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Data Article

Data on isotopic niche differentiation in benthic consumers from shallow-water hydrothermal vents and nearby non-vent rocky reefs in northeastern Taiwan

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A B S T R A C T

This paper presents data on carbon and nitrogen stable isotopes in benthos from shallow-water hydrothermal vents (SV) and nearby non-vent rocky reefs (NV) located in northeastern Taiwan, which is related to the article “Isotopic niche differentiation in benthic consumers from shallow-water hydrothermal vents and nearby non-vent rocky reefs in northeastern Taiwan” [1]. Field sampling work was conducted in July 2009 and July–August 2010 to collect sediment organic matters (SOM), zooplankton, and benthos for carbon and nitrogen stable isotopic analyses. Scuba divers collected macrobenthos, seawater, and surface sediments (0–2 cm). The collection of zooplankton was by a North Pacific standard net and trawled vertically. Testing samples were lyophilized before grounding by a mortar and pestle. For carbon and nitrogen isotope analyses, approximately 1 mg of powder was weighed and encapsulated in a tin capsule. Analyses were performed at the stable isotope laboratory at the University of California at Davis using an Integra Mass Spectrometer

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elemental analyzer (PDZ Europa, Sandbach, UK). The information is presented as 187 and 53 unprocessed data points from SV and NV, which incorporates $\delta^{13}C$ and $\delta^{15}N$ values (‰) of sediment, zooplankton, and benthos' tissue samples. Data from SOM provides information about chemosynthetic activity in SV sites. These data can be used to correlate food sources of consumers inhabiting shallow-water hydrothermal vent and rocky reef ecosystems in subtropical regions.

Specifications Table

Subject	Environmental science
Specific subject area	Marine ecology Carbon and nitrogen stable isotope analysis
Type of data	Figure and Table
How data were acquired	The samples were collected in the field, then lyophilized, and grounded in powder for stable carbon and nitrogen isotope analyses. Empirical data was measured by an Integra Mass Spectrometer elemental analyzer coupled with a PDZ Europa 20–20 isotope ratio mass spectrometer (Sercon Ltd., Cheshire, UK).
Data format	Raw
Parameters for data collection	Sample collection date, latitude (°), longitude (°), temperature (°C), pH, depth (m), carbon stable isotope ratio (‰), and nitrogen stable isotope ratio (‰).
Description of data collection	The sampling sites were in northeastern Taiwan, including shallow-water hydrothermal vents (SVs) off Kueishan (KS) Islet and nearby non-vent rocky reefs (NV). Scuba divers collected benthic organisms and surface sediments (0 – 2 cm). Zooplanktons were trawled vertically by a North Pacific standard net. Analyses were conducted at the stable isotope laboratory at the University of California at Davis. Analytical accuracy was 0.2 ‰ for $\delta^{13}C$ and 0.3 ‰ for $\delta^{15}N$. Analytical precision based on the standard deviation of replicates of internal standards was $<$ 0.2 ‰ for both $\delta^{13}C$ and $\delta^{15}N$.
Data source location	Samples were collected from SV (shallow-water hydrothermal vent) sites and NV (non-vent rocky reef) sites. SV sites were White vent (WV, 24.83404 N, 121.96172 E) and Yellow vent (YV, 24.83553 N, 121.96361 E). NV sites were Tail (24.83404 N, 121.96172 E) and Dali (24.95743 N, 121.91960 E). The samples were analyzed at UC Davis Stable Isotope Facility, Department of Plant Sciences, University of California, Davis, CA 9516, United States of America.
Data accessibility	With the article
Related research article	J.Y. Wu, S.Y. Lin, S.H. Peng, J.J. Hung, C.T.A. Chen, L.L. Liu, Isotopic niche differentiation in benthic consumers from shallow-water hydrothermal vents and nearby non-vent rocky reefs in northeastern Taiwan, Prog. Oceanogr. 195 (2021) 102596. https://doi.org/10.1016/j.pocean.2021.102596.

