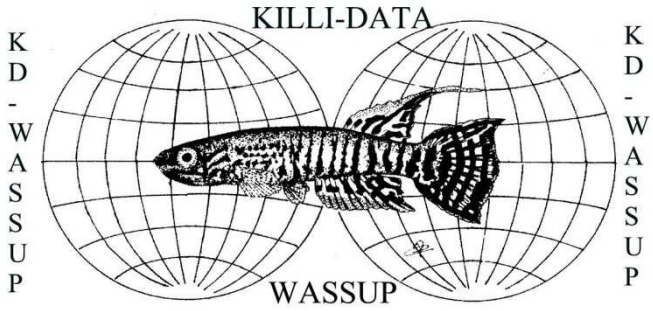


Killi-Data Wassup n°17

Overview of Killifish research output

December 28. 2023–July 13. 2024

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Editor: Jean H. Huber (editor@killi-data.org)

Alert-co-analyst: Vasco Gomes

INTRODUCTION

The present Wassup is again back to normal, but with less new papers during this long 6 months' period, compared to the past.

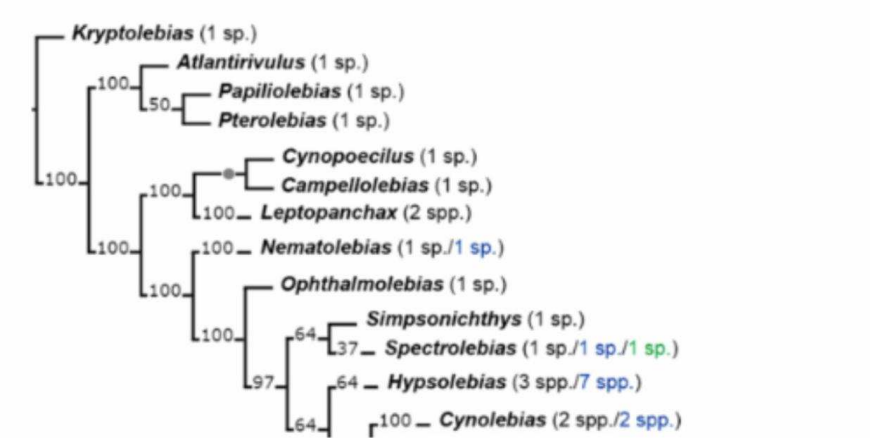
Within this time frame of present Wassup, it must be noted 3 new generic names (*Eremodon*, plus *Xerosplatys*, *Kulonplatys*, as subgenera of *Epiplatys*) and 6 new species (*Argolebias adrianae*, but no link with *Rivulus adrianae*, *Malagodon honahona*, already extinct in Madagascar, *Eremodon cochleari*, *kifuani*, joined by *jeanneli*, moved from Procatopodidae to Pantanodontidae, all 3 to form the first disclosed intra-lacustrine speciation in Ethiopian-Kenyan lake Turkana, among lampeyes (aside *Orestias* sp. in lake Titicaca or some *Cyprinodon* sp. in Mexico and Caribbeans), *Aliteranodon effusorium*, *Austrolebias ayoreode*.

Besides, there are some further discussions on major themes:

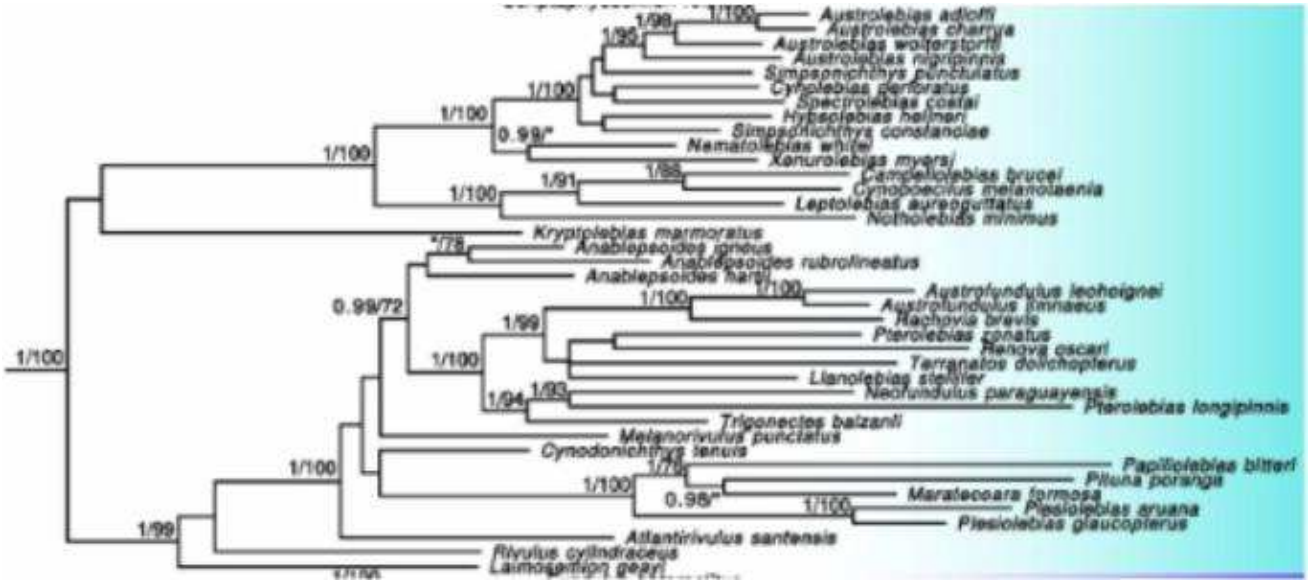
First and major work is the full molecular review of Cyprinodontiformes with solid branches and clear results by Morales et al. and those Latino-American authors produce 2 interesting trees, one with full genome, limited but strong, and the other with 12 markers only, but over 100 species ; their results concur that *Rivulus* in a large sense is heterophyletic (but not at all the way by Costa or by Huber as independent researchers), that *Fluviphylax*, previously a lampeye and *Orestias* previously a Cyprinodontidae are related, that *Cubanichthys* and synonymized *Chriopeops* are separated since a longer time than for example *Tlaloc* and *Profundulus*, then they should be distinct genera, etc. ; the team concludes by considering 16 distinct families in Cyprindontiformes (it has been only 7, not so long ago, in 2018, today it is 14) that would have separated from relatives now in distinct orders BEFORE the C/T or K/T boundary (Cretaceous-Tertiary) that occurred ca. 65 MYA (the gigantic meteorite and massive extinction) and the first split between (and within) Cyprinodontiformes families some (million) years, AFTER that major event (Full article, analyzed herein, is free reading at: https://bmcgenomics.biomedcentral.com/articles/10.1186/s12864-024-10416-w {note : the move to 16 families, as Anablepsidae (or wrongly Anablepidae), Aphaniidae, Aplocheilidae, Cubanichthyidae, Cyprinodontidae, Fluviphylacidae (monogeneric), Fundulidae, Goodeidae, Nothobranchiidae, Orestiadidae (or wrongly Orestiidae), Pantanodontidae, Poeciliidae, Procatopodidae, Profundulidae, Rivulidae, Valenciidae (monogeneric), in Cyprinodontiformes is discussed at the proper page, https://www.killi-data.org/list-names-familygroup.php , but not applied yet, since Killi-Data, for family-group names, wait and follow international fish databases for those upper branches (to maintain global coherence), even if it is likely because another more global paper, by Near & Thacker, just before, in 2024, https://bioone.org/journals/bulletin-of-the-peabody-museum-of-natural-history/volume-65/issue-1/014.065.0101/Phylogenetic-Classification-of-Living-and-Fossil-Ray-Finned-Fishes-Actinopterygii/10.3374/014.065.0101.full, pleas in the same way for 16 families (besides downgrading Cyprinodontiformes to suborder level, as Cyprinodontoidei!}.

