

CLOFFAR - update 4 - supplement to Checklist of the Freshwater Fishes of Argentina.

Stefan Koerber¹, Thomas O. Litz² & Juan Marcos Mirande³

¹ Friesenstr. 11, 45476 Muelheim, Germany, pecescrilloos@koerber-germany.de

² Friedhofstr. 8, 88448 Attenweiler, Germany, pecesuruguayos@aol.com

³ CONICET - Fundación Miguel Lillo, Miguel Lillo 251, 4000 San Miguel de Tucumán, Argentina.
mcmirande@gmail.com

Remarks on this update

Since the last update, published in January 2017, we have registered again a dozen of changes influencing the list of freshwater fishes found in Argentina. The total number of species has gone up to 548 caused by five first records, four new species, one new subspecies, and resting two synonymizations.

This time there is not a single publication which included massive changes to report on, as happened in the earlier updates, but all twelve changes result from individual papers. Nevertheless, the paper of Craig et al. is worth to be mentioned as special. For more than a decade *Gymnotus carapo* has been considered not to be present in Argentina and with the present paper the authors not only re-confirm this species, but do so by describing a new subspecies from the río Iguazú in Misiones.

	CLOFF AR	update # 1	update # 2	update # 3	update # 4	total
Myliobatiformes	6					6
Acipenseriformes	1					1
Clupeiformes	6					6
Cypriniformes	5					5
Characiformes	183		4	4	2	193
Siluriformes	200	1	4	11	2	217
Gymnotiformes	15				1	16
Galaxiiformes	4					4
Salmoniformes	6					6
Atheriniformes	4	1				5
Cyprinodontiformes	30			-3	1	28
Beloniformes	2					2
Synbranchiformes	1					1
"Perciformes"	3					3
Centrarchiformes	3					3
Mugiliformes	2					2
Cichliformes	41	2	-1	2	2	46
Pleuronectiformes	2					2
Ceratodontiformes	1					1
total	515	4	7	14	8	548

We have decided to adopt the systematical structure to the latest knowledge as published by Mirande (2017) with the exception of the Sciaenidae which we leave tentatively in "Perciformes". The counts of species per order from the original CLOFFAR and the first three updates have been respectively transferred to the new hierarchy. We refrain from following Costa (2016) in the new arrangement of rivulids for the reasons provided by Koerber et al. (2017: 70).

	formerly in	now in
Potamotrygonidae	Rajiformes	Myliobatiformes
Galaxiidae	Osmeriformes	Galaxiiformes
Mugilidae	Perciformes	Mugiliformes
Cichlidae	Perciformes	Cichliformes
Percichthyidae	Perciformes	Centrarchiformes
Lepidosirenidae	Lepidosireniformes	Ceratodontiformes

The aim of this list of species of freshwater fishes from Argentina is to provide an updated supplement to the 'Checklist of the Freshwater Fishes of Argentina (CLOFFAR)' published by Mirande & Koerber (2015). Only those species are listed here that have not been included in that paper and earlier updates or which have undergone systematical changes since then. Changes in this sense may be new species, synonymies, revalidations, new combinations, first records etc., every factor which might modify the data published at present. Information already provided in CLOFFAR is not repeated herein.

This list is not a publication in the sense of the 'Code' (ICZN) and expressions as 'new species', 'new combination' etc. are only used to highlight changes in comparison with the original CLOFFAR.

'NEW' after species names indicates that this record has not been included in previously published updates. 'Info' provides hyperlinks to the individual species accounts in www.pecescrilloos.de, usually with figures and some data from the respective publication.

class **ACTINOPTERYGII**

order **CHARACIFORMES**

family **Parodontidae**

Apareiodon

A. vittatus Garavello, 1977

first record for Argentina from the Río Iguazú
published in Casciotta et al. (2016)

[info](#)

family **Anostomidae**

Megaleporinus

M. macrocephalus (Garavello & Britski, 1988)

new combination from *Leporinus*
published in Ramirez et al. (2017)

[info](#)

M. obtusidens (Valenciennes, 1837)

new combination from *Leporinus*
published in Ramirez et al. (2017)

