

# Stable isotopic evidence for nutrient rejuvenation and long-term resilience on Tikopia Island (Southeast Solomon Islands)

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## Supplementary Information

**Table S1.** Results of stable carbon and nitrogen isotope analysis of commensal bone collagen and quality control indicators, including previously published samples.

Sample	$\delta^{13}\text{C}$	$\delta^{15}\text{N}$	%N	%C	C:N	Phase
TKR-3*	-15.3	15.9	12.6	35.8	3.3	Kiki
TKR-7*	-19.9	11.9	13.9	41.0	3.4	Kiki
TKR-9*	-18.8	12.6	14.1	40.8	3.4	Kiki
TKR-10*	-15.3	12.3	13.2	39.2	3.5	Kiki
TKR-11*	-14.8	12.0	8.2	23.2	3.3	Kiki
TKR-12*	-17.1	13.4	6.0	18.1	3.5	Kiki
TKR-14*	-17.2	13.2	15.4	43.5	3.3	Kiki
TKR-15*	-14.1	15.1	12.7	38.1	3.5	Kiki
TKR-18*	-18.9	14.3	9.2	27.6	3.5	Kiki
TKR-19*	-17.4	16.1	13.4	39.4	3.4	Kiki
TKR-20*	-20.2	12.8	10.8	32.6	3.5	Kiki
TKR-23*	-15.7	12.5	12.8	37.4	3.4	Kiki
TKR-26*	-19.4	12.4	15.0	44.9	3.5	Kiki
TKR-87*	-15.0	13.3	7.2	21.1	3.4	Kiki
TKR-55*	-20.4	11.7	11.1	33.4	3.5	Kiki
TKR-56*	-18.9	13.9	14.2	41.4	3.4	Kiki
TKR-58*	-18.5	12.9	10.4	31.5	3.5	Kiki
TKR-59*	-16.3	13.1	9.8	30.0	3.6	Kiki
TKR-60*	-17.0	13.0	13.2	40.7	3.6	Kiki
TKR-61*	-17.9	11.7	15.0	43.9	3.4	Kiki
TKR-62*	-18.9	11.3	15.0	45.3	3.5	Kiki
TKR-63*	-15.9	13.0	10.4	31.9	3.6	Kiki
TKR-68*	-17.7	15.0	9.7	29.0	3.5	Kiki
TKR-36*	-20.2	10.9	14.8	43.8	3.5	Sinapupu
TKR-38*	-18.6	8.1	10.4	29.9	3.4	Sinapupu
TKR-40*	-19.3	9.2	7.3	21.8	3.5	Sinapupu
TKR-41*	-19.3	9.8	7.7	23.8	3.6	Sinapupu
TKR-53*	-23.0	8.7	15.4	43.5	3.3	Tuakamali