Second is the ambitious article by Alonso et al. (with description of *Argolebias adrianae* from near the gigantic Iguaçu Falls, within *Austrolebias* clade) where the Cynolebiinae are indirectly reviewed (and 5 genera are

accepted in one branch as *Nematolebias*, *Ophthalmolebias*, *Simpsonichthys*, *Spectrolebias*, *Hypsolebias*, aside from *Cynolebias* and the *Austrolebias* group) which does confirm the split of *Simpsonichthys* s.l. (*Xenurolebias*, not studied) and attempt to clarify the controversy between Costa's team and Nielsen' team (see hereafter taxonomic tree, pending a further dedicated revision with much more taxa than the herein 11 molecularly studied taxa {note : for comparison in Killi-Data there are 84 putatively valid species in *Nematolebias*-*Simpsonichthys* s.l.-*Xenurolebias*}.



However, Alonso's new phylogeny will not be followed in Killi-Data because *Xenurolebias* is missing in the tree and more importantly 11 taxa are very few compared to potential 84. Moreover, an extract for Rivulidae only of above mentioned remarkable phylogeny by Morales et al. (cf. tree hereafter) shows clearly also on 11 taxa (different sampling and with *Xenurolebias*) that the tree of *Simpsonichthys* et al. is still heterogeneous and with high bootstraps (side note: this sub-tree also includes Rivulidae outside *Austrolebias* et al., i.e. all genera related to *Rivulus*, and the results are solid and congruent with the study by Thompson & Furness shown on Internet in 2021 (BiorXiv then Square), but never formally published, showing intricated sub-branches of annual and non annual groups in the tree, which means that the formal full splitting of *Rivulus* s.l. is in front of us (no matter lumper or splitter) but not the way Costa proposed and with putative diagnoses very difficult to write and with family-group names compositions very difficult to define! Incidentally, and parallelly, the spur to recollect live *Prorivulus auriferus* and get a molecular detailed picture (full genome or full mitochondrion) after a recent successful fundraising becomes considerably important, in order to understand, at last, the phylogeny of that complex group with many genera).



Third is the pioneering and major molecular work by Papa et al. (from a very technical thesis) that shows that (small) parts of genome, precisely named, a breakthrough among killifish, are altered (ca. 700 gene transcripts differentially expressed) at induction of diapause I in the annual killifish (*Garcialebias charrua*) or simply said specific genes are potentially involved in promoting entry into diapause I, a stage related to the survival of embryos subject to an adverse environment (dryness), it shows for the first time that an embryological mechanism is associated with precise genome changes and this is a critical finding because Diapause I is the most important and first egg-arrest in killifish annuals (the authors, a team of South-American researchers in a specialized lab, compare mRNA profiles at maternal stage with those of diapause I-induced embryos, non-diapause I-induced embryos and embryos that have exited diapause I).

Fourth is the full review of genus *Epiplatys* by Huber in line with molecular data by Collier (4 papers, alone or along other authors); the author does not split the genus in 2 or more genera, but accepts all previously generic names (downgrading *Pseudepiplatys* and *Aphyoplatys* to subgenera, and proposing 2 new subgenera, *Xerosplatys*, for the *bifasciatus-spilargyreius* groups, and *Kulonplatys* for the *fasciolatus-olbrechtsi* groups), all specific names previously seen as subspecies are upgraded to full species status (following molecular evidence for many, including even further potential future splitting at the population level for *zenkeri*); besides all valid species, valid species-groups and subgenera are re-diagnosed and their distribution is clarified (details at https://www.killi-data.org/infoweb20.php).

Fifth is the major discovery by Huber & Meinema of an intra-lacustrine speciation among previously so-called lampeyes (today in a distinct family with 4 extant genera with or without teeth, *Pantanodon*, *Aliteranodon*, *Malagodon* and *Eremodon*) ; all *Eremodon* dwarf sp. live in a single strongly saline lake, named today Turkana, previously named Rudolf, a Rift valley lake, 300 km long, at its northern position (in both Ethiopia and Kenya) and they belong to Pantanodontidae because all components of family (including fossils) share the character of divided Ventral fins in male only.

Sixth and last is the first molecular study of *Millerichthys robustus* (in 2 papers, both led by Mexican researcher, Omar Dominguez-Castanedo, one with mitochondrion, the other with full genome) and the results are surprising, and not congruent with morpho studies by Costa and Huber, independently : they unambiguously show that that annual species is not related to annuals in South-America, but to non-annuals in Cuba (of *Rivulus* genus) and this brings again another argument to support that the genus *Rivulus* is fully heterogeneous and not the way proposed by Costa and Huber, independently (in other papers) and will be split soon and probably differently in several generic units (when *Prorivulus* is at last molecularly studied) and more importantly when the South-American genera will be solidly placed within (not outside) the *Rivulus* s.l. phylogeny with other family-group names. Another striking example of biological complexity!

SELECTION OF PUBLICATIONS (last in, first out)

- Gonzalez, D.G.V. [Gonzalez compares cryptic *Poecilia butleri* and *nelsoni* and only finds morpho differences in canonical variant analyses (plus distinct range) ; the genus *Poecilia* consists of ca. 42 valid species distributed in rivers of Central, South and North America ; the author (in a bachelor level thesis) studies *butleri* and *nelsoni*, described in 1889 and 1904, respectively, *nelsoni* being subsequently synonymized with *Poecilia sphenops* and, years later, with *butleri* through morphological analysis ; however, recent phylogenetic studies based on mitochondrial and nuclear DNA of the *Poecilia mexicana* species complex resurrected *nelsoni* as a valid sister species to *butleri* and the author aims to find morphological distinction between *butleri* and *nelsoni* and allow their delimitation through a more complete and precise analysis ; results show evidence of a cryptic nature between the 2 species, as morphometric and meristic Principal Component Analyses (PCA) show a clear overlap in multivariate space, however Canonical Variant Analyses (CVA) of geometric morphometrics manage to separate both species, with a clear distinction

between males of each species and little overlap in females. 2024. TesisLic, https://repositorio.unicach.mx/handle/20.500.12753/5287] {Jean Huber, 29-June-2024} <°))))>< <°))))>< <°))))><

