil, M.** 2017. Taxonomic notes on *Mystus* species of northern Kerala. *Journal of Aquaculture: Research and Development*, 8 (6): 1-4. 9. (Scimago-UGC listed)
- 44. Plamoottil, M.** 2017. Systematic notes on *Osteobrama bakeri* Day collected from Travancore. *International Journal of Zoological Investigations*, 3 (2): 175- 178. (Web of Science Indexed Journal).

45. Plamoottil, M and Abraham, N. P. 2013. Endemic fishing Gear usage in Manimala River, Kerala, India. In Proc.Natural Resource Management: A key to sustainability, published by Dept. of Botany, Assumption College, Changanacherry. 109-113.

46.Plamoottil, M. 2018. Rediscovery of *Capoetaambhibia* after one and a half century. In Proc.National Seminar ‘Emerging challenges in Biodiversity conservation with special reference to recent trends in Ecotoxicology’ (ISBN 978: 93-5291-469-2) Published by Dept. of Zoology, MSM College, Kayamkulam, 101-109.

OTHER ARTICLES

47.Plamoottil, M and Zupancic, P. 2017. *Labeofiliferus*, a new fish species from Kerala, India. *Bioscience Discovery*, 8 (4):301-306. **{UGC Listed}**

48.Plamoottil, M and Win, T. 2017. *Pristolepis pauciradiatus*, a new fish species from Kerala, India. *Bioscience Discovery*. 8 (3): 613-618. **{UGC Listed}**

49.Plamoottil, M. 2017. *Pristolepis procerus*, a new fish species from Kerala, India. *European Journal of Zoological Research*, 5 (1):40-44 **{Peer Reviewed}**

50.Plamoottil, M and Win, T. 2017. On some destructive fishing methods of Travancore. *Journal of Zoological and Bioscience Research*, 4 (1): 6-12. **{Peer Reviewed Journal from Canada}**

51.Plamoottil, M. 2016. *Mystuscatapogon*, a new fish species from Kerala, India. *Journal of Research in Biology*, 6 (2), 1967– 1976| **{Peer Reviewed}**

52. Plamoottil, M. 2016. Systematic Accounts on Percoid fishes of Manimala River, Travancore. *International Journal of Research Studies in Zoology*, 2 (5): 12-23. **{Peer Reviewed}**

53.Plamoottil, M. 2016. Taxonomic Notes on some cultivable fishes of South India, *International Journal of Research Studies in Zoology*, 2 (4): 15- 26 **{Peer Reviewed}**

54.Plamoottil, M. 2016. *Rasbora ataenia*, a new fish species from Kerala, India. *International Journal of Innovative Studies in Aquatic Biology and Fisheries*, 2 (5): **{Peer Reviewed}**

55.Plamoottil, M. 2016. *Systomuslaticeps*, a new fish species from Kerala, India, *International Journal of fauna and Biological Studies*, 3(5): 92-96. . (Peer Reviewed)

- 56.Plamoottil, M.** 2016. Systematic notes on the hill stream cyprinid fishes of Manimala River, Kerala, India. *International Journal of Research Studies in Zoology*, 2 (3): 39- 46. **{Peer Reviewed}**
- 57.Plamoottil, M.** 2016. Systematic Studies on the Catfishes of Sasthamcottah Lake of Kerala, India, *International Journal of Research Studies in Zoology*, 2 (2): 9- 16. **{Peer Reviewed}**
- 58.Plamoottil, M.** 2015. Taxonomic Notes on the exotic fishes of Manimala River. *Journal of Environment and Zoological Studies*, 3(5): 1799-1808. **{Peer Reviewed}**
- 59.Plamoottil, M.** 2015.Taxonomic notes on the catfishes of central Travancore. *Journal of Zoological and Bioscience Research*. 2 (3): 6- 17. **{A Peer Reviewed Canadian Journal}**
- 60.Plamoottil, M.** 2015.Validation of *Pristolepis pentacantha* Plamoottil, 2014. *International Journal of Pure and Applied Zoology*, 3 (2):142- 143 **{UGC Listed}**
- 61.Plamoottil, M,** 2015. Ichthyodiversity of Manimala River of Kerala, India. *Journal of Zoology and Bioscience Research*, 2 (2): 26-34. **{A Peer Reviewed Canadian Journal}**
- 62.Plamoottil, M.** 2015. *Puntius dolichopterus*, a new fish species from Kerala, India. *International Journal of Pure and Applied Zoology*, 3 (3): 226-231. **{UGC Listed}**
- 63.Plamoottil, M& Abraham, N. P,** 2014. *Macrognathus albus*, a new fish species from Kerala, India, *International Journal of Pure and Applied Zoology*, 2 (2), 100-105. **{UGC Listed}**
- 64.Plamoottil, M.& Abraham, N. P,** 2014. *Mystus keralai*, a new fish species from Kerala, India, *International Journal of Pure and Applied Zoology*, 2 (3): 196-205. **{UGC Listed}**
- 65.Plamoottil, M. & Abraham, N. P,** 2014. Rediscovery and redescription of *Mystus armatus* Day. *International Journal of Research in Fisheries and Aquaculture*, 4(1): 18-21. **{UGC Listed}**
- 66.Plamoottil, M.** 2014. *Batasio flavus*, a new catfish from Kerala, India. *Journal of Research in Biology*, 3 (5). 74- 76. **{Peer Reviewed}**
- 67.Plamoottil, M.** 2014. *Puntius nigronotus*, a new fish species from Kerala, India, *Journal of Research in Biology*, 4 (2): 1581-1588. **{Peer Reviewed}**
- 68.Plamoottil, M.** 2014. *Puntius nelsoni*, *Systomus chryseus* and *S. rufus* three new fish species from Kerala, India. *International Journal of faunal and Biological Studies*, 1 (6), 135-145 **{Peer Reviewed}**
- 69.Plamoottil, M& Abraham, George, S.** 2014. Development of molecular markers for the study of fish fauna of Manimala River, *International Journal of Biological Technology*, 5 (3), 1-6. **{Peer Reviewed}**

70.Plamoottil, M, 2013. Rediscovery of *Pristolepis marginata* Jerdon (Teleostei: Percomorpha: Pristolepididae) after one and a half century *Research Journal of Animal, Veterinary and Fishery Sciences*, 1 (7), 1-5.

71.Plamoottil, M& Abraham, N. P. 2013. *Mystus menoni*, a new fish species from Kerala, India. *International Journal of Pure and Applied Zoology*, 1(4): 315-325. {UGC Listed}

72.Plamoottil, M. & Abraham, N. P, 2013. *Horabagrus melanosoma*, a new fish species (Actinopterygii: Siluriformes) from Kerala, India, *International Journal of Pure and Applied Zoology*, 1 (4): 280-288. {UGC Listed}

73.Plamoottil, M. & Abraham, N. P, 2013. *Puntius viridis* a new fish species from Kerala, India, *Journal of Research in Biology*, 3 (7): 1093- 1104. {Peer Reviewed}

74.Plamoottil, M. & Abraham, N. P, 2013. Rediscovery of *Mastacembelus malabaricus* after one and Half Century. *Research Journal of Animal, Veterinary and Fishery Sciences*, 1(8): 6-11.

Popular Scientific Articles Written by Mathews Plamoottil

75. Plamoottil, M. 2019. "Kanangonum kerala sundariyum" (Malayalam). Aarayam Magazine (Published by Kerala Govt. Forest dept), 41: 42- 43.

76. Plamoottil, M. 2019. "Paralum kooralum poovaliparalum" (Malayalam). Aarayam Magazine (Published by Kerala Govt. Forest dept), 40 : 38-39.

SIGNIFICANT SCIENTIFIC CONTRIBUTIONS OF MATHEWS PLAMOOTTIL

1. Discovered, described and gave scientific name to 33 (thirty three) new fishes, which were unknown to scientific field.
2. Rediscovered 11 (eleven) forgotten fishes after one and half century and resurrected from their synonymy with others. .
3. Deposited 113 (One hundred thirteen) topotypic rare fish specimens (collected by Mathews Plamoottil) in Government of India museums.
4. Written and published 74 (Seventy Four) peer reviewed research articles and 2 (Two) popular articles.
5. Inserted DNA sequences of 36 (Thirty Six) rare fishes in GeneBank.
6. All congeners of genera *Puntius*, *Barilius*, *Systemus*, *Hypselobarbus*, *Heteropneustes*, *Pristolepis*, *Mystus*, *Osteochilichthys*, *Macrognathus* etc were procured from their type localities.

