The following supplement accompanies the article

Niche width expansion of coral reef fishes along a primary production gradient in the remote central Pacific

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Marine Ecology Progress Series 625: 127–143 (2019)

Text S1. Supplementary Methods – Environmental Data.

To quantify the extent of climatological variability among islands in sea surface temperature (SST) and nearshore chlorophyll-*a* (proxy for primary production) were characterized at an island for 2004-215 (12 years) (Gove et al. 2013, Fox et al. 2018). To characterize long-term variation in SST across the SLI we used the global 0.1° spatial resolution, monthly day/night composite SST data from the Advanced Very High Resolution Radiometer instrument aboard NOAA's Polar Operational Environmental Satellites (POES) (http://coastwatch.pfeg.noaa.gov/erddap/griddap/erdAGsstamday_LonPM180.html). This product accurately estimates *in situ* temperatures on shallow coral reefs in the central Pacific at monthly time scales (Fox et al. 2018) and therefore provides a useful metric for comparing climatological means across islands in this region. To quantify patterns of island-scale primary production, we used the eight-day 0.0417^{o} (~4-km) spatial resolution product of chl-*a* (mg m^{-3}) derived from the Moderate Resolution Imaging Spectroradiometer (MODIS; http://modis.gsfc.noaa.gov/). Data were obtained over the same 12-year period (2004-2015) to provide climatological means of surface chl-*a* concentrations across the SLI following the methods outlined in Gove et al. (2013) and Fox et al. (2018).

LITERATURE CITED

Fox MD, Williams GJ, Johnson MD, Kelly ELA, Radice VA, Zgliczynski BJ, Rohwer FL, Sandin SA, Smith JE (2018) Gradients in primary production predict trophic strategies of mixotrophic corals across spatial scales. Curr Biol, in press (accepted)

Gove JM, Williams GJ, McManus MA, Heron SF, Sandin SA, Vetter OJ, Foley DG (2013) Quantifying climatological ranges and anomalies for Pacific coral reef ecosystems. PLoS ONE 8(4): e61974

Table S1. Sample sizes for stomach content analysis and stable isotope analysis for each species. Numbers listed are the totals after empty stomachs and stable isotope outliers (> 4 SD) were removed. *Ctenochaetus marginatus* was not found at Flint or Millennium, and *Stegastes aureus* was not found on Flint. *Lutjanus bohar* individuals had many empty stomachs, thus stomach content analyses were not performed on this species.

	Flint		Vostok		Millennium		Starbuck		Malden	
Species	**Stomachs**	**Stable Isotopes**	**Stomachs**	**Stable Isotopes**	**Stomachs**	**Stable Isotopes**	**Stomachs**	**Stable Isotopes**	**Stomachs**	**Stable Isotopes**
Paracirrhites arcatus	24	25	27	25	25	24	31	24	27	24
Cephalopholis urodeta	19	25	11	25	25	25	12	25	18	25
Lujanus bohar	0	24	0	25	0	23	0	25	0	24
Pseudanthias bartlettorum	24	25	22	24	25	25	23	25	25	25
Chromis margaritifer	22	23	24	25	25	25	16	25	19	23
Stegastes aureus	0	0	14	25	23	11	26	25	25	23
Acanthurus nigricans	21	25	25	25	25	25	24	25	25	24
Ctenochaetus marginatus	0	0	24	25	0	0	24	25	25	24

Table S2. Mean percentages (± 1 SE) of prey groups by percent weight in the stomachs of *Paracirrhites arcatus* from the Southern Line Islands. Islands listed in order of increasing oceanographic primary production.

