

Supplementary Material

Navigating large scale ocean science in a Pacific small island developing state

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Supplemental table and figure legends.

Table S1: Details of observed tuna larvae: Station information, morphological and genetic identification, length, and estimated age. Estimated age is given in days post spawning (dps). There were three larvae with damage that prevented a reliable estimate of length.

Date	Lat. (°N)	Long. (°E)	T at depth (°C)	Sample ID	Morph. ID	Genetic ID	Length (mm)	Age (dps)
10/8/22	8.71	134.70	27.86	N1_3_D_006	Thunnus	<i>Thunnus albacares</i>	4.11	5
10/18/22	7.24	133.50	27.99	W4_1_D_002	Thunnus	<i>Thunnus obesus</i>	3.70	4
10/18/22	7.24	133.50	27.99	W4_1_D_003	Thunnus	<i>Thunnus obesus</i>	5.79	9
10/18/22	7.25	133.49	27.92	W4_2_D_001	Thunnus	<i>Thunnus obesus</i>	2.69	1
10/18/22	7.25	133.49	27.92	W4_2_D_005	Thunnus	<i>Thunnus obesus</i>	3.67	4
10/18/22	7.27	133.49	27.01	W4_3_D_001	Thunnus	<i>Thunnus obesus</i>	3.72	4
10/18/22	7.27	133.49	27.01	W4_3_D_003	Katsuwonus	<i>Thunnus obesus</i>	3.85	4
10/19/22	7.02	133.29	28.85	S2_2_D_002	Thunnus	<i>Thunnus obesus</i>	-	-
10/21/22	6.04	134.17	26.87	S4_1_D_003	Katsuwonus	<i>Thunnus albacares</i>	3.78	4
10/21/22	6.04	134.17	26.87	S4_1_D_004	Katsuwonus	<i>Thunnus albacares</i>	2.79	1
10/21/22	6.04	134.17	26.87	S4_1_D_005	Auxis	<i>Auxis thazard</i>	2.67	5
10/21/22	6.04	134.17	26.87	S4_1_D_006	Auxis	<i>Auxis thazard</i>	2.78	5
10/21/22	6.04	134.17	26.87	S4_1_D_008	Thunnus	<i>Thunnus obesus</i>	5.21	8
10/21/22	6.04	134.17	26.87	S4_1_D_011	Katsuwonus	<i>Thunnus albacares</i>	4.11	5
10/21/22	6.04	134.17	26.87	S4_1_D_014	Thunnus	<i>Thunnus albacares</i>	-	-
10/21/22	6.04	134.17	26.87	S4_1_D_017	Auxis	<i>Auxis thazard</i>	3.57	7
10/21/22	6.04	134.16	26.88	S4_2_D_003	Thunnus	<i>Thunnus albacares</i>	-	-
10/21/22	6.04	134.16	26.88	S4_2_D_005	Katsuwonus	<i>Katsuwonus pelamis</i>	3.40	2

10/21/22	6.02	134.15	26.98	S4_3_D_001	Auxis	<i>Auxis thazard</i>	3.42	7
10/21/22	6.02	134.15	26.98	S4_3_D_002	Auxis	<i>Auxis thazard</i>	3.22	6
10/22/22	6.48	133.82	27.96	S1_2_D_005	Katsuwonus	<i>Katsuwonus pelamis</i>	5.34	6
10/22/22	6.48	133.82	27.96	S1_2_D_010	Thunnus	<i>Katsuwonus pelamis</i>	4.79	5

Figure S1: Catch of yellowfin tuna larvae (*Thunnus albacares*). The colored circles are sized according to the number of tuna larvae collected, ranging from 1 to 12 larvae. The white circles show sites where plankton were collected but no tuna larvae were observed. Most of the Palauan EEZ is occupied by the PNMS (yellow polygon), with the commercial domestic fishing zone forming a wedge to the west and the artisanal domestic fishing zone forming a donut around the main Palauan islands. Bathymetry accessed from GEBCO 2023 Grid. Compare also with legend, details, and inset map shown in Figure 1.

Figure S2: Catch of bigeye tuna larvae (*Thunnus obesus*). Figure details are the same as Figure S1.

Figure S3: Catch of frigate tuna larvae (*Auxis thazard*). Figure details are the same as Figure S1.

Figure S4: Catch of skipjack tuna larvae (*Katsuwonus pelamis*). Figure details are the same as Figure S1.

Figure S5: Relative spawning output for 4 yellowfin tuna (*Thunnus albacares*) larvae collected in October 2022. Black triangles show the collection sites, which was the starting location for the backtracking simulations. Black lines show the coastline of Palau and the boundaries of the PNMS. The grid of grey arrows depicts the average currents at 25 m depth during sampling (October 8 - 22).

Figure S6: Relative spawning output for 7 bigeye tuna (*Thunnus obesus*) larvae collected in October 2022. Figure details are the same as in Figure S5.

Figure S7: Relative spawning output for 3 skipjack tuna (*Katsuwonus pelamis*) larvae collected in October 2022. Figure details are the same as in Figure S5.

Figure S8: Relative spawning output for 5 frigate tuna (*Auxis thazard*) larvae collected in October 2022. Figure details are the same as in Figure S5.