7. Taxonomic ambiguity which had existed on the genera *Puntius*, *Mystus*, *Barilius*, *Systemus*, *Hypselobarbus*, *Osteochilichthys*, *Heteropneustes* was eradicated.
8. Changed the scientific name of *Osteochilichthys nashii* to *Osteocheilichthys augraoides*.

SCIENTIFIC FINDINGS OF MATHEWS PLAMOOTTIL

Mathews Plamoottil, is a freshwater fish taxonomist conducting taxonomic research works on the freshwater fishes of India. He discovered & gave scientific name to 35 new fish species which were unknown to scientific world; all these new fishes have received Zoobank Reg. No from ICZN, the official authority for naming animals. He DNA sequenced and uploaded 29 fishes in GenBank and got Accession Numbers. He wrote and published 74 first author research articles in scientific journals. He rediscovered 11 forgotten fishes after 1.5 century.

Mathews Plamoottil could collect many rare fishes from the water bodies of Kerala, neighboring states of India and Myanmar. His many rare freshwater fish specimens are now deposited in the museums of Zoological Survey of India at Chennai, Kozhikode, Kolkata, Pune, Shillong, Hyderabad and Andamans and Nicobar Islands; of these specimens, his 35 species are type species with valid registration numbers of the museum and Zoobank register numbers received from International Commission of Zoological Nomenclature. He discovered, gave scientific name and described 35 new fishes. He is the south Indian born researcher who has discovered and given scientific name to more number of freshwater fishes from water bodies of India. His new fishes are *Glyptothorax elankadensis*, *Horabagrus melanosoma*, *Mystus indicus*, *M. keralai*, *M. heoki*, *M. menoni*, *M. catapogon*, *Macragnathus fasciatus*, *M. albus*, *Puntius viridis*, *P. nelsoni*, *P. nigronotus*, *P. dolichopterus*, *P. kyphus*, *Systemus chryseus*, *S. rufus*, *S. gracilus*, *Pristolepis pentacantha*, *P. pauciradiatus*, *P. procerus*, *Batasio flavus*, *Labeo filiferus*, *Puntius euspilurus*, *Systemus laticeps*, *Rasbora ataenia*, *Puntius sanctus*, *P. kyphus*, *P. ocellus*, *Barilius cyanochlorus*, *Hypselobarbus procerus*, *H. nitidus*, *Heteropneustes. fucus*, *Osteochilichthys formosus* and *Osteochilichthys elegans*.

Importance of Mathews Plamoottil's discovery of new fish species

Glyptothorax elankadensis is the first new species of Mathews Plamoottil. It is also the first species of the genus *Glyptothorax* described from south of Palakkad in Kerala and the large sized *Glyptothorax* described from India;

Horabagrus melanosoma Plamoottil & Nelson is the first species of genus *Horabagrus* discovered, named and described by an Indian researcher. It is a fully black colored *Horabagrus*.

Rasbora ataenia Plamoottil is the new fish species of the genus *Rasbora* described after 150 years; in other words it is the only *Rasbora* species described by a south Indian researcher. Compared to other *Rasbora* species, it is without a mid lateral color band.

Mathews Plamoottil's new *Labeo* species namely *Labeo filiferus* is also only one species of *Labeo* discovered, described and given scientific name by a south Indian Researcher from south India. This new species is characterized by deep black color and filamentous fins.

Mathews Plamoottil's new spiny eels namely *Macognathus fasciatus* and *M. albus* are also remarkable by the fact that species of this genus was discovered after one and half century. *M. fasciatus* is characterized by the possession of lateral bands; *M. albus* is unique in having a unspotted body.

Pristolepis pentacantha Plamoottil is unique in the possession of 5 anal spines and 16 dorsal spines. It was the first time a *Pristolepis* species with 5 anal spines was discovered; Mathews Plamoottil procured it from hill ranges of Wayanad and he scientifically named it.

Pristolepis pauciradiatus Plamoottil & Win was discovered and scientifically named from fresh water body of Myanmar. It is characterized by the possession of lesser number of anal spines. It was the first time a *Pristolepis* species with least number of anal spines was discovered. It was described in collaboration with Dr, Than Win, a researcher from Myanmar.

Puntius kyphus Plamoottil is a unique new fish species discovered, described and given scientific name from Thiruvalla of Kerala. It is characterized by the presence of non -ossified last simple dorsal fin ray. But it showed many characters of fishes having ossified last simple dorsal ray.

Puntius sanctus, Plamoottil is a new species collected from Velamkanni in Tamil Nadu. It is showing many similarities with *Puntius chola* Hamilton of west Bengal. Detailed studies and taxonomic comparisons had been made between both these species. For this, all relative *Puntius* species were taxonomically analyzed. These studies proved that the *Puntius* species from Tamil Nadu as a new species (*P. sanctus*).

Plamoottil's new species *Systemus gracilis*, is a very unique *Systemus* species which was discovered from west Bengal during an exploratory survey. This species showed many distinct differences from other relative *Systemus* species such as *Systemus sarana*, *Systemus subnasutus*, *S. chryseus*, *S. rufus* and *S. laticeps*. Specimens of *Systemus subnasutus* were collected from Puducherry for this purpose. All other *Systemus* species were procured from Kerala and other regions, from their type localities. *Systemus* species collected from west Bengal showed many distinct differences from its relative species; mainly, its anal fin was with 6 branched rays in contrast to 5 branched rays in all other *Systemus* species. Detailed

studies conducted on this species and proved that *Systemus* from west Bengal as a new species, *Systemus gracilis*. The species name is referring to its thin body.

Puntius nigronotus Plamoottil was discovered, described and scientifically named by Mathews Plamoottil from a difficult to reach site of mountain ranges of Wayanad, in Kerala. It showed many distinct differences from its congeners in fin ray counts and its color.

Puntius ocellus: Mathews Plamoottil's new species *Puntius ocellus* collected from Kazargod district of Kerala was also proved as a new fish species. It is having a round black spot on caudal fin base which is surrounded by a golden ring around it; it is also remarkable in having an elongated and pointed snout; this cyprinid fish was examined in detail and compared well with its congeners. All their relative species such as *P. chola*, *P. dorsalis*, *P. nelsoni*, *P. viridis*, *P. parrah*, *P. nigronotus* were procured from their type localities and examined and compared with the new species for this purpose. These taxonomical studies proved that *Puntius ocellus* is a new fish.

Barilius cyanochlorus was another new fish species discovered, described and scientifically named by Mathews Plamoottil. It showed many valid distinctions from its congeners; so all relative species of this rare fish were procured from their respective type localities; many specimens of *Barilius bakeri*, *B. canarensis*, *B. malabaricus*, *B. ardens*, *B. bendelisis* were collected by Mathews Plamoottil, for this purpose, from various water bodies of south India. All these congeners and *B. cyanochlorus* were taxonomically examined in detail which led to the identity of the new fish.

Hypselobarbus procerus Plamoottil, was a unique, deep bodied *Hypselobarbus* species collected, by Mathews Plamoottil from Attappady mountain ranges in Palakkad district in Kerala. It showed many distinct differences from its congeners; so all its relative species such as *Hypselobarbus carnaticus* (collected from Bhavani River in Kerala), *H. jerdoni* (from Chickmanglore, Karnataka), *H. basavaraji*, *H. pulchellus*, *H. dobsoni* (these three were examined from ZSI Chennai), *Hypselobarbus micropogon*, *Hypselobarbus kushavali* (these two were examined from Manomaniam Sundaranar University, Tamil Nadu) were taxonomically analyzed and compared with deep bodied *Hypselobarbus*. It proved that the latter is a new species, unknown to science. Mathews Plamoottil named it as *Hypselobarbus procerus* and a detailed scientific article was written and published proving its existence as a new species.

Hypselobarbus nitidus is another beautiful new species of Mathews Plamoottil described from northern Kerala. It was misidentified by many as *Hypselobarbus jerdoni* (Day, 1870), a cyprinid fish with hyaline fins. But Mathews Plamoottil collected specimens of *H. jerdoni* from Karanataka, its type locality and compared with the red finned *Hypselobarbus*. Detailed taxonomic studies proved that the red finned *Hypselobarbus* is a new species. *H. nitidus* is with weak and non osseous last simple dorsal fin ray where

as *H.jerdoni* is with strong and osseous last simple dorsal ray.

