

Supplementary Materials

Systematic Biology

Considering ontogenetic phases of diversification in macroevolution: An example using Triggerfishes (Balistidae)

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Supplemental Table 1: Location of specimens examined for this study

Species	Burke Museum	Bishop Museum	Philadelphia Academy of Sciences	LA County Museum	Yale Peabody Museum	Museum of Comparative Zoology	Field Museum	North Carolina Museum of Natural Sciences
<i>Abalistes stellaus</i>	----	---	117657 (a-b) 117656 90440	---	---	27048 24320 3758		
<i>Balistapus undulatus</i>	UW 009104 UW 017709 (a-d)	---	---	---	7168 7169 8325 9816 7167 9544	63172 26356	4747 89708 90739 91474 110921	
<i>Balistes capriscus</i>	UW 005164 UW 016887	---	102579 102745 102579	---	14006	62199 23972 11941 26654 11946 24148 54378 35799 23971	4883 46697 46828 48897	4551; 4763; 5935; 5990; 7864; 9077; 9132; 9510; 11471 11705 13030 15117 15587 17332 10159 10171; 3976 4906; 4985 7875; 9816 23245 27138 27157 27158 27234 27244 28197 28230 28275 30383 30485 31204

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								57384
								60221
								60223
								60234
								60297
								71477
								49876
								49999
<i>Balistes polylepis</i>	UW 014876 UW 025817	---	103797 103801 103793	---	893	11929	73535	30333
<i>Balistes punctatus</i>	----	---	102835 103227	---	---	---	---	
<i>Balistes vetula</i>	----	---	103907 (a-b) 103863	---	---	30168 11906 11877 11878 32900 11928	15638 47961 52837 65379	48110
<i>Balistoides conspicillum</i>	----	9484	103896	38229-12 54166-1	15135	15135	112946	78129
<i>Balistoides viridescens</i>	----	---	130942 113798 103894	---	---	11914 36907	110922	

<i>Canthidermis maculata</i>	UW 048621	---	108895	---	---	146629	48578	17356
			15356			11874	61360	102516
			103895			55503	74559	23252
							113476	20281
								49164
								49299
								49337
								49370
								49394
								49853
								49891
								49964
								49990
								57658
								60242
			<i>Canthidermis sufflamen</i>					
		60258						
		60281						
		60335						
		30986						
		5032						
		27162						
		49541						
		49541						
		49681						
		49844						
		49856						
		49874						
		49896						
		71861						
		49844						
		57243						
<i>Melichthys niger</i>	UW 048380 UW 000546 UW 026434 (a-b)	---	103657	---	8674	11918	91152	
						11919		
<i>Melichthys vidua</i>	UW 000542 UW 013045	---	131925 (a-b)	---	---	11912	16400	
						163091	21572	
							21744	
<i>Odonus niger</i>	UW 010542 (a-b) UW 013061	---	103873	---	9822	11913	19935	
			102779		8326	5896	21944	
							31725	

							31726	
							110923	
<i>Pseudobalistes flavimarginatus</i>	----	12211 28375	102420	35973 56845	---	11900 24362	---	
<i>Pseudobalistes fuscus</i>	----	---	103841 (a-b)	---	---	3770 3759 6158 11893 (a-c)	---	
<i>Pseudobalistes naufragium</i>	----	---	103800 103905 100258	3449 3450	---	41405 50737	---	
<i>Rhinecanthus aculeatus</i>	UW 008237 UW 013063 UW 013064 UW 014387 UW 017710 (a-c) UW 018647 UW 018649	---	---	-----	7184 9613	---	47792 63522 76682 89707 LW-15	79605 WCS-915
<i>Rhinecanthus assasi</i>	----	---	---	---	20551	50082 440	---	
<i>Rhinecanthus rectangulus</i>	UW 013053 UW 011096 UW 016610 (a-b) UW 026440 UW 026439 UW un- cataloged (2X)	---	---	---	---	---	44227 44229 44231 55641	30485
<i>Rhinecanthus verrucosus</i>	UW 009159	---	130753 91393	---	---	24868 30516	3975 52000	
<i>Sufflamen bursa</i>	----	---	---	42474 1245 1244	---	5898	16399 47703 63681 73656	77393
<i>Sufflamen chrysopterum</i>	UW 008645 (a-c)	---	63882	---	8327	8327	---	

