



INTRODUCTION

The present Wassup is totally exceptional because the covered time frame is very long. This is due, as everybody is aware, to the defect of journal Aqua owned by German Heiko Bleher who has changed the rules of diffusion of his quarterly magazine without notification in the articles that contain a new taxon description of fish (genus or species), from a printed journal with also sales as PDF to a purely electronic media without prints, and then the information only emerges, in November 2022 (then the putative date of issue of present K-D Wassup), it becomes clear that all new names between issue 2 of 2021 and issue 4 of 2022 of Aqua change ICZN status from available to unavailable (= nomina nuda). For killifish this concerns 5 taxa : *Anablepsoides katukina* and *falconi* Nielsen, Hoetmer & Vandekerkhove, 2022 {in Killi-Data, maintained in *Rivulus*, according to latest evidence}, *Laimosemion anitae* Nielsen, Hoetmer & Vandekerkhove, 2022 {in Killi-Data, maintained in *Rivulus*, according to latest evidence}, *Aphyosemion lorai* and *Caeruleamsemion* (a new subgenus of *Aphyosemion*) Valdesalici & Malumbres, 2022. No blame on those authors who are more victims than anything else. Nomenclature authorities have required in early December 2022 from Aqua editor (and from owner), in order that the names become available, that a special print of all those articles (or more affordably a synthesis of them with ICZN required minimum items) be published the sooner the better, that, in the future, Aqua and owner decide either to go back to full prints or if maintained as an e-publication to align them to ICZN rules for electronic names (Zoobank, legal electronic archives, etc.) and that the Aqua website is returned to a normal website with permanent linked archive to each abstract for all papers (i.e., with a weblink) and information on possible purchases. Since early December time passes (3 months) and at this date nothing has happened and the 5 above names are kept unavailable until the conditions are met (probably sometime in 2023). As a practical consequence, the database cannot unfortunately be updated (and uploaded) until this is achieved (and then notably the database is frozen for the 3 first taxa already covered in a previous Wassup). This a regrettable situation for the authors, for managers of databases (like Killi-Data), for killifish associations journals and even for keen researchers who are confused in terms of timing (which taxon has priority?). This situation has been met, even worse, similarly but not identically to Aqua for another new *Fundulus* species (*herminiamatildae*) described and claimed as print and PDF in December 2021 by very isolated (and now dead) journal titled American International Journal of Biology ; that print never occurred in 2021 but was accepted as such for a subsequent print (not seen) by U.S.A. research groups sometimes in Summer 2022 (with 6 months lag, then it becomes ICZN available) and again the authors (Mexican : Garcia, M.E.R., M.L.V. de Lozano & M.B. De la Maza) have suffered a lot of that situation, having to register themselves in Zoobank.

Within this (long) time frame of present Wassup, the menu contains (1) some new species, relatively slender *Nothobranchius balamaensis* from northern Mozambique, related to *kirki* and *wattersi* {putatively forming a new larger group of related sp., still to be discovered}, *Rivulus adrianae* (hypothetically in the *micropus* group) from Guiana (British Guyana), *Fundulus herminiamatildae*, isolated like *philpisteri*, from Mexico (see supra), 3

new *Aphyosemion* in Ecuatorial Guinea, *losantosi*, *mitemelense*, *montealenense*, first 2 cryptic to *maculatum*, last to *bochtleri*, *Moema juanderibaensis* from southwestern Amazon basin, Bolivia (2) Vences et al. disclose most *Pachypanchax* sp. DNA barcodes in 2 clades, *arnoulti*, *sparksorum*, *Antsahalalina* new sp. {to be described, but no date known}, then all others, outside the single *playfairii*, not from Madagascar, (3) a major molecular study of total *Kryptolebias* genus in several clades (confirming confusing distribution imbrications (yet -fortunately- without systematic consequences on *marmoratus*, *heyei*, *bonairensis*, *ocellatus* and *caudomarginatus* (or *hermaphroditus* and *ocellatus* depending on authors).

Due to space constraints this time there will be few further discussions :

First is the major finding by Polacik and Vrtilek (Reichard lab in Czechia) who experimentally disclose in *Nothobranchius furzeri* a new additional stage of pause in embryological development between diapause II and III (the first major innovation since the famous papers by Wourms and followers in the 1960ies and 1970ies)... hoping on a coming detailed digging into this mechanism for the species and putatively other annual killifish.

Second is the downgrading of *Aphyolebias* to a subgenus of *Moema* in Killi-Data (not anymore a distinct genus, even if there is a strong need of a comprehensive revision of *Aphyolebias* and *Moema*, as synonyms, subgenera or distinct genera plus hypothetically a third new (sub)genus, according to Drawert, pers. comm), following the published works by Drawert, recently, and previously by Valdesalici, describing *juanderibaensis* and *kenwoodi* respectively, and 2 species names are altered, *obliqua* instead of *obliquus*, *rubrocaudata*, instead of *rubrocaudatus*.

Third is the non-acceptation of *Apricaphanius* as a distinct genus for the Spain-emblematic *iberus* (and some others) by Doadrio's team after disclosure of full mitochondrion (then favoring *Esmaeili*, *Teimori*, *Zarei* & *Sayyadzadeh*, 2020, also followed by Killi-Data, unlike *Freyhof*. & *Yogurtcuoglu*, 2020, hence *Apricaphanius* is conservatively kept as a subgenus of *Aphanius*).

Finally following several questions on repeated incongruence between molecular data and morpho-osteo data on killifish (and all living beings including plants) it is worth discussing the issue with regards to that incongruity and taxonomy. The answer is not simple and may evolve along time. There are at least 2 main contrasted options: (1) 'laisser-faire' (i.e., do not bother) as it is the trend today with painful implications into systematics and naming (but is that so painful, let's be more modest?) and wait for new techniques that may uphold that incongruency (if possible), (2) use molecular data only on phylogeny at any higher level (for group of species, genus, family, order, etc.) and restrict morpho-osteo data to creating-modifying names (mainly individual species) with diagnoses (without sequences), then those names will be accepted as artificial but separable at sight (e.g., pattern) and as a direct consequence those names will not include molecular species anymore (then moved to synonyms). Easy to understand, very uneasy to decide and implement collectively, just because of the huge variety of authors and their cultures. But at one point of time after naming many unrecognizable molecular species (notably not separable if variability in the wild is included-accepted) there will be inevitably a crisis (or the ICZN code as it is today will be dynamited). Without drama, let's suggest future will tell (not soon).