Value of the Data

- The data is helpful to determine the trophic structure and the contribution of different food sources to benthic consumers in the shallow-water hydrothermal vents and coastal rocky reefs in northeastern Taiwan.
- Other researchers can use the data to reference further comparative studies in vent ecosystems with or without endemic species.
- The data can be compared with inter-site and inter-regional studies related to trophic structure and isotopic niche width of consumers with different feeding guilds in other benthic ecosystems.

1. Data Description

Data reported in the present study are collected on the northeast coast of Taiwan (Fig. 1). Table 1 contains water depth, temperature, and pH of the collection sites; the carbon and nitrogen stable isotopic values of 240 samples. The samples include benthic consumers, primary producers, copepods, zooplankton, fishes, and sediment organic matters (SOMs) from sites of shallow-water hydrothermal vents and non-vent rocky reefs.

2. Experimental Design, Materials and Methods

2.1. Sampling sites

The SV sites included White vent (WV, 24.83404 N, 121.96172 E) and Yellow vent (YV, 24.83553 N, 121.96361 E) (Fig. 1), which are located southeast of KS Islet. At WV, white fluids are emitted from a 2 m wide hole surrounded by rocks. The ambient substrate is sand with deposited sulfur globules (< 0.1 cm in diameter). At YV, the yellow plume is composed of sulfur particles and form massive sulfur balls (> 97 % elemental S) [2]. The two NV sites are rocky reefs [3,4]; one is located southwest of KS Islet (Tail, 24.83404 N, 121.96172 E), and the other is located along the northeast coast of Taiwan (Dali, 24.95743 N, 121.91960 E). The sediment contained no sulfur globules at the Tail site. The Tail is located approximately 3 km away from the SV study sites and around 9 km away from Dali.

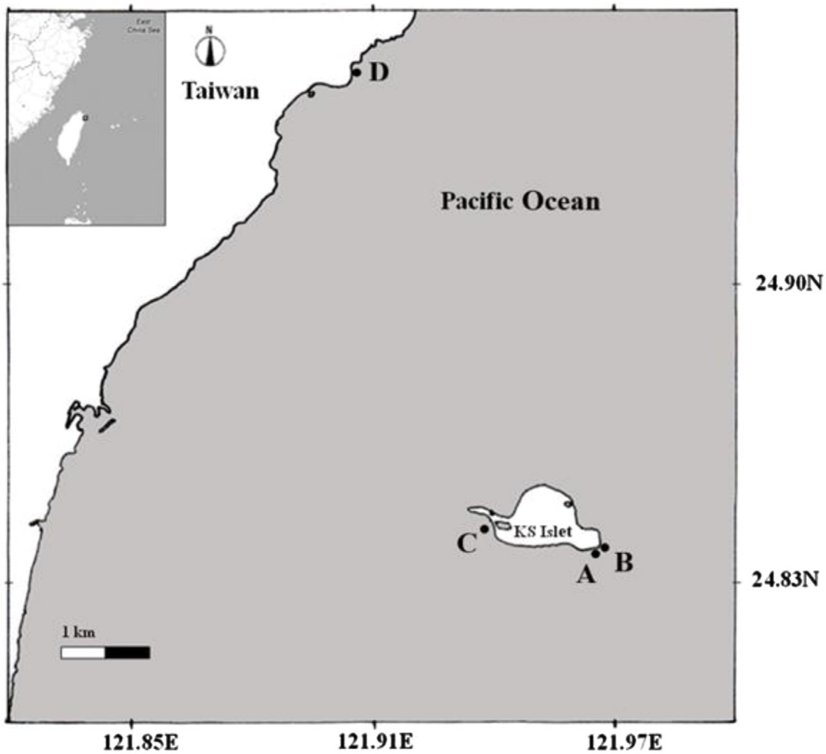

Fig. 1. Map of the northeast coast of Taiwan showing sampling sites: A (White vent), B (Yellow vent), C (Tail of KS Islet), and D (Dali), modified from Wu et al. (2021).

Table 1
The carbon and nitrogen stable isotopic values of all samples from sites of shallow-water hydrothermal vents and non-vent rocky reefs.