UW 009210
 UW 9379
 UW 9106

<i>Sufflamen fraenatum</i>	----	---	105589 (a-c) 815933	---	---	29740	73660	
<i>Sufflamen verres</i>	----	---	100283 100251 100252 103809	---	1095 814	29628 36524 45781 29716	---	
<i>Xanthichthys auromarginatus</i>	----	35394 (a-c) 10088 (a-b)	134540 134542 (a-c)	45004	---	---	---	
<i>Xanthichthys mento</i>	----	---	68601	8999-16 31778-57 31778-60 31778-61	---	---	---	
<i>Xanthichthys ringens</i>	----	---	100989 (a-c) 157639 (a-b)	---	6247	6247 11940	---	52104 57424

Supplemental Table 2: Habitat classification and data from the primary literature

	Reef/ Non-Reef	Flow	Habitat	Reference
ADULT				
<i>Abalistes stellaris</i>	Reef	1	10	Fisher et al. (1990)
<i>Abalistes stellatus</i>	Reef	1	10	Bray (2011)
<i>Balistes undulates</i>	Reef	3	4,6,7,12	Myers (1991), Bean et al. (2002), Kuwamura (1991)
<i>Balistes capriscus</i>	Non-Reef	3	4,6,9	Aiken (1975), Nunoo et al. (2006)
<i>Balistes polylepis</i>	Non-Reef	3	10,1,11	Randall and Mundy (1998), Thomson et al. (1979), Kells et al. (2016)
<i>Balistes punctatus</i>	Non-Reef	3	10,1,11	Nunoo et al. (2006)
<i>Balistes vetula</i>	Reef	3	1,2,6,11,12	Aiken (1975), Cervigón et al. (1992), Lyczkowski-Shultz and Ingram (2003)
<i>Balistoides conspicillum</i>	Reef	2	6	Myers (1991), Kulter and Tonozuka (2001)
<i>Balistoides viridescens</i>	Reef	3	4,6	Myers (1991), Kuwamura (1991)
<i>Canthidermis maculata</i>	Non-Reef	2	5,9	Aiken (1975), Lyczkowski-Shultz and Ingram (2003)
<i>Canthidermis sufflamen</i>	Non-Reef	2	5,6,8,9	Aiken (1975), Myers (1991), Lyczkowski-Shultz and Ingram (2003)
<i>Melichthys indicus</i>	Reef	2	8	Kulter and Tonozuka
<i>Melichthys niger</i>	Reef	3	1,6,7,8,12	Aiken (1975), Myers (1991), Kells et al. (2016)
<i>Melichthys vidua</i>	Reef	2	6	Myers (1991), Bean et al. (2002), Kuwamura (1991)
<i>Odonus niger</i>	Reef	2	6,7	Myers (1991), Kuwamura (1991)
<i>Pseudobalistes flavimarginatus</i>	Reef	1	1,4,12	Myers (1991)
<i>Pseudobalistes fuscus</i>	Reef	3	1,4,6,10,12	Myers (1991), Kuwamura (1991)
<i>Pseudobalistes naufragium</i>	Non-Reef	3	1,6,12	Bussing (1995)
<i>Rhinecanthus aculeatus</i>	Reef	1	1,4,12	Myers (1991), Kuwamura (1991), Hoover (2003)
<i>Rhinecanthus assasi</i>	Reef	1	1,10	Lieske and Myers (1994), Kulter and Tonozuka (2001),
<i>Rhinecanthus lunula</i>	Reef	2	6	Bacchet et al. (2006)
<i>Rhinecanthus rectangulus</i>	Reef	3	1,6,12	Myers (1991), Kuwamura (1991), Matsuura (2001)
<i>Rhinecanthus verrucosus</i>	Reef	1	2,4,12	Myers (1991), Bean et al. (2002), Kuwamura (1991)
<i>Sufflamen albicaudatum</i>	Reef	1	1	Myers (1991)
<i>Sufflamen bursa</i>	Reef	1	6,8,12	Myers (1991), Bean et al. (2002)
<i>Sufflamen chrysopterum</i>	Reef	3	1,4,6	Myers (1991), Bean et al. (2002), Kuwamura (1991)
<i>Sufflamen fraenatum</i>	Reef	1	1,11,12	Myers (1991), Kuwamura (1991)
<i>Sufflamen verres</i>	Reef	1	1,11	Thomson et al. (1979)
<i>Xanthichthys auromarginatus</i>	Non-Reef	2	7,6,8	Kulter and Tonozuka (2001), Hoover (2003)
<i>Xanthichthys lineopunctatus</i>	Reef	2	6	Kulter and Tonozuka (2001)
<i>Xanthichthys mento</i>	Reef	3	8,11	Kulter and Tonozuka (2001), Hoover (2003), Kells et al. (2016)