SELECTION OF PUBLICATIONS (last in, first out)

- Krysanov, E.Y., B. Nagy, B.R. Watters, A. Sember & S.A. Simanovsky. [Krysanov et al. newly disclose *Nothobranchius ugandensis* group karyotypes, stable on chromosome number (18) but not on arms (23 to

32) ; karyotypes of the 12 (5 already published, 7 newly disclosed) known members of the *Nothobranchius ugandensis* species group is reviewed, using a conventional cytogenetic protocol ; present investigation reveals a highly conserved diploid chromosome number ($2n = 36$) but a variable number of chromosomal arms (46–64, as fundamental number) among *ugandensis* superspecies components, implying a significant role of pericentric inversions and/or other types of centromeric shift in the karyotype evolution of the group {since Scheel has pioneeringly demonstrated in the 1960ies and 1970ies} ; within sampling, lowest number of banded chromosomes (18) is in *moameensis*, while *derhami* has the highest number of such chromosomes (28) ; all species exhibit different karyotype structures except for *attenboroughi* and *ugandensis*, but those 2 species are widely separated geographically and belong to different molecular clades ; importantly when superimposed onto a phylogenetic tree based on molecular analyses of 2 mitochondrial genes {previously published by another team} the cytogenetic characteristics do not show any correlation with molecular relationships within lineage ; while karyotypes of many other *Nothobranchius* spp. studied to date diversified mainly via chromosome fusions and fissions, the *ugandensis* species group maintains stable $2n$ and the karyotype differentiation seems to be constrained to intrachromosomal rearrangements and possible reasons for this difference in the trajectory of karyotype differentiation are discussed. 2023. C.C., <https://compcytogen.pensoft.net/article/97165/>] {Jean Huber, 1-February-2023} <°)))))>< <°)))))>< <°)))))><

- Polacik, M. & M. Vrtilek. [Polacik and Vrtilek disclose in *Nothobranchius furzeri* a new additional stage of pause in embryo development between diapause II and III ; up to present, for annual killifish, embryological development involves 3 strictly defined stages of pause (embryo may go dormant and stop developmental progression), i.e., diapause I, II, and III ; here the authors report on the potential of embryos in the case {at least} of *Nothobranchius furzeri* to enter an additional developmental stasis occurring in between the stages defined for diapause II and III ; that stasis occurs as a full developmental arrest in a stage previously regarded as non-diapausing or a markedly slowed down developmental rate (at least under usual laboratory incubation conditions, embryos entering that stasis are capable of normal hatching after they exit the dormancy and complete their development) ; therefore, there appears an increased, cryptic complexity of killifish diapause system. 2023. E.B.F., <https://link.springer.com/article/10.1007/s10641-023-01393-2>] {Jean Huber, 28-January-2023} <°)))))>< <°)))))>< <°)))))><
- Silva, J.P.M., B. Scorsim, G. Gonçalves, A. Frota, W.J. Graça, & A.V. Oliveira. [Silva et al. show as distinct sp. a new but threatened *Cnesterodon* population from rio Ivai, S.E. Brasil, near Paraguay border ; the livebearer genus *Cnesterodon* comprises 10 valid species occurring in major river basins of southern South America ; the authors along a field survey in rio Ivai basin, upper Paraná River system, suggest existence of a possible new species, based on morphological characters and they confirm isolation after a molecular study encoding mitochondrial genes Cytochrome c Oxidase, subunit I (COI), and NADH dehydrogenase subunit 2 (ND2) (however this possibly distinct species is already in serious danger of extinction since its habitat often suffers from human exploitation and its distribution seems restricted to only 2 sites, but it has disappeared in one of them. 2023. Zebrafish, <https://www.liebertpub.com/doi/abs/10.1089/zeb.2022.0052>] {Jean Huber, 28-January-2023} <°)))))>< <°)))))>< <°)))))><
- Soria, M.B., A.A.D. Gonzalez, R.H. Rodiles & C.P.G. Ornelas. [The Ornelas team reports on dramatically low population sizes (93 - 208 fish) per site of Mexican endangered *Tlaloc hildebrandi* ; an alarming conservation report, the species being more and more vulnerable due to accelerated human population growth in its distribution range and its low genetic diversity ; the authors conclude in order to preserve some of those populations, urgent conservation and management activities must be implemented, suggesting establishment of conservation areas in the Fogotico River (which has the best water quality and habitat conditions) and habitat restoration in protected areas of La Kisst and María Eugenia Mountain

Wetlands, where populations can be reintroduced, and proposing implementation of ex situ conservation programs to maintain genetic diversity and prevent local extinctions of most vulnerable populations {hopefully they are listened and followed}. 2023. E.S.R., <https://www.int-res.com/articles/esr2023/50/n050p017.pdf>] {Jean Huber, 28-January-2023} <°)))))>< <°)))))>< <°)))))><

- Axlid, E.G., P.D. Lewis, T.J. Carroll & M.R. Minicozzi. [Axlid et al. show air exposure improves maximum jump distance and endurance but reduce swimming performance in *Kryptolebias marmoratus* ; like all *Rivulus* sp., mangrove killifish (*Kryptolebias marmoratus*, previously in *Rivulus*) is a phenotypically plastic teleost fish that can spend considerable time on land and traverse the terrestrial realm through a behavior termed the tail-flip jump, as a transitional stage between fully aquatic and terrestrial lifestyles ; previous similar studies show that terrestrial acclimation and exercise improve tail-flip jumping performance are due to muscle remodeling ; the present authors, in a lab experiment, hypothesize (1) that terrestrial acclimation and exercise lead to physiological changes, such as changes to muscle fiber type, muscle mass distribution, or body shape, that optimize tail-flip jump distance and endurance while negatively impacting swimming performance in *marmoratus* and (2) that plasticity of the brain (which has been demonstrated in response to a variety of stimuli in *marmoratus*) allows terrestrial emersion and exercise to cause behavioral changes that promote survival and long-term reproductive success, using a series of measurements (critical swimming speed, tail-flip jump distance, terrestrial endurance, and undisturbed aquatic behavior of age- and size-matched, before and after a terrestrial exercise period (6 three-minute exercise sessions spread over 12 days, pushing fish to jump continuously) ; their hypotheses are confirmed but not all, notably in the relation of jump endurance and swimming performance. 2023. I.C.B., <https://academic.oup.com/icb/advance-article-abstract/doi/10.1093/icb/icad003/6988179>] {Jean Huber, 25-January-2023} <°)))))>< <°)))))>< <°)))))><
- MacPherson, N., C.P. Champion, L.K. Weir & A.C. Dalziel. [MacPherson et al. study in lab very rare natural hybridization between *Fundulus heteroclitus* and *diaphanus* with incomplete mating ; when species hybridize in nature, one F1 hybrid cross type often predominates and that asymmetry can arise from differences in a variety of reproductive barriers, but the relative roles and concordance of pre-mating, post-mating prezygotic, and post-zygotic barriers in producing those biases in natural animal populations have not been widely investigated ; the authors study a population of predominantly F1 hybrids between 2 killifish species (*Fundulus heteroclitus* and *diaphanus*) in which >95% of F1 hybrids have *diaphanus* mothers and *heteroclitus* fathers (standard hybridization). To determine why F1 hybrids (*heteroclitus* female and *diaphanus* male) are so rare, the authors test for asymmetry in pre-mating reproductive barriers (female preference and male aggression) at a common salinity (10 ppt) and post-mating, pre-zygotic (fertilization success) and post-zygotic (embryonic development time and hatching success) reproductive barriers at a range of ecologically relevant salinities (0, 5, 10, and 15 ppt, ca. half of marine contents) ; results show that *heteroclitus* females {actually in northern range it is *macrolepidotus* subspecies} prefer conspecific males, whereas *diaphanus* females do not, matching the observed cross bias in the wild ; naturally rare *heteroclitus* female and *diaphanus* male crosses also have lower fertilization success than all other cross types, and a lower hatching success than standard crosses at salinity found in hybrid zone center (10 ppt) ; furthermore, the naturally predominant (standard) crosses have a higher hatching success than *diaphanus* crosses at 10 ppt, which may further increase their relative abundance ; the authors conclude that a combination of incomplete mating, post-mating pre-zygotic and post-zygotic reproductive isolating mechanisms act in concert to produce hybrid asymmetry in this case. 2023. J.E.B., <https://onlinelibrary.wiley.com/doi/10.1111/jeb.14148>] {Jean Huber, 20-January-2023} <°)))))>< <°)))))>< <°)))))><
- Lopez, A.S., T.L. Nester, S. Perea & I. Doadrio. [Lopez et al. publish full mitogenome of *Aphanius iberus* (16,708 bp) with a GenBank Cyprinodontiformes phylogeny morphs-congruent ; the full mitogenome (a