Heteropneustes fuscus Plamoottil's discovery was the one of the famous finding conducted in 2022. It was the description and scientific naming of the black stinging catfish of Kerala as *Heteropneustes fuscus*. All the stinging catfishes of Kerala were misidentified as *Heteropneustes fossilis*; actually the latter is a fish described from Tranquebar in Tamil Nadu. During a survey to collect rare fishes from Tamil Nadu, Mathews Plamoottil could collect some specimens of *H. fossilis* which on careful analysis proved to be different from *Heteropneustes* species of Kerala. This lead dr. Mathews Plamoottil to collect all species of *Heteropneustes* from their type localities in Kerala and Tamil Nadu; detailed classical and molecular taxonomic studies were conducted on Tamil Nadu *Heteropneustes* and Kerala *Heteropneustes*; it proved that both these species are different and can easily be distinguished as two distinct species. So Mathews Plamoottil described Kerala *Heteropneustes* and gave it scientific name as *Heteropneustes fuscus* and retained the name *H. fossilis* to Tamil Nadu species. It was a very important research finding done on the fishes of south India during the last century.

Osteochilichthys elegans Plamoottil was a new fish discovered, described and scientifically named from Palakkad Mountain Ranges in Kerala. It showed marked differences from all other *Osteochilichthys* species; mainly without any mid lateral color band and also lacking color stripe on anal fin. Detailed taxonomic studies were conducted on the new fish and an article published based on the findings.

Osteochilichthys formosus: Another important discovery of Mathews Plamoottil was of the description and scientific naming of *Osteochilichthys formosus*, a new fish from Kazargod in Kerala which was unknown to science until this discovery. Type specimens of these fishes were misidentified as *Osteochilichthys nashii* until this time. So *Ostecochilichthys nashii* were also collected directly from Karnataka during this research project and DNA sequencing and Bar Coding were done for both *O. Nashii* and the new species. DNA sequences of both species showed marked differences; it persuaded for further taxonomical studies, which resulted in the identity of the new species *Osteochilichthys formosus*.

New *Mystus* species of Mathews Plamoottil: Five new species of *Mystus* were discovered, named and described by Mathews Plamoottil namely *Mystus indicus*, *M. keralai*, *M. heoki*, *M.menoni* and *M. catapogon*. It is important in the fact that it was the first time a new species of genus *Mystus* was discovered from the water bodies of Kerala after 1865 when Francis Day discovered *Mystus armatus* from Kerala. A confusion had conquered the minds of many Indian and foreign taxonomists regarding the identity of many *Mystus* species which had been discovered and described by the foreign scientists from the water bodies of Kerala. Due to this difficulty they dared not to conduct taxonomic studies on any species of *Mystus*. Mathews Plamoottil could collect all *Mystus* species of Kerala, that too from their type localities, and eradicated the confusion existed on the species.

Mathews Plamoottil discovered, described and scientifically named *Mystus indicus* from central Travancore; it was characterized by the unique taxonomic features pertaining to cephalic fontanel and occipital spine, *Mystus heoki* and *M. menoni* were collected by Mathews Plamoottil from hill ranges of Idukki district. Both these were peculiar in having a thick mid lateral color band on the trunk region. But the former is with a slim body than the latter. Mathews Plamoottil's new species *Mystus catapogon* and *M. keralai* were characterized by the possession of very elongated maxillary barbels which extend beyond caudal fin base. These are the new fish species of this category described from Kerala after one and half century.

Finding and describing a new fish species is a difficult task and consuming much time; an expert scientist may sometimes discover and describe one or two new fishes in his /her entire research career. But during the last 13 (Thirteen) years, Mathews Plamoottil could discover, describe and could scientifically name 35 new fishes which were unknown to science. Relevance of these findings is that these 35 new species are belonging to 14 (fourteen) different genera viz; *Puntius*, *Systemus*, *Rasbora*, *Barilius*, *Labeo*, *Hypselobarbus*, *Osteochilichthys*, *Glyptothorax*, *Horabagrus*, *Batasio*, *Mystus*, *Macrogathis*, *Pristolepis* and *Heteropneustes*. These 14 genera are with different diagnostic characters and with entirely different congeners. So to newly describe these, all the comparative fish specimens must be collected from their type localities or must be viewed from their museums. For describing various *Puntius* species all relative species of these *Puntius* species were collected from their type localities and some examined directly from the Govt. museum in which they are deposited. *Puntius euspilurus* deposited in ZSI, Hyderabad, *Puntius madhusoodani* deposited in St. Alberts college, Ernakulam, Kerala, *Puntius nigrionotus*, *P. viridis*, *P. dorsalis*, *P. chola*, *P. sophore*, *P. parrah*, and *P. cauveriensis* deposited in museum of Zoological Survey of India Kolkata, west Bengal, *Puntius dolichopterus* deposited in ZSI Andamans and *P. nelsoni* of ZSI Calicut, Kerala were examined and taxonomically analyzed for this purpose. For describing *Barilius cyanochlorus*, an understanding of all *Barilius* species of Indian water bodies must be kept in mind and all congeners must be collected from their type localities and must be made available to future researchers in this field. So various relative species of *Barilius cyanochlorus* such as *B. gatensis* was collected from Nilghiri hills, *B. malabaricus* and *B. canarensis* from Kazargod in Kerala, *B. bendelisis* from Karnataka and *B. bakeri* from Mundakkayam in Kerala were collected are taxonomically analysed. Before the publication of *Barilius cyanochlorus*, a clear idea on various *Barilius* species of India was lacking in the minds of ichthyotaxonomists of India. It was the main impediment in discovering new species of this genus. As all species of *Barilius* were collected during this project, the former confusions were removed and ambiguities were eradicated; moreover all these specimens of *Barilius* are now deposited in Zoological survey of India museums and so it can be accessed and studied by anyone.

Describing a new species of *Systemus* was a trying endeavor for all taxonomists; it was because *Systemus sarana* and *S. subnasutus* was considered as a single species by some, even though it was described as two distinct species by Francis Hamilton (1822) and Valenciennes (1842). For the description of various *Systemus* species, *S. sarana*, *S. subnasutus* and all other relative *Systemus* species were procured from their type localities and now deposited in recognized museums of India. It paved way for further research work in this genus.

Various *Hypselobarbus* species of India were also met with serious taxonomic ambiguity; especially *H. carnaticus* and *H. jerdoni*. Even though these species were described from Kerala and Karnataka respectively, many of the Cyprinid fishes of Kerala were misidentified as these species. It created mere confusions. Moreover Francis Day's descriptions in various volumes on the characters of *H. jerdoni* were also different. During this project *H. jerdoni*, *H. carnaticus* and its close congeners were procured from their type localities and taxonomically analysed and deposited in Govt museums of India. It cleared the confusions existed in various *Hypselobarbus* species of south India.

Osteochilichthys was a very little studied cyprinid fish genus of Indian fresh water bodies. No new fishes of this genus had been described from India, excluding *O. longidorsalis* described by Pethiyagoda & Kottelat in 1994. Many confusions existed in the identity of *O. brevidorsalis* and *O. thomassi*. But Mathews Plamoottil could collect all *Osteochilichthys* species of India from their type localities and could deposit in ZSI museums; *Osteochilichthys nashii* was collected from Karnataka, *O. longidorsalis* from Trichur, *O. thomassi* collected from Palakkad and *O. brevidorsalis* from base of Nilghiri hills. It gave a distinct picture on the various species of this genus. Confusions had been existed on the species *Gobio augraoides* of Jerdon (1849). Mathews Plamoottil could examine various specimens of *O. nashii* collected from Karnataka and proved that Jerdon (1849)'s species is nothing but *O. nashi* and so *Gobio augraoides* were renamed as *Osteochilichthys augraoides*.

Scientific naming of *Heteropneustes fuscus* was of great relevance in scientific world; most of the Asian stinging catfishes were considered as *Heteropneustes fossilis* (Bloch, 1794) until recently. No endeavor was taken by any scientist to taxonomically analyze the *Heteropneustes* species of different parts of India. Mathews Plamoottil could conduct molecular level studies, including DNA bar coding and proved that *Heteropneustes* species in Kerala are not *H. fossilis* and named it as *Heteropneustes fuscus*. This prime discovery has great impact in scientific world and it also received wide publicity and media coverage; all dailies and All India Radio reported discovery of *Heteropneustes fuscus*.