Location	Latitude (°N)	Longitude (°E)	Distance to vent center (m)	Depth (m)	Water temperature (°C)	pH	Species	δ^{13}C (‰)	δ^{15}N (‰)	Sampling date
White vent	24.83404	121.96172	~ 5	17	25-26	7.3	*Prionurus scalprum*	-18.04	12.16	2009-July-2
							Alpheus lobidens	-18.33	10.24	2009-July-2
							Alpheus lobidens	-18.10	9.45	2010-August-25
							Anachis sp.	-16.30	9.78	2009-July-2
							Anachis sp.	-18.19	8.69	2009-July-2
							Anachis sp.	-16.97	8.67	2010-August-04
							Anachis sp.	-16.95	8.93	2010-August-04
							Anachis sp.	-17.47	8.94	2009-July-2
							Ergalatax contractus	-17.39	7.78	2009-July-2
							Ergalatax contractus	-16.26	10.05	2009-July-2
							Ischnochiton comptus	-23.16	8.15	2009-July-2
							Ischnochiton comptus	-19.16	7.62	2010-July-2
							Ischnochiton comptus	-19.21	8.50	2010-July-2
							Ischnochiton comptus	-16.79	8.80	2010-July-2
							Ischnochiton comptus	-17.12	6.02	2009-July-2
							Thylacodes dentiferus	-17.34	7.16	2009-July-2
							Thylacodes dentiferus	-17.84	5.91	2010-July-2
							Thylacodes dentiferus	-17.89	6.11	2010-July-2
							Thylacodes dentiferus	-17.66	5.45	2010-July-2
							Thylacodes dentiferus	-17.90	6.28	2010-July-2
							Bostrycapulus gravispinosus	-16.10	-0.09	2009-July-2
							Bostrycapulus gravispinosus	-17.79	3.62	2010-July-2
							Bostrycapulus gravispinosus	-17.60	3.10	2010-August-04
							Bostrycapulus gravispinosus	-16.92	0.42	2010-August-04
							Bostrycapulus gravispinosus	-16.95	1.55	2010-August-04
							Bostrycapulus gravispinosus	-16.80	0.20	2010-August-04
							Bostrycapulus gravispinosus	-18.01	3.40	2010-August-04
							Bostrycapulus gravispinosus	-17.79	4.69	2010-August-04
							Bostrycapulus gravispinosus	-17.51	3.43	2010-July-2

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Table 1 (*continued*)

Location	Latitude (°N)	Longitude (°E)	Distance to vent center (m)	Depth (m)	Water temperature (°C)	pH	Species	$\delta^{13}C$ (‰)	$\delta^{15}N$ (‰)	Sampling date
							Bostrycapulus gravispinosus	-16.95	1.63	2010-July-2
							Anthopleura sp.	-18.75	8.72	2010-August-04
							Anthopleura sp.	-18.67	8.55	2010-August-04
							Anthopleura sp.	-19.45	8.39	2010-July-2
							Anthopleura sp.	-19.61	8.19	2010-July-2
							Anthopleura sp.	-19.21	8.26	2010-July-2
							Anthopleura sp.	-18.74	8.16	2010-July-2
							Anthopleura sp.	-19.66	8.29	2010-July-2
							Tubastraea aurea	-19.27	8.05	2010-July-2
							Tubastraea aurea	-19.50	8.30	2010-July-2
							Tubastraea aurea	-19.63	8.54	2010-July-2
							Tubastraea aurea	-19.80	7.61	2010-July-2
							Cirriformia sp.	-19.66	7.29	2009-July-2
							Glycera sp.	-19.75	7.41	2009-July-2
							Platynereis sp.	-19.09	8.58	2009-July-2
							Platynereis sp.	-22.17	7.97	2010-July-2
							Lanice sp.	-18.85	6.69	2010-July-2
							Harmothoe imbricata	-17.15	9.14	2010-August-23
							Xenograpsus testudinatus	-18.28	8.44	2010-July-2
							Xenograpsus testudinatus	-18.20	9.16	2010-July-2
							Xenograpsus testudinatus	-16.42	8.29	2010-July-2
							Xenograpsus testudinatus	-14.84	4.02	2010-July-2
							Xenograpsus testudinatus	-17.53	8.43	2010-July-2
							Xenograpsus testudinatus	-17.62	8.30	2010-July-2
							Xenograpsus testudinatus	-17.72	8.34	2010-July-2
							Xenograpsus testudinatus	-17.89	7.51	2010-July-2
							Xenograpsus testudinatus	-13.73	7.31	2010-July-2
							Xenograpsus testudinatus	-18.97	7.40	2010-July-2
							Xenograpsus testudinatus	-17.76	8.47	2010-July-2
							Xenograpsus testudinatus	-17.06	7.31	2010-July-2
							Xenograpsus testudinatus	-18.92	8.70	2010-July-2
							Xenograpsus testudinatus	-17.80	7.73	2010-July-2

