

Calcified gill filaments increase respiratory function in fishes. Turko AJ, Cisternino B and Wright PA. Proceedings of the Royal Society B 2019.2796

Supplemental Material Contains:

Figure S1. Gill filament calcification in *Kryptolebias marmoratus* and *Poecilia wingei* after 28d of acclimation to (A) water versus air (N=34), (B) aquatic normoxia or hypoxia (*K. marmoratus* N = 31; *P. wingei* N = 27), (C) fresh versus 35‰ seawater (N = 52), or (D) 25°C versus 30°C (*K. marmoratus* N = 22; *P. wingei* N = 20).

Table S1. Species, sample sizes (n), calcification (proportion of filament length), standard error (SEM), lifestyle (amphious or fully aquatic), and acquisition information for all fishes used for phylogenetic analysis.

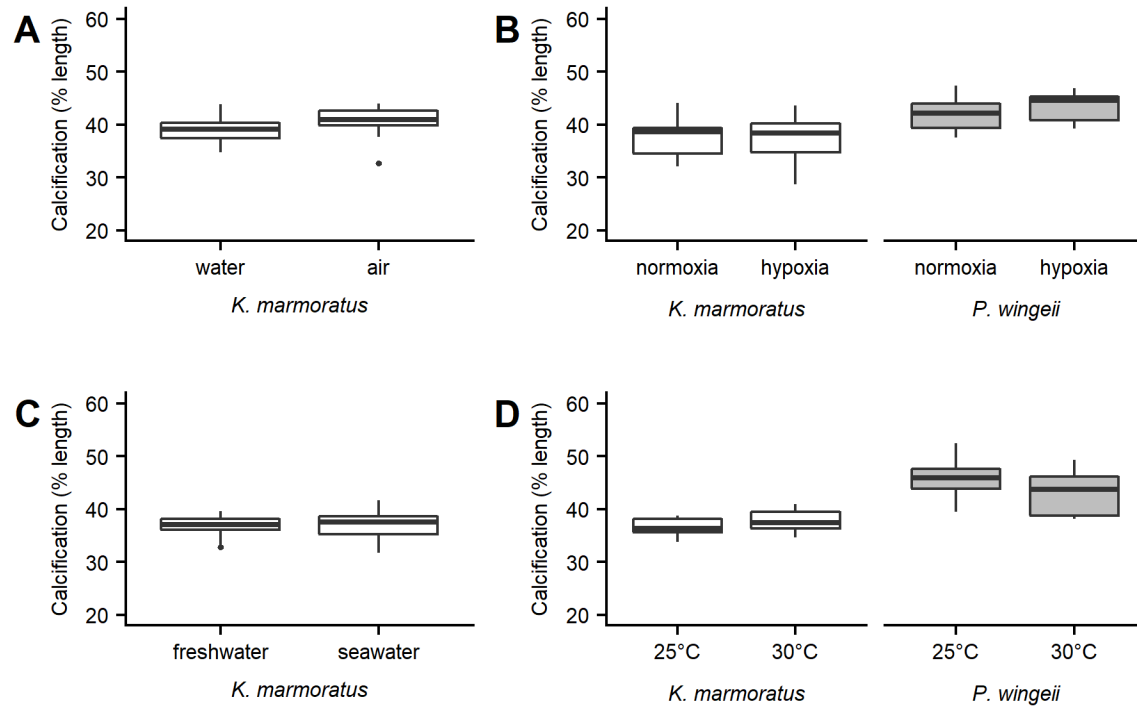


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species	n	calcification	SEM	amphibious?	source
<i>Amatitlania nigrofasciata</i>	4	0.2738	0.0192	no	aquarium hobby
<i>Ambloplites rupestris</i>	1	0.1133	-	no	researcher donation
<i>Ameca splendens</i>	1	0.4886	-	no	aquarium hobby
<i>Anablepsoides hartii</i>	4	0.4416	0.0173	yes	aquarium hobby
<i>Aphyolebias rubrocaudatus</i>	3	0.3430	0.0401	no	aquarium hobby
<i>Aphyosemion australe</i>	5	0.2746	0.0253	no	aquarium hobby
<i>Aphyosemion bivittatum</i>	1	0.2253	-	no	aquarium hobby
<i>Aphyosemion celiae</i>	3	0.3006	0.0126	no	aquarium hobby
<i>Aphyosemion fulgens</i>	1	0.3379	-	yes	researcher donation
<i>Aphyosemion gabunense</i>	2	0.3344	0.0206	yes	researcher donation
<i>Aphyosemion primigenium</i>	5	0.2033	0.0198	yes	researcher donation
<i>Aphyosemion striatum</i>	5	0.4051	0.0058	yes	researcher donation
<i>Aplocheilichthys lineatus</i>	5	0.4102	0.0176	yes	aquarium hobby