Importance of rediscovery findings of Mathews Plamoottil

Mathews Plamoottil rediscovered and redescribed 11 fishes after one and a half century; they are *Pristolepis marginata*, *P. malabarica*, *Mastacembelus malabaricus*, *Mystus amatus*, *Mystus keletius*, *Gobius malabaricus*, *Gobio augraoides*, *Capoeta puckelli*, *Leuciscus stigma*, *Barilius rugosus* and *Puntius amphibius*. It was believed, for the last one and a half century, that *Pristolepis marginata* is a percoid fish with only three anal spines; it is because no one could find a *Pristolepis* species with more than three anal spines. But Jerdon (1849) who described it mentioned that it bears four spines. Mathews Plamoottil could rediscover and redescribe the four anal spined original *Pristolepis marginata* from Mananthavady River of Wayanad. Many specimens of *Pristolepis marginata* are now deposited, by this researcher, in the museum of Zoological Survey of India, Kolkata, the national museum of India. Mathews Plamoottil was also able to rediscover and redescribe *Mystus amatus*. It was believed that *Mystus armatus* was a synonym of *M. oculatus* as the latter shows many similarities to the former. This researcher could collect both these species from their type localities in Karavannoor River and after careful examination and analysis *Mystus armatus* was resurrected from its synonymy with *M. oculatus*. Both these species have been now deposited in ZSI museum at Kolkata. This researcher could also rediscover and redescribe *Mastacembelus malabaricus*. He also renamed it as *Mastacembelus malabaricus* from *Macrogathus malabaricus*. Dr. Plamoottil could also rediscover and redescribe *Gobius malabaricus*, *Leuciscus stigma* and *Capoeta amphibia* from the water bodies of Kerala after one and half century. Steven Grant (1999, 2010) erroneously renamed '*Hara malabarica*' as *Mystus canarensis* based on his collection from Wayanad. But Mathews Plamoottil collected original specimens of '*Hara malabarica*' from Mundakkayam and proved the neotype designation of Grant as invalid.

Rediscovery of *Capoeta puckelli*: *Capoeta puckelli* was described by Day (1868) from Bangalore. His description was based on a single specimen given to him by Major Puckell. Day (1868) described it in detail and could demarcate it from all its congeners. But all later scientists omitted this name from all their literature and treated as synonym of other *Puntius* species. Researchers after Day (1868) treated it as an invalid species; its name and details have been disappeared from most of the taxonomic literature; it was considered as a forgotten species. Mathews Plamoottil could collect original specimens of *Puntius puckelli* from its type locality at Bangalore and detailed taxonomic studies were conducted on it. It presented amazing results. These studies proved that *P. puckelli* is not a forgotten species and it is a distinct species restricted in its distribution in Bangalore only. An article was also written and proved the identity of *P. puckelli*. Specimens (Neotypes) of this very rare species are now deposited in Zoological Survey of India museum at Portblair in Andamans (ZSI/ANRC/M/27239). Rediscovery of *Puntius puckelli* was a wonderful scientific finding in the field of taxonomy in this decade. This species and the article describing this have also received Zoo bank register number from International Commission of

Zoological Nomenclature.

Rediscovery of *Barilius rugosus*: *Barilius rugosus* was described by Francis Day from the mountain streams of south India. Even though he described this species distinctly, himself and the later authors kept away from this name intentionally or inadvertently. Day himself, in his later volumes, was suspicious about the identity of this new species. In the original description, *B. rugosus* was compared with *B. bakeri* Day. But in his 'Fishes of India'...', Day treated *Barilius rugosus* as a synonym of *B. gatensis* Jerdon, who described three new species of this genus from south India, avoided *B. rugosus* from all his accounts. Gunther treated *B. rugosus* as a distinct species. Beavan not recognized the identity *B. rugosus* in his accounts. Talwar and Jhingrandid not recognize the identity of the Day's *Barilius*. Menon catalogued it as a synonym of *Barilius gatensis*. Jayaram eluded *rugosus* from his all-taxonomic accounts including 'The freshwater fishes of the Indian region'. Knight *et al* avoided the name *B. rugosus* from their description of *B. ardens*. *B. rugosus* is currently a forgotten species even though it was described originally in much detail. Researchers after Day were oblivious about the identity of *B. rugosus*, mainly because of the neglect of this species by the original discoverer himself. Moreover, it had not been procured by them from its type locality after its original description. *Barilius rugosus* was not an uncommon species at the base of Nilgiri hills especially in Bhavani and Siruvani Rivers. Unfortunately, Bhavani and Siruvani, two perennial Rivers, are the least explored water bodies in south India for taxonomic studies: especially part of these Rivers at Palakkad Mountain ranges in Kerala-Tamil Nadu border. Serious ichthyotaxonomic studies conducted on eastern parts of Bhavani River along the base of Nilgiris were also scarce. Adventurous and dangerous nature of this fast flowing and rocky bottom stream may be a hurdle for many researchers to conduct taxonomic studies on the fish fauna in it. Furthermore, most of the workers were confused between *B. rugosus* and *B. gatensis*; both of these species were described from south Indian mountain streams, *rugosus* from 'the Bowany and Seegoor Rivers, (Now Bhavani and Siruvani Rivers) and the rapid streams along the lower slopes of the Neilgherries' (Now Nilgiris) and *gatensis* from 'fresh waters that descend from the mountains of the Gates' (now Western Ghats). As per original descriptions, *B. rugosus* possess many distinct morphometric and meristic differences from *B. gatensis*. Mathews Plamoottil could collect many original specimens of *Barilius rugosus* from Bhavani River at Palakkad Mountain ranges which resulted in the rediscovery of *Barilius rugosus* after one and half century. For this purpose this researcher could collect all congener species of *B. rugosus* from Kerala and Karnataka. Detailed meristic and morphometric analysis revealed that *Barilius rugosus* is a distinct species with many valid differences from its congeners. An article was also written and published proving the rediscovery of *Barilius rugosus*. This rare species and the article describing this species received zoo bank register number from International

Commission of Zoological Nomenclature. The specimens of *B. rugosus* collected during this project have been deposited in Zoological Survey of India museum at Pune in Maharashtra.

Clearing the ambiguity of *Puntius chola*: There were many taxonomic ambiguity and systematic confusion in the identity of *Puntius chola*. But many Kerala and Tamil Nadu cyprinid fishes were erroneously treated as *P. chola*. So the specimens of the latter fish were collected by Mathews Plamoottil from west Bengal and compared with the similar south Indian fishes and taxonomic analysis were done. It resulted in the eradication of taxonomic confusion of this fish by writing an article. By this study, north Indian species are named as *Puntius chola* and south Indian forms are *Puntius sanctus*.

Clearing the ambiguity of *Puntius dorsalis*: Much confusion had existed in the taxonomic identity of *Puntius dorsalis*. This fish had been originally discovered and described by Jerdon (1849) from Tamil Nadu. But many fishes of Kerala were also erroneously treated as *P. dorsalis*. Original *Puntius dorsalis* was with extremely long snout and head; but many other *Puntius* species of Kerala were considered as *P. dorsalis* until now. PI's exploratory survey to Tamil Nadu, resulted in the eradication of this ambiguity. Specimens of *Puntius dorsalis* were procured from its type locality and detailed taxonomic analysis was done. These specimens are now deposited in ZSI museums for future studies. An article has also been published on this study in an international journal during this project.

Rediscovery of *Mystus keletius*: Another significant finding was the rediscovery of *Mystus keletius*. The latter was considered as a synonym of *Mystus vittatus*. and *M. montanus*. *Mystus keletius* was originally described from Pondicherry. Due to lack of holotype, paratypes or topotypes many *Mystus* species of Kerala and Tamil Nadu were wrongly identified as *Mystus keletius*. During an exploratory survey in Pondicherry, for procuring cyprinid fishes, Principal Investigator of this project could collect some topotypic specimens of *Mystus keletius* from Pondicherry; when taxonomically analyzed it showed distinct differences from all other *Mystus* specie of Kerala and Tamil Nadu; in order to confirm its identity, the investigator also visited Tranquebar, the type locality of *Mystus vittatus*, the most closely related fish species of *Mystus keletius*. Detailed taxonomical studies proved that both are different and *M. keletius* is an entirely different species and it is restricted in its distribution only in Pondicherry. Specimens of *Mystus keletius* are now deposited in Zoological Survey of India museum (ZSI) at Andamans. Zoo bank register has also received for this rediscovery.