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Table 1 (*continued*)

Location	Latitude (°N)	Longitude (°E)	Distance to vent center (m)	Depth (m)	Water temperature (°C)	pH	Species	$\delta^{13}C$ (‰)	$\delta^{15}N$ (‰)	Sampling date
							Xenograpsus testudinatus	-19.20	8.18	2010-July-2
							Xenograpsus testudinatus	-17.80	7.67	2010-July-2
							Xenograpsus testudinatus	-16.52	7.35	2010-July-2
							Xenograpsus testudinatus	-16.92	6.38	2010-July-2
							Xenograpsus testudinatus	-17.48	7.60	2010-July-2
							Xenograpsus testudinatus	-17.26	7.54	2010-July-2
							Xenograpsus testudinatus	-19.23	8.78	2010-July-2
							Xenograpsus testudinatus	-18.28	8.34	2010-July-2
							Xenograpsus testudinatus	-18.24	8.54	2010-July-2
							Xenograpsus testudinatus	-19.69	8.27	2010-July-2
							Xenograpsus testudinatus	-18.80	8.27	2010-July-2
							Xenograpsus testudinatus	-17.03	7.41	2010-July-2
							Xenograpsus testudinatus	-17.70	7.51	2010-July-2
							Xenograpsus testudinatus	-17.54	6.98	2010-July-2
							Xenograpsus testudinatus	-16.82	7.53	2010-July-2
							Xenograpsus testudinatus	-16.44	7.72	2010-July-2
							Xenograpsus testudinatus	-16.99	7.94	2010-July-2
							Xenograpsus testudinatus	-17.77	7.13	2010-July-2
							Xenograpsus testudinatus	-15.73	4.72	2010-August-04
							Xenograpsus testudinatus	-16.70	8.94	2010-August-04
							Xenograpsus testudinatus	-16.37	6.85	2010-August-04
							Xenograpsus testudinatus	-17.12	8.04	2010-August-04
							Xenograpsus testudinatus	-17.30	7.47	2010-August-04
							Xenograpsus testudinatus	-17.50	8.22	2010-August-04
							Xenograpsus testudinatus	-16.39	7.40	2010-August-04
							Xenograpsus testudinatus	-17.86	7.97	2010-August-04
							Xenograpsus testudinatus	-17.21	8.75	2010-August-04
							Xenograpsus testudinatus	-14.99	8.55	2010-August-04
							Xenograpsus testudinatus	-17.08	8.10	2010-August-04

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Table 1 (*continued*)