TKS1	-20.5	8.8	16.7	48.4	3.4	Tuakamali
TKS2	-20.3	10.2	13.4	38.0	3.3	Tuakamali
TKS3	-20.4	9.0	16.5	48.2	3.4	Kiki
TKS4	-20.1	9.0	17.3	49.6	3.3	Tuakamali
TKS10	-20.6	10.6	17.7	49.9	3.3	Tuakamali
TKS11	-21.0	6.3	14.3	40.6	3.3	Sinapupu
TKS13	-20.9	9.4	14.3	42.5	3.5	Tuakamali
TKS15	-20.5	8.2	13.8	39.1	3.3	Tuakamali
TKS16	-19.3	8.6	13.0	37.5	3.4	Tuakamali
TKS17	-20.2	10.4	15.8	44.7	3.3	Tuakamali
TKS18	-20.4	12.6	17.5	49.6	3.3	Tuakamali
TKS19	-20.1	11.8	16.9	47.9	3.3	Tuakamali
TKS20	-18.3	11.6	17.0	48.7	3.3	Kiki
TKS21	-21.7	12.0	15.8	46.3	3.4	Tuakamali
TKS22	-20.2	9.8	16.5	47.7	3.4	Tuakamali
TKS23	-21.4	10.7	13.8	38.8	3.3	Tuakamali
TKS24	-20.9	10.8	14.0	38.8	3.2	Tuakamali
TKS25	-20.8	8.5	12.0	33.0	3.2	Tuakamali
TKS26	-20.3	8.9	16.8	46.8	3.3	Tuakamali
TKS27	-20.5	9.0	14.9	41.0	3.2	Tuakamali
TKS28A	-21.4	6.2	16.0	44.9	3.3	Tuakamali
TKS28B	-20.0	9.9	16.2	46.3	3.3	Tuakamali
TKS29	-19.6	10.1	16.7	47.0	3.3	Tuakamali
TKS30	-20.0	10.1	14.5	39.2	3.2	Tuakamali
TKS31	-20.4	9.5	16.5	46.2	3.3	Sinapupu
TKS32	-21.2	8.8	15.8	45.5	3.4	Sinapupu
TKS33	-20.6	8.4	12.1	33.6	3.2	Sinapupu
TKS34	-21.6	5.0	12.8	35.8	3.3	Sinapupu
TKS35	-20.5	10.5	12.7	35.1	3.2	Sinapupu
TKS36	-19.3	10.7	15.0	41.3	3.2	Sinapupu
TKS37	-20.3	6.5	15.8	44.9	3.3	Sinapupu
TKS39	-21.4	8.4	15.8	44.8	3.3	Sinapupu
TKS40	-20.3	12.8	13.8	38.8	3.3	Tuakamali
TKS 41	-16.9	13.0	15.9	46.4	3.4	Tuakamali
TKS42	-19.6	9.3	16.4	46.8	3.3	Tuakamali
TKS43	-19.9	11.4	14.4	41.5	3.4	Tuakamali
TKS44	-19.2	9.4	11.7	33.2	3.3	Tuakamali
TKS45	-19.4	10.7	15.0	43.9	3.4	Tuakamali
TKS46**	-19.1	10.0	11.7	33.3	3.3	Tuakamali
TKS47**	-19.6	6.3	13.8	39.5	3.4	Tuakamali

TKS48	-19.3	9.8	13.0	36.5	3.3	Tuakamali
TKS49	-19.3	9.5	11.3	31.7	3.3	Tuakamali
TKS50	-20.2	6.4	15.7	44.9	3.3	Tuakamali
TKS51	-19.7	7.6	11.2	31.5	3.3	Sinapupu
TKS52	-19.1	7.3	12.1	33.7	3.3	Sinapupu
TKS53	-19.9	8.8	14.9	41.9	3.3	Tuakamali
TKS54	-19.5	11.4	14.0	39.4	3.3	Tuakamali
TKS55	-19.8	8.6	12.7	34.5	3.2	Tuakamali
TKS56	-20.1	9.3	15.2	42.2	3.2	Tuakamali
TKS57	-19.9	10.8	16.4	46.6	3.3	Tuakamali
TKS58	-19.4	9.5	13.1	35.9	3.2	Tuakamali
TKS59	-19.3	9.7	13.4	36.5	3.2	Tuakamali
TKS60	-19.8	9.4	15.3	42.9	3.3	Tuakamali
TKS61	-20.5	8.3	16.7	47.0	3.3	Tuakamali
TKS62	-19.5	8.8	14.3	41.1	3.4	Tuakamali
TKS63	-20.1	9.1	14.9	41.6	3.3	Sinapupu
TKS64	-20.3	6.4	15.3	42.3	3.2	Sinapupu
TKS65	-19.6	8.6	14.3	41.0	3.4	Tuakamali
TKS66	-19.9	9.0	16.5	47.3	3.3	Sinapupu
TKS67	-20.1	9.1	12.7	36.8	3.4	Sinapupu
TKS68	-20.6	9.7	14.7	42.5	3.4	Sinapupu
TKS69	-20.0	9.3	16.5	47.2	3.3	Sinapupu
TKS70	-20.0	6.6	14.4	40.9	3.3	Sinapupu
TKS71	-20.8	9.3	12.5	35.7	3.3	Sinapupu
TKS72	-19.1	10.7	16.1	45.9	3.3	Sinapupu
TKS73	-19.2	8.5	13.8	40.8	3.4	Sinapupu
TKR-69	-17.9	13.1	14.4	44.0	3.6	Tuakamali
TKR-70	-18.0	12.8	14.1	43.1	3.6	Tuakamali
TKR-71	-17.0	10.7	14.5	43.3	3.5	Tuakamali
TKR-72	-18.9	10.4	14.5	43.4	3.5	Tuakamali
TKR-73	-19.3	9.0	13.3	39.3	3.5	Sinapupu
TKR-74	-19.5	10.2	15.0	42.8	3.3	Sinapupu
TKR-76	-21.0	10.5	13.7	41.2	3.5	Sinapupu
TKR-79	-20.1	7.6	14.1	40.8	3.4	Sinapupu
TKR-80	-18.3	11.9	15.0	42.7	3.3	Tuakamali
TKR-81	-20.3	9.7	14.3	43.2	3.5	Tuakamali
TKR-82	-18.9	9.0	14.2	42.5	3.5	Tuakamali
TKR-83	-18.6	11.3	15.1	43.0	3.3	Tuakamali
TKR-84	-21.1	15.0	14.2	43.6	3.6	Tuakamali
TKR-86	-18.1	12.8	13.6	40.7	3.5	Tuakamali