<i>Aplocheilichthys panchax</i>	1	0.5237	-	yes	aquarium hobby
<i>Ataniobius toweri</i>	4	0.4216	0.0154	no	aquarium hobby
<i>Austrofundulus lehoignei</i>	3	0.3129	0.0656	no	aquarium hobby
<i>Austrofundulus limnaeus</i>	6	0.3319	0.0269	no	researcher donation
<i>Chapalichthys pardalis</i>	5	0.3328	0.0159	no	aquarium hobby
<i>Cynodonichthys hildebrandi</i>	7	0.5086	0.0221	yes	aquarium hobby
<i>Cynodonichthys tenuis</i>	3	0.4377	0.0011	yes	aquarium hobby
<i>Cynolebias itapicuruensis</i>	6	0.2474	0.0222	no	aquarium hobby
<i>Cyprinodon albivellus</i>	2	0.4960	0.0103	no	researcher donation
<i>Cyprinodon nazas</i>	1	0.5767	-	no	researcher donation
<i>Cyprinodon tularosa</i>	1	0.5367	-	no	researcher donation
<i>Danio rerio</i>	4	0.0000	0.0000	no	researcher donation
<i>Dermogenys pusilla</i>	6	0.3694	0.0245	no	aquarium hobby
<i>Epiplatys chaperi</i>	4	0.3793	0.0203	no	aquarium hobby
<i>Epiplatys dageti</i>	2	0.6814	0.3347	no	aquarium hobby
<i>Epiplatys togolensis</i>	2	0.4261	0.0127	no	aquarium hobby
<i>Floridichthys polyommus</i>	8	0.3408	0.0567	no	wild caught
<i>Fundulopanchax gardneri</i>	5	0.2961	0.0248	yes	aquarium hobby
<i>Fundulopanchax gresensi</i>	3	0.3351	0.0056	no	aquarium hobby
<i>Fundulopanchax walkeri</i>	2	0.3480	0.0864	yes	aquarium hobby
<i>Fundulus confluentus</i>	3	0.3747	0.0169	yes	researcher donation
<i>Fundulus grandis</i>	2	0.2036	0.0184	yes	researcher donation
<i>Fundulus heteroclitus</i>	6	0.4316	0.0299	yes	researcher donation
<i>Fundulus rathbuni</i>	1	0.3460	-	no	researcher donation
<i>Fundulus similis</i>	2	0.2806	0.0107	yes	researcher donation
<i>Gambusia affinis</i>	3	0.3606	0.0367	no	aquarium hobby
<i>Gambusia yucatana</i>	15	0.4314	0.0129	no	wild caught