Clearing the ambiguity of *Hypselobarbus carnaticus*: Many taxonomic ambiguities had prevailed in the identity of *Hypselobarbus carnaticus*, the Carnatic Carp; confusions existed in many of its meristic counts and morphometric features. To eradicate the taxonomic confusion Mathews Plamoottil visited Attappady Hill Ranges, below Nighiri Hills, and collected many specimens of it and detailed taxonomic studies conducted on it. It proved that original *Hypselobarbus carnaticus* is a different species from the currently

considered *H. carnaticus*. For proving the taxonomic identity of this fish this researcher visited two prominent Govt. museums in Tamil Nadu and taxonomic examinations were conducted on all congeners of *H. carnaticus*. It cleared the confusion prevailed on the identity of *H. carnaticus*. An article proving the identity of *Hypselobarbus carnaticus* has also been written in a peer reviewed journal.

Studies on synonymic cyprinids: Many small and large cyprinoid fishes described by Jerdon (1849) and other researchers were facing the threat of ambiguity and taxonomic confusion; detailed studies conducted on this aspect and two articles written on it in 2020 as part of this research work. It cleared the taxonomic confusions existed on these fishes. No information was available to a budding taxonomic researcher on many rare fishes such as *Cirrhinus rubropunctatus* Jerdon, *Gobio hamiltoni* Jerdon, *Gobio bovanius* Jerdon, *Dangila leschenaultii* Valenciennes, *Rohita leschenaultii* Valenciennes, *Cirrhina dussiumieri* Valenciennes, *Barbus guentheri* Day etc. Original description, diagnostic features and other essential details of these types of *species inquirende* were revealed to scientific world by writing an article on these fishes. Many uncertainty and obliviousness had existed in the identity of various *Puntius* species of south India including Kerala. As part of this research project, serious and sincere studies conducted on the *Puntius* fishes and a review article was also written on forgotten and distinct *Puntius* species of south India; this article is very beneficial to all researchers especially those who are trying to describe any new species of *Puntius*.

Molecular level studies of Mathews Plamoottil

Mathews Plamoottil conducted molecular level studies on a number of fishes. DNA sequencing and DNA barcoding has been prepared for many fishes. It was conducted in collaboration with Rajiv Gandhi Centre for Biotechnology, Trivandrum, Zoological Survey of India, Hyderabad and many other recognized research labs. DNA sequences of many were uploaded in GenBank during the last thirteen years. It will be greatly beneficial to the taxonomy researchers all over the world. No molecular data was available for *Barilius* species of south India. DNA sequencing and bar coding done for *Barilius canarensis*, *B. malabaricus*, *B.ardens* and *B. bendelisis*. Their DNA sequences were uploaded in GenBank and received registration numbers. It will be advantageous for all taxonomists working on this genus. Now confusion and ambiguity has been eradicated and anyone can proceed with their research on *Barilius* species and can also dare to describe new species of this genus. Likewise, DNA sequencing and Bar-coding done for all *Osteochilichthys* species of south India. Complete DNA sequences of *Osteochilichthys nashii*, *O. brevidorsalis*, *O. longidorsalis* were uploaded in GenBank; no molecular level studies were done on *Osteochilichthys* species of India. It had created unnecessary confusion in the systematics of this genus. Moreover no one could describe a new species after the discovery of *O. longidorsalis*; in the description of latter too, no molecular evidence had been included. Now, due to

GenBanking of all *Osteochilichthys* species, by this researcher, a clear-cut picture of taxonomy of the species of this genus has been revealed to scientific world.

By the hard work of Mathews Plamoottil, *Heteropneustes* species of south India got its identity and it has given the scientific name *Heteropneustes fuscus*. It was made possible mainly by the molecular taxonomy evidence. Different color varieties of *Heteropneustes* of south Indian water bodies were treated as topographic variants of *H. fossilis*. By DNA Bar coding Mathews Plamoottil confirmed that black colored *Heteropneustes* is different from original *Heteropneustes fossilis* which is brown in color. GenBank accession numbers for sequences of *Heteropneustes fuscus* and *H. fossilis* (procured from its type locality) were MZ848411 and MW684709 respectively. BLAST results proved that *Heteropneustes fossilis* isolated from its type locality (Tranquebar, Tamil Nadu, India) have only 90.53% nucleotide similarity to, *Heteropneustes fuscus* (*Heteropneustes* sp. nov; MZ848411.1 and *Heteropneustes* sp. MZ 848410.1) isolated from Pathanamthitta, Kerala, India. So *Heteropneustes fuscus* has been proved to be different from *H. fossilis* and so treated as a new species. It was a very significant taxonomic finding in the field of animal systematics.

Another DNA based study by Mathews Plamoottil was on *Osteochilichthys formosus*. It was a new species proved by DNA bar coding and also by classical taxonomic procedures. All the cyprinid fishes with a black blotch on dorsal fin, a black band on anal fin and a back stripe on mid lateral line were treated as *Osteochilichthys nashii*. Even though some morphological changes were observed in different *Osteochilichthys* species found in different parts of south India, no one dared to describe any of these as new species. By the endeavors of Mathews Plamoottil, DNA sequences of both *Osteochilichthys* species from Karnataka (*O. nashii*) and Kerala were taken and carried out molecular taxonomic studies. It proved that *Osteochilichthys* species from Kerala is a new species, *O. formosus*.

Molecular studies conducted by Mathews Plamoottil will surely be beneficial to all budding taxonomists and those who will try to conduct sincere and detailed taxonomic studies in future. They can easily access the DNA sequences from GenBank and compare with that of their own specimens.

Relevance of the Molecular Taxonomic Studies of Mathews Plamoottil

Identifying and procuring the correct type specimen is the most relevant requisite in the realm of molecular taxonomy; it is because many of the DNA sequences available in NCBI taxonomy databases are wrong; their tissues were not taken from the fishes collected from their type localities. Different DNA sequences of a single species may be present in GenBank; some are even without their locality details. Taxonomic confusions will be created when comparing with the DNA sequences of the fishes which are not from the type locality. Sadly, accession numbers will be received irrespective of the type locality of

fishes. During the research of Mathews Plamoottil, tissues for DNA sequencing were taken from fishes from their type locality. It avoids taxonomic ambiguity in future studies in this field.

Lack of voucher- a permanently preserved accessible specimen that is maintained in a Govt. Museum- is the major reason for the creation of taxonomic errors. Voucher specimens ensure reproducibility and legality in taxonomic studies. Unfortunately, the vast majority of fish genomes stored in the GenBank database do not refer to voucher specimens. Modern taxonomists are of opinion that significant amount of funding must be dedicated for storing voucher specimens in Govt. museums. In the research works of Mathews Plamoottil, all voucher specimens of DNA taken species are kept in recognized Government Museums. These specimens are accessible to any taxonomists working in the similar fields. Moreover, It will solve many taxonomic ambiguities existing in various freshwater fish genera. We need to execute our best to preserve Type specimens, Voucher specimens and their DNA sequences not only for us but also for future generations!

New Fishes Discovered by Mathews Plamoottil

Sl. No.	Name of fish	Collected & identified by	Described by	Reg. No.	Museum where now deposited
1	<i>Mystus catapogon</i>	Mathews Plamoottil	Mathews Plamoottil	ZSI/ ANRC 12758; ZSI/ ANRC 12759	ZSI, Andamans
2	<i>Batasio flavus</i>	Mathews Plamoottil	Mathews Plamoottil	ZSI/ANRC – 12228; ZSI/ANRC - 12229	ZSI, Andamans
3	<i>Puntius dolichopterus</i>	Mathews Plamoottil	Mathews Plamoottil	ZSI/ANRC-12226; ZSI/ANRC-12227	ZSI, Andamans
4	<i>Puntius nelsoni</i>	Mathews Plamoottil	Mathews Plamoottil	ZSI/WGRC/IR/2353; ZSI/ WGRC/ IR/ 2354	ZSI, Kozhikode
5	<i>Puntius nigronotus</i>	Mathews Plamoottil	Mathews Plamoottil	ZSI FF 5285	ZSI, Kolkata
6	<i>Systemus chryseus</i>	Mathews Plamoottil	Mathews Plamoottil	ZSI/FF 4625; ZSI/WGRC/IR/V 2421	ZSI, Kozhikode; ZSI, Kolkata
7	<i>Systemus rufus</i>	Mathews Plamoottil	Mathews Plamoottil	ZSI/WGRC/IR/2367; ZSI/WGRC/IR/ 2368	ZSI, Kozhikode; ZSI, Kolkata
8	<i>Pristolepis pentacantha</i>	Mathews Plamoottil	Mathews Plamoottil	ZSI FF 5191; ZSI FF 5192	ZSI, Kolkata
9	<i>Puntius viridis</i>	Mathews Plamoottil	Mathews Plamoottil & Nelson Abraham	ZSI/WGRC/2382; ZSI/WGRC/2383 ZSI/FF 4932	ZSI, Kozhikode; ZSI, Kolkata
10	<i>Glyptothotax elankadensis</i>	Mathews Plamoottil	Mathews Plamoottil & Nelson Abraham	ZSI/WGRC/IR/2351; ZSI/WGRC/IR/2352	ZSI, Kozhikode
11	<i>Mystus indicus</i>	Mathews	Mathews	ZSI/FF 4627;	ZSI Kozhikode &