circular double-stranded DNA sequence of 16,708 bp) is innovatively reconstructed and aligned against 83 Cyprinodontiformes and 2 outgroup taxa to identify the phylogenetic position of *iberus*; results show {in this limited tree} that *iberus* forms a sister group with *Orestias ascotanensis*, a Cyprinodontiformes native to South America in an Andean lake {note : after having hesitated within a preview paper, the authors select *Aphanius* for the genus of the emblematic killifish, like Esmaeili, Teimori, Zarei & Sayyadzadeh, 2020, followed by Killi-Data, unlike Freyhof. & Yogurtcuoglu, 2020, hence *Apricaphanius* is conservatively kept as a subgenus of *Aphanius*}. 2023. M.B.R., <https://link.springer.com/article/10.1007/s11033-022-08236-w>] {Jean Huber, 19-January-2023} <°))>< <°))>< <°))><

- Deacon, A.E., D.F. Fraser & A.D. Farrell. [Deacon et al. in lab study invasive potential of *Poecilia reticulata* (Guppy) vs. resident and predator (in the wild) *Rivulus hartii*; in northern range of Trinidad {a small South America island, off the coast of Venezuela}, where ephemeral conditions in small pool habitats lead to repeated colonization by 2 native species (guppies, *Poecilia reticulata*, and killifish, *Rivulus hartii*), the issue about role of biotic resistance and intraguild predation in natural, small-water habitats, is key {and already studied a lot with various behavioral aspects, ca. the 1990ies}; the author use horticultural containers under forest cover as tanks and test established populations of each species, notably if invasive species is successful to establish populations from a single female could be excluded by a resident intraguild predator, the killifish; results show that single founder Guppies (of course with internal fry) always fail to recruit in pools with resident oviparous killifish, hypothetically attributable to biotic resistance from killifish when resident; however, increased pressure of Guppies (introduction attempts and number of spms) greatly increases probability of successful invasion despite killifish {this confirms that Guppies are capable of being successful colonizers even in presence of a resident killifish, itself a predator of those livebearers}; the authors stress that while previous studies have shown that Guppies are strong colonizers outside of their native range, this may not always be the case when there are other small-bodied fish present like in Trinidad {and Venezuela}. 2022. F.B., <https://onlinelibrary.wiley.com/doi/abs/10.1111/fwb.14035>] {Jean Huber, 31-December-2022} <°))>< <°))>< <°))><
- Motamedi, M., A. Teimori, M.R. Esmaeili & H. Mostafavi. [Motamedi et al. study in lab scale development and regeneration potency of *Aphaniops hormuzensis* (156 days at room temperature); the authors in this lab innovative LHT experiment study scales development and regeneration using light and scanning electron microscopy; results show that full scale development begins 13 days post-hatching (dph) (total length= 8.5 mm) at level of caudal peduncle region and it extends anteriorly 26 dph (TL= 13.6 mm) at the area below Dorsal fin, with scales forming independently in head region from 33 dph (TL= 21.7 mm), and in abdominal region from 41 dph (TL= 25.8 mm); regarding regeneration, process starts in caudal peduncle 6 days after removal (dar), while at 16 dar, the microstructural features appear and the growth circles, a wide and oblong focus (focus length= 0.6 ± 0.05 µm), and lepidonts are also formed; at 36 dar, scale shape is gradually changed from circular to a polygon, and radii {of growth} are distinguishable in anterior field. 2022. J.E.Z., <https://onlinelibrary.wiley.com/doi/10.1002/jez.b.23185>] {Jean Huber, 31-December-2022} <°))>< <°))>< <°))><
- Zarei, F., A.H. Masoumi, S.M. Al Jufaili & H.R. Esmaeili. [Zarei et al. molecularly confirm 2 *Aphaniops* sp. in Oman, into 3 E.S.U. for *kruppi* and 2 E.S.U. for *stoliczkanus*, with new ranges; with 3 freshwater ecoregions, i.e., Oman mountains, southwestern Arabian coast and Arabian interior, Oman (sultanate) is considered to have the greatest freshwater biodiversity among Arabian Peninsula countries (all rather desertic); in Oman, killifish are represented by small, colorful, and mosquito-eating fish species of genus *Aphaniops* while 5 congeners are recorded are present in northern marginal basins of Indian Ocean {notably Iran}; the authors report several new populations in Oman and study them molecularly (mitochondrial COI data); results confirm presence of two species in Oman, *kruppi* {recently described} and *stoliczkanus* {with a huge distribution as far as Pakistan, and northwest India} and provide with details

(*kruppi* is represented by 2 northern and 1 southern management units, while *stoliczkanus* is divided into 2 evolutionary units worthy of additional taxonomic evaluation) {evolutionary systematic units or ESU being the entry to naming molecular sp., knowing that already *kruppi* is already phenotypically difficult to separate from variable *stoliczkanus*}. 2022. Biol., <https://link.springer.com/article/10.1007/s11756-022-01289-z>] {Jean Huber, 24-December-2022} <°))>< <°))>< <°))><

