

Supplementary material

What ecological role do soft-substrate tide pools play for fishes? Difference in community structures between estuarine and coastal tidal flats in subtropical Japan

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Table S1. Fishes collected from tide pools in Shioya and Sashiki tidal flats in Okinawa-jima Island over 1 year

Use pattern: R, residents; T, transients; Ac, accidental species. Developmental stage, L, larva; J, juvenile; Y, young; A, adult

Species	Use pattern	Developmental stage	Shioya				Sashiki								
			Summer	Autumn	Winter	Spring	Total	SL range (average)	Summer	Autumn	Winter	Spring	Total	SL range (average)	
Elopidae															
<i>Elops hawaiiensis</i>	Tr	L, J										10	10	11.0–26.2 (21.5)	
Mugilidae															
<i>Planiliza macroleps</i>	Ac	Y	1					1	34.1			1	1	30.4	
<i>P. melinopterus</i>	Ac	Y										2	2	16.4–17.9 (17.2)	
<i>P. affinis</i>	Tr	Y				4	4	4	17.1–30.2 (23.7)			8	8	17.8–21.9 (20.0)	
<i>Crenimugil seheli</i>	Ac	Y										2	2	19.0–22.6 (20.8)	
Poeciliidae															
<i>Poecilia reticulata</i>	Tr	Y, A									8	3	1	12	11.1–22.5 (14.5)
Platycephalidae															
<i>Platycephalus indicus</i>	Ac	J									2		2	15.7–17.1 (16.4)	
Serranidae															
<i>Epinephelus malabaricus</i>	Tr	J, Y								3	1		4	14.7–63.7	

Species	Use pattern	Developmental stage	Shioya				Sashiki				SL range (average)				
			Summer	Autumn	Winter	Spring	Total	Summer	Autumn	Winter		Spring	Total		
											(45.2)				
Apogonidae															
<i>Fowleria isostigma</i>	Ac	Y	1							1	12.9				
Lutjanidae															
<i>Lutjanus fulviflamma</i>	Tr	J, Y								1		5	6	15.2–17.6 (16.1)	
Gerreidae															
<i>Gerres japonicus</i>	Ac	J										2	2	13.3–13.5 (13.4)	
Sparidae															
<i>Acanthopagrus sivicolus</i>	Tr	J, Y										46	46	9.9–13.8 (11.0)	
Sillaginidae															
<i>Sillago aeolus</i>	Ac	J										1	1	15.8	
Chaetodontidae															
<i>Chaetodon vagabundus</i>	Ac	J								1			1	17.1	
Cichlidae															
<i>Tilapia zillii</i>	Tr	J											6	6	5.6–7.9 (6.9)
Pomacentridae															
<i>Pomacentrus taeniometopon</i>	Ac	Y								1			4	5	12.2–31.3 (19.1)
Scaridae															

Species	Use pattern	Developmental stage	Shioya					Sashiki							
			Summer	Autumn	Winter	Spring	Total	SL range (average)	Summer	Autumn	Winter	Spring	Total	SL range (average)	
<i>Leptoscarus vaigiensis</i>	Ac	A								1			1	66.5	
Pinguipedidae															
<i>Parapercis cylindrica</i>	Ac	Y											1	1	25.6
Blenniidae															
<i>Omobranchus loxozonus</i>	Tr	Y, A							4	2			8	14	24.0–58.0 (36.8)
Eleotridae															
<i>Eleotris acanthopoma</i>	R	J, Y, A		1	3	4	8	12.3–28.5 (17.3)	7	1	1	4	13	13.8–57.7 (31.5)	
<i>E. melanosoma</i>	Ac	Y											2	2	19.6–50.4 (35.0)
Gobiidae															
<i>Scartelaos histophorus</i>	Tr	–											11	11	17.0–23.0 (19.4)
<i>Periophthalmus modestus</i>	Ac	J					1	9.7							
<i>Periophthalmus argentilineatus</i>	R	J, Y, A			2	3	5	14.8–51.9 (26.2)	4	1	2	5	12	9.9–50.0 (22.1)	
<i>Stiphodon</i> spp.	Ac	L											2	2	10.5–13.9 (12.2)
<i>Luciogobius ryukyuensis</i>	Ac	L, J, Y			8		8	13.1–19.9 (16.4)							
<i>Callogobius tanegasimae</i>	R	J, Y, A							7	3	3	4	17	8.5–47.4 (31.4)	