[info](#)

family **Erythrinidae**

Hoplias

H. mbigua Azpelicueta, Benítez, Aichino & Mendez, 2015

new species from the Paraná basin in Misiones
published in Azpelicueta et al. (2015)
type locality Misiones, río Paraná, Nemesio Parma

[info](#)

H. misionera Rosso et al., 2016

new species from the Uruguay and Paraná basins
published in Rosso et al. (2016)
type locality Misiones, río Acaraguá, Villa Bonita

[info](#)

family **Serrasalminidae**

Myloplus

M. tiete (Eigenmann & Norris, 1900)
 new combination from *Myleus* [info](#)
 published in Ortí et al. (2008)

family **Characidae**

subfamily Bryconinae

Brycon

B. hilarii (Valenciennes, 1850) NEW
 confirmed for Argentina [info](#)
 published in Lima (2017)
 original *Chalceus hilarii*
 synonyms *Megalobrycon erythropterus* Cope, 1872
Brycon microlepis Perugia, 1897

subfamily Characinae

Characinae considered not to be distributed in Argentina

Cynopotamus gulo Cope, 1870 | in CLOFFAR sub *Galeocharax knerii* | Giovannetti et al. (2017) [info](#) NEW

subfamily Stevardiinae

tribus Diapomini

Bryconamericus

B. indefessus (Mirande, Aguilera & Azpelicueta, 2006)
 new combination from *Nantis* [info](#)
 published in Thomaz et al. (2015)

Diapoma

D. alburnus (Hensel, 1870) [info](#)
 new combination from *Cyanocharax*
 published in Thomaz et al. (2015)

D. guarani (Mahnert & Géry, 1987) [info](#)
 new combination from *Hyphessobrycon*
 published in Thomaz et al. (2015)

D. lepiclastus (Malabarba, Weitzman & Casciotta, 2003)
 new combination from *Cyanocharax*
 published in Thomaz et al. (2015)

D. obi (Casciotta, Almirón, Piálek & Rican, 2012)
 new combination from *Cyanocharax*
 published in Thomaz et al. (2015)

D. pyrrhopteryx Menezes & Weitzman, 2011 [info](#)
 first record for Argentina from the Upper Uruguay basin
 published in Almirón et al. (2016)

D. uruguayense (Messner, 1962)
 new combination from *Cyanocharax*
 published in Thomaz et al. (2015)
 remarks not *uruguayensis* as Diapoma is neuter

Piabarchus

- P. stramineus** (Eigenmann, 1908)
 new combination from *Bryconamericus*
 published in Thomaz et al. (2015) [info](#)

Piabina

- P. thomasi** (Fowler, 1940)
 new combination from *Bryconamericus*
 published in Thomaz et al. (2015) [info](#)

tribus

Eretmobryconini

Markiana

- M. nigripinnis** (Perugia, 1891)
Tetragonopterus anomalus is a jr. synonym
 published in Carvalho & Santos (2015) [info](#)
 synonym *Tetragonopterus anomalus* Steindachner, 1891
 type locality *anomalus*: Corrientes, Río Paraná

subfamily

Astyanax clade**Astyanax**

- A. bifasciatus** Garavello & Sampaio, 2010
 first record for Argentina from the Río Iguazú
 published in Casciotta et al. (2016) [info](#)
- A. dissensus** Lucena & Thofehr, 2013
 first record for Argentina from río Uruguay in Corrientes
 published in Terán et al. (2016) [info](#)
- A. dissimilis** Garavello & Sampaio, 2010
 first record for Argentina from the Río Iguazú
 published in Casciotta et al. (2016) [info](#)
- A. lacustris** (Lütken, 1875)
Astyanax asuncionensis is a jr. synonym [info](#)
 published in Lucena & Soares (2016)
 original *Tetragonopterus lacustris*
 synonyms *Astyanax altiparanae* Garutti & Britski, 2000
A. bimaculatus asuncionensis Géry, 1972
A. bimaculatus paraguayensis Eigenmann, 1921
Tetragonopterus jacuhiensis Cope, 1894
- A. powelli** Terán, Butí & Mirande, 2017 NEW
 new species from the arheic of Río Sucuma, Catamarca
 published in Terán et al. (2017) [info](#)
- A. xiru** Lucena, Castro & Bertaco, 2013
 first record for Argentina from río Uruguay basin in Misiones
 published in Casciotta et al. (2016) [info](#)