Prey Group			Flint	Vostok	Millennium	Starbuck	Malden
Crustaceans			80.77 (5.28)	77.85 (7.00)	80.5 (7.32)	90.71 (4.18)	78.85 (6.00)
	Decapoda		52.08 (8.03)	58.88 (8.89)	41.72 (9.73)	47.59 (8.02)	41.52 (8.41)
		Crab	28.25 (8.18)	26.59 (7.32)	18.36 (7.62)	33.96 (7.65)	21.86 (6.74)
		Shrimp	5.54 (3.47)	0.00 (0.00)	0.00 (0.00)	1.20 (0.87)	2.78 (2.49)
		Megalopae	15.03 (5.32)	25.00 (7.28)	11.36 (6.30)	9.20 (3.62)	5.93 (4.00)
		Unidentifiable	3.26 (2.35)	7.28 (4.53)	12.00 (6.63)	3.23 (3.23)	10.95 (6.08)
	Stomatopoda		4.17 (4.17)	3.33 (3.33)	4.00 (4.00)	0.00 (0.00)	0.97 (0.97)
	Isopoda		0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.23 (0.23)	0.00 (0.00)
	Amphipoda		0.64 (0.64)	0.00 (0.00)	1.36 (0.94)	0.00 (0.00)	0.00 (0.00)
	Unidentifiable		23.88 (6.96)	15.65 (6.46)	33.42 (8.77)	42.89 (7.95)	36.35 (8.43)
Fish			19.03 (5.31)	21.98 (6.93)	15.5 (6.53)	9.29 (4.18)	20.12 (6.05)
	Unidentifiable		19.03 (5.31)	18.83 (6.75)	14.11 (6.59)	9.29 (4.18)	20.12 (6.05)
	Fish Eggs		0.00 (0.00)	3.15 (2.62)	1.39 (0.96)	0.00 (0.00)	0.00 (0.00)
Other			0.21 (0.20)	0.17 (0.17)	4.00 (4.00)	0.00 (0.00)	1.03 (1.03)
	Mollusca	Gastropoda	0.20 (0.20)	0.00 (0.00)	4.00 (4.00)	0.00 (0.00)	1.03 (1.03)
	Parasites		0.01 (0.01)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
	Foraminifera	Benthic Foram	0.00 (0.00)	0.17 (0.17)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)

Table S3. Mean percentages (± 1 SE) of prey groups by percent weight in the stomachs of *Cephalopholis urodeta* from the Southern Line Islands. Islands listed in order of increasing oceanographic primary production.

Prey Group			Flint	Vostok	Millennium	Starbuck	Malden
Crustaceans			61.30 (11.11)	45.39 (15.73)	35.08 (9.35)	48.94 (14.78)	62.05 (11.02)
	Decapoda		36.26 (11.20)	9.09 (9.09)	20.00 (8.16)	32.42 (13.85)	37.16 (11.34)
		Crab	23.10 (9.58)	9.09 (9.09)	4.00 (4.00)	16.67 (11.24)	15.95 (8.67)
		Shrimp	5.26 (5.26)	0.00 (0.00)	0.00 (0.00)	15.75 (10.64)	15.66 (8.52)
		Megalopae	7.89 (5.75)	0.00 (0.00)	4.00 (4.00)	0.00 (0.00)	0.00 (0.00)
		Unidentifiable	0.00 (0.00)	0.00 (0.00)	12.00 (6.63)	0.00 (0.00)	5.56 (5.56)
	Unidentifiable		25.04 (11.12)	36.30 (15.19)	15.08 (6.78)	16.52 (11.14)	24.88 (10.09)
Fish	**Unidentifiable**		38.70 (11.12)	45.41 (15.69)	60.80 (9.56)	50.91 (14.83)	32.40 (10.58)
Other			0.00 (0.00)	9.19 (9.08)	4.11 (4.00)	0.15 (0.15)	5.56 (5.56)
	Mollusca	Gastropoda	0.00 (0.00)	9.09 (9.09)	4.00 (4.00)	0.00 (0.00)	0.00 (0.00)
	Algae		0.00 (0.00)	0.10 (0.10)	0.11 (0.11)	0.15 (0.15)	0.00 (0.00)
	Unknown		0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	5.56 (5.56)

Table S4. Mean percentages (± 1 SE) of prey groups by percent abundance in the stomachs of *Pseudanthias bartlettorum* from the Southern Line Islands. Islands listed in order of increasing oceanographic primary production.