Species	Use pattern	Developmental stage	Shioya					Sashiki						
			Summer	Autumn	Winter	Spring	Total	SL range (average)	Summer	Autumn	Winter	Spring	Total	SL range (average)
<i>Eviota japonica</i>	Ac	Y									1		1	20.6
<i>Cryptocentroides insignis</i>	Tr	Y, A							1	1	1	1	4	35.6–50.3 (42.5)
<i>Oxyurichthys ophthalmonema</i>	Ac	A				1	1	44.7						
<i>O. lonchotus</i>	Tr	Y	3				10	13				2	2	28.0–32.6 (30.3)
<i>Cristatogobius lophius</i>	Ac	Y			1			1						21
<i>Yongeichthys nebulosus</i>	Tr	J, Y							11	4		9	24	11.0–64.7 (31.0)
<i>Acanthogobius insularis</i>	Tr	J, Y	29	5		80	114	12.0–32.4 (18.7)						
<i>Pseudogobius masago</i>	R	L, J, Y, A	26	89	115	186	416	6.4–20.8 (12.1)	44	24	17	534	619	6.1–22.5 (12.5)
<i>P. javanicus</i>	R	L, J, Y, A	159	131	70	258	618	5.6–25.9 (12.8)	36	24	4	51	115	6.0–29.3 (14.8)
<i>Pseudogobius</i> spp.		L				8	8	6.1–7.4 (6.8)				3	3	6.5–6.9 (6.7)
<i>Istigobius campbelli</i>	Tr	Y							2			50	52	8.2–33.2 (23.5)
<i>Bathygobius fuscus</i>	R	J, Y, A	2	3			5	22.3–49.6 (35.1)	16	23	18	21	78	7.1–62.4 (29.1)
<i>B. coalitus</i>	Ac	Y								1			1	21.6
<i>Myersina macrostoma</i>	R	J, Y, A	20	1	2	5	28	6.6–33.2						

Species	Use pattern	Developmental stage	Shioya					Sashiki						
			Summer	Autumn	Winter	Spring	Total	SL range (average)	Summer	Autumn	Winter	Spring	Total	SL range (average)
<i>Amblygobius</i> spp.		L									1		1	12.0
<i>Redigobius bikolanus</i>	Ac	Y								1			1	19.2
<i>Favonigobius gymnauchen</i>	R	L, J, Y, A	8	5		7	20	6.9–23.9 (12.7)	2	1	1	44	48	6.4–30.7 (16.6)
<i>F. reichei</i>	R	L, J, Y, A	34	40	48	41	163	6.1–31.5 (15.1)	85	94	7	262	448	6.0–46.2 (15.0)
<i>F. melanobranchus</i>	Tr	Y, A	7	5			12	10.4–27.1 (17.7)	9	8		5	22	8.4–30.4 (18.1)
<i>Favonigobius</i> sp. 1	Ac	J, Y, A	1				1	20.9	4			9	13	5.7–31.3 (9.8)
<i>Favonigobius</i> sp. 2	Ac	Y, A									2		2	28.0–39.4 (33.7)
<i>Mugilogobius</i> sp.	R	J, Y, A	4	9	23	7	43	8.1–27.1 (17.0)	130	20	27	182	359	5.3–36.2 (15.8)
<i>M. chulae</i>	R	J, Y, A			1		1	7.3	25	25	16	20	86	6.8–29.2 (16.5)
<i>Mugilogobius</i> spp.		L										1	1	4.7
<i>Amoya moloanus</i>	Tr	Y, A	1	1		3	5	19.7–42.7 (32.7)						
<i>Acentrogobius viridipunctatus</i>	Ac	A										1	1	72.3
<i>Acentrogobius</i> sp. 2	R	J, Y, A	20	3	8	65	96	8.8–41.8 (22.0)	9	7	2	30	48	8.4–41.8 (19.7)

Species	Use pattern	Developmental stage	Shioya					Sashiki						
			Summer	Autumn	Winter	Spring	Total	SL range (average)	Summer	Autumn	Winter	Spring	Total	SL range (average)
<i>Drombus</i> sp.	Tr	Y, A	4		1	3	8	14.7–36.5 (30.4)	3	2			5	12.5–30.3 (23.2)
<i>Drombus</i> spp		Y								1			1	13.3
<i>Pandaka lidwilli</i>	Tr	J, Y, A		18	7	14	39	1.9–11.9 (10.3)		13	6	2	21	7.5–12.5 (10.9)
<i>P. trimaculata</i>	Tr	J, Y, A		4	2	18	24	7.3–12.0 (9.3)				4	4	6.8–7.2 (7.1)
<i>Mangarinus waterousi</i>	Ac	Y, A								1		2	3	17.8–29.6 (24.7)
<i>Rhinogobius</i> spp.		J				1	1	15.5						
<i>Tridentiger kuroiwae</i>	Ac	J, Y				9	9	8.7–16.2 (12.7)						
Gobiidae sp.	R	L, J, Y, A	26	1	1	66	94	5.0–11.6 (8.9)	1	1		1	3	4.1–7.2 (5.3)
Bothidae														
<i>Bothus pantherinus</i>	Ac	Y										1	1	13.2