Xanthichthys ringens Reef 2 8 Aiken (1975), Lieske and Myers (1994), Lyczkowski-Shultz and Ingram (2003)

JUVENILE

<i>Abalistes stellatus</i>	1	9	Kulter and Tonozuka (2001)
<i>Balistapus undulates</i>	3	6,12	Bean et al. (2002), Kuwamura (1991)
<i>Balistes capriscus</i>	1	9	Longley and Hildebrand (1941), Clements et al. (1991), Hoffmayer et al. (2005), Ballard and Rakocinski (2005)
<i>Balistes polylepis</i>	1	1,9	Thomson et al. (1979), Kells et al. (2016)
<i>Balistes vetula</i>	1	9,12	Robertson (1998)
<i>Balistoides conspicillum</i>	1	8	Kulter and Tonozuka (2001)
<i>Balistoides viridiscens</i>	1	1	Kuwamura (1991)
<i>Canthidermis maculata</i>	1	9	Clements et al. (1991), Hoffmayer et al. (2005)
<i>Canthidermis sufflamen</i>	1	9	Clements et al. (1991), Hoffmayer et al. (2005)
<i>Melichthys vidua</i>	1	6,12	Bean et al. (2002), Kuwamura (1991)
<i>Odonus niger</i>	1	1	Kuwamura (1991)
<i>Pseudobalistes fuscus</i>	1	1,9	Kuwamura (1991)
<i>Rhinecanthus aculeatus</i>	1	4	Kuwamura (1991)
<i>Rhinecanthus assasi</i>	1	9,12	Lieske and Myers (1994)
<i>Rhinecanthus rectangulus</i>	1	12	Kulter and Tonozuka (2001),
<i>Rhinecanthus verrucosus</i>	1	3,12	Bean et al. (2002), Kuwamura (1991)
<i>Sufflamen bursa</i>	1	12	Bean et al. (2002)
<i>Sufflamen chrysopterum</i>	1	2,12	Bean et al. (2002), Kuwamura (1991)
<i>Sufflamen fraenatum</i>	1	2	Kuwamura (1991)
<i>Xanthichthys ringens</i>	1	9	Randall (1968), Clements et al. (1991)

Flow regimes range from (1) Low flow or sheltered habitat; (2) high flow or open habitat; and (3) mix of low and high/sheltered and open habitat. Habitat types: (1) debris/rubble; (2) sea grass; (3) mangrove; (4) lagoon; (5) epipelagic/pelagic; (6) outer reef; (7) surge zone/strong currents; (8) drop-off; (9) sargassum/floating debris; (10) sand flat; (11) rocky reef; (12) inner reef/sheltered reef.