		Plamoottil	Plamoottil & Nelson Abraham	ZSI/WGRC/2418	ZSI Kolakata
12	<i>Mystus menoni</i>	Mathews Plamoottil	Mathews Plamoottil & Nelson Abraham	ZSI/FF 4628; ZSI/WGRC/IR/V 2417	ZSI Kozhikode & ZSI Kolakata
13	<i>Mystus heoki</i>	Mathews Plamoottil	Mathews Plamoottil & Nelson Abraham	ZSI/FF 4626; ZSI/WGRC 2419	ZSI Kozhikode & ZSI Kolakata
14	<i>Mystus keralai</i>	Mathews Plamoottil	Mathews Plamoottil & Nelson Abraham	ZSI FF 5091; ZSI FF 5092	ZSI, Kolkata
15	<i>Horabagrus melanosoma</i>	Mathews Plamoottil	Mathews Plamoottil & Nelson Abraham	ZSI/WGRC/IR/2384; ZSI/WGRC/IR/2385	ZSI, Kozhikode
16	<i>Macrogathus albus</i>	Mathews Plamoottil	Mathews Plamoottil & Nelson Abraham	ZSI/WGRC/IR/2386; ZSI/WGRC/IR/2387	ZSI, Kozhikode
17	<i>Macrogathus fasciatus</i>	Mathews Plamoottil	Mathews Plamoottil & Nelson Abraham	ZSI/WGRC/IR 2422; ZSI/WGRC/IR 2423	ZSI, Kozhikode
18	<i>Labeo filiferus</i>	Mathews Plamoottil	Mathews Plamoottil	V/F/NERC/4054	ZSI, Shillong
19	<i>Rasbora ataenia</i>	Mathews Plamoottil	Mathews Plamoottil	V/F/NERC/ 4055 V/F/NERC/ 4056	ZSI, Shillong
20	<i>Puntius euspilurus</i>	Mathews Plamoottil	Mathews Plamoottil	FBRC/ZSI/F/2314 FBRC/ZSI/F/2315	ZSI, Hyderabad
21	<i>Systomus laticeps</i>	Mathews Plamoottil	Mathews Plamoottil	FBRC/ZSI/F/ 2316	ZSI, Hyderabad
22	<i>Pristolepis procerus</i>	Mathews Plamoottil	Mathews Plamoottil	ZSI/NERC/4057	ZSI, Shillong
23	<i>Pristolepis procerus</i>	Mathews Plamoottil	Mathews Plamoottil	ZSI/ANRC/16619	ZSI, Andamans
24	<i>Hypselobarbus nitidus</i>	Mathews Plamoottil	Mathews Plamoottil & Vineeth, K	ZSI /WRC/P/5543; FBRC/ZSI/VS/13	ZSI, PUNE; ZSI, HYDERABAD
25	<i>Barilius cyanochlorus</i>	Mathews Plamoottil	Mathews Plamoottil & Vineeth, K	FBRC/ZSI/VS/02; FBRC/ZSI/VS/03	ZSI, HYDERABAD
26	<i>Puntius ocellus</i>	Mathews Plamoottil	Mathews Plamoottil & Vineeth,	ZSI/WRC/P5541; ZSI/WRC/P5542	ZSI, PUNE

			K		
27	<i>Puntius kyphus</i>	Mathews Plamoottil	Mathews Plamoottil & Vineeth, K	ZSI/ NERC/ V/F 4546; ZSI/ NERC/ V/F 4547	ZSI, SHILLONG
28	<i>Puntius sanctus,</i>	Mathews Plamoottil	Mathews Plamoottil	ZSI/WRC/ P/5535; ZSI/WRC/ P/5536	ZSI, PUNE
29	<i>Systomus gracilus</i>	Mathews Plamoottil	Mathews Plamoottil & Maji	ZSI/ANRC/M/ 23593; ZSI/WRC/ P/ 5540	ZSI, PORTBLAIR; ZSI, PUNE
30	<i>Heteropneustes fuscus</i>	Mathews Plamoottil	Mathews Plamoottil	ZSI/WRC/P/5545; ZSI/WRC/P/5546	ZSI, PUNE
31	<i>Osteocheilichthys elegans</i>	Mathews Plamoottil	Mathews Plamoottil	V/F/NERC/ZSI/5420; ZSI/ANRC/M/27755	ZSI, SHILLONG; ZSI, PORTBLAIR
32	<i>Hypselobarbus procerus</i>	Mathews Plamoottil	Mathews Plamoottil	ZSI/ANRC/M/27756; ZSI, PORTBLAIR	ZSI, PORTBLAIR
33	<i>Osteocheilichthys formosus</i>	Mathews Plamoottil	Mathews Plamoottil & vineeth	V/F/NERC/ZSI/5482; V/F/NERC/ZSI/5483; ZSI/SRS/F9490	ZSI, SHILLONG; ZSI, CHENNAI

**TOPOTYPIC RARE FISHES OF MATHEWS PLAMOOTTIL DEPOSITED IN GOVT.
MUSEUMS**

Sl. No.	Name of fish	No. of fishes deposited	Collected & identified by	Collected from	Reg. No.	Govt. Museum (where fishes has been deposited)
1	<i>Mystus cavasius</i>	5	Mathews Plamoottil	Ganges River	ZSI FF 4930	ZSI, Kolkata
2	<i>Mystus seengtee</i>	4	Mathews Plamoottil	Mananthavady River	ZSI FF 4936	ZSI, Kolkata
3	<i>Mystus</i>	5	Mathews	Mananthavady	ZSI FF 4931	ZSI, Kolkata

	<i>malabaricus</i>		Plamoottil	River		
4	<i>Mystus oculatus</i>	5	Mathews Plamoottil	Karavannoor River	ZSI FF 4933	ZSI, Kolkata
5	<i>Mystus armatus</i>	2	Mathews Plamoottil	Karavannoor River	: ZSI FF 5095	ZSI, Kolkata
6	<i>Mystus montanus</i>	1	Mathews Plamoottil	Mananthavady River	ZSI FF 5096	ZSI, Kolkata
7	<i>Mystus canarensis</i>	1	Mathews Plamoottil	Manimala River	ZSI FF 4939	ZSI, Kolkata
8	<i>Horabagrus brachysoma</i>	10	Mathews Plamoottil	Manimala River	ZSI/WGRC/IR/2388	ZSI, Kozhikode
9	<i>Pristolepis malabarica</i>	12	Mathews Plamoottil	Manimala River	ZSI/WGRC/IR/2373; ZSI FF 4937	ZSI, Kozhikode; ZSI, Kolkata
10	<i>Pristolepis marginata</i>	8	Mathews Plamoottil	Mananthavady River	ZSI FF 4935	ZSI, Kolkata
11	<i>Puntius parrah</i>	4	Mathews Plamoottil	Karavannoor River	ZSI FF 4934	ZSI, Kolkata
12	<i>Puntius sophore</i>	2	Mathews plamoottil	Ganges River	ZSI FF 4938	ZSI, Kolkata
13	<i>Bunaka grinoidea</i>	1	Mathews Plamoottil	Karavannoor River	QM 1.39513	Queensland Museum, Australia
14	<i>Nandus nandus</i>	10	Mathews Plamoottil	Manimala River	ZRC 54188, 54190	ZRC, Singapore
15	<i>Nandus nandus</i>	10	Mathews Plamoottil	Ganges River	ZRC 54189	ZRC, Singapore
16	<i>Colletteichthys dussumieri</i>	1	Mathews Plamoottil	Kollam coast	CAS 243798 (SL- 150.3 mm;TL- 180 mm)	California Academy of Sciences, USA
17	<i>Heteropneustes fossilis</i>	3	Mathews Plamoottil	Tranquebar, TN	V/F/NERC/ZSI/5135	ZSI, SHILLONG
18	<i>Mystus keletius</i>	3	Mathews Plamoottil	Pondicherry	ZSI/ANRC/M/23594	ZSI, PORTBLAIR
19	<i>Systomus subnasutus</i>	2	Mathews Plamoottil	Karaikal, Pondicherry	ZSI/WRC/P/5539	ZSI, PUNE
20	<i>Puntius chola</i>	1	Mathews Plamoottil	Naihati, West Bengal	ZSI/WRC/P/5537	ZSI, PUNE
21	<i>Puntius dorsalis</i>	2	Mathews Plamoottil	Chennai	ZSI/ANRC/M/23595	ZSI, PORTBLAIR
22	<i>Mystus vittatus</i>	2	Mathews Plamoottil	Tranquebar, Tamil Nadu	ZSI/WRC/P/5538	ZSI, PUNE
23	<i>Barilius canarensis</i>	1	Mathews Plamoottil	Uppinangadi, Karnataka	ZSI/ANRC-26829	ZSI, PORTBLAIR
24	<i>Barilius canarensis</i>	1	Mathews Plamoottil	Kolichaal,	ZSI/ANRC-26830	ZSI, PORTBLAIR
25	<i>Barilius bakeri</i>	3	Mathews Plamoottil	Mundakkayam, Kerala	ZSI/WRC/P/5561	ZSI, PUNE