- Walsh M.R., Roden C. [Walsh and Roden show, for *Anablepsoides hartii* {K-D maintained in *Rivulus*}, hatching plasticity of eggs reared terrestrially vs. in water ; in Trinidad, killifish *hartii* is found in communities with and without predators (in sites with predators, its habitat is shallower, ephemeral, then exposure of eggs to air and lead to possible desiccation is probable) ; the authors laboratory experiment timings of hatching whether in water or in air but they do not differ when eggs are reared in water ; on the contrary, eggs from sites with predators respond to terrestrial incubation by hatching significantly earlier compared with water-reared eggs ; hence results provide evidence for local adaptation in embryonic plasticity at the population scale. 2024. PRSB, https://royalsocietypublishing.org/doi/pdf/10.1098/rspb.2024.0083] {Jean Huber, 29-June-2024} <°))))>< <°))))>< <°))))><
- Papa, N.G., J.S. Sotelo, L. Inchausti, N. Berois, M.L. Allende & M.J. Arezo (+). [The Arezo team discloses on *Garcialebias charrua* 7 hundred gene transcripts differentially expressed upon induction of diapause I ; the authors study the molecular mechanisms involved in the regulation of diapause arrest (I, II and III) of annual killifish embryos in *Garcialebias charrua* {previously *Austrolebias*} along 2 options either diapause I induction or non-diapause I induction ; they compare mRNA profiles at maternal stage with those of diapause I-induced embryos, non-diapause I-induced embryos and embryos that have exited diapause I {developing further towards diapause II} ; results show that there are 700 transcripts that are differentially and exclusively expressed upon induction of diapause I ; among them, Gene Ontology (GO) categories of the gene-specific transcriptional regulator group, RNA metabolism, cytoskeletal protein and scaffold/adaptor proteins exhibit the highest representation among differentially expressed genes (DEGs) and co-expression analysis ; remarkably, the identification of different homeodomain transcription factors, cell cycle regulators and RNA processing/regulators as DEGs suggests that these regulators play important roles in diapause I induction, at least for *Garcialebias charrua* ; consistent with the results of the DEG analysis, results of the Clust co-expression analysis reveal 5 and 3 patterns of diapause I-induced gene upregulation and downregulation, corresponding to 3939 and 1250 genes, respectively ; comparative expression analysis of genes and signaling pathways reported to contribute to diapauses in other species reveals that insulin/IGF, vitamin D, Wnt, polycomb and heat shock proteins are also involved in diapause I induction in annual killifish (some unique transcripts found in the diapause I induction trajectory such as SETBP1, the Kinesin-like protein KIF1C and the Ras-related protein Rab-26, could play a role in cancer) {a very technical, but clear and convincing innovative work, the first that links molecular mechanisms and the most important and unavoidable embryo arrest in annual killifish}. 2024. E.B.L., https://link.springer.com/article/10.1007/s10641-024-01562-x] {Jean Huber, 22-June-2024} <°))))>< <°))))>< <°))))><
- Morales, P., F. Gajardo, C. Valdivieso, M. Valladares & M.L. Allende (+). [Morales et al. detail 3 *Orestias* sp. full genome, find, on 12 markers only for over 100 killifish, *Orestias* related to *Fluviphylax* ; the phylogenetic position of the *Orestias* genus has been estimated partly on unavailable or incomplete information, then assigned to the family Cyprinodontidae, relating this Andean fish to other geographically distant genera distributed in the Mediterranean, Middle East and North and Central America {notably by Costa, in several papers} ; in this study, using complete genome sequencing, the authors add the genome of 3 *Orestias* species from the Andean Altiplano (outside Titicaca lake) and generate a phylogenetic tree of Cyprinodontiformes using 902 orthologs extracted from all 32 available full genomes as well as 3 outgroup species and in addition they generate another tree based on only 12 molecular markers (8 nuclear and 4 mitochondrial genes) but with 198 species of nearly all families and genera of the order Cyprinodontiformes ; overall, results show that *Orestias* is not part of the Cyprinodontidae family, and that

it is more closely related to the South American fish fauna, being the Fluviphylacidae the closest sister group ; it is suggested these 2 groups have likely diverged during the Late Eocene concomitant with hydrogeological changes in the South American landscape ; besides the minimum differences of ca. 2 Mb in full genome between the 3 *Orestias* sp. (*gloriae*, 694.8 Mb, *laucaensis*, 700.6 Mb and *chungarensis* 698,3 Mb, compared with already sequenced *ascotanensis*, 696.3 Mb) are very small {in the future, will there be a golden standard as to define molecular sp.?}. 2024. BMC G, https://bmcgenomics.biomedcentral.com/articles/10.1186/s12864-024-10416-w] {Jean Huber, 20-June-2024} <°))))>< <°))))>< <°))))><

- Yusuf, L.H., Y.S. Lemus, P. Thorpe, C.M. Garcia & M.G. Ritchie. [The Ritchie team molecularly studies radiation in 4 Goodeinae sp. (including *Ataeniobius toweri*, single without trophotaenia) ; in order to understand mechanisms of speciation in true livebearers, the authors compare the genomes of 3 Goodeidae with trophotaeniae (*Ameca splendens*, *Ilyodon furcidens* and *Characodon lateralis*) with that of another species, *Ataeniobius toweri*, related to them but exhibiting no trophotaeniae during egg development within mother (loss of placental viviparity) ; results show evidence of gene flow between geographically isolated species, suggesting {usual} vicariant speciation is supplemented by limited post-speciation gene flow, and gene flow may explain previous uncertainties about Goodeid phylogeny ; overall, the authors suggest that both volcanism-driven vicariance and changes in reproductive mode have influenced radiation, then speciation in Goodeinae. 2024. Heredity, https://www.nature.com/articles/s41437-024-00694-1] {Jean Huber, 14-June-2024} <°))))>< <°))))>< <°))))><
- Drawert, H.A. & C. Ergueta. [Drawert and Ergueta redescribe *Austrolebias accorsii* and describe a new congener, *ayoreode*, from upper rio Paraguay basin, in Bolivia ; *Austrolebias accorsii* is morphologically redescribed based on specimens from type-locality, nearby temporary pools, and other locations within the same hydrologic unit {and previous reports identifying collections as *vandenbergi* are shown as errors for *accorsii*, while other new locations are shown as dwelt truely by *vandenbergi* in Bolivia} ; from that, the authors describe a new species more easterly, exclusively found in 2 temporary waterbodies in Abayoy, a unique vegetation type situated in the transitional zone between the Dry Chaco, Chiquitano Dry Forest, and Pantanal Flooded Savannas ecoregions in southeastern Bolivia, bordering Paraguay, where the last voluntarily isolated indigenous people outside the Amazon in America reside (the Ayoreode, hence the name of the species} ; *Neofundulus* aff. *paraguayensis* is sympatric with the new speces ; within *Austrolebias*, 2 species groups are recognized with different morphological characters, geographical distribution, and ecological traits of their habitats (named the *melanoorus* group and the *vandenbergi* species group {the former, curiously, because it includes senior taxon, *bellottii*) ; many color photos of the 2 related, quite variable outside ontogeny, species, *accorsii* and *ayoreode*, are presented, and notably the remarkable blotch on male mid-sides of *ayoreode* cannot be diagnostic because not all males show it. 2024. N.I., https://www.scielo.br/j/ni/a/FYNtGJ4vjZMVsBD4SmFXDrB/?lang=en#] {Jean Huber, 10-June-2024} <°))))>< <°))))>< <°))))><
- Johnson, E.S., S.D. Johnson, R. McNemee, R. Greenway, L.A. Rodriguez & M. Tobler. [The Tobler team compares female urogenital aperture and male gonopodium of standard pop of *Poecilia mexicana* vs. its cave counterpart ; there are several cases of natural invasions of caves {no or very little light} by Poeciliidae, sometimes with species differentiation ; with *Poecilia mexicana* and its cave counterpart there does not seem species differentiation but the authors explore putative morphological differentiation in sex ornaments and then investigate how a change in sensory environment (the absence of light upon cave colonization) impacts the expression of genital traits in that live-bearing fish, with populations in adjacent cave and surface habitats ; results show that male from cave populations exhibits a significantly enlarged palp, a fleshy gonopodial appendage that has been hypothesized to have sensory functions ; the authors propose that genital traits can diverge rapidly among closely related populations exposed to different

environmental conditions. 2024. BJLS, https://academic.oup.com/biolinnean/advance-article-abstract/doi/10.1093/biolinnean/blae040/7644237] {Jean Huber, 2-June-2024} <°))))>< <°))))>< <°))))><