Supplemental Table 3: Genbank Accessions

Taxon	12S	16S	Rhodopsin	Tmo-4C4	RAG1	BMP4	COI	CYTB	GLYT	MYH6	RAG2
<i>Abalistes stellaris</i>						KT600846.1	KF025667.1	AP009202.1			KT600890.1
<i>Abalistes stellatus</i>	AY70024 8	AY67963 2	EU108845	EU108823	AY700318		KF025668.1		JX190373.1		
<i>Acanthaluteres spilomelanurus</i>							KF025693.1	KF025759.1			
<i>Acanthaluteres vittiger</i>							KF025694.1	KF025760.1			
<i>Acreichthys tomentosus</i>							KF025695.1	KF025761.1	KF139659.1		
<i>Aluterus schoepfii</i>						KT600848.1	KF025698.1	KF025764.1			
<i>Aluterus heudelotii</i>							KF025696.1	KF025762.1			
<i>Aluterus monceros</i>							KF025697.1	KF025763.1			
<i>Aluterus scriptus</i>						KT600849.1	KF025699.1	KF025765.1	KF027670.1		
<i>Amanses scopas</i>							KF025700.1	KF025766.1	KF027671.1	KT600891.1	KT600891.1
<i>Brachaluteres jacksonianus</i>							KF025701.1	KF025767.1 B			
<i>Balistapus undulatus</i>	EU10880 2	EU1088 13	EU108849	EU108826	EU108869	KT600852.1	JQ861003.1	AP009203.1	KF027662.1		KT600894.1
<i>Balistes capriscus</i>	AY70023 8	AY67962 2	EU108846	EU108824	AY700308	KT600853.1	KF025670.1	DQ197928.1	KF139685.1		DQ874786.1
<i>Balistes polylepis</i>	AY70023 9	AY67962 3	---	---	AY700309	KT600854.1	KF025673.1	KF025738.1			KT600896.1
<i>Balistes punctatus</i>	EU10880 1	EU1088 12	EU108848	EU108827	EU108868	KT600855.1	KF025674.1	KF025739.1			KT600897.1
<i>Balistes vetula</i>	AY70024 0	AY67962 4	EU108850	EU108828	AY700310	KT600856.1	KF025671.1	AP009204.1	KF027663.1		KT600898.1
<i>Balistoides conspicillum</i>	AY70024 1	AY67962 5	EU108847	EU108825	AY700311	KT600857.1	KF025672.1	AP009205.1			KT600899.1

<i>Balistoides viridescens</i>	AY70025 0	AY67963 4	---	---	AY700320	KT600858.1	KF025675.1	KF025740.1		KT600900.1
<i>Cantherhines fronticinctus</i>									KT600901.1	KT600901.1
<i>Cantherhines pardalis</i>						KT600861.1	KF025702.1	KF025769.1	KF027672.1	KT600902.1
<i>Cantherhines dumerilii</i>						KT600859.1		KF025768.1		
<i>Canthidermis maculata</i>	AY70024 2	AY67962 6	EU108851	EU108829	AY700312	KT600862.1	KF025676.1	AP009206.1		KT600904.1
<i>Canthidermis sufflamen</i>						KT600863.1				KT600905.1
<i>Cantherhines pullus</i>							KF025703.1	KF025770.1	JX190377.1	KT600903.1
<i>Cantherhines sandwichiensis</i>								KF025771.1		
<i>Chaetodermis penecilligerus</i>							KF025704.1	KF025772.1		
<i>Diodon hystrix</i>							KF025664.1	KF025730.1		
<i>Eubalichthys Bucephalus</i>							KF025705.1	KF025773.1		
<i>Eubalichthys mosaicus</i>							KF025706.1	KF025774.1		
<i>Melichthys indicus</i>							KF025677.1	KF025742.1		
<i>Melichthys niger</i>	AY70024 3	AY67962 7	EU108852	---	AY700313	KT600865.1	KF025678.1	KF025743.1		KT600907.1
<i>Melichthys vidua</i>	EU10880 3	EU1088 14	EU108853	EU108830	EU108870	KT600866.1	KF025679.1	AP009207.1		KT600908.1
<i>Meuschenia hippocrepis</i>							KF025708.1	KF025776.1		
<i>Meuschenia trachylepis</i>							KF025709.1	KF025777.1		
<i>Meuschenia freycineti</i>							KF025707.1	KF025775.1		
<i>Mola mola</i>							KF025665.1	KF025731.1		
<i>Monacanthus chinensis</i>							KF025710.1	KF025778.1	KF027673.1	