subfamily

Hemigrammus clade**Hemigrammus**

- H. tridens** Eigenmann, 1907 NEW
 first record for Argentina from Río Paraná basin in Corrientes
 published in Azpelicueta & Koerber (2017) [info](#)

order **SILURIFORMES**

family **Clariidae**

Clarias

C. gariepinus (Burchell, 1822)
 first record for Argentina from the Río Iguazú
 published in Casciotta et al. (2016) [info](#)
 original *Silurus gariepinus*
 remarks introduced exotic species
 origin Africa

family **Pimelodidae**

Steindachneridion

S. melanodermatum Garavello, 2005
 first record for Argentina from the Río Iguazú
 published in Casciotta et al. (2016) [info](#)

family **Pseudopimelodidae**

Microglanis

M. carlae Vera Alcaraz, da Graça & Shibatta, 2008
 first record for Argentina from the Pre-Delta National Park,
 lower Paraná basin [info](#)
 published in Almirón et al. (2015)

M. nigrolineatus Terán, Jarduli, Alonso, Mirande & Shibatta, 2016
 new species from the río Bermejo basin in Salta [info](#)
 published in Terán et al. (2016)

family **Heptapteridae**

Heptapterus

H. mandimbusu Aguilera, Benitez, Terán, Alonso & Mirande, 2017
 new species from the Uruguay basin in Misiones [info](#) NEW
 published in Aguilera et al. (2017)

Pimelodella

P. mucosa Eigenmann & Ward, 1907
 first record for Argentina from swamps in Formosa [info](#)
 published in Aguilera & Azpelicueta (2015)

Rhamdella

R. longiuscula Lucena & da Silva, 1991
 first record for Argentina from the Uruguay basin in Misiones [info](#)
 published in Benitez et al. (2016)

Rhamdia

R. branneri Haseman, 1911
 first record for Argentina from the Río Iguazú [info](#)
 published in Casciotta et al. (2016)

R. voulezi Haseman, 1911
 first record for Argentina from the Río Iguazú
 published in Casciotta et al. (2016) [info](#)

Hepteteridae considered not to be distributed in Argentina

Pimelodella howesi Fowler, 1940 | in CLOFFAR sub *P. howesi* | Aguilera & Azpelicueta (2015) [info](#)

family **Aspredinidae**

Amaralia

A. oviraptor Friel & Carvalho, 2016
 new species from the Paraguay and Paraná basins
 published in Friel & Carvalho (2016) [info](#)

Xyliphius

X. barbatus Alonso de Arámburu & Arámburu, 1962
Xyliphius lombarderoi is a jr. synonym
 published in Carvalho et al. (2017) [info](#) NEW
 synonyms *X. lombarderoi* Risso & Risso, 1964

family **Trichomycteridae**

subfamily Stegophilinae

Pseudostegophilus

P. maculatus (Steindachner, 1879)
 new combination from *Parastegophilus*
 published in DoNascimento (2015) [info](#)

subfamily Trichomycterinae

Silvinichthys

S. pachonensis Fernández & Liotta, 2016
 new species from San Juan
 published in Fernández & Liotta (2016) [info](#)

S. pedernalensis Fernández, Sanabria & Quiroga, 2017
 new species from San Juan
 published in Fernández et al. (2017) [info](#) NEW

Trichomycterus

T. mboyacy Wosiacki & Garavello, 2004
 first record for Argentina from the Río Iguazú
 published in Casciotta et al. (2016) [info](#)

T. stawiarski (Miranda Ribeiro, 1968)
 first record for Argentina from the Río Iguazú
 published in Casciotta et al. (2016) [info](#)
 original *Pygidium stawiarski*