- Velazquez, E.V., S.E.C. Domínguez, M.J.C. de Anzueto & M.F.C. Maza. [Velazquez et al. show in all 13 species of *Profundulus* and *Tlaloc* presence of spicules on male scales and-or fins (not female) ; this is a fine morpho-study that discloses for the first time {curiously not discussed by Hoedeman a long time ago, the specialist of those micro-morphological characters, and describer of family name} a minute dimorphic character in family Profundulidae, endemic to Mesoamerican region (Belize; Guatemala; Honduras; Mexico; Salvador) and one of the least speciose within order Cyprinodontiformes, with only 13 valid species ; the authors using scanning electron microscope reveal presence of 1–10 spicules on surface of scales in male and its absence in female of all species analyzed ; numerous, small and thin spicules are also observed on middle rays of Anal and Dorsal fins of male {unfortunately the authors do not discuss their availability or not and when, along a LHT study or will do it in a further work}. 2022. A.I.P., <https://aiep.pensoft.net/article/93669/>] {Jean Huber, 20-December-2022} <°))>< <°))>< <°))><
- Vermeulen, F.B.M. [Vermeulen describes non ocellated *Rivulus adrianae* from Sipaliwini river, S.W. Suriname, hypothetically related to *micropus* group ; *Rivulus* sp. without supracaudal ocellus in female are quite rare whatever the lineage they belong to {subgenera, or genera, depending on authors} ; the new species, dedicated to author's beloved wife, formally named as Adriana, commonly known as Marjan, *Rivulus adrianae*, is described from a single locality, a small creek, tributary of the Sipaliwini river, drainage of Courantyne river in remote southwestern Suriname {not far from Guiana border} : it is diagnosed from other components of *micropus* very large group {ca. 40 sp. described}, with a huge distribution in northern and northeastern South America, by bright gold markings on sides without a series of longitudinal pattern of red spots (5 to up to 10 lines, usually 7, sometimes fused posteriorly) and of course lack of ocellus in male and female ; the author newly defines the *micropus* group by a relatively high number of LL scales, long predorsal distance with 73% - 82.3% S.L., Dorsal fin origin at a vertical between the base of the penultimate and last Anal fin ray and female usually with an ocellus, a short well rounded Caudal fin, and very short Ventral fins, compared to other groups of *Rivulus* in a large sense ; the new species is separated from other congeners of the region (apparently similar *xanthonotus*) or belonging to other lineages and from *Kryptolebias sepioides* (also without red pattern and ocellus) ; the new sp. is not sympatric but occurring very close to a population referable to *Rivulus stagnatus*. 2022. KDS, <https://www.killi-data.org/series-kd-2022-Vermeulen.php>] {Jean Huber, 6-December-2022} <°))>< <°))>< <°))><
- Gomez, S.M. & M.C. Camacho. [Gomez and Camacho show distinct preference in water temperature and refuge use for sympatric *Skiffia bilineata* and the invasive Guppy (*Poecilia reticulata*) ; climate change and biological invasions are two of the major threats to biodiversity {everybody now agrees if mankind is not a threat oneself} ; the twice lineated viviparous killifish, *Skiffia bilineata* {in Killi-Data, as *Neotoca bilineata*}, is an endangered Mexican topminnow that cohabits with invasive Guppies {due to misbehavior by aquarists} in some areas of central Mexico, where the alien takes advantage and is partly responsible for the decline of the Goodeidae, and refugia conservation is a possible solution ; the authors investigate how a change in temperature affects the refuge use and exploratory behaviors for both species. results show that temperature affects the 2 sp., while *Skiffia* sp. explore the rock more than Guppy invaders regardless of temperature scenario and that smaller fish spend more time performing exploratory behaviors than bigger ones {with implied risks}. 2022. N.S.R., <https://www.nature.com/articles/s41598-022-24755-9>] {Jean Huber, 4-December-2022} <°))>< <°))>< <°))><

- Drawert, H.A. [Drawert describes *Moema juanderibaensis* from southwestern Amazon basin, Bolivia, linked to *claudiae* ; after Costa's synonymization the authors counts 20 valid species in that Neotropical annual fish genus (including *Aphyolebias*) ; the new congener is from upper Río Madeira drainage with male distinguished from all congeners by combination of a color pattern consisting of oblique, sometimes chevron-like, irregular rows of red and light blue double-dots on body ; besides, it is noted in live male dark yellowish to golden Pectoral fins with no visible markings and only a lower marginal-submarginal pattern on Caudal fin (the very narrow black marginal line, may be intermittent or even absent) ; according to the author, *juanderibaensis* is closer to *obliquus* and *kenwoodi* (but all components of that group with *boticarioi*, *claudiae*, *kenwoodi*, *manuensis*, *obliquus*, *rubrocaudatus*, seem superficially similar in pattern {notes: as agreed with the author (pers. comm.), *Moema* in Costa's sense including *Aphyolebias* as a junior synonym, needs a major revision and that it is very possible that its current members actually belong to at least 2, if not 3, genera, then, anyway pending that revision, from today in Killi-Data the generic name *Aphyolebias* is downgraded to subgenus level of *Moema*, after the published works by this present author and previously Valdesalici, describing *juanderibaensis* and *kenwoodi*, and 2 species names are altered, *obliqua* instead of *obliquus*, *rubrocaudata*, instead of *rubrocaudatus* ; in a strict application of the ICZN code, the name should have been 'deribaorum' in accordance with the etymology}. 2022. N.I., <https://www.scielo.br/j/ni/a/XGLB7WpGCvGMqdxYbwZqWdy/>] {Jean Huber, 22-November-2022} <°)))))>< <°)))))>< <°)))))><
- Tian, D., A.H. Patton, B.J. Turner & C.H. Martin. [Tian et al. show alarming reduced diversity in genes of cave rare remaining *Cyprinodon diabolis* vs. other Death Valley congeners ; in general, populations with limited range are often threatened by inbreeding and reduced genetic diversity, which can reduce fitness and exacerbate population decline ; specifically this is the case of the Devils Hole pupfish (*Cyprinodon diabolis*), an iconic and critically endangered species with the smallest known range of any vertebrate ; the authors reports the variation of fish with severe declines in population size over the last 30 years and suffered major bottlenecks in 2007 and 2013, when the population is reduced to 38 and 35 individuals, respectively, and they molecularly analyze 30 re-sequenced genomes of desert pupfishes (several species) belonging to Death Valley and Ash Meadows and surrounding areas ; results show that *diabolis* is genetically suffering of extremely high levels of inbreeding and of an increased amount of potentially deleterious genetic variation in the Devils Hole pupfish as compared to other species, including unique, fixed loss-of-function alleles and deletions in genes associated with sperm motility and hypoxia (even using successfully a formalin-fixed museum specimen from 1980 with already highly inbred, prior to recent known bottlenecks) {notes : this is again a red alarm concerning *diabolis* following another recent {this issue of K-D Wassup} paper on ecological constraints ; another side result of this paper shows that *Cyprinodon diabolis* is molecularly related to *nevadensis* and *salinus*, the 2 present subspecies, *salinus* and *milleri*, being distant and possibly distinct sp., not anymore subspecies, but the authors do not tackle the issue}. 2022. PRSB, <https://royalsocietypublishing.org/doi/10.1098/rspb.2022.1561>] {Jean Huber, 8-November-2022} <°)))))>< <°)))))>< <°)))))><
- Fromm, D.W. [Fromm reviews bibliographic and systematic data of *Limia versicolor* {K-D maintained in *Poecilia*} with new live collection and photos ; this species although it is living from the well known Hispaniola island (Haiti + Santo Domingo) is poorly know and the author reviews total bibliographic and systematic data since description in 1866, with various reports, mostly misidentifications, an unpublished redescription by Rivas up to reviews in aquarium book syntheses and adds new collecting data near type locality, not very far from Santo Domingo capital city ; ecological data are given as substrate sand, fine gravel and larger stones, with in a few places terrestrial grasses growing into the water and in others a plant resembling Elodea, with shallow water less than knee deep in the deepest hole and few fish, very weak current. 2022. ALAJ, <https://www.livebearers.org>] {Jean Huber, 7-November-2022} <°)))))>< <°)))))><