TKR-87	-17.1	11.9	13.7	41.7	3.6	Tuakamali
TKR-88	-20.2	10.8	15.0	43.3	3.4	Tuakamali
TKS-74	-19.3	10.1	11.2	33.0	3.4	Kiki
TKS-75	-18.8	11.8	13.5	39.8	3.5	Kiki
TKS-76	-20.7	5.9	14.5	41.4	3.3	Kiki
TKS-77	-21.3	6.0	14.1	41.3	3.4	Sinapupu
TKS-78	-18.6	10.0	12.2	35.4	3.4	Kiki
TKS-79	-19.0	8.3	12.6	37.8	3.5	Sinapupu
TKS-80	-20.5	8.4	13.4	38.7	3.4	Sinapupu
TKS-81	-19.8	9.7	14.3	41.0	3.3	Sinapupu
TKS-82	-20.2	5.9	14.4	41.2	3.3	Sinapupu

\*previously published (Swift et al. 2018)

\*\*collagen sample was not large enough for replicate analysis

**Table S2.** Results of Kruskal Wallis Test for commensal bone collagen  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  values across archaeological phases. Underlined values are statistically significant ( $p < 0.05$ ).

	Chi-Squared	Degree of Freedom	p-value
$\delta^{13}\text{C}_{\text{Crat}}$	10.491	2	<u>0.005</u>
$\delta^{15}\text{N}_{\text{rat}}$	22.253	2	<u>&lt; 0.001</u>
$\delta^{13}\text{C}_{\text{pig}}$	4.523	2	0.104
$\delta^{15}\text{N}_{\text{pig}}$	11.809	2	<u>0.003</u>
$\delta^{13}\text{C}_{\text{commensal}}$	47.488	2	<u>&lt; 0.001</u>
$\delta^{15}\text{N}_{\text{commensal}}$	30.767	2	<u>&lt; 0.001</u>

**Table S3.** Results of Pairwise Mann-Whitney-Wilcoxon Test for pig and rat collagen  $\delta^{13}\text{C}$  and  $\delta^{15}\text{N}$  values. Underlined values are statistically significant ( $p < 0.05$ ).

	Kiki-Sinapupu	Sinapupu-Tuakamali	Kiki-Tuakamali
$\delta^{13}\text{C}_{\text{pig}}$	0.200	0.250	0.200
$\delta^{13}\text{C}_{\text{Crat}}$	<u>0.010</u>	0.158	0.096
$\delta^{13}\text{C}_{\text{commensal}}$	<u>&lt; 0.001</u>	0.200	<u>&lt; 0.001</u>
$\delta^{15}\text{N}_{\text{pig}}$	0.140	<u>0.003</u>	0.669
$\delta^{15}\text{N}_{\text{rat}}$	<u>&lt; 0.001</u>	<u>0.022</u>	<u>0.005</u>
$\delta^{15}\text{N}_{\text{commensal}}$	<u>&lt; 0.001</u>	<u>&lt; 0.001</u>	<u>&lt; 0.001</u>