T. ytororo Terán, Ferrer, Benitez, Alonso, Aguilera & Mirande, 2017
 new species from the Paraná basin in Misiones
 published in Terán et al. (2017) [info](#) NEW

family **Callichthyidae**

subfamily Corydoradinae

Corydoras

- C. ehrhardti** Steindachner, 1910
 first record for Argentina from the Río Iguazú in Misiones [info](#)
 published in Cardoso et al. (2015)
 synonym *Corydoras meridionalis* Ihering, 1911
- C. paleatus** (Jenyns, 1842)
 remarks correction of spelling: in CLOFFAR as *palaetus*

family **Loricariidae**

subfamily Hypoptopomatinae

tribus Otothyriini

Hisonotus

- H. yasi** (Almirón, Azpelicueta & Casciotta, 2004)
 new combination from *Epactionotus* [info](#)
 published in Casciotta et al. (2016)

subfamily Hypostominae

tribus Ancistrini

Ancistrus

- A. mullerae** Bifi, Pavanelli & Zawadzki, 2009
 first record for Argentina from the Río Iguazú [info](#)
 published in Casciotta et al. (2016)

tribus Hypostomini

Hypostomus

- H. formosae** Cardoso, Brancolini, Paracampo, Lizarralde, Covain & Montoya-Burgos, 2016
 new species from the Río Paraguay basin in Formosa [info](#)
 published in Cardoso et al. (2016)

subfamily Loricariinae

tribus Loricariini

Rineloricaria

- R. steinbachi** (Regan, 1906)
 new combination from *Ixinandria* [info](#)
 published in Covain et al. (2016)

order **GYMNOTIFORMES**

family **Gymnotidae**

Gymnotus**G. carapo** Linnaeus, 1758

again confirmed for Argentina as a species based on a new subspecies *G. c. australis* Craig, Crampton & Albert, 2017 from the Río Iguazú basin in Misiones published in Craig et al. (2017)

[info](#)

NEW

order **ATHERINIFORMES**family **Atherinopsidae**

subfamily Atherinopsinae

tribus Sorgentinini

Odontesthes**O. humensis** de Buen, 1953

first record for Argentina from the Río de la Plata published in Bogan et al. (2015) synonym *Odontesthes guazu* de Buen, 1953

[info](#)order **CYPRINODONTIFORMES**family **Rivulidae**

subfamily Cynolebiasinae

tribus Cynolebiasini

Austrolebias**A. bellottii** (Steindachner, 1881)

Austrolebias apaii is a jr. synonym published in Calviño et al. (2016)

[info](#)**A. robustus** (Günther, 1883)

Austrolebias nonoiuliensis is a jr. synonym published in Calviño et al. (2016)

[info](#)

subfamily Rivulinae

tribus Neofundulini

Neofundulus**N. paraguayensis** (Eigenmann & Kennedy, 1903)

Neofundulus ornatipinnis is a jr. synonym published in Calviño et al. (2016)

[info](#)

tribus Plesiolebiasini

Papiliolebias**P. bitteri** (Costa, 1989)

Papiliolebias hatinne is a jr. synonym published in Calviño et al. (2016)

[info](#)

family

Poeciliidae

subfamily

Poeciliinae

tribus

Cnesterodontini

Phalloceros

P. harpagos Lucinda, 2008
 first record for Argentina from the Río Iguazú
 published in Casciotta et al. (2016)

[info](#)

tribus

Gambusiini

Gambusia

G. holbrooki Girard, 1859
 first record for Argentina
 published in Cabrera et al. (2017)

[info](#)

NEW

order

CICHLIFORMES

family

Cichlidae

subfamily

Cichlinae

tribus

Geophagini

Crenicichla

C. iguassuensis Haseman, 1911
 confirmed for Argentina from the Río Iguazú
 published in Casciotta et al. (2016)

[info](#)

C. tapii Piálek, Dragová, Casciotta, Almirón & Říčan, 2015
 new species from the Río Iguazú in Misiones
 published in Piálek et al. (2015)

[info](#)