<i>Girardinus microdactylus</i>	3	0.5133	0.0227	no	aquarium hobby
<i>Gnatholebias zonatus</i>	4	0.3357	0.0164	no	researcher donation
<i>Goodea gracilis</i>	5	0.2919	0.0612	no	aquarium hobby
<i>Heterandria formosa</i>	2	0.4335	0.1646	no	aquarium hobby
<i>Hypsolebias antenori</i>	1	0.3768	-	no	aquarium hobby
<i>Hypsolebias sertanejo</i>	2	0.2985	0.0415	no	aquarium hobby
<i>Ilyodon furcoides</i>	1	0.4274	-	no	aquarium hobby
<i>Ilyodon whitei</i>	7	0.3063	0.0363	no	aquarium hobby
<i>Ilyodon xantusi</i>	4	0.3447	0.0362	no	aquarium hobby
<i>Jenynsia onca</i>	5	0.3129	0.0067	no	aquarium hobby
<i>Jordanella floridae</i>	3	0.4421	0.0418	yes	aquarium hobby
<i>Kryptolebias marmoratus</i>	5	0.4290	0.0529	yes	laboratory stock
<i>Laimosemion xiphidius</i>	4	0.3896	0.0519	yes	aquarium hobby
<i>Limia nigrofasciata</i>	1	0.3842	-	no	aquarium hobby
<i>Limia perugiae</i>	11	0.5730	0.0136	no	aquarium hobby
<i>Lucania goodei</i>	3	0.3253	0.0281	no	researcher donation
<i>Lucania parva</i>	3	0.3043	0.0177	no	researcher donation
<i>Melanotaenia splendida</i>	6	0.2658	0.0135	no	aquarium hobby
<i>Menidia menidia</i>	5	0.4125	0.0093	no	wild caught
<i>Micropoecilia parae</i>	4	0.4123	0.0066	no	researcher donation
<i>Nematolebias papilliferus</i>	6	0.3533	0.0215	no	aquarium hobby
<i>Nothobranchius brienii</i>	6	0.2220	0.0125	no	aquarium hobby
<i>Nothobranchius cardinalis</i>	6	0.1866	0.0268	no	aquarium hobby
<i>Nothobranchius furzeri</i>	1	0.3826	-	no	aquarium hobby
<i>Nothobranchius fuscotaneatus</i>	2	0.3433	0.0183	no	aquarium hobby
<i>Nothobranchius guentheri</i>	1	0.2154	-	no	researcher donation
<i>Nothobranchius hassoni</i>	1	0.3510	-	no	researcher donation
<i>Nothobranchius jubbi</i>	6	0.2960	0.0192	no	researcher donation
<i>Nothobranchius kadleci</i>	10	0.2613	0.0063	no	aquarium hobby
<i>Nothobranchius kafuensis</i>	6	0.1971	0.0313	no	aquarium hobby
<i>Nothobranchius kilomboensis</i>	3	0.2678	0.0133	no	aquarium hobby
<i>Nothobranchius milvertzi</i>	2	0.2522	0.0600	no	aquarium hobby
<i>Nothobranchius polli</i>	2	0.2023	0.0359	no	aquarium hobby
<i>Nothobranchius rachovii</i>	6	0.2698	0.0092	no	aquarium hobby
<i>Nothobranchius rubroreticulatus</i>	6	0.2700	0.0256	no	aquarium hobby
<i>Nothobranchius wattersi</i>	5	0.1735	0.0164	no	aquarium hobby
<i>Oncorhynchus mykiss</i>	6	0.0000	0.0000	no	researcher donation
<i>Oryzias dancena</i>	1	0.5417	-	no	aquarium hobby
<i>Oryzias woworae</i>	5	0.4561	0.0176	no	aquarium hobby
<i>Oxyeleotris marmorata</i>	1	0.3253	-	yes	researcher donation
<i>Pelvicachromis pulcher</i>	1	0.2621	-	no	aquarium hobby
<i>Poecilia gillii</i>	1	0.5630	-	no	researcher donation
<i>Poecilia latipinna</i>	1	0.6923	-	no	aquarium hobby
<i>Poecilia mexicana</i>	1	0.5827	-	no	aquarium hobby
<i>Poecilia orri</i>	12	0.5543	0.0178	no	wild caught

<i>Poecilia reticulata</i>	6	0.4776	0.0198	no	aquarium hobby
<i>Poecilia sphenops</i>	6	0.6759	0.0120	no	aquarium hobby
<i>Poecilia wingei</i>	6	0.4637	0.0137	no	laboratory stock
<i>Poeciliopsis gracilis</i>	1	0.4556	-	no	researcher donation
<i>Poeciliopsis infans</i>	1	0.4773	-	no	researcher donation
<i>Poeciliopsis prolifica</i>	3	0.4728	0.0152	no	researcher donation
<i>Poeciliopsis retropinna</i>	2	0.3741	0.0005	no	researcher donation
<i>Poeciliopsis turneri</i>	1	0.5506	-	no	researcher donation
<i>Poropanchax normani</i>	2	0.4374	0.0648	no	aquarium hobby
<i>Pterolebias longipinnis</i>	2	0.5276	0.0495	no	aquarium hobby
<i>Rachovia brevis</i>	1	0.0454	-	no	aquarium hobby
<i>Rivulus cylindraceus</i>	5	0.3854	0.0251	yes	aquarium hobby
<i>Simpsonichthys margaritatus</i>	4	0.2548	0.0277	no	aquarium hobby
<i>Simpsonichthys suzarti</i>	2	0.3263	0.0181	no	aquarium hobby
<i>Skiffia lermæ</i>	2	0.5370	0.0186	no	aquarium hobby
<i>Strongylura notata</i>	1	0.1459	-	no	wild caught
<i>Xenotoca eiseni</i>	4	0.4113	0.0154	no	aquarium hobby
<i>Xiphophorus alvarezi</i>	8	0.3669	0.0269	no	aquarium hobby
<i>Xiphophorus hellerii</i>	6	0.3719	0.0188	no	aquarium hobby
<i>Xiphophorus maculatus</i>	6	0.4038	0.0173	no	aquarium hobby
<i>Xiphophorus mayae</i>	6	0.3465	0.0092	no	aquarium hobby
<i>Xiphophorus nezahualcoyotl</i>	6	0.3874	0.0174	no	aquarium hobby