- Tigert, L.R., P.A. Wright & A.J. Turko. [Tigert et al. show *Kryptolebias marmoratus* with severe aquatic hypoxia spend 50% of time out of water with gill lamellae changed ; this is a good example of an ecological transition from pure water fish to temporary invasion of land and this is facilitated by a link between habitat choice and phenotypic plasticity ; the authors study in lab amphibious (and clonal) fish *Kryptolebias marmoratus* if aquatic hypoxia, emergence behavior out of water and respiratory plasticity create this type of positive feedback loop that causes fish to spend increasing amounts of time on land ; results show that terrestrially-acclimated fish are more sensitive to aquatic hypoxia (emergence at higher PO₂) and are less hypoxia tolerant (shorter time to loss of equilibrium) relative to water-acclimated fish ; then the authors test if exposure to aquatic hypoxia causes fish to emerge frequently, to reduce gill surface area, and to become less hypoxia tolerant, and results show that fish exposed to severe aquatic hypoxia spend almost 50% of the time out of water and that coverage of the gill lamellae by an inter-lamellar cell mass almost double {during the short time of experiment, a remarkable sign of plasticity!}; besides, fish exposed to aquatic hypoxia that could emerge from water are also more sensitive to subsequent acute aquatic hypoxia and are less hypoxia tolerant than normoxia-exposed controls ; in conclusion, emergence behavior out of water induces further emergence behavior, driven by gill remodelling which reduces aquatic respiratory function {this is not only a learning process}. 2022. J.E.B., <https://journals.biologists.com/jeb/article-abstract/225/19/jeb244236/277275/Positive-feedback-promotes-terrestrial-emergence>] {Jean Huber, 23-October-2022} <°)))))>< <°)))))>< <°)))))><
- Garcia, K.N.C., J.A.G. Fuentes, N.S. Saleh, J. Pienaar & J.J.V. Zuñiga. [The Zuñiga team shows in Poeciliidae that emergence of placentotrophy is boosted by preceding evolution of more simultaneous broods ; among livebearing killifishes (of course outside mammalian vertebrates), placentotrophy is a post-fertilization nutrition of developing embryos of viviparous organisms by means of a maternal placenta ; the authors study, in the fish family Poeciliidae, evolutionary link between placentotrophy and superfetation (ability of females to simultaneously bear embryos at distinct developmental stages fertilized by 1 male, more often in the wild by several males), using 36 sp. (not congeners) {with variable capacities of superfetation and placentas, from null to strong, even if not as strong as purely viviparous like the Goodeidae} and they disclose that, along time for those very different fish, evolution of extensive placentotrophy (placentas becoming increasingly complex) is facilitated by a preceding evolution of more simultaneous broods (the opposite of superfetation) (note : the finding is important because in the past, superfetation or not and lecithotrophy or matrotrophy have been thought independent}. 2022. B.L., <https://royalsocietypublishing.org/doi/abs/10.1098/rsbl.2022.0173>] {Jean Huber, 10-October-2022} <°)))))>< <°)))))>< <°)))))><
- Chaudoin, A.L., O.G. Feuerbacher, S.A. Bonar & P.J. Barrett. [Chaudoin et al. video-monitor single location of remaining ca. 20 spms *Cyprinodon diabolis* to mimic critical algae, light, seiches ; alas the sole wild population of extremely endangered Devils Hole Pupfish, *Cyprinodon diabolis*, declines to fewer than 40 individuals in total several times (twice since 2006), prompting increased recovery efforts ; the authors address information deficits in reproductive behavior and ecology, from February–December 2010 and study environmental factors associated with spawning activity of *diabolis* in the wild with an underwater camera, continuously monitoring a portion of a shallow, submerged rock shelf used for spawning ; this is compared with water level and precipitation data provided by the U.S. National Park Service, with identified disturbances from earthquake-induced seiches and storm-induced flash floods ; modeling results show a 28% predictive power with algal cover, light energy, and seiches as the 3 strongest predictors among tested factors in spawning behavior of *diabolis* in the wild {note : this is very alarming because 2 of those factors are at least human independent or human dependent if the climate crisis is included and besides it is well known that the population secured in refugium are developing characters that are unknown in the cave}. 2022. I.H., <https://meridian.allenpress.com/copeia/article->

[abstract/110/3/502/485275/Environmental-Factors-in-Spawning-of-Wild-Devils](https://doi.org/10.3502/485275/Environmental-Factors-in-Spawning-of-Wild-Devils)] {Jean Huber, 10-October-2022}

- Malumbres, F.J., R. Sonnenberg & J.R. van der Zee. [Malumbres et al. describe 3 *Aphyosemion*, *losantosi*, *mitemelense*, *montealense*, first 2 cryptic to *maculatum*, last to *bochtleri* ; the new species are diagnosed by color pattern in male and by molecular data ; the authors present results of mtDNA analyses of most of known phenotypes of *Mesoaphyosemion* and ‘*Aphyosemion*’ *herzogi* species group {the authors consider *Mesoaphyosemion* as full distinct genus but without a proper revision splitting all *Aphyosemion* groups (leaving the other subgenera simply labeled with commas) and without new diagnoses and it is regrettable that the journal and reviewers accept (or let it be) usage of such a taxonomy without evidence and this is not accepted by all international databases (including Killi-Data) ; both *losantosi* and *mitemelense* have dark blotches on posterior sides and look like *maculatum* from Gabon, yet according to the authors, they are not closely related to that species, but rather {molecularly} to un-named and undefined various populations of aff. *cameronense* ; the third new sp., *montealense*, is in *Aphyosemion* *herzogi* species group with a similar distribution as *Mesoaphyosemion*, but with its northern boundary in southern Cameroun and it is distinguished from 2 described components of the same superspecies, *bochtleri* and *herzogi* by a combination of color pattern characters, with on unpaired fins and sides a green background and a caudal peduncle often yellow to golden and dark red irregular bars {however, Eberl has studied dozens of populations of that region in Gabon and the variability of pattern in male is huge, ref. Eberl, W. 2016. Die *Aphyosemion* *herzogi* -Artengruppe. D.K.G. (Deutsche Killifisch Gemeinschaft) Journal, 48 (1): 1-60, tabs., figs. [also translated in B.K.A. Killi-News, June-July 2016]}. 2022. Graell., <https://graellsia.revistas.csic.es/index.php/graellsia/article/view/701>] {Jean Huber, 30-September-2022}
- Garcia, M.E.R., M.L.V. de Lozano & M.B. De la Maza. [Garcia, Lozano and Maza describe *Fundulus herminiamatildae* from Nuevo Leon, with simple side bars, specific water temperature, close to *philpisteri* ; the new species is endemic from the Marmolejo stream, a head water tributary of Río Soto La Marina basin, in the municipality of Aramberri, Nuevo Leon, northeastern Mexico ; the authors stress water temperature is a determinant and important factor for the species differentiation, notably vs. its closest relative, *Fundulus philpisteri* ; it is diagnosed from other congeners by a large number of conspicuous and simple lateral bars, a body with high profile and some *minor* morphometrics {note: this article becomes a nomenclatural struggle where the authors bear no responsibility to the contrary to the editors of the journal, an ephemeral US venture (named American International Journal of Biology) who probably is gone bankrupt since its e-publication dated ‘late’ 2021, then claimed as January 2022 but without Zoobank number and never distributed, and accepted from US institutions as actually ICZN-published in Summer 2022, after the processing of Zoobank number by the first author herself, then dated herein as last day of Summer, but without formal confirmation by the editors (a complete unacceptable failure in void by them)}. 2022. AIJB, <https://aijbnet.com/vol-9-no-2-december-2021-abstract-2-aijb>] {Jean Huber, 22-September-2022}
- Groves, V., C.K. Elvidge & G.E. Brown. [Groves et al. show in *Anablepsoides hartii* {K-D maintained in *Rivulus*} distinct behaviors of small vs. large fish, facing cues ; it is well known that aquatic prey uses chemical alarm cues as public information signals to optimize behavioral decisions of congeners ; the authors study behavior of Hart’s *Rivulus* subject to conspecific or heterospecific alarm cues from donors that are either smaller or larger in size than the mean focal *Rivulus* size ; smaller fish reduce foraging in response to conspecific and heterospecific cues, regardless of signal donor size ; however, larger fish exhibit no reduction in foraging towards small conspecific cues and increase foraging towards small heterospecific cues ; besides, conspecific donors induce strong predator avoidance and exhibit stronger responses to large vs. small heterospecific cues ; the authors conclude that the value of alarm cues is shaped by interacting effects of receiver size and donor size. 2022. Behaviour,