C. tuca Piálek, Dragová, Casciotta, Almirón & Říčan, 2015
 new species from the Río Iguazú in Misiones
 published in Piálek et al. (2015)

[info](#)**Geophagus**

G. brasiliensis (Quoy & Gaimard, 1824)
 first record for Argentina from the Río Iguazú
 published in Casciotta et al. (2016)
 original *Chromis brasiliensis*
 remarks introduced exotic species
 origin coastal basins in East and Southeast Brazil

[info](#)**Gymnogeophagus**

G. lipokarenos Malabarba, Malabarba & Reis, 2015
 first record for Argentina from the Río Uruguay basin
 published in Casciotta et al. (2017)

[info](#)

NEW

G. terrapurpura Loureiro, Zarucki, Malabarba & González-Bergonzoni, 2016
 first record for Argentina from the Río Uruguay basin
 published in García et al. (2017)

[info](#)

NEW

Cichlidae considered not to be distributed in Argentina

Geophagus gymnogonys Hensel, 1870 | in CLOFFAR sub *Gymnogeophagus* g. | Malabarba et al. (2015)

[info](#)

References

- Aguilera, G. & M. Azpelicueta (2015): First record of *Pimelodella mucosa* Eigenmann & Ward, 1907 (Siluriformes: Heptapteridae) in Formosa, Argentina and comments on the geographical distribution of *P. howesi* Fowler, 1940. *CheckList* 11 (5/1757): 1-3
- Aguilera, G., M. Benitez, G.E. Terán, F. Alonso & J.M. Mirande (2017): A new species of *Heptapterus* Bleeker 1858 (Siluriformes, Heptapteridae) from the Uruguay River Basin in Misiones, Northeastern Argentina. *Zootaxa* 4299 (4): 572-580
- Almirón, A., J. Casciotta, L. Ciotek & P. Giorgis (2015): Guía de los peces del Parque Nacional Pre-Delta. Administración de Parques Nacionales. 2nd. edition. Administración de Parques Nacionales. 299 p.
- Almirón, A., J. Casciotta, Š. Říčanová, K. Dragová, L. Piálek & O. Říčan (2016): First record of *Diapoma pyrropteryx* Menezes & Weitzman, 2011 (Characiformes: Characidae) from freshwaters of Argentina. *Ichthyological Contributions of PecesCriollos* 40: 1-3
- Azpelicueta, M., M.F. Benítez, D.R. Aichino & D.C.M. Mendez (2015): A new species of the genus *Hoplias* (Characiformes, Erythrinidae), a tararira from the lower Paraná River, in Misiones, Argentina. *Acta zoológica lilloana* 59 (1-2): 71-82
- Azpelicueta, M. & S. Koerber (2017): *Hemigrammus tridens* Eigenmann (Characiformes, Characidae): first records of a small tetra from the Paraná River basin. *Revue suisse de Zoologie* 124 (1): 67-71
- Benitez, M.F., A.E. Almirón, J.R. Casciotta & M. Azpelicueta (2016): First records of *Rhamdella longiuscula* from Argentina and new localities for *Rhamdella cainguae* (Siluriformes: Heptapteridae). *CheckList* 12 (1/1844): 1-5
- Bogan, S., V. Bauni, J.M. Meluso, E. Carini & M. Homberg (2015): *Odontesthes humensis* de Buen, 1953 (Atheriniformes: Atherinopsidae: Sorgentinini) from the La Plata River, first record from Argentina. *Ichthyological Contributions of PecesCriollos* 38: 1-5
- Cabrera, M.B., S. Bogan, P. Posadas, G.M. Somoza, J.I. Montoya-Burgos & Y.P. Cardoso (2017): Risks associated with introduction of poeciliids for control of mosquito larvae: first record of the non-native *Gambusia holbrooki* in Argentina. *Journal of Fish Biology* 91 (2): 704-710