- Aguilar, R.M. & M.E.C. Vega. [Aguila and Vega differentiate by morphology and diet 7 sympatric *Cyprinodon* endangered congeners from Lake Chichankanab, Yucatan, Mexico ; the intra-lacustrine *Cyprinodon* speciation has been studied in details by Ulricke Strecker at the turn of the century {major ref.: Strecker, U. 2006. Genetic differentiation and reproductive isolation in a *Cyprinodon* fish species flock from Laguna Chichancanab, Mexico. Mol. Phylogenet. Evol., 39 (3): 865-872, 2 figs., 4 tabs.} ; Chichankanab is a small, shallow, ca. 8,000-year-old, tropical lake where the adaptive radiation of 7 sympatric *Cyprinodon* species have been reported {plus several other morphotypes as new hybrids or further speciation} ; the authors gather, from fish collections, an updated sample of 7 sympatric species and the sister species *Cyprinodon artifrons* from whom they take their size and photographs to develop geometric morphometric analyses, and collect information on their diet ; results show that size range only allows separation of *Cyprinodon beltrani* as the largest species, whereas geometric morphometric allows segregation *beltrani*, *simus*, *suavium*, and *labiosus*, and a morphotype of 3 species, *esconditus*, *verecundus*, and *maya*, which can be segregated by body measurements and the size of the species ; the diet can help to segregate *beltrani* herbivorous, *maya* piscivorous-omnivorous, *simus* zooplanktivorous-detritivorous, *suavium* and *verecundus* carnivorous-molluscivorous, and *esconditus* and *labiosus* carnivorous ; the ongoing hybridization and the changes in the lake are driving the diversification and decrease of these species ; however, there is not one character that differentiates all the species, differentiation is only possible through their specific variation in one character or by a specific combination of characters. 2024. I.R., https://link.springer.com/article/10.1007/s10228-024-00980-2] {Jean Huber, 2-June-2024} <°))))>< <°))))>< <°))))><
- Sudasinghe, H., T. Ranasinghe, K. Wijesooriya, L. Ruber & M. Meegaskumbura [Sudasinghe et al. present a molecular phylogeny and investigate the 3 species of *Aplocheilus* in Sri Lanka, *parvus*, *dayi*, *werneri* ; there are 3 nominal species of the killifish genus *Aplocheilus* reported from the lowlands of Sri Lanka and all are studied based on 28 locations ; *Aplocheilus dayi* and *Aplocheilus werneri*, are considered endemic to the island, whereas *Aplocheilus parvus* is reported from both Sri Lanka and Peninsular India ; the endemic Sri Lankan aplocheilid clade comprising *Aplocheilus dayi* and *Aplocheilus werneri* is recovered as the sister group to the clade comprising *Aplocheilus parvus* from Sri Lanka and *Aplocheilus blockii* from Peninsular India ; the reciprocal monophyly of *Aplocheilus dayi* and *Aplocheilus werneri* is not supported in the presented molecular phylogeny ; evidence that the Nilwala-Gin region of southwestern Sri Lanka may have acted as a drought refugium for these fishes is provided. 2024. J.F.B., https://onlinelibrary.wiley.com/doi/10.1111/jfb.15792] {Vasco Gomes, 28-May-2024} <°))))>< <°))))>< <°))))><
- Dominguez, O.C., W.M. Berbel-Filho, S. Pirro & S.C. Valdez. [Dominguez-Castanedo et al. present complete genome of *Millerichthys robustus*, an annual with functional sequential hermaphroditism ; this is a seasonal killifish that has changed paradigms on the evolution of annualism among killifishes ; *Millerichthys* evolved unique characteristics within annual killifishes as a functional sequential hermaphroditism, in which females change to males under perceived conditions of mate competition ; the phylogenetic position of *Millerichthys robustus* has been controversial for a long period of time but recent molecular analyses reveal that it is a sister clade to two non-annual species found exclusively in Cuba (*Rivulus cylindraceus* and *Rivulus berovidesi*), indicating that the annual life cycle, through the acquisition of embryonic diapause, has evolved independently in this species ; the complete genome sequences for *Millerichthys robustus* is presented and available in GenBank {note: the first molecular study of the fish, with only multiple sequences, has been disclosed only a few weeks before this study at Dominguez, O.C., A.W. Thompson, R.W. Meredith, A.I. Furness. 2024. An independent Origin of an annual life cycle in a

North American killifish species. Biological Journal of the Linnean Society (Biol. Journal Linnean Society), blae029, https://doi.org/10.1093/biolinnean/blae029}. 2024. B.G., https://biodiversitygenomes.scholasticahq.com/article/116895-the-complete-genome-sequence-of-the-protogynous-hermaphrodite-north-american-annual-killifish-_millerichthys-*robustus*_-rivulidae-cyprinodontiformes] {Vasco Gomes, 14-May-2024} <°))))>< <°))))>< <°))))><

- Kapakos, Y., R. Barbieri, B. Zimmerman, H. Miliou, N. Karakatsouli & E. Kalogianni. [Kapakos et al. report LHT of globally threatened Peloponnese *Valencia robertae* with 5.4 mm SL when newborn and 11 mm SL at day 25 ; this is the first life history study of a recently described congener from mainland Greece, that is already at risk of extinction due to anthropogenic habitat degradation and alien invasive species ; development of *robertae* {a fish species dedicated to famous Greek ichthyologist Roberta Barbieri, who is among the co-authors} is described from the embryonic to the juvenile stage from in vivo imaging, for the first time in detail for this species and genus ; fertilized eggs are large (approximately 2 mm), spherical, macrolecithal, translucent, with negative buoyancy, filaments at the outer surface, and several oil globules ; they have a long incubation period (approximately 18 days at 20°C) and, in laboratory conditions, a high hatching rate (84%, n=89) ; embryos at hatching measure approximately 5.4 mm S.L. or 6.5 mm T.L. and have well-developed Caudal and Pectoral fins, large eyes, and well-developed mouth ; exogenous feeding starts at 24–48 h post hatching and formation of fins continues with the development of Anal and Dorsal fins and is completed by the formation of Ventral fins, at approximately 11 mm S.L. (25–30 days post hatching) ; the authors discuss ecological and conservation implications of their findings. 2024. E.B.F., https://link.springer.com/article/10.1007/s10641-024-01529-y] {Jean Huber, 13-May-2024} <°))))>< <°))))>< <°))))><
- Huber, J.H. & E. Meinema. [Huber and Meinema disclose an intra-lacustrine speciation in Lake Turkana, describe genus *Eremodon*, 2 new sp. and *Aliteranodon effusorium* ; additional research after previous review of extant and fossil Pantanodontidae [ref.: Meinema, E. & J.H. Huber. 2023. Review of Pantanodontidae (Cyprinodontiformes) and its fossil and extant genera *Pantanodon* Myers, 1955 and *Paralebias* Gaudant, 2013 with descriptions of two new recent genera and five new species. Killi-Data Series 2023] confirms the presence of an inland lineage of extant East African Pantanodontidae, described as a new genus *Eremodon*, with type species *Eremodon cochleari* based on a small collection from Ferguson Gulf (Lake Turkana, Kenya) ; *Haplochilichthys jeanneli*, previously in *Lacustricola*, is moved as a member of Pantanodontidae and assigned to *Eremodon* ; a third cryptic species is disclosed among a collection of types of *Micropanchax rudolfianus* and is described as *Eremodon kifuani* ; the presence of three closely related congeners in Lake Turkana is a case of intra-lacustrine speciation ; due to the construction of a hydroelectric powerplant in the Lower Omo Valley all fish species in the lake should be considered as endangered ; a species from Gazi (Kenya), tentatively included in *Aliteranodon* by Meinema & Huber (2023), is confirmed in genus and described as a distinct species, as *Aliteranodon effusorium* and a previously overseen species from Garsen (Kenya) is, pending on new material, assigned to *Aliteranodon* ; an updated redescription of *Micropanchax rudolfianus* is given and a lectotype is designated from syntypes ; the lampeye from Lake Baringo is confirmed as an artificial transplant of *Lacustricola maculatus* ; finally, the authors discuss the distribution of Pantanodontidae according to new hypotheses of palaeo-microplates. 2024. KDS, https://www.killi-data.org/series-kd-2024-Huber_Meinema.php] {Jean Huber, 30-April-2024} <°))))>< <°))))>< <°))))><
- Zee, J. van der. [Zee studies photographs of syntypes of *Epiplatys longiventralis* and discloses 3 distinct species ; syntypes of *Epiplatys longiventralis* (Boulenger, 1911), taken by the National History Museum in London, are studied ; in total, 9 specimens, all from eastern Nigeria, actually consist of 3 distinct species ; the 6 specimens from Awka, just north of the eastern Niger Delta, are true *longiventralis* {one specimen is designated as lectotype in a distinct paper, just before}; surprisingly the single syntype from the Niger mouth is *Epiplatys grahami*, and the 2 syntypes from Old Calabar, are either *Epiplatys infrafasciatus* or