<i>Monacanthus ciliates</i>							KF025711.1	KF025779.1	
<i>Monacanthus tuckeri</i>								KF025780.1	
<i>Nelusetta ayraudi</i>							KF025712.1	KF025781.1	
<i>Odonus niger</i>	EU10880	EU1088	EU108854	EU108831	EU108871	KT600867.1	KF025680.1	AP009208.1	KT600909.1
	4	15							1
<i>Oxymonacanthus longirostris</i>						KT600868.1	KF025713.1	KF025782.1	KF027674.1
								KT600910.1	KT600910.1
<i>Pergavor janthinosoma</i>						KT600870.1	KF025719.1	KF025787.1	KF139831.1
								KT600912.1	KT600912.1
<i>Pergavor melanocephalus</i>						KT600881.1	KF025720.1	KF025788.1	
								KT600913.1	KT600913.1
<i>Pergavor nigrolineatus</i>							KF025721.1	KF025789.1	KF139832.1
								KT600914.1	KT600914.1
<i>Paraluteres prionurus</i>						KT600869.1	KF025714.1	KF025783.1	KF027675.1
								KT600911.1	KT600911.1
<i>Paramonacanthus choirocephalus</i>							KF025715.1		
<i>Paramonacanthus oblongus</i>							KF025717.1	KF025785.1	
<i>Paramonacanthus pusillus</i>							KF025718.1	KF025786.1	
<i>Paramonacanthus filicauda</i>							KF025716.1	KF025784.1	
<i>Peudomonacanthus peroni</i>							KF025724.1	KF025792.1	
<i>Peudomonacanthus macrurus</i>							KF025723.1	KF025791.1	
<i>Pseudobalistes naufragium</i>								KF025746.1	KT600917.1
<i>Pseudobalistes flavimarginatus</i>	EU10880	EU1088	EU108855	EU108832	EU108872	KT600872.1		AP009209.1	KF139856.1
	5	16							KT600915.1
<i>Pseudobalistes fuscus</i>	AY70024	AY67962	EU108856	EU108833	AY700314	KT600873.1h	KF025681.1	KF025745.1	KT600916.1
	4	8							1
<i>Rhinecanthus abyssus</i>							KT600875.1		KT600918.1
<i>Pseudobalistes naufragium</i>	GU01446	GU0144	GU014454	GU014453	GU014460	KT600874.1	KF025682.1		
	4	61		Pending					

<i>Pseudodalutarius nascornis</i>							KF025722.1	KF025790.1		
<i>Ranzania laevis</i>							KF025666.1			
<i>Rhinecanthus aculeatus</i>	AY70024 7	AY67963 1	EU108857	EU108834	AY308790	KT600876.1	KF025683.1	AP009210.1	KF027664.1	KT600919.1
<i>Rhinecanthus assasi</i>	AY70024 5	AY67962 9	EU108858	EU108835	AY700315	KT600877.1	KF025684.1	KF025748.1		KT600920.1
<i>Rhinecanthus lunula</i>	EU10880 6	EU1088 17	EU108859	EU108836	EU108873		KF025685.1	KF025749.1		
<i>Rhinecanthus rectangulus</i>	EU10880 7	EU1088 18	EU108860	EU108837	EU108874	KT600878.1	KF025686.1	KF025750.1		KT600921.1
<i>Rhinecanthus verrucosus</i>	EU10880 8	EU1088 19	EU108861	EU108838	EU108875	KT600879.1	KF025687.1	KF025751.1	KF139869.1	
<i>Ranzania laevis</i>								KF025732.1		
<i>Rudarius ercodes</i>							KF025725.1			
<i>Stephanolepis auratus</i>							KF025727.1			
<i>Scobinichthys granulatus</i>							KF025726.1	KF025793.1		
<i>Stephanolepis hispidus</i>						KT600880.1	KF025729.1	KF025795.1	KF139893.1	KT600922.1
<i>Stephanolepis setifer</i>						KT600881.1		KF025796.1		KT600923.1
<i>Stephanolepis cirrifer</i>							KF025728.1	KF025794.1	KF027676.1	
<i>Sufflamen albicaudatum</i>	EU10880 9	EU1088 20	EU108862	EU108839	EU108876			KF025798.1		
<i>Sufflamen bursa</i>	AY70024 9	AY67963 3	EU108863	EU108840	AY700319	KT600882.1		KF025752.1		KT600924.1
<i>Sufflamen chrysopterum</i>	AY70025 1	AY67963 4	EU108864	EU108841	---	KT600883.1		KF025753.1	KF139894.1	KT600925.1
<i>Sufflamen fraenatum</i>	NC	NC	---	---	AY700321	KT600884.1		AP004456.1		KT600926.1

Supplemental Table 4: Best-fit nucleotide substitution models and partitioning strategies identified by PartitionFinder.