Location	Latitude (°N)	Longitude (°E)	Distance to vent center (m)	Depth (m)	Water temperature (°C)	pH	Species	$\delta^{13}C$ (‰)	$\delta^{15}N$ (‰)	Sampling date
							Xenograpsus testudinatus	-17.75	8.08	2010-August-04
							Phascolosoma sp.	-18.24	6.44	2009-July-2
							Phascolosoma sp.	-18.24	7.18	2010-July-2
							Phascolosoma sp.	-18.64	7.18	2010-July-2
							Phascolosoma sp.	-17.57	6.57	2010-July-2
							Phascolosoma sp.	-17.92	7.19	2010-August-23
							Halichondrida sp1.	-17.11	9.25	2009-July-2
							Halichondrida sp2.	-21.57	4.43	2010-July-2
							Halichondrida sp2.	-21.46	3.77	2010-July-2
							Halichondrida sp2.	-21.49	4.45	2010-July-2
							Colpomenia sinuosa	-16.22	4.00	2009-July-2
							Sargassum sp.	-22.05	5.03	2010-July-2
							Gelidiopsis repens	-32.91	3.64	2009-July-2
							Gelidiopsis repens	-24.21	2.70	2009-July-2
							Gelidiopsis repens	-31.42	4.03	2009-July-2
							Gelidiopsis repens	-22.32	3.31	2009-July-2
							Caulerpa brachypus f. parvifolia	-20.74	3.11	2009-July-2
							Caulerpa brachypus f. parvifolia	-20.92	3.09	2010-July-2
							Caulerpa brachypus f. parvifolia	-20.62	3.39	2010-July-2
							Chaetomorpha spiralis	-20.07	3.13	2009-July-2
							Cladophora catenata	-24.97	3.73	2009-July-2
							Cladophora catenata	-23.25	3.89	2009-July-2
							Cladophora catenata	-19.65	5.58	2009-July-2
							Cladophora catenata	-17.66	5.00	2009-July-2
							Codium intricatum	-14.32	3.32	2009-July-2
							Ulva lactuca	-20.87	3.59	2009-July-2
							periphyton sp. 1	-20.76	2.63	2010-July-2
							periphyton sp. 1	-14.72	2.06	2010-August-2

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Table 1 (*continued*)

Location	Latitude (°N)	Longitude (°E)	Distance to vent center (m)	Depth (m)	Water temperature (°C)	pH	Species	$\delta^{13}C$ (‰)	$\delta^{15}N$ (‰)	Sampling date
							periphyton sp. 1	-17.68	2.32	2010-August-2
							Copepod(mix)	-21.49	6.08	2009-July-2
							Copepod(mix)	-21.40	5.43	2009-July-2
							Copepod(mix)	-21.11	5.69	2009-July-2
							Zooplankton(mix)	-19.19	6.7	2010-July-2
							SOM(mix<10 um)	-17.56	3.86	2009-July-2
							SOM(mix<10 um)	-19.58	-3.23	2009-July-2
							SOM(mix<10 um)	-20.77	5.19	2009-July-2
							SOM(mix<10 um)	-18.79	3.65	2010-July-2
							SOM(mix<10 um)	-18.51	2.33	2010-July-2
							SOM(mix<10 um)	-18.79	2.34	2010-July-2
							SOM(mix<10 um)	-21.64	2.48	2010-July-2
							SOM(mix<10 um)	-19.68	9.37	2010-July-2
							SOM(mix<10 um)	-25.61	-1.12	2010-July-2
							SOM(mix<10 um)	-16.45	-1.25	2010-July-2
							SOM(mix<10 um)	-16.74	-3.12	2010-July-2
							SOM(mix<10 um)	-15.76	0.70	2010-July-2
							SOM(mix<10 um)	-17.33	0.31	2010-July-2
							SOM(mix<10 um)	-17.81	-3.60	2010-July-2
							SOM(mix<10 um)	-21.75	0.86	2010-July-2
							SOM(mix<10 um)	-16.60	3.76	2010-July-2
							SOM(mix<10 um)	-17.57	2.84	2010-July-2
Yellow vent	24.83553	121.96361	~ 5	7	26-27	7.8	*Trachinotus baillonii*	-16.93	10.81	2009-July-2
							Xenograpsus testudinatus	-15.91	6.21	2010-August-25
							Xenograpsus testudinatus	-16.37	7.81	2010-August-25
							Xenograpsus testudinatus	-15.22	5.39	2010-August-25
							Xenograpsus testudinatus	-16.28	7.60	2010-August-25
							Xenograpsus testudinatus	-16.12	6.79	2010-August-25
							Xenograpsus testudinatus	-16.10	7.37	2010-August-25