- Calviño, P., D.O. Naldin, M.J. Serio & H.L. López (2016): Colección ictiológica del Museo de La Plata: la familia Rivulidae. *ProBiota - Serie técnica y didáctica* 36: 1-21
- Cardoso, Y.C., S. Bogan, J.M. Meluso & V. Bauni (2015): Presencia de *Corydoras ehrhardti* Steindachner, 1910 en Argentina. *Historia Natural* 5 (1): 21-27
- Carvalho, F.R., R.E. Reis & M.H. Sabaj (2017): Description of a new blind and rare species of *Xylophius* (Siluriformes: Aspredinidae) from the Amazon basin using high-resolution computed tomography. *Copeia* 105 (1): 14-28
- Carvalho, F.R. & A.C. Santos (2015): Taxonomic status of *Tetragonopterus anomalus* Steindachner, 1891, an inquiring species in Characidae (Teleostei: Characiformes). *Zootaxa* 4018 (1): 146-150
- Casciotta, J., A. Almirón, L. Ciotek, P. Giorgis, O. Říčan, L. Piálek, K. Dragová, Y. Croci, M. Montes, J. Iwaszkiv & A. Puentes (2016): Visibilizando lo invisible. Un relevamiento de la diversidad de peces del Parque Nacional Iguazú, Misiones, Argentina. *Historia Natural* 6 (2): 5-77
- Casciotta, J., A. Almirón, Š. Říčanová, K. Dragová, L. Piálek, F. Alonso & O. Říčan (2017): First record of *Gymnogeophagus lipokarenos* Malabarba, Malabarba & Reis, 2015 (Teleostei: Cichliformes) from Argentina. *Ichthyological Contributions of PecesCriollos* 54: 1-5
- Casciotta, J., A. Almirón, Š. Říčanová, K. Dragová, L. Piálek & O. Říčan (2016): First record of *Astyanax xiru* Lucena, Castro & Bertaco, 2013 (Characiformes: Characidae) from the río Uruguay basin of Argentina. *Ichthyological Contributions of PecesCriollos* 42: 1-4
- Costa, W.J.E.M. (2016): Comparative morphology and classification of South American cynopoeciline killifishes (Cyprinodontiformes: Aplocheilidae), with notes on family-group names used for aplocheiloids. *Vertebrate Zoology* 66 (2): 125-140
- Covain, R., S. Fisch-Muller, C. Oliveira, J.H. Mol, J.I. Montoya-Burgos & S. Dray (2016): Molecular phylogeny of the highly diversified catfish subfamily Loricariinae (Siluriformes, Loricariidae) reveals incongruences with morphological classification. *Molecular Phylogenetics and Evolution* 94 (B): 492-517
- Craig, J.M., W.G.R. Crampton & J.S. Albert (2017): Revision of the polytypic electric fish *Gymnotus carapo* (Gymnotiformes, Teleostei), with descriptions of seven subspecies. *Zootaxa* 4318 (3): 401-438
- DoNascimento, C. (2015): Morphological evidence for the monophyly of the subfamily of parasitic catfishes Stegophilinae (Siluriformes, Trichomycteridae) and phylogenetic diagnoses of its genera. *Copeia* 103 (4): 933-960
- Fernández, L. & J. Liotta (2016): *Silvinichthys pachonensis*, a new catfish from high altitude, with a key to the species of the genus (Siluriformes: Trichomycteridae). *Ichthyological Exploration of Freshwaters* 27 (4): 375-383
- Fernández, L., E.A. Sanabria & L.B. Quiroga (2017): Description of *Silvinichthys pedernalensis* n. sp. (Teleostei, Siluriformes) from the Andean Cordillera of southern South America. *Animal Biodiversity and Conservation* 40 (1): 41-47
- Friel, J.P. & T.P. Carvalho (2016): A new species of *Amaralia* Fowler (Siluriformes: Aspredinidae) from the Paraná-Paraguay River Basin. *Zootaxa* 4088 (4): 531-546