Subset	Best Model	# of Sites	Contained Partitions
1	GTR+I+G	868	12Snonpairing, 16Snonpairing
2	GTR+I+G	1120	16Spairing, COIp1, 12Spairing, cytbp3
3	HKY+G	1144	MYH6p1, RAG2p1, RAGp1
4	HKY+G	1979	BMP4p2, 4c4p1, Glytp1, Rhodp3, RAGp2, MYH6p2, RAG2p2
5	K80+G	490	RAGp3
6	HKY+G	537	Rhodp1, Rhodp2, BMP4p1
7	HKY+G	488	4c4p2, Glytp2
8	K80+G	487	Glytp3, 4c4p3
9	GTR+I	160	BMPp3
10	HKY+I+G	592	COIp2, cytbp1
11	GTR+G	226	COIp3
12	GTR+G	365	cytbp2
13	HKY+G	652	RAG2p3, MYH6p3

Supplemental Table 5: Taxon coverage of phenotypic data

	Life Stage	Fin aspect ratios	Fin incidence angles	Body Shape	Fin Shapes
<i>Abalistes stellaris</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Abalistes stellatus</i>	Adult	+	+	+	+
	Juvenile	---	---	---	---
<i>Balistes undulates</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Balistes capriscus</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Balistes polylepis</i>	Adult	+	+	+	+
	Juvenile	---	---	---	---
<i>Balistes punctatus</i>	Adult	+	+	+	+
	Juvenile	---	---	---	---
<i>Balistes vetula</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Balistoides conspicillum</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Balistoides viridescens</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Canthidermis maculata</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Canthidermis sufflamen</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Melichthys indicus</i>	Adult	+	+	+	+
	Juvenile	---	---	---	---
<i>Melichthys niger</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Melichthys vidua</i>	Adult	+	+	+	+
	Juvenile	---	---	---	---
<i>Odonus niger</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Pseudobalistes flavimarginatus</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Pseudobalistes fuscus</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Pseudobalistes naufragium</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Rhinecanthus aculeatus</i>	Adult	+	+	+	+

	Juvenile	+	+	+	+
<i>Rhinecanthus assasi</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Rhinecanthus lunula</i>	Adult	+	+	+	+
	Juvenile	---	---	---	---
<i>Rhinecanthus rectangulus</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Rhinecanthus verrucosus</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Sufflamen albicaudatum</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Sufflamen bursa</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Sufflamen chrysopterum</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Sufflamen fraenatum</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Sufflamen verres</i>	Adult	+	+	+	+
	Juvenile	---	---	---	---
<i>Xanthichthys auromarginatus</i>	Adult	+	+	+	+
	Juvenile	---	---	---	---
<i>Xanthichthys lineopunctatus</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+
<i>Xanthichthys mento</i>	Adult	+	+	+	+
	Juvenile	---	---	---	---
<i>Xanthichthys ringens</i>	Adult	+	+	+	+
	Juvenile	+	+	+	+

Presence/absence of phenotypic trait data between adult and juvenile triggerfishes.

Fin aspect ratios = both dorsal and anal fin aspect ratios, fin incidence angles = the presence of incidence angles for both the anal and dorsal fins, fin shapes = shape data for both the anal and dorsal fins. + = presence of data; --- = absence of data.

Supplemental Table 6: Percent variation captured by each relative warp axis

	<i>Anal Fin</i>	<i>Dorsal Fin</i>	<i>Body Shape</i>
RelWarp1	38.25	49.8	41.2
RelWarp2	35.24	24.3	20
RelWarp3	15.74	13.8	13.2

Figure S1: Landmarks and measurements used for analyses. (A) Landmarks (dark) and sliding semi-landmarks (light) used for shape analyses of the body. (B) Graphical representation of landmarks (dark) and sliding semi-landmarks (light) used for shape analyses of the fin and areas measured to quantify the emergent mechanical properties of the fins. Numbers correspond to points discussed in the primary text.