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Table 1 (*continued*)

Location	Latitude (°N)	Longitude (°E)	Distance to vent center (m)	Depth (m)	Water temperature (°C)	pH	Species	$\delta^{13}C$ (‰)	$\delta^{15}N$ (‰)	Sampling date
							Xenograpsus testudinatus	-15.71	6.27	2010-August-25
							Xenograpsus testudinatus	-16.51	7.03	2010-August-25
							Xenograpsus testudinatus	-16.77	7.18	2010-August-25
							Xenograpsus testudinatus	-15.79	6.50	2010-August-25
							Xenograpsus testudinatus	-17.00	8.00	2010-August-25
							Xenograpsus testudinatus	-14.99	4.40	2010-July-2
							Xenograpsus testudinatus	-17.96	8.57	2010-July-2
							Xenograpsus testudinatus	-16.74	7.41	2010-July-2
							Xenograpsus testudinatus	-16.97	6.53	2010-July-2
							Xenograpsus testudinatus	-16.84	7.29	2010-July-2
							Xenograpsus testudinatus	-15.71	3.89	2010-July-2
							periphyton sp. 1	-19.29	0.45	2010-August-25
							periphyton sp. 1	-23.85	1.60	2010-July-2
							periphyton sp. 1	-22.74	0.18	2010-August-25
							periphyton sp. 1	-21.05	0.27	2010-August-25
							periphyton sp. 2	-18.68	0.12	2010-August-25
							periphyton sp. 2	-18.39	0.78	2010-August-25
							periphyton sp. 2	-20.45	1.62	2010-August-25
							periphyton sp. 2	-20.97	0.81	2010-July-2
							periphyton sp.3	-22.60	1.41	2010-August-25
							Copepod (mix)	-21.30	5.97	2009-July-2
							Copepod (mix)	-21.09	4.86	2009-July-2
							Copepod (mix)	-21.68	9.49	2009-July-2
							Zooplankton (mix)	-20.21	6.77	2010-July-2
							SOM (mix<10 um)	-24.00	-2.46	2009-July-2
							SOM (mix<10 um)	-18.64	-7.29	2009-July-2
							SOM (mix<10 um)	-24.99	-6.13	2009-July-2
							SOM (mix<10 um)	-17.51	-1.60	2010-July-2
							SOM (mix<10 um)	-10.68	4.25	2010-July-2
							SOM (mix<10 um)	-18.36	-1.93	2010-July-2

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Table 1 (*continued*)

Location	Latitude (°N)	Longitude (°E)	Distance to vent center (m)	Depth (m)	Water temperature (°C)	pH	Species	$\delta^{13}C$ (‰)	$\delta^{15}N$ (‰)	Sampling date
							SOM (mix<10 um)	-19.17	0.22	2010-July-2
							SOM (mix<10 um)	-17.49	-0.95	2010-July-2
Tail of KS Islet	24.83404	121.96172	> 3000	7-17	26	8.1	*Diagramma pictum*	-17.64	11.07	2009-July-2
							Flatheads sp.	-16.07	11.08	2009-July-2
							Girella punctata	-18.35	10.44	2009-July-2
							Paracaesio caerulea	-16.73	11.37	2009-July-2
							Drupella cornus	-15.33	8.79	2009-July-2
							Morula granulata	-15.73	7.30	2009-July-2
							Morula granulata	-15.69	10.19	2009-July-2
							Lygdamis japonicus	-18.29	7.48	2009-July-2
							Lygdamis japonicus	-17.73	8.11	2009-July-2
							Clathria echinata	-20.07	6.47	2009-July-2
							Callyspongia fallax	-19.19	6.28	2009-July-2
							Dysidea etheria	-20.20	6.62	2009-July-2
							Sargassum sp.	-16.82	5.47	2010-July-2
							Meristotheca papulosa	-16.04	4.81	2010-July-2
							Codium intricatum	-13.07	5.32	2009-July-2
							Ulva lactuca	-14.74	5.23	2009-July-2
							Copepod (mix)	-21.46	4.62	2009-July-2
							Copepod (mix)	-20.83	5.80	2009-July-2
							Copepod (mix)	-21.21	6.33	2009-July-2
							Zooplankton (mix)	-20.28	6.44	2010-July-2
							SOM (mix<10 um)	-13.79	4.05	2009-July-2
							SOM (mix<10 um)	-16.68	6.69	2009-July-2
							SOM (mix<10 um)	-15.40	5.71	2010-July-2
							SOM (mix<10 um)	-14.38	4.67	2010-July-2
							SOM (mix<10 um)	-15.15	5.52	2010-July-2
							SOM (mix<10 um)	-14.70	-5.67	2010-July-2
							SOM (mix<10 um)	-13.91	2.67	2010-July-2
							SOM (mix<10 um)	-13.24	4.02	2010-July-2
							SOM (mix<10 um)	-14.93	2.83	2010-July-2
							SOM (mix<10 um)	-13.72	4.72	2010-July-2
							SOM (mix<10 um)	-14.92	4.18	2010-July-2