togolensis ; *longiventralis* males have a different frontal sensory system than other species of the *sexfasciatus* group since a central lobe separates the 2 anterior neuromasts ; however, it is not the same as Clausen's triangular system (in that system, the 2 neuromasts are very close to each other, with a gap of approximately 1 neuromast length, whereas in *longiventralis* these neuromasts are far apart, as in the *sexfasciatus* group) ; the author proposes to name the two systems according to their basic characteristic: as wide if the neuromasts are far apart and close if they are close together ; besides *longiventralis* is not the only congener with elongated Ventral fins, since populations of *togolensis* west of the Cross River may also have this trait and *longiventralis* and *togolensis* occur syntopically in the Niger Delta, but, they choose a different microhabitat. 2024. KDS, https://www.killi-data.org/series-kd-2024-Zee.php] {Jean Huber, 30-April-2024} <°))))>< <°))))>< <°))))><

- Huber, J.H. [Huber reviews genus *Epiplatys* with 2 new subgenera, downgrades *Pseudepiplatys* and *Aphyoplatys*, upgrades all subspecies to full species ; the poorly known genus *Epiplatys* and its many species are systematically and taxonomically reviewed according to morphological data, new diagnoses with a coded system of bars on sides and proposed phylogenetic keys, in comparison with limited and contradictory molecular data, based on distinct sequences ; the previously distinct, or not, genera (according to authors), *Aphyoplatys* and *Pseudepiplatys*, are lumped into *Epiplatys* and downgraded as subgenera in line with molecular data because no major difference could be disclosed except size (smaller) and pattern (very broad bars and black head for the latter), little neuromastic differences and Caudal fin shape (mid-pointed for the former), which are autapomorphies ; a total of 54 species are considered as distinct and valid, many with reservations, and 6 species are considered as stable synonyms, out of a total of 75 taxa assignable to the genus, then 15 could be resurrected as valid with new collections, renewed diagnoses and molecular support ; all specific taxa previously seen as valid subspecies in the past by various authors are provisionally valid and conservatively upgraded to full species status, namely, *zenkeri*, *rathkei* (ex-subspecies of *infrafasciatus*), *nigricans* (ex-subspecies of *chevalieri*), *monroviae* (ex-subspecies of *dageti*), *sheljuzhkoi*, *spillmanni*, *schreiberi*, *samborskii* (ex-subspecies of *chaperi*), *zimiensis*, *tototaensis*, *josianae*, *azureus*, *puetzi* (ex-subspecies of *fasciolatus*), *kassiapleuensis*, *dauresi* (ex-subspecies of *olbrechtsi*), except *taeniatus* (ex-subspecies of *bifasciatus*) which is synonymized again into *bifasciatus*, according to new findings ; the case of *lokoensis* is reviewed and it status is provisionally considered as valid and distinct following new scattered collections but unverified identifications, and the phylogenetic position of 2 relict species, *longiventralis* and *biafranus*, is hypothetically changed following new diagnoses (the former with lectotype designation), but with still instability ; finally 2 new subgenera are erected, as *Xerosplatys* and *Kulonplatys*, each diagnosed by several synapomorphies, geographical specificities, also supported by molecular data, and all other existing subgenera are kept as valid because they can be easily diagnosed, sometimes with new characters, each with listed and keyed components ; the author clarifies ranges for all and, with a map, confirms the crab-like subgroups distribution pattern for the genus *Epiplatys*. 2024. KDS, https://www.killi-data.org/series-kd-2024-Huber.php] {Jean Huber, 30-April-2024} <°))))>< <°))))>< <°))))><
- Carr, E.M., R.P. Martin & J.S. Sparks. [Carr et al. describe already extinct *Malagodon honahona* from southeastern marshes in Madagascar, distinct from *madagascariensis* ; the new species is reported since at least 25 years, but despite several attempts is thought extinct (phased out by introduced *Gambusia* sp., like its northern congener *madagascariensis*) and it belongs to the recently described genus *Malagodon* Meinema and Huber, 2023 ; the fish are collected in a single, small, isolated Pandanas swamp in southeastern coastal Madagascar, located within the Réserve Spéciale de Manombo, south of the town of Farafangana, its only known locality. The new species was last collected in the late 1990s, and despite repeated attempts over the past three decades, no additional specimens have been collected at the type locality or from any other suitable habitats within the region, and the species is presumed to be extinct ; it is distinguished from its only congener, *Malagodon madagascariensis*, formerly known from forested

swamps in northeastern coastal Madagascar, and also now considered to be extinct, by the following derived characters features: a lower anal-fin ray count (15–17 vs. 18–19), a longer caudal peduncle (26.8%–39.8% vs. 21.9%–26.7% SL), and the presence of a plate-like (vs. thin and spine-like) neural spine on the fifth vertebral centrum in both sexes ; the authors propose a rediagnosis of *Malagodon* based on the examination of additional material unavailable in the original description, and mainly osteological characters ; even if extinction of those 2 species, very colorful (the new sp. is pictured shortly after live collection) is probable, hopes remain that in the future live recollections are achieved because that coastal plain is very long and the 2 congeners live in 2 very distinct biotopes, either freshwater brooks or brackish water (?) marshes. 2024. A.M.N., https://bioone.org/journals/american-museum-novitates/volume-2024/issue-4012/4012.1/A-New-Extinct-Species-of-*Malagodon*-Cyprinodontiformes--Pantanodontidae-from/10.1206/4012.1.full] {Jean Huber, 25-April-2024} <°))))>< <°))))>< <°))))><