- García, I., A. Puentes, G.E. Terán, S. Koerber & F. Alonso (2017): First record of *Gymnogeophagus terrapurpura* (Teleostei: Cichliformes) from Argentina. *Ichthyological Contributions of PecesCriollos* 52: 1-4
- Giovannetti, V., M. Toledo-Piza & N.A. Menezes (2017): Taxonomic revision of *Galeocharax* (Characiformes: Characidae: Characinae). *Neotropical Ichthyology* 15 (1): e160040. 32 p.
- Koerber, S., H.S. Vera-Alcaraz & R.E. Reis (2017): Checklist of the Fishes of Paraguay (CLOFPY). *Ichthyological Contributions of PecesCriollos* 53: 1-99
- Lima, F.C.T. (2017): A revision of the cis-andean species of the genus *Brycon* Mueller & Troschel (Characiformes: Characidae). *Zootaxa* 4222 (1): 1-189
- Lucena, C.A. & H. G. Soares (2016): Review of species of the *Astyanax bimaculatus* "caudal peduncle spot" subgroup *sensu* Garutti & Langeani (Characiformes, Characidae) from the rio La Plata and rio São Francisco drainages and coastal systems of southern Brazil and Uruguay. *Zootaxa* 4072 (1): 101-125
- Malabarba, L.R., M.C. Malabarba & R.E. Reis (2015): Descriptions of five new species of the Neotropical cichlid genus *Gymnogeophagus* Miranda Ribeiro, 1918 (Teleostei: Cichliformes) from the rio Uruguay drainage. *Neotropical Ichthyology* 13 (4): 637-662
- Mirande, J.M. & S. Koerber (2015): Checklist of the Freshwater Fishes of Argentina (CLOFFAR). *Ichthyological Contributions of PecesCriollos* 36: 1-68
- Mirande, J.M. (2017): Combined phylogeny of ray-finned fishes (Actinopterygii) and the use of morphological characters in large-scale analyses. *Cladistics* 33 (4): 333-350
- Ortí, G., A. Sivasundar, K. Dietz & M. Jégu (2008): Phylogeny of the Serrasalminae (Characiformes) based on mitochondrial DNA sequences. *Genetics and Molecular Biology* 31 (1): 343-351
- Piálek, L., K. Dragová, J. Casciotta, A. Almirón & O. Říčan (2015): Description of two new species of *Crenicichla* (Teleostei: Cichlidae) from the lower Iguazú River with a taxonomic reappraisal of *C. iguassuensis*, *C. tesay* and *C. yaha*. *Historia Natural* 5 (2): 5-27
- Ramirez, J.L., J.L.O. Birindelli & P.M. Galetti (2017): A new genus of Anostomidae (Ostariophysi: Characiformes): Diversity, phylogeny and biogeography based on cytogenetic, molecular and orphological data. *Molecular Phylogenetics and Evolution* 107: 308-323
- Rosso, J.J., E. Mabrugaña, M. González-Castro, M.S. Delpiani, E. Avigliano, N. Schenone & J.M. Díaz de Astarloa (2016): A new species of the *Hoplias malabaricus* species complex (Characiformes: Erythrinidae) from the La Plata River basin. *Cybiurn* 40 (3): 199-208
- Terán, G.E., F. Alonso, I. García, P. Calviño & J.M. Mirande (2016): Occurrence of *Astyanax dissensus* Lucena & Thofehrn, 2013 (Teleostei: Characidae) in Argentina. *Check List* 12 (1/1828): 1-3
- Terán, G.E., C.I. Butí & J.M. Mirande (2017): A new species of *Astyanax* (Ostariophysi: Characidae) from the headwaters of the arheic Río Sucuma, Catamarca, Northwestern Argentina. *Neotropical Ichthyology* 15 (2): e160165. 9 p.
- Terán, G.E., J. Ferrer, M. Benitez, F. Alonso, G. Aguilera & J.M. Mirande (2017): Living in the waterfalls: A new species of *Trichomycterus* (Siluriformes: Trichomycteridae) from Tabay stream, Misiones, Argentina. *Plos One* 12 (6): e0179594. 13 p.

recommended form for reference:

Koerber, S., T.O. Litz & J.M. Mirande (2017): CLOFFAR - update 4 - supplement to Checklist of the Freshwater Fishes of Argentina. *Ichthyological Contributions of PecesCriollos* 55: 1-11 available as pdf-file at www.pecescrilloos.de since 07.Oct.2017