<https://brill.com/view/journals/beh/aop/article-10.1163-1568539X-bja10185/article-10.1163-1568539X-bja10185.xml>] {Jean Huber, 21-September-2022} <°))>< <°))>< <°))><

- Berbel-Filho, W.M., G. Pacheco, A. Tatarenkov, G. Pacheco, M.G. Lira, C.G. Leaniz, C.M. Rodriguez-Lopez, S.M.Q. Lima & S. Consuegra. [Berbel-Filho et al. extend genus *Kryptolebias* genomic tree with new lineage (mito-nuclear discordance) from Espirito Santo, Brasil ; this concerns very southern population of *hermaphroditus* sensu Costa or *ocellatus* sensu Seegers {latest evidence, then privileged in Killi-Data} distinctive from *marmoratus* ; results show surprisingly that all individuals sequenced of *Kryptolebias* sp. 'ESP' have the same mtDNA haplotype commonly observed along the whole range of Brazilian selfing and clonal *Kryptolebias*, demonstrating an extensive history of introgression between the 2 lineages, despite their current sympatry and history of introgression ; the authors also confirm introgression between other species pairs in genus that have been recently reported to form hybrid zones ; the authors, using mtDNA and genome-wide nuclear sites, provide the first phylogenomic based hypothesis on the evolutionary relationships within the killifish genus *Kryptolebias*, in a single tree separating 3 sub-lineages, *marmoratus* from Florida, northern Cuba, Belize, Honduras, central *hermaphroditus* {or *ocellatus* sensu Seegers} {*bonairensis* and *heynei* is not discussed}, from Southern Cuba, Bahamas to northern Brasil, southern *hermaphroditus* {or *ocellatus* sensu Seegers} from northern to southern Brasil and 1 sublineage, hermaphroditic but not clonal *ocellatus* {or *caudomarginatus* sensu Seegers} only from southern Brasil and finally 1 sublineage, not hermaphroditic, with *brasiliensis* and *gracilis* {curiously the authors do not discuss the systematic status of *gracilis* although in their tree clearly *gracilis* is not distinguishable by haplotypes and appears a junior synonym of *brasiliensis*} 2022. M.P.E., <https://www.sciencedirect.com/science/article/abs/pii/S1055790322002305>] {Jean Huber, 31-August-2022} <°))>< <°))>< <°))><
- Mainero, H.M., S.M. Al-Jufaili, L. Jawad & B. Reichenbacher. [Mainero et al. study dimorphism in *Aphaniops stoliczkanus* strong in many morpho-characters, absent in meristics and otolith morph ; sex dimorphism is found in many organisms and obviously among members of Aphaniidae ; the authors study morphological variability within and between sexes of *Aphaniops stoliczkanus* ; results show sex dimorphism is significant in many body morphometric variables, but (almost) absent in meristic traits and otolith morphometry, is most marked in Anal and Dorsal fin lengths (longer in male), and in Anal and Dorsal fin positions (more anteriorly positioned in male) and does not alter the overall variance of population unless the character concerned is highly divergent {this seems the first time that a D/A deviation sex dimorphism is disclosed in Aphaniidae}. 2022. A.Z., <https://onlinelibrary.wiley.com/doi/pdf/10.1111/azo.12436>] {Jean Huber, 25-August-2022} <°))>< <°))>< <°))><
- Stockwell, C.A., Schmelzer M.R., Gillis B.E., Anderson C.M. & B.D. Wisenden. [Stockwell et al. test anti-predator responses to conspecific chemical alarm cues and water column position of CrE *Empetrichthys latos* ; this is a lab behavior study of reaction to predator ; the authors test Pahrump poolfish anti-predator responses to conspecific chemical alarm cues released from damaged epidermal tissue in terms of fish activity and water column position ; surprisingly killifish behavioral responses to conspecific alarm cues did not differ from responses to a dechlorinated tap water control and the authors tagged that behavior as naive {a behavior very different from the control species, the well-studied fathead minnow, a Cyprinidae sp. largely distributed in North America} ; then, negative result but interesting observation : anti-predator competence mediated by conspecific alarm cues does not seem to be a component of ecology of Pahrump poolfish. 2022. PRSBS, <https://royalsocietypublishing.org/doi/abs/10.1098/rspb.2022.0752>] {Jean Huber, 23-August-2022} <°))>< <°))>< <°))><
- Watters, B.R. & B. Nagy. [Watters and Nagy by comparing holotype and neotype of *Nothobranchius ocellatus* show differences paving way to heteromorphy with age ; the authors disclose important morphometric differences between original measurements of lost holotype and proposed neotype ;

besides, growth rate of the predatory sp. is relatively rapid and linear at 1.3–1.4 mm/day through first phase to sexual maturity at 7–8 weeks, followed by a marked flattening of the growth curve with, from 14 weeks, rates of only about 1.0 mm/week in male and 0.6 mm/week in female {note : this seems the first time such measurements are published in the genus}. 2022. Zootaxa, <https://www.biotaxa.org/Zootaxa/article/view/zootaxa.5175.5.1> [Jean Huber, 23-August-2022]