- Pappalardo, A.M., G.S. Calogero, R. Sanda, M. Giuga & V. Ferrito. [Pappalardo et al. exemplify differences of NDI, CytB, COI genes for 6 pops of *Aphanius fasciatus*, 3 Italian, 2 Albanian, 1 Greek ; mitochondrial oxidative phosphorylation (OXPHOS) genes are subject to selection under determined environmental constraints despite a neutral evolution model that has long been hypothesized for the mitochondrial genome ; the authors detect the sequences of ND1, Cytb, and COI genes in 6 populations of eurythermal and euryhaline (lagoons) *Aphanius fasciatus*, non-synonymous mutations leading to amino acid changes ; the samples concern coastal ponds along a North–South thermal gradient, i.e., the Italian population of Grado as the northernmost, and the Greek one of Korission as the southernmost (in details, coasts of Italy, Grado, Tarquinia, and Casaraccio lagoons, Albania (Vain and Karavasta lagoons), and Greece (Korission lagoon) ; results indicate a high COI and Cytb gene diversity and a high percentage of private haplotypes in all populations ; in Greek population, non-synonymous nucleotide substitutions are observed in N-terminal region of COI and Cytb ; positively selected sites are also found. 2024. Biol., https://www.mdpi.com/2079-7737/13/4/212] {Jean Huber, 28-March-2024} <°))))>< <°))))>< <°))))><
- Dominguez, O.C., A.W. Thompson, R.W. Meredith & A.I. Furness. [Domínguez et al. first disclose moleculars of *Millerichthys robustus*, not related to neotropical annuals but to *Rivulus* from Cuba ; this is the single species with an annual life cycle in North America (Mexico), geographically separated from the nearest South American annual killifish species by over 2000 km ; it has a limited geographical distribution (and some conservation threats) ; Costa and Huber, independently proposed that the species is though still related to Colombian annuals in genera *Rachovia* and *Austrofundulus* ; the authors present for the first time the mitochondrial genome of *Millerichthys robustus* and generate a molecular phylogeny of killifishes that includes this species ; results clearly indicate that, rather than being most closely related to South American annual killifishes, this species is sister to 2 non-annual killifish species from Cuba (*Rivulus cylindraceus* and *Rivulus berovidesi*) ; then, state reconstruction strongly supports an independent origin [from South-Americans] of annual life cycle and embryonic diapause in *Millerichthys robustus*. 2024. BJLS, https://academic.oup.com/biolinnean/advance-article-abstract/doi/10.1093/biolinnean/blae029/7633731] {Jean Huber, 25-March-2024} <°))))>< <°))))>< <°))))><
- Mandeng, F.D.M., C.F.B. Bilong & J.F. Agnese. [Mandeng et al. present species diversity and distribution patterns of African rivulines in rainforest streams of Cameroun (Aphyos.) ; the authors examine the community structure and species diversity of nothobranchiids (African rivulines) in rainforest streams of Cameroon's southern plateau and part of the coastal plain, using data on 19 environmental variables for ecological indices and multivariate analyses ; the presence of nothobranchiids in the study area is associated with several local environmental factors common to all sampling sites, mainly canopy cover above the watercourse and physicochemical characteristics of the stream habitat ; these findings highlight nothobranchiids as local fish assemblages having high biotic integrity and responsiveness to environmental degradation ; in tropical Africa, these fishes often occupy fragile habitats influenced by

anthropogenic activities. 2024. A.Z., https://www.tandfonline.com/doi/abs/10.1080/15627020.2024.2306391] {Vasco Gomes, 25-March-2024} <°))))>< <°))))>< <°))))><

- Zak, J. & P. Suhajova. [Zak and Suhajova show that in clear or turbid water, female of *Nothobranchius furzeri* consumes 3 times more food than male (vs. weight) ; water turbidity alters prey detectability and prey selection by a predator ; the authors experimentally test the effect of turbidity on prey consumption with respect to sex, for *Nothobranchius furzeri* (the shortest life-span vertebrate) ; since large males of the species {like most congeners} possess conspicuous nuptial coloration while females are smaller and drab, it is expected vision is a fundamental sense, despite often living in very turbid water. As mesopredators, killifish regulate the invertebrate community in ephemeral pools ; the experiment concerns the consumption of bloodworms (benthic and red-coloured) and glassworms (pelagic and transparent) under clear (<1NTU) and turbid (320 NTU) water conditions ; results show that all fish keep their overall foraging success irrespective of turbidity ; however, in both the clear and turbid waters, the females consume 3 times more food than males relative to their body mass, probably due to females' higher nutritional demands to face daily reproduction efforts ; besides, rationally, females are not risk-aversive in clear water despite their smaller size because they have no showy color like males. 2024. E.F., https://onlinelibrary.wiley.com/doi/pdf/10.1111/eff.12774] {Jean Huber, 15-March-2024} <°))))>< <°))))>< <°))))><
- Fast, K.M., J.D. Larrimore, Z.D. Alley & M.W. Sandel. [Fast et al. disclose full mitochondrial genome of *Fundulus dispar* with 16,564 bp supporting relationship with *notatus* and *olivaceus* ; interspecific relationships between *Fundulus* congeners remain unresolved, despite recent advances in mitochondrial and nuclear genome sequencing ; specifically, interrelationships within a group containing *Fundulus blairae*, *dispar*, *escambiae*, *lineolatus*, and *nottii* typically yield low node support values {bootstraps or equivalent} ; the authors present the first annotated mitochondrial genome of *dispar* (not full genome) based on a population collected in Kentucky, USA ; the circular genome is 16,564bp long and contains 13 protein-coding genes, two ribosomal RNAs (rRNA), 22 transfer RNAs (tRNA), and one control region (D-loop) ; the resulting phylogenetic tree supports a sister relationship between *dispar* and a group containing *notatus* and *olivaceus*. 2024. MitDNA, https://www.tandfonline.com/doi/full/10.1080/23802359.2024.2327564] {Jean Huber, 14-March-2024} <°))))>< <°))))>< <°))))><
- Alonso, F., G.E. Teran, P. Calviño, W.S.A. Serra, M.M. Montes, I.D Garcia, J.A. Barneche, L. Ciotek, P. Giorgis & J. Casciotta. [Alonso et al. describe *Argolebias adrianae* with dark grey anterior third Dorsal and no iridescent spots on basal Pectoral in male ; the new species comes from a small temporary wetland in the Parana Forest ecoregion with no regular or predictable temporal pattern of water availability, in lower rio Iguazu basin ; it is distinguished from all congeners by its unique coloration, which includes a conspicuously dark grey anterior third portion of Dorsal fin and lack of iridescent spots on the basal half of Pectoral fin in live adult male ; molecularly, *adrianae* is closely related to *guarani* from adjacent Middle Parana basin ; the authors add data on the ecology, ontogeny of coloration, and chorion ornamentation of this species and position the species within the *Austrolebias* groups of genera and more globally within Cynolebiinae (separating as distinct genera *Nematolebias*, *Ophthalmolebias*, *Simpsonichthys*, *Spectrolebias*, *Hypsolebias* {*Xenurolebias*, not studied}). 2024. C.J.Z., https://cdnsciencepub.com/doi/abs/10.1139/cjz-2023-0132] {Jean Huber, 4-March-2024} <°))))>< <°))))>< <°))))><
- Tiffany, R.E., Hogers, R.M.H.W., A. Korosi, J.L. van Leeuwen & A. Kotrschal. [Ernst et al. find no differences in female *Poeciliopsis gracilis*, previously housed alone or with a coercive male, for 2 tests ; coercive mating with female harassment by male is a sexual selection strategy that is putatively to influence female cognition (usually female may respond to coercive mating by investing energy into outsmarting males) ;