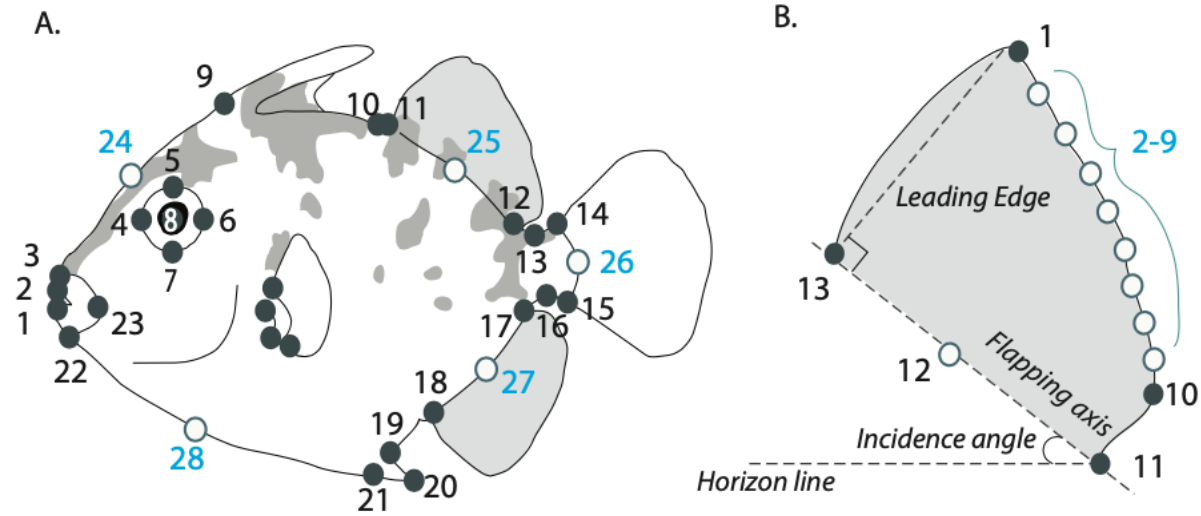
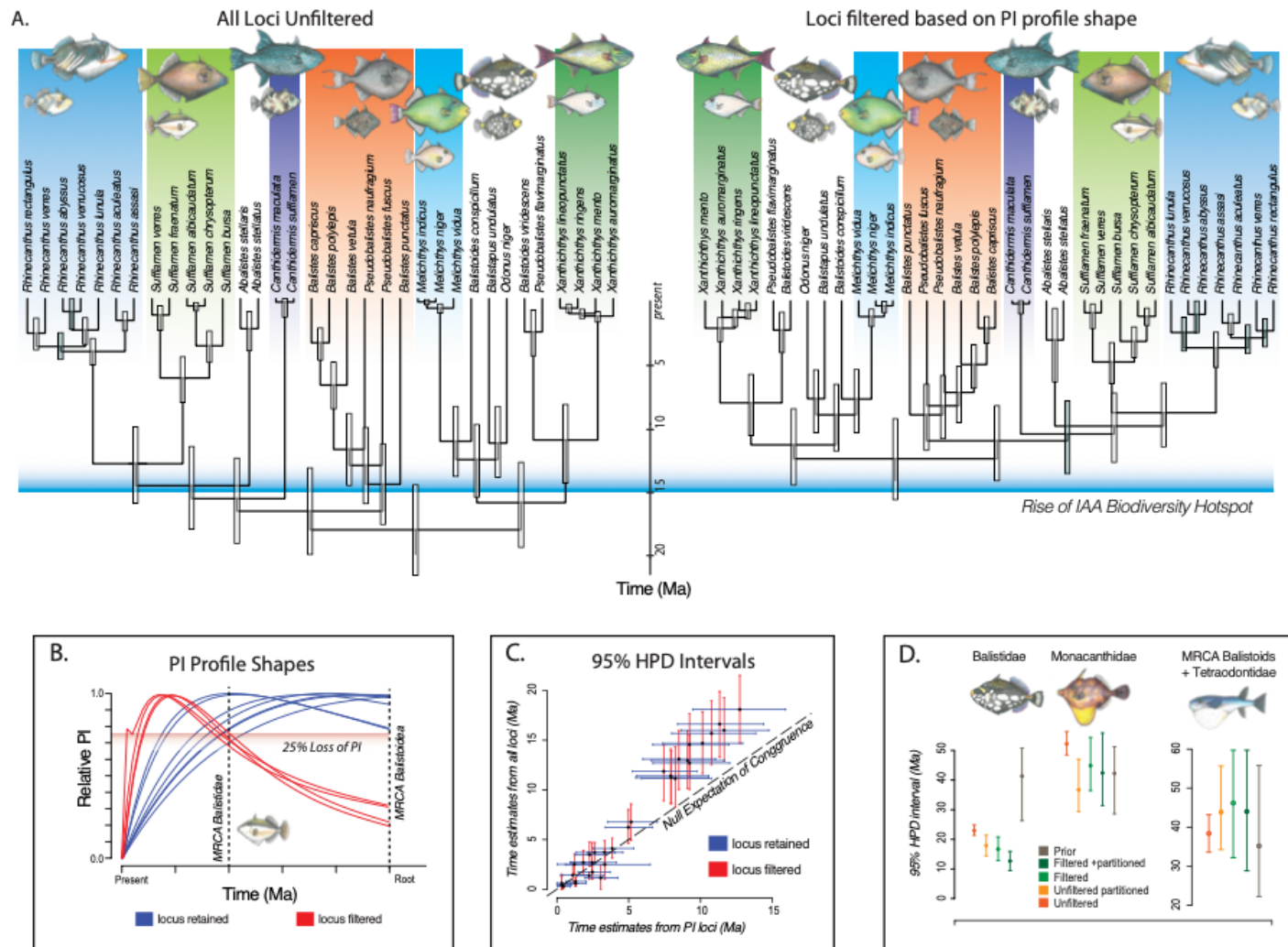