- Vences, M., D. Stützer, N.R. Raminosoa & T. Ziegler. [Vences et al. disclose most *Pachypanchax* sp. DNA barcodes in 2 clades, *arnoulti*, *sparksorum*, *Antsahalalina* new sp., then all others ; the authors genetically study 2860 mitochondrial sequences in COI, 16S and ND2 for many Malagasy fish (not only killifish) ; in aplocheiloid killifishes of genus *Pachypanchax*, most species from northern Madagascar have only low mitochondrial divergences {confirming previous fertile hybridization lab tests}, 3 of these species (*omalonotus*, *patriciae* and *varatraza*) being not reciprocally monophyletic ; there is also one genetically deviant lineage in a northern locality, suggesting a need for partial taxonomic revision of genus ; the authors also provides several new populations belonging to *Pachypanchax* and distribution schemes {note : species *nuchimaculatus*, never collected since description back in 1866 by Guichenot, is not discussed}. 2022. PlosOne, <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0271400> [Jean Huber, 16-August-2022]
- Bragança, P.H.N., D.U. Bellstedt, P.D.W. van der Merwe, F.P.D. Cotterill, B.R. Watters & A. Chakona. [Bragança et al. describe relatively slender *Nothobranchius balamaensis* from northern Mozambique, related to *kirki* and *wattersi* ; the new species *balamaensis*, attributed to Bragança & Chakona, is differentiated from congeners by its characteristic color pattern and molecular data ; it is similar in male pattern to *kirki* sharing characteristic deep red-orange color at basal, proximal, and medial zones of Caudal and Anal fins that grades to orange in distal zone {no congener is similar} ; *balamaensis* and *kirki* are separated by presence of a light blue to white band or series of irregular markings in male Anal fin for the latter ; *balamaensis* and *wattersi* are separated by slenderness of former (both *kirki* and *wattersi* are deep-bodied) ; the author present a comprehensive molecular tree of most components of genus, using 2 mitochondrial and 3 nuclear genes {that is incrementally better than all previous ones}. 2022. Zootaxa, <https://mapress.com/zt/article/view/zootaxa.5174.5.2> [Jean Huber, 12-August-2022]
- Güçlü, S. [Güçlü reports LHT of Turkey endangered *Anatolichthys meridionalis* {K-D maintained in *Aphanius*} with only 43% males, Summer breeding ; Anatolia has been a center in the diversity of *Anatolichthys* with at least 13 species today considered as possibly valid, all endangered (some extinct) ; . The study is one of the first studies on the growth of the species. On this occasion, in study, it was aimed to examine the growth parameters of the *Anatolichthys meridionalis* Akşiray, 1948 population, which is an endemic and endangered species in Anatolia ; population structure of that endemic species is studied in Gökpınar Spring (Dalaman River basin-Turkey) (37.34° N, 29.44° E), using 108 fish in October 2019 and September 2020 ; growth and reproductive characteristics are disclosed : males are made up 42.59%, females 57.41%, length-weight relationship and Von Bertalanffy growth equation are $W = 0.0112 L3.4638$, $R2 = 0.9793$, $Lt = 22.97$, respectively, average growth performance and condition factor are calculated as 1.21 and 1.84, respectively ; gonadosomatic index shows a maximum value (12.742%) in July and a minimum value (0.545%) in January {i.e. breeding maturity or not}, reproduction time is between July and September, mean fecundity and mean egg diameter are 147.94 ± 28.03 number/individual/year and 1.35 ± 0.04 mm, respectively, first maturation is at age I {year}, first maturity length (Lm) is at 23.95 mm for females and 22.04 mm for males ; the author conclude that *meridionalis* and its habitat Gökpınar Spring should be protected. 2022. I.W.B., <https://link.springer.com/article/10.1134/S1995082922050182> [Jean Huber, 2-August-2022]

- Campbell, D.C., D.T. Camak & K.R. Piller [The Piller team studies single nucleotide polymorphisms of nearly all *Crenichthys* pops, confirming an undescribed sp. out of *nevadae* ; oviparous genus *Crenichthys* (part of family Goodeidae, mostly viviparous) is an imperiled group of desert spring specialist fishes currently containing 2 species and 5 subspecies (*baileyi baileyi*, *baileyi albivallis*, *baileyi grandis*, *baileyi moapae*, *baileyi thermophilus*, *nevadae*), living {surviving} within only a few of the relictual springs distributed throughout USA Great Basin ; they are highly threatened by multiple forms of human disturbance, including habitat destruction, invasive species, and pollution ; this new study by the same research team {ref. Foster, K.L. & K.R. Piller. 2018. Disentangling the Drivers of Diversification in an imperiled Group of freshwater fishes (Cyprinodontiformes: Goodeidae). BMC Evolutionary Biology, 18 (1): 116, figs. [<https://bmcevolbiol.biomedcentral.com/articles/10.1186/s12862-018-1220-3>]}, further emphasizes that current taxonomy of *Crenichthys* needs re-evaluation and that genetic substructure may be present {meaning that molecular results are totally incongruent with morphological results into subspecies and *minor* pattern and proportions differentiations} ; results show again but with different makers that genetic divergence is strong between 2 groups within both *baileyi* and *nevadae* and that many populations are genetically similar, likely due to a combination of short divergence time and possible past admixture {note : will the sp. Duckwater be described as a new sp. and some current subspecies be lumped in the future?}. 2022. C.G., <https://link.springer.com/article/10.1007/s10592-022-01457-3>] {Jean Huber, 1-August-2022}
- Xie, Y., K.S. Kim, D. Powell, H.P. Espinosa, E.K. Moody & K.J. Roe. [Xie et al. genetically study 7 pops of *Gambusia marshi* in Coahuila, with 4 microsatellites clusters, an East-West division and 1 ESU ; valley of Cuatro Ciénegas in Coahuila, Mexico, has the highest degree of local endemism of any habitat in North America, despite arid desert climate, with permanent streams, wetlands, and springfed pools and 2 sub-basins divided by the central Sierra de San Marcos y Pinos ; the author study genetic diversity (notably microsatellites) of *Gambusia marshi*, a livebearer belonging to Poeciliidae ; results show 4 genetic populations with a major east-west division corresponding to the Sierra de San Marcos y Pinos, but most sample sites exhibit high levels of genetic differentiation despite recent gene flow between some of these locations ; population of Poza Anteojo is extremely divergent, and appears to represent a remnant of a different historical system considered an independent management unit (E.S.U.) {but it is not diagnosed and named}. 2022. ACMFE, <https://onlinelibrary.wiley.com/doi/pdf/10.1002/aqc.3858>] {Jean Huber, 19-July-2022}
- Kim, D.H. [Kim shows *Poropanchax normani* egg with a bundle of adhesive 1-3 mm filaments and envelope with 1 layer and 10 lamellar sublayers ; morphology of the fertilized egg of that African lampeye {presently named in genus *Poropanchax*, but temporarily} is studied with electron microscopy ; results show fertilized eggs with narrow perivitelline space are spherical and demersal, additionally containing small oil droplets in vitelline membrane and a bundle of adhesive filaments, approximately 1-3 mm in length and elastic, is present on one side of the fertilized egg (outer surface is smooth and adhesive filaments is originating at different location of surface of envelope distributed all around) ; size of fertilized egg is about 1.49 mm ; a peak-like structure formed of several straight wrinkles is observed around micropyle ; total thickness of egg envelope is approximately 12.5–14.5 μm, consisting of 2 distinct layers, an outer electron dense layer and an inner lamellar layer, further consisting of 10 sublayers of varying thicknesses {notes : the authors tag *normani* as belonging to the family Poeciliidae, but lately all African lampeyes are moved to Procatopodidae ; this is the most detailed embryological study of a lampeye, this is qualitative and should be enriched by a comparison with congeners, more advanced than pioneering works by N. Peters in the 1960ies}. 2022. A.M., <https://www.tandfonline.com/doi/pdf/10.1080/23766808.2022.2096533>] {Jean Huber, 19-July-2022}