this experiment in lab concerns laboratory-born individuals derived from laboratory stocks originally collected from a small tributary of the Rio Motagua, near village Jones in Zacapa, Guatemala ; the authors compare performance of female porthole livebearers, which has been previously always alone in aquarium of 30 liter tanks, blind or transparent (no learning effect) or with a coercive male, for both a spatial food localization task and a reversal learning task ; the results show no difference between the 2 types of female (of course both single and paired fish exhibit high proficiency in learning both tasks) ; besides, presence of a coercive male has no impact on female fecundity, but influences female mass and standard length 2024. J.F.B., https://onlinelibrary.wiley.com/doi/10.1111/jfb.15696] {Jean Huber, 2-March-2024} <°))))>< <°))))>< <°))))><

- Powell, C. & I. Schlupp. [Powell and Schlupp show no geographical differences in male mate choice in 8 populations of *Limia perugiae* {K-D maintained in *Poecilia*} ; the authors study, in garden pond conditions, offsprings of several wild caught specimens from 8 locations all over Santo Domingo, with local differences in salinity of biotope and of pattern (a gold phase and the standard color phase) ; and male mate choice, while maybe not as common as female choice, might be expected to evolve when males respond to significant variation in female quality and for example prefer females with higher fecundity, but in experiment, male does not ; on the contrary, male significantly prefers large females and there is no significant statistical variation between populations ; while in previous studies, some environmental variables, which may differ between populations, such as turbidity, have been shown to influence mate choice in a related species, *Poecilia latipinna* ; on the other hand, for *Poecilia vittata*, differences in black spots seem to be associated with differences in salinity, but no effect of black spots on mate preferences in both males and females are reported. 2024. B.E., https://academic.oup.com/beheco/advance-article-abstract/doi/10.1093/beheco/arae008/7601963] {Jean Huber, 28-February-2024} <°))))>< <°))))>< <°))))><
- Olivera, A., C. Passos, J.I. Vazquez, B. Tassino & A. Migliaro. [Olivera et al. evidence variation in daily rhythm of locomotor (light or not) and reproductive activity of *Garcialebias reicherti* ; the species is a South American annual fish from Uruguay, adapted to extreme environmental conditions, where ponds they inhabit dry out as the year progresses, while engaging in reproductive behavior from sexual maturity to death ; this behavioral research experiment shows that, for *Garcialebias reicherti*, the ever-changing environmental cycles these species are subjected to makes them adapt their behavior with daily rhythms in both their locomotor and reproductive behavior ; in details, it shows diurnal behavioral patterns, with neither sex nor reproductive context affecting the phase relationship between the light and dark cycle and activity (circadian, i.e., the oscillation that repeats roughly every 24 hours) ; however, reproductive context modulates the amount of locomotor activity and leads to synchronization between members of fish couples, while introducing a second behavioral rhythm for reproductive events, themselves. 2024. N.I., https://www.scielo.br/j/ni/a/SX6SfgrX43pNc7gcy7fw5gk/] {Jean Huber, 24-February-2024} <°))))>< <°))))>< <°))))><
- Rössel, D.W.R., J.N. Palacio, S. Espinosa & J.F.M. Martinez. [Rössel et al. report LHT of *Ataeniobius toweri* during Summers, more abundant with underwater vegetation, less deep and near shores : this Goodeinae species and true livebearers like his relatives {ca. 40 species from a limited and relict Mexican plateau} is endemic to a spring lake ; in the last decades, the ecosystem has been modified by tourism, and the habitat has changed for this species ; in this field study, the authors study the ecological responses and spatial distribution for adult and juvenile life stages, during 3 summer periods (years 1999, 2009, and 2019), using water depth and underwater coverage as habitat variables ; in modeling evaluation, for the Linear Regression Model, the authors obtain statistical confirmations that, as summer periods progresses, the highest probability of occurrence (P> 0.20) and distribution (P> 0.60) lies in areas with conditions of large coverage of underwater vegetation, within the first 1.5 m of depth, and near the shores of the spring (likewise for relative abundance) ; for (artificial and natural) conservation of this endangered monotypic

species, the authors promote suitable and unsuitable habitat conditions and areas with little or no anthropogenic pressure. 2024. EBF, https://link.springer.com/article/10.1007/s10641-024-01520-7] {Jean Huber, 15-February-2024} <°))))>< <°))))>< <°))))><

- Pacher, K., N.R. Hernandez, A.L. Juarez, J.E.J. Jiménez, J. Lukas, Y. Sevinchan, J. Krause, L.R. Arias, D. Bierbach. [Pacher et al. show thermal tolerance is not affected by hypoxia in extremophile *Poecilia sulphuraria* and *Gambusia eurystoma* of Mexico ; the authors present data on the thermal limits of 2 endemic and endangered extremophile fish species, inhabiting a geothermally heated and sulfur-rich spring system in southern Mexico, *Poecilia sulphuraria* and *Gambusia eurystoma* (a wide mouth congener), knowing that in their extreme biotope, the 2 species endure physiological challenges induced by toxic hydrogen sulfide and related severe hypoxia during the day, water temperatures have been previously reported to exceed those of nearby clearwater streams ; this is a standard laboratory thermal tolerance tests (CTmin and CTmax) both under normoxic and severe hypoxic conditions in both species ; results show that average CTmax limits do not differ between species when dissolved oxygen is present, however, critical temperature (CTmax=43.2°C) in *sulphuraria* do not change when tested under hypoxic conditions, while *eurystoma*, on average, has a lower CTmax when oxygen is absent ; this suggests that both species in the wild live near their thermal limits during the annual dry season and are locally already exposed to temperatures above their critical thermal limits. 2024. B.O., https://journals.biologists.com/bio/article/13/2/bio060223/342708] {Jean Huber, 8-February-2024} <°))))>< <°))))>< <°))))><
- Gomes , V.M.A.R. & D.A. Mejia. [Gomes and Mejia disclose 5 new collecting localities of *Rivulus* rnejiai extending its range in Colombia, only known from type locality ; the species is much well known by those apart spots, still in an homogeneous eco-region of northeastern part of the country ; the authors give details of the biotopes and physicochemical parameters, all in high altitude (441-660 m), of the accompanying ichthyofauna (but no sympatric killifish), report a wild female as large as 96 mm T.L., and of its conservation status (moved to vulnerable), due to mainly deforestation. 2024. JAKA, http://www.killi-data.org/registration.php] {Jean Huber, 5-February-2024} <°))))>< <°))))>< <°))))><
- Sungur, S., H.R. Esmaeili, S. Echreshavi, E. Çiçek. [Sungur et al. demonstrate sexual dimorphism of scales and Anal fin rays in genera *Anatolichthys* and *Paraphanius* (Aphaniidae) ; this study concerns secondary sexual dimorphism and sexual selection, which is connected to selecting a mate and male competitiveness ; the authors investigate the microscopic characteristics of scales in several body parts and Anal fin rays of 9 species of family Aphaniidae, in genera *Anatolichthys* {in Killi-Data, as a valid subgenus of *Aphanius*, encompassing 13 taxa, *anatoliae*, *chantrei*, *danfordii*, *fontinalis*, *iconii*, *irregularis*, *maeandricus*, *meridionalis*, *saldae*, *splendens*, *sureyanus*, *transgrediens*, *villwocki*} and *Paraphanius* {in Killi-Data, monotypic species *mento*} to find out possible secondary sexual dimorphic traits and their importance in taxonomy ; results with both light and scanning microscopy reveal that scales show general characteristics of the family and present large cycloid scales of several subtype forms including cycloid-true circular, cycloid-chordate, oval-reversed ovoid, polygonal-pentagonal, quadrilateral-square, oval-ovoid and oval-oblong in different body parts of fishes ; both genera show sexual dimorphism with 5 specificities, (i) male individuals of all species present contact organs as ctenus-like structure {spines} in posterior margin of scales and spicule-like structure in Anal fin rays; (ii) Caudal fin rays of both sexes lack contact organs; (iii) number, position, size and form of contact organs provide a taxonomic evidence to identify and differentiate the 2 genera; (iv) contact organs can be thought of as functional structures that keep male and female individuals in physical contact during courtship and display behavior throughout the active phase of reproduction; (v) it can provide evolutionary signals because sexual dimorphism would come from various sexual selection pressures acting on both sexes. 2024. A.Z., https://onlinelibrary.wiley.com/doi/abs/10.1111/azo.12493] {Jean Huber, 4-February-2024} <°))))>< <°))))>< <°))))><