Figure S2: Divergence time estimates of Balistidae. (A) Comparison of divergence time estimated using all loci (left) versus estimates based on loci filtered by (B) PI profile shape. (C) Comparison of branch length 95% HPD intervals between the two datasets. (D) Comparison of age estimates between four data inclusion and partitioning strategies and the prior expectation for crown triggerfishes, filefishes, and the most recent common ancestor of triggerfishes and pufferfishes.



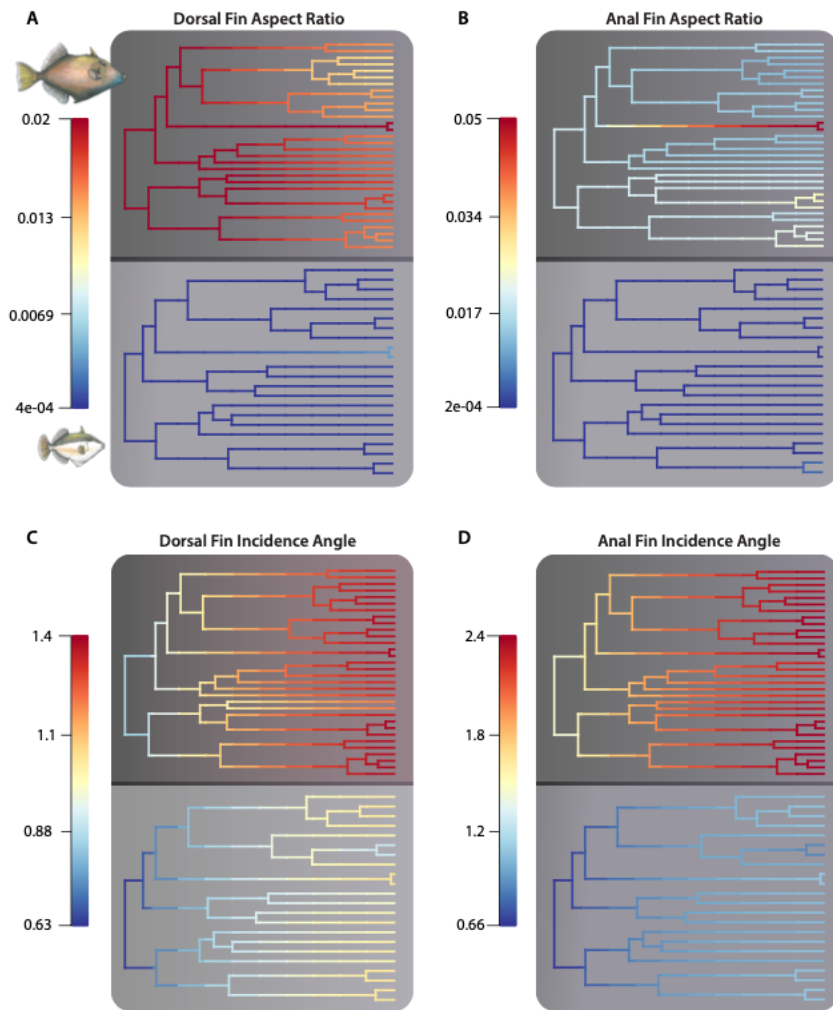


Figure S3. Visualization of rates of trait diversification between adults (top) and juveniles (bottom) for A) dorsal fin aspect ratio; B) anal fin aspect ratio; C) dorsal fin incidence angle; and D) anal fin incidence angle.

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