26	<i>Barilius malabaricus</i>	2	Mathews Plamoottil	Vellarikundu, Kerala	ZSI/WRC/P/5562	ZSI, PUNE
27	<i>Barilius ardens</i>	1	Mathews Plamoottil	Kammaadam, Kerala	V/F/NERC/ZSI/5329	ZSI, SHILLONG
28	<i>Hypselobarbus jerdoni</i>	2	Mathews Plamoottil	Chikmagaluru, Karnataka	V/F/NERC/ZSI/5330	ZSI, SHILLONG
29	<i>Osteochilichthys longidorsalis</i>	3	Mathews Plamoottil	Athirappally	ZSI/ANRC/M/27238	ZSI, PORTBLAIR
30	<i>Garra surendranathini</i>	2	Mathews Plamoottil	Athirappally	ZSI/ANRC/M/27239	ZSI, PORTBLAIR
31	<i>Puntius puckelli</i>	4	Mathews Plamoottil	Hunsur, Karnataka	ZSI, PORTBLAIR	ZSI/ANRC/M/27239
Total 113 rare Topotypic fishes were deposited, by Mathews Plamoottil, in Govt museums of India and abroad						

MATHEWS PLAMOOTTIL RECEIVED GENBANK ACCESSION

NUMBERS FOR THE FOLLOWING RARE FISHES

Sl No	Name of fish	Order	Family	Place of collection	GenBank Acc.No
1	<i>Megalops cyprinoides</i>	Elopiformes	Megalopidae	Manackachira	KJ442603
2	<i>Salmostoma boopis</i>	Cypriniformes	Cyprinidae	Kottangal	KJ442587
3	<i>Barilius bakeri</i>	Cypriniformes	Cyprinidae	Koottikkal	KJ442580
4	<i>Devario malabaricus</i>	Cypriniformes	Cyprinidae	Velanilam	KJ442590
5	<i>Cyprinus carpio communis</i>	Cypriniformes	Cyprinidae	West Venpala	KJ442595
6	<i>Puntius mahecola</i>	Cypriniformes	Cyprinidae	Komalom	KJ442600
7	<i>Dawkinsia filamentosa</i>	Cypriniformes	Cyprinidae	Kulathurmoozhy	KJ442582
8	<i>Gonoproktopterus kurali</i>	Cypriniformes	Cyprinidae	Kottangal	KJ442586

9	<i>Cirrhinus mrigala</i>	Cypriniformes	Cyprinidae	Kuttoor	KJ442596
10	<i>Garra mullya</i>	Cypriniformes	Cyprinidae	Elankadu	KJ442584
11	<i>Mesonoemacheilus triangularis</i>	Cypriniformes	Balitoridae	Yendayar	KJ442611
12	<i>Horabagrus brachysoma</i>	Siluriformes	Bagridae	Thelapuzha	KJ442591
13	<i>Mystus gulio</i>	Siluriformes	Bagridae	Keezhvaipur	KJ442606
14	<i>Ompok bimaculatus</i>	Siluriformes	Siluridae	Karuthavadas serikkara	KJ442604
15	<i>Wallago attu</i>	Siluriformes	Siluridae	Vallakkadavu	KJ442594
16	<i>Clarias dussumeiri</i>	Siluriformes	Claridae	Manimala	KJ442598
17	<i>Hyrhamphus limbatus</i>	Beloniformes	Hemirhamphidae	Kallumkal	KJ442593
18	<i>Xenentodon cancilla</i>	Beloniformes	Belonidae	Velanilam	KJ442583
19	<i>Macrornathus guentheri</i>	Synbranchiformes	Mastacembelidae	Komalom	KJ442597
20	<i>Parambassis dayi</i>	Perciformes	Chandidae	Velanilam	KJ442585
21	<i>Pristolepis malabarica</i>	Perciformes	Nandidae	Mundakkayam	KJ442581
22	<i>Etroplus maculatus</i>	Perciformes	Cichlidae	Koottikkal	KJ442579
23	<i>Etroplus suratensis</i>	Perciformes	Cichlidae	Keezhvaipur	KJ442588
24	<i>Hypselobarbus nitidus</i>	Cypriniformes	Cyprinidae	Kazargod	MZ407851
25	<i>Heteropneustes fossilis</i>	Siluriformes	Heteropneustidae	Tranquebar, TN	MW684709
26	<i>Osteochilus longidorsalis</i>	Cypriniformes	Cyprinidae	Athirappally, Trichur	MZ428280

27	<i>Hypselobarbus jerdoni</i>	Cypriniformes	Cyprinidae		MZ848412
28	<i>Heteropneustes fuscus</i>	Siluriformes	Heteropneusti dae	Pathanamthitt a, Kerala	MZ848411
29	<i>Barilius malabaricus</i>	Cypriniformes	Cyprinidae	kazargod	MZ848408
30	<i>Barilius rugosus</i>	Cypriniformes	Cyprinidae	Palakkad	MZ848409
31	<i>Barilius canarensis</i>	Cypriniformes	Cyprinidae	Uppinangadi, Karnataka	MZ848413
32	<i>Barilius ardens</i>	Cypriniformes	Cyprinidae	Kammaadam	MZ848414
33	<i>Osteochilichthys nashii</i>	Cypriniformes	Cyprinidae	Mysore	OK285283
34	<i>Hypselobarbus procerus</i>	Cypriniformes	Cyprinidae	Attappady	OK314956
35	<i>Osteochilichthys formosus</i>	Cypriniformes	Cyprinidae	Kazargod	OK631755
36	<i>Osteochilichthys brevadorsalis</i>	Cypriniformes	Cyprinidae	Palakkad	OL703027

IMAGES OF NEW FISHES DISCOVERED AND GIVEN SCIENTIFIC NAME

BY MATHEWS PLAMOOTTIL



Glyptothorax elankadensis



Horabagrus melanosoma



Macrognathus albus



Macrognathus fasciatus



Mystus heoki



Mystus indicus



Mystus keralai



Mystus menoni



Mystus catapogon



Pristolepis pentacantha



Puntius dolichopterus



Puntius nelson



Puntius nigronotus



Puntius viridis



Systomus chryseus



Systomus rufus



Batasio flavus



Systomus laticeps



Rasbora ataenia



Labeo filiferus



Puntius euspilurus



P. procerus



Pristolepis pauciradiatus



Hypselobarbus procerus



Puntius kyphus



Puntius sanctus



Systemus gracilis



Puntius ocellus



Bariius cyanochlorus



Hypselobarbus nitidus



Osteochilichthys formosus



Osteochilichthys elegans



Heteropneustes fuscus

IMAGES OF FISHES REDISCOVERED BY MATHEWS PLAMOOTTIL, AFTER ONE AND A HALF CENTURY



Pristolepis marginata



Mystus armatus



Pristolepis malabarica



M. malabaricus



Barilius rugosus



Puntius puckelli



Mystus keletius

MATHEWS PLAMOOTTIL IS THE REVIEWER

EDITORIAL BOARD MEMBER OF THE FOLLOWING

JOURNALS

Journal of Experimental Zoology India (Reviewer)

Journal of Environmental

Biology (Reviewer)

The Indian Forester

(Reviewer)

The Check List, the Journal of Biodiversity-

Data (Reviewer)

Flora & Fauna (Editorial Board Member)

Journal of Advanced Zoology (Reviewer)

Bioglobia (Editorial Board & Advisory Board Member)

Biological Forum-(Editorial Board Member)

Biobulletin (Editorial Board Member)

OTHER RECOGNITIONS RECEIVED

Govt. of India publishes book named “Animal Discoveries” every year. “Animal Discoveries 2014”.contains new animals discovered and named in India during 2014.