- Elkins, L.C., M.R. Acre, M.G. Bean, S.M. Robertson, R. Smith & J.S. Perkin. [Elkins et al. monitor abundance of re-introduced *Cyprinodon eximius*, after 5 years, in detailed subniches, with positive effects ; the species inhabits desert spring systems of the American southwest and has been once considered extinct in USA due to population extirpations caused by human poisoning of streams and reservoir construction ; benefitting from artificial transplantations, today it is still considered as highly endangered and protected in USA (Texas) ; the authors monitor abundances within 5-m transects at 3 reaches of the Devils River, where the last known USA populations persist ; modeling current fish abundance reveals pupfish abundance among transects is negatively correlated with current velocity and detection is negatively correlated with water depth {therefore fish prefer slower current and less deep places} ; the authors provide conservation guidance by establishing (1) baseline and trajectory values for abundance, (2) transect locations where abundances might be managed within existing protected areas, (3) reaches where high abundances could be used for future repatriation, and (4) stream segments where future surveys might be conducted to assess conservation opportunities. 2024. A.C., https://zslpublications.onlinelibrary.wiley.com/doi/pdf/10.1111/acv.12930] {Jean Huber, 29-January-2024} <°))))>< <°))))>< <°))))><
- Alila, D.O., H. Ten Brink, M. Haesler & O. Seehausen. [Alila et al. show in *Nothobranchius melanospilus* populations that sympatry with congener *eggersi* is a driver of morpho-separation ; the authors competition-driven divergence in resource use-related phenotypic traits between coexisting {sympatric} species with the case of 2 African annual killifish in *Nothobranchius*, either *eggersi* and *melanospilus* in sympatry and *melanospilus* in allopatry ; results show that sympatric *melanospilus* {with *eggersi*} differ from allopatric *melanospilus* {without *eggersi*} and they differ from *eggersi* more strongly than when *melanospilus* is alone ; the authors conclude that divergence pattern between allopatric and sympatric *melanospilus* results from an evolutionary shift rather than from ecological sorting (because the authors find no difference in food resource availability or other ecological conditions between the two types of *melanospilus*, alone or in sympatry) and, pioneeringly that competition is the main driver of the observed divergence between those two types of *melanospilus* populations. 2024. Evol., https://academic.oup.com/evolut/advance-article/doi/10.1093/evolut/qpae005/7577501] {Jean Huber, 28-January-2024} <°))))>< <°))))>< <°))))><
- Henriquez, C.M., Y.M. Sarmiento, G.M. Salgado, W.A. Matamoros. [The Matamoros team discloses 21 new collecting sites of *Tlaloc portillorum* in rios Patuca and Choluteca, Honduras, with eco-data ; in 2010 *Tlaloc portillorum* is described then in *Profundulus* with material from the Ulua River basin, Honduras, and only from the types. besides, a few additional localities in the Nacaome River are reported in 2014 and 2015, but basic knowledge about its biology, ecology and life history is still lacking ; the authors report that *portillorum* is found in sympatry with other species including *Poecilia mexicana*, *Alfaro huberi* and *Phallichthys amates* ; fish is found at higher altitudes lower order streams, ranging from ca. 570 to ca. 1670 m altitude where the creeks are all characterized by having smaller widths, from less than a meter to ca. 10 meters, with bottoms dominated by boulders, rocks, gravel and cobblestone. 2024. Zootaxa, https://www.mapress.com/zt/article/view/zootaxa.5403.3.10] {Jean Huber, 22-January-2024} <°))))>< <°))))>< <°))))><

Güçlü, S.S. & B. Celik. [Güclü and Celik report on LHT and conservation of few remaining pops of Turkish *Anatolichthys maeandricus* {K-D maintained in *Aphanius*} ; in Mediterranean Anatolia, a region of Turkey, the Lakes Region and Konya Closed Basin are the richest regions in terms of endemic fish with 55 species, notably *Anatolichthys maeandricus* ; there, global warming (droughts) and anthropogenic impact (human activities) are serious threats to freshwater fishes ; the authors study the threatened species in Isikli Lake and today separated Isikli Spring (38°19’19”N; 29°51’07”E) in Büyük Menderes River basin, influenced by both factors ; from seasonal collections (August, October 2021, February and April 2022), the authors disclose age ranges, male to female proportions, length and weight ranges in those 2 populations ; ratio of

female to male is 0.98:1.00 in lake and 0.78:1.00 in spring ; contents of digestive tract and stomach pinpoint Gammarus sp. and Chironomidae insect organisms as dominant in food of fish from both habitats ; in spring population, water temperature is almost constant, 15°C–16°C (15.4°C in May 2021, 16.1°C in October 2021, 14.8°C in February 2022 and 15.0°C in April 2022) throughout the year ; based on other publications, comparison of growth parameters of various *Anatolichthys* species is given ; according to the authors, over the past 10 years, habitat of *maeandricus* has been severely restricted and it is an urgent to protect its habitat. 2024. PZIRAS, https://www.zin.ru/journals/trudyzin/eng/publication.html?id=533] {Jean Huber, 9-January-2024} <°))))>< <°))))>< <°))))><

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Killi-Data Wassup is a service of information to members that does not aim to be comprehensive of whole Killifish research output (it presents only a subjective selection of articles, primarily those being coherent with Killi-Data focus on names, systematics and nomenclature), that is not regular, that separates clearly, the "selection of publications" (listed as last-in first-out) with (1) a full neutral synthesis for each major publication, (2) a quick snapshot of contents for other publications (papers not obtained), with or without neutral comments for each.

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Conventions : everywhere in Killi-Data analyses, present form of verbs is used (not preterit), style synthetically restricts grammar (e.g., avoiding articles), names of countries are exclusively local (not English), standard parentheses as '()' have their normal meaning while brackets '[]' corresponds to attributions and accolades as '{}' correspond to personal comments by K-D author-editor (or co-editors).