(*continued on next page*)

Table 1 (*continued*)

Location	Latitude (°N)	Longitude (°E)	Distance to vent center (m)	Depth (m)	Water temperature (°C)	pH	Species	$\delta^{13}C$ (‰)	$\delta^{15}N$ (‰)	Sampling date
Dali	24.95743	121.91960	>14000	7-17	26-27	8.1-8.2	*Choerodon azurio*	-17.32	11.14	2009-July-3
							Diagramma pictum	-17.38	11.78	2009-July-3
							Parupeneus ciliatus	-17.79	11.85	2009-July-3
							Prionurus scalprum	-18.18	10.99	2009-July-3
							Stenopus hispidus	-16.51	10.09	2009-July-3
							Uroptychus sp.	-14.40	6.96	2009-July-3
							Cronia margariticola	-15.98	8.9	2009-July-3
							Drupella cornus	-14.09	9.44	2009-July-3
							Drupella cornus	-14.74	9.37	2009-July-3
							Drupella cornus	-14.46	10.49	2009-July-3
							Ergalatax contractus	-15.67	10.01	2009-July-3
							Morula granulata	-15.40	11.25	2009-July-3
							Thais clavigera	-14.51	10.65	2009-July-3
							Liolophura japonica	-4.50	5.57	2009-July-3
							Liolophura japonica	-12.14	7.98	2009-July-3
							Rhyssoplax komaiana	-18.65	7.80	2009-July-3
							Thylacodes dentiferus	-15.93	5.70	2009-July-3
							Bostrycapulus gravispinosus	-17.49	2.18	2009-July-3
							Clathria echinata	-20.13	3.12	2009-July-3
							Dictyonella funicularis	-18.78	7.00	2009-July-3
							Haliclona tubifera	-19.55	5.61	2009-July-3
							Ulva lactuca	-15.53	5.37	2009-July-3
							SOM (mix<10 um)	-18.36	5.20	2009-July-3

2.2. Sample collection

Samples from YV and WV have gathered 5 m away from the emitting centers at depths of 7 and 17 m. At Tail and Dali, samples were collected between 7 to 17 m. The sampling periods were July 2009 and July–August 2010 at YV, WV, and Tail. In Dali, it was in July 2009. Seawater temperature and the depth of sampling sites were obtained from the records of dive computers (Table 1). For the measurements of pH, seawater was sampled with 25 mL sterile centrifuge tubes and determined by a portable pH meter (Radiometer, Copenhagen, Denmark).

Surface sediments (0−−2 cm) were collected by hands and stored in 50 mL sterile centrifuge tubes for sediment organic matter (SOM) preparation. Zooplankton was obtained by trawling vertically using a North Pacific standard net. Fishes were sampled by line fishing, and macrobenthos was hand-collected by scuba divers. Sessile species, such as sea anemones, *Thylacodes* snails, and periphyton, were gathered along with their substrates with a chisel and hammer. All samples were put in plastic bags and frozen at -20 °C until sample preparation.