- Anzueto, M.J.C., E.V. Velazquez, G.C. Ruiz, B.G.M. Cruz & S.E.C. Dominguez. [Anzueto et al. present morphological indexes linked to length-weight relationship of very endangered *Tlaloc hildebrandi* in Chiapas ; species *hildebrandi* is a small (<130 mm) freshwater fish endemic to Southwest Mexico and is listed as endangered through habitat loss and invasive species ; other *Tlaloc* sp. are *candalarius*, *labialis* and *portillorum* (also from nearby Guatemala) ; the authors disclose length-weight relationship, relative weight, and condition factor among different surviving populations of *hildebrandi*. 2022. N.B., <https://www.tandfonline.com/doi/full/10.1080/23766808.2022.2096533>] {Jean Huber, 15-July-2022}
- Dominguez, O.C., S.C. Valdez, A.B. Martinez & T.M.C. Muñoz. [Dominguez et al. show skipping diapause at 30°C, entering diapause at 18°C, and diapause at 25°C varying with female age in *Millerichthys* ; in the monotypic annual sp., *robustus*, living in temporary pools, all embryos at extreme temperatures follow a defined developmental pathway: skipping diapause at 30°C, and entering diapause at 18°C, both regardless of maternal age, and incubation medium ; however, maternal age, and incubation medium influence whether diapause is entered or not, and time arrested in diapause for embryos incubated at 25°C ; besides, embryos that are incubated in aqueous medium (not semi-dry) do skip diapause state more frequently at this intermediate temperature {this study is rather bold and unique since it has not previously explored in other annuals of Africa or South America}. 2022. D.D., <https://anatomypubs.onlinelibrary.wiley.com/doi/abs/10.1002/dvdy.515>] {Jean Huber, 4-July-2022}
- Bidaye, R.G., S.M. Al-Jufaili, E.A. Charmpila, L. Jawad, J. Vukic & B. Reichenbacher. [The Reichenbacher team studies 6 new pops *Aphaniops stoliczkanus* from Oman gulf coast, 2 of them as new haplotypes vs. 9 congeners ; Oman, small country along coast of East Africa, is now dwelling very close *Aphaniops* sp., with 1 name, *stoliczkanus* (extremely distributed up to Pakistan and India coast, but poorly known) ; the authors study otolith morphology, which is known to evolve on (small) ecological timescales and can signal the presence of cryptic lineages, for 6 Aphaniidae populations in northern Oman (from 2 coastal spots, Barka, Bahayez and 4 land-locked sites, Al Khoud, Al Amirat, Nakhal, Saroor) ; besides, variation in pigmentation, disparities in body shape are surveyed, linked with otolith variability and can be associated with distinctive environmental conditions ; the unique otolith shape of *stoliczkanus* from a hot sulphuric spring (Nakhal, not near coast) suggests that a cryptic lineage may have emerged there ; the authors also disclose partial cytb sequences obtained for Barka samples and compare it with sequence data available from GenBank to confirm identification as *stoliczkanus* and separation from 10 other Aphaniidae in GenBank. 2022. A.Z., <https://onlinelibrary.wiley.com/doi/full/10.1111/azo.12428>] {Jean Huber, 30-June-2022}
- Garcez, D.K., Barbosa, C., Fernandes, M.O., Volcan M.V., Robe L.J. [Garcez et al. molecularly study 42 sp. (*Austrolebias*, *Cynapoecilus*) from Patos-Mirim Lagoon System (Brasil) with conservation issues ; the genetic study from one mitochondrial gene concerns 42 species or evolutionary lineages (ESUs) collected in 144 ponds ; among the evaluated species and lineages, 9 sp. all in *Austrolebias* genus are shown as strictly endemic (*camaquensis*, *juanlangi* and *litzi* [unnamed subgenus], *prognathus* [*Megalebias* subgenus], *jaegari* and aff. *gymnoventris* [*Gymnolebias* subgenus], *luteoflammulatus* and *quirogai* [*Acantholebias* subgenus], and *univentripinnis* [*Austrolebias* subgenus]), and 55 of the evaluated ponds show records of sympatry of killifish ; a tree topology is generated by Bayesian analysis for the set of COI and ENC1 sequences ; patterns of lineage richness shows an heterogeneous distribution of annual fish along the sampling area, concentrated in 4 larger areas, located on the Southeast and on the Southwest margins of the Patos Lagoon and on the Southeast and Center-West margins of the Mirim Lagoon {note : a revision of *Austrolebias* subgenera with new names is then expected in following years}. 2022. B+C, <https://link.springer.com/article/10.1007/s10531-022-02441-6>] {Jean Huber, 27-June-2022}

- Esmaeili, G., A. Habibi & H.R. Esmaeili. [Esmaeili et al. report 4 *Aphanius* (*farsicus*, *pluristriatus*, *isfahanensis*, *sophiae*) in Iran Qanats (underground irrigation systems) ; already in ancient Iran, in order to improve water resources management for humans, invention of Qanat decisively maintains the availability of water, being an artificial underground system and subterranean tunnel-wells system where water flows through gravity on a slight slope in arid and semi-arid regions, at least 5,000 years ago (and copied throughout much of the Middle East and extended into North Africa, Spain, Italy, and South Asia ; curiously fish of about 42 species (36 native and alas 6 exotic species, including Poeciliidae) belonging to 20 genera, 7 families, and 2 orders, has opportunistically invaded those artificial and specialized biotopes ; natives of 4 Aphaniidae species (9.52%) are disclosed showing a wide tolerance of environmental conditions. 2022. IJAB, <http://www.ij-aquaticbiology.com/index.php/ijab/article/view/1515/672>] {Jean Huber, 26-June-2022}
- Aceves E.F., Santiago A.A., Camacho M.C. [Aceves et al. show invasive behavior (bold females) of livebearer *Poeciliopsis gracilis* in Mexico vs. native (endangered) species ; biological invasions are considered the second major cause of plant, amphibian, reptile, and mammal loss worldwide and they are far too much frequent, due to human errors, e.g. here in Mexican Central Plateau, like its cousin species the guppy (*Poecilia reticulata*) ; to explain the invasive success, the authors experiment the emergence latency and latency to locate food in simple and complex environments of *Poeciliopsis gracilis* in lab, including the effect of their size and sex ; results are that for both sexes, bigger fish emerge less times and take longer to do so, but females are faster to exit the refuge than males ; besides no differences in behavior for *Poeciliopsis gracilis* in complex or simple habitats, and no significant differences between sex, size or treatment in the time to locate food after exiting the refuge are found ; then, the benefit of faster emergence from the refuge in *Poeciliopsis gracilis* in novel environments would be higher for females {hence who being bolder are the determinant of invasive success, to explore novel environments} 2022. PlosOne, <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0269384>] {Jean Huber, 26-June-2022}
- Özpiçak, M., S. Saygin, S. Yilmaz & N. Polat. [Özpiçak et al. disclose *Anatolichthys marassantensis* {K-D maintained as a synonym of *chantrei*} in Simenlik-Akgöl lagoon, N. Turkey ; this is a good discovery (and morphological data of dozens of specimens are provided) for those congeners with higher and higher conservation risks {note: the authors ignore literature where validity of *marassantensis* is at least questioned and even its taxonomic status is synonymized with *chantrei*, due to the Gordian knot arisen from type locality of *danfordii*}. 2022. A.R., <http://aquatres.scientificwebjournals.com/tr/download/article-file/2376752>] {Jean Huber, 26-June-2022}

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