It describes 23 freshwater fishes; of this 7 (30.4 %) were the fishes discovered and named by Mathews Plamoottil. 17 % of fishes described in “Animal Discoveries 2013” were also of Mathews Plamoottil. Out of 26 new fishes discovered and included in “Animal Discoveries- 2015”, two were discovered by Mathews Plamoottil. 4 (17%) fishes out of total 24 new fishes described in “ Animal Discoveries 2016” were also of Dr. Mathews Plamoottil. ‘Animal Discoveries’ released on 5th June 2018 by Prime Minister Sri. Narendra Modi contains two new freshwater fishes discovered by this researcher. In “Anima Discoveries- 2020” out of the 22 new freshwater fishes, 4 were discovered, described and scientifically named by this researcher. In ‘Animal Discoveries 2021’ only one new freshwater fish discovery was included from Kerala state; that was Mathews Plamoottil’s ‘*Heteropneustes fuscus*’. ‘Animal Discovery 2022’ of Govt. of India comprises discovery of three new freshwater fishes of Mathews Plamoottil namely *Osteochilichthys elegans*, *O. formosus* and *Hypselobarbus nitidus*.

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2. “A silver fish from Velamkanni” *The Hindu*, daily news paper, May 25, 2020
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4. New species of eel fish found in Manimala River, *The Hindu*, 15, March, 2014.
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7. New catfish species sighted at Manimala River. *The Hindu*, 13 October, 2013.
8. New catfish adds to biodiversity. *Deccan Chronicle*, 2 July, 2016.
9. New catfish species reported from Alappuzha. *The Hindu*, 29 may, 2016.
10. New fish species discovered from Western Ghats. *The Gulf Today*, 26 December, 2015

11. Velinjil Malsya kudumbathilekku oru adhithi koodi"-11 November 202- *Madhyamam* (A leading Malayalam News Paper)
12. New fish species discovered in Kerala. *The Hindu*, 2015. July 19.
13. "Puthiya sudha jala malsyathe kandethi"- 11 November 2020, *Janayugam*, a leading News paper of Kerala.
14. Nammude kaarikkum peraiyi'11 January 2022 *Madhyamam* (Leading daily news paper of Kerala)
15. Angane nammude kaarikkum swontham peraiyi" 12, January, *Malayala Manorama* (The 2nd largest daily news paper of India)
16. *Batasio*: Second of its species to be found after 1941. *Travancore Talk*, 5th Oct 2015

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18. New eel fish species found in Kerala river, *India journal*, 3/16/2014.
19. New fish species discovered in Kerala, *The Hindu*, 19 July, 2015
20. Four new fish species discovered in Kerala, *Times of India*, the daily news paper 11 February, 2015.
21. Pidakkunnu Sastham. *Malayala Manorama*, (The 2nd largest daily news paper of India) 20 July 2013.
22. Four new fish species found in Kerala. *The Gulf Indian Weekly*, 11 March, 2015.
23. A new species of fish discovered in Kerala, *India Today*, 19 July, 2015.
24. In Kerala four new species discovered. *East Coast daily*, 11 February 2015.
25. Four new fish species discovered in Kerala. *The Gulf Today*, 12 February, 2015.
26. Unique species of fish identified in Manimala River. *The Times of India* (the leading daily news paper of India), 11, August, 2014.
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28. Researchers unravel more of the Western Ghats Diversity. *The Hindu*, 8 August, 2014.
29. Unique species of fish identified in Manimala River. *The Times of India*, 11 August, 2014.
30. Puthiya Sudha Jala Malsyathe Kandethi. *Malayala Manorama* (The 2nd largest daily news paper of India), 27, July, 2015.
31. Varshangalku Sesham Vayanaadan Aarakane Kandethi. *Mathrubhoomi* (a leading daily news paper of south India), 29 September 2013.
32. Apoorvayinam Malsyathe kandethi. *Maadyamam* (a daily news paper of Kerala), 9 May 2013.
33. Puthiya Sudha Jala Malsyathe Kandethi. *Malayala Manorama* (The 2nd largest daily news paper of India), 9 August 2014.
34. Kuruva Paral Vargangalile Naalu Puthiya Sudhajala Malsyangale kandethi. *Malayala Manorama Manorama* (The 2nd largest daily news paper of India), 13 February, 2015.
35. Puthiya Meesakkaaran Malsyathe kandethi. *Malayal Manorama*, (The 2nd largest daily news paper of India), 18 October 2014.
36. Keralathil Puthiya Naalu Sudha jala Malsyangale kandethi. *Mathrubhoomi*, 13 February, 2015.

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39. Puthiya Naalu Sudha jala malsyangale kandethi. *Mangalam*, (a leading daily news paper of south India) 12 February, 2015.
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57. Puthiya inam aattu chembelliye kandethi, *Malayala Manorama*, 12.08.2017.
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**LIST OF INFORMATION (ABOUT NEW FISHES OF DR. MATHEWS PLAMOOTTIL)
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2. ‘Batasio flavus’ --- Newkis .com
3. ‘Batasio flavus’ --- Wkisppecies
4. ‘Batasio flavus’ --- Fish base
5. ‘Batasio flavus’ --- Planetcatfish
6. ‘Batasio flavus’ --- Wikipedia
7. ‘Batasio flavus’ --- Academia

8. 'Glyptothorax elankadensis' - Thomas Reuters
9. 'Glyptothorax elankadensis' - Planetcatfish
10. 'Glyptothorax elankadensis' - Wkisppecies
11. 'Glyptothorax elankadensis' - Species
12. 'Horabagrus melanosoma' - Wkisppecies
13. 'Horabagrus melanosoma' - Fish base
14. 'Macrogathus albus' - Wkiversity
15. 'Macrogathus albus' - Wkiwand
16. 'Mystus indicus' - Fishbase
17. 'Macrogathus fasciatus' - Fish base
18. 'Macrogathus fasciatus' - Wikisppecies
19. 'Macrogathus albus' - My Tropical fish
20. 'Macrogathus albus' - Fishbase
21. 'Macrogathus fasciatus' - Wikipedia
22. 'Mystus menoni' - Fish base
23. 'Mystus heoki' - Global species
24. 'Mystus menoni' - Wikisppecies
25. 'Mystus heoki' - Fish base
26. 'Mystus heoki' - Wikisppecies
27. 'Mystus indicus' - Wikisppecies
28. 'Puntius nelsoni' - Fish base
29. 'Puntius dolichopterus' - Fish base
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41. 'Pristolepis pentacantha' - Fish Base
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50. CABI- CAB direct News-‘Puntius kyphus, a new fish species from Kerala, India’
51. BioLib.cz News- Taxon Profile- Species- Puntius kyphus Plamoottil, 2019
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57. KHAS ABAR- trending News Channel IN Hindi---‘Systemus gracilis’
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61. ВСЕ О ПРЕСНОВОДНЫХ РЫБАХ- Пунтиус кифус- A Russina News
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63. World Fish Wiki- ‘Heteropneustes fuscus Plamoottil, 2021’
64. Welt der Fische / World of Fishes- Newest Taxa Heteropneustes fuscus- Januaery 11, 2022.
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66. Naturalist Canada News- Puntius kyphus
67. New Taxa – 2020 | Welt der Fische / World of Fishes
68. Silver hued fish Puntius Sanctus – Pinterest
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70. Civil Services Chronicle July 2020 Issue- Puntius Sanctus
71. Unique species of fish identified in Kabani River, *India Environment Portal*-Knowledge for Change, 11 August, 2014.
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