2.3. Sample preparation for stable isotope determination

For SOM sample preparation, the collected surface sediments were thawed, ultra-sonicated for 10 min, and then filtered through a ten µm-mesh nylon membrane rinsed with phosphate-buffered saline (PBS) buffer. The filtrate was collected as a SOM sample (presumably microbial organisms) then lyophilized for further stable isotope measurements [5].

All collected organisms were identified to the lowest classification level, except for mixed samples (i.e., periphyton, copepods, and zooplankton). Identification of algae was based on external morphology and pigment color [6]. Copepods were the primary components of zooplankton samples (>70%). So copepods were treated as a mixed sample for carbon and nitrogen stable isotopic analysis and listed in Table 1.

Debris and epibionts were eliminated from samples before processed. Afterward, samples were rinsed with PBS buffer to avoid the potentially detrimental influence of acidic solutions [7–9] and distilled water in the cleaning process [7,10,11]. The knives and containers used for sample preparation were pre-cleaned by soaking in 1% hydrochloric acid (HCL) solution overnight and washing several times with distilled water. For macroalgae, thallus were used. Sessile organisms were scratched from their substrates with a knife. For large animals, tissue samples were taken from the dorsal muscle of fishes, the abdomen of shrimps, the leg muscle of crabs, and the foot muscle of snails. For small animals, whole samples (sea anemone, sipunculate, and polychaete) or pooled specimens (copepod, *Anachis* snail) were used.

The processed samples were lyophilized and grounded to powder by a pre-cleaned glass mortar and pestle. The powder was placed into 1.5 mL micro-centrifuge tubes. Approximately 1 mg of powder was weighed and encapsulated in a tin capsule, then stored in a 96-well sample collection plate ready for carbon and nitrogen isotope analyses.

2.4. Carbon and nitrogen stable isotope analyses

Analyses were conducted at the stable isotope laboratory at the University of California at Davis. Samples were combusted at 1020°C then analyzed by a PDZ Europa ANCA-GSL elemental analyzer coupled with a PDZ Europa 20–20 isotope ratio mass spectrometer (Sercon Ltd., Cheshire, UK). Ratios were derived from the equation of $\delta X\ (‰) = [(R_{sample}/R_{standard}) - 1] \times 10^3$. Where X is ^{13}C or ^{15}N, and R is the corresponding ratio of $^{13}C/^{12}C$ or $^{15}N/^{14}N$. Stable isotope abundances were expressed in conventional delta (δ) notation, and deviations in parts per thousand (‰) relative to the Pee Dee Belemnite and atmospheric N_2 standards for carbon and nitrogen, respectively.

During analysis, samples were interspersed with several standards from at least two different laboratories (nylon with certified $\delta^{13}C$ and $\delta^{15}N$ values of -27.8 and -9.8‰; USGS40, L-glutamic acid with certified $\delta^{13}C$ and $\delta^{15}N$ values of -28.9 and -4.3‰, respectively). Carbon and nitrogen contents were calculated based on peak area versus sample weight ratio and calibrated with standards. Analytical accuracy was 0.2‰ for $\delta^{13}C$ and 0.3‰ for $\delta^{15}N$ by comparing measured values (mean ± 1 SD) for the known values of the included laboratory reference materials (e.g., acetanilide). Analytical precision was <0.2‰ for both $\delta^{13}C$ and $\delta^{15}N$ based on the standard deviation of measurements of internal standards.

Ethics Statement

The authors declare that they have read and follow the ethical requirements for publication in Data in Brief.

CRediT Author Statement

Jing-Ying Wu: Writing, Methodology, Software; **Siou-Yan Lin:** Performed the experiments and data/evidence collection; **Shao-Hung Peng:** Visualization, Investigation; **Jia-Jang Hung:** Supervision, critical review; **Chen-Tung Arthur Chen:** Supervision, critical review, commentary, and revision for the pre-publication stage; **Li-Lian Liu:** Conceptualization, reviewing, and editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships which have or could be perceived to have influenced the work reported in this article.

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