Prey Group	Flint	Vostok	Millennium	Starbuck	Malden
Copepoda	83.02 (1.75)	71.08 (2.43)	93.32 (1.33)	75.16 (3.77)	79.75 (3.96)
Harpacticoida	34.92 (1.58)	10.77 (1.41)	52.07 (5.60)	40.79 (3.87)	59.80 (4.53)
Calanoida	0.75 (0.18)	7.61 (0.88)	3.66 (1.09)	0.13 (0.07)	0.40 (0.21)
Candaciidae	0.48 (0.14)	4.92 (0.76)	3.63 (1.09)	0.04 (0.04)	0.40 (0.21)
Other	0.27 (0.11)	2.69 (0.51)	0.03 (0.03)	0.09 (0.06)	0.00 (0.00)
Poecilostomatoida	31.67 (1.94)	38.70 (2.41)	27.28 (4.15)	24.94 (2.77)	11.90 (2.11)
Oncaeidae	24.57 (1.18)	18.70 (2.04)	17.94 (2.08)	17.58 (2.23)	11.08 (2.06)
Corycaecidae	7.11 (1.01)	20.00 (2.00)	9.34 (2.29)	7.36 (1.25)	0.83 (0.25)
Cyclopoida	0.04 (0.04)	1.20 (0.72)	0.23 (0.12)	0.00 (0.00)	0.08 (0.08)
Sapphirinidae	0.04 (0.04)	1.20 (0.72)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Other	0.00 (0.00)	0.00 (0.00)	0.23 (0.12)	0.00 (0.00)	0.08 (0.08)
Unidentifiable	0.02 (0.02)	0.73 (0.27)	1.72 (0.52)	0.00 (0.00)	0.33 (1.02)
Egg Sacs	15.62 (1.23)	12.08 (1.54)	8.35 (1.02)	9.31 (1.23)	7.24 (1.03)
Other Crustaceans	0.04 (0.04)	0.13 (0.09)	0.33 (0.17)	0.00 (0.00)	0.13 (0.13)
Decapoda	0.00 (0.00)	0.00 (0.00)	0.13 (0.09)	0.00 (0.00)	0.13 (0.13)
Stomatopoda	0.00 (0.00)	0.00 (0.00)	0.02 (0.02)	0.00 (0.00)	0.00 (0.00)
Appendages	0.04 (0.04)	0.13 (0.09)	0.18 (0.12)	0.00 (0.00)	0.00 (0.00)
Mollusca	0.22 (0.11)	2.30 (0.56)	0.20 (0.13)	2.66 (0.88)	0.39 (0.17)
Gastropoda	0.18 (0.11)	1.82 (0.47)	0.20 (0.13)	2.46 (0.86)	0.39 (0.17)
Bivalvia	0.04 (0.04)	0.48 (0.42)	0.00 (0.00)	0.20 (0.09)	0.00 (0.00)
Larvaceans	2.70 (0.35)	4.28 (0.73)	0.85 (0.22)	5.10 (1.07)	2.90 (1.35)
Appendicularia	2.47 (0.34)	4.06 (0.68)	0.78 (0.20)	4.30 (0.72)	0.92 (0.31)
Salp	0.24 (0.09)	0.22 (0.17)	0.07 (0.04)	0.80 (0.67)	1.98 (1.09)
Foraminifera	4.04 (0.94)	3.55 (0.65)	0.49 (0.20)	4.74 (1.08)	8.45 (1.83)
Fish	1.28 (0.71)	4.91 (1.60)	1.22 (0.27)	2.03 (0.69)	0.39 (0.17)
Fish Egg	0.08 (0.08)	0.51 (0.22)	0.87 (0.22)	0.19 (0.15)	0.00 (0.00)
Fish Scale	1.20 (0.71)	4.41 (1.61)	0.33 (0.14)	1.80 (0.69)	0.39 (0.17)
Fish Spine	0.00 (0.00)	0.00 (0.00)	0.02 (0.02)	0.04 (0.04)	0.00 (0.00)
Other	8.69 (1.59)	13.75 (2.55)	3.59 (1.23)	10.30 (1.80)	8.00 (1.84)
Ostracod	0.02 (0.02)	0.33 (0.16)	0.06 (0.04)	0.60 (0.26)	0.18 (0.13)
Trichodesmium	0.14 (0.07)	0.22 (0.22)	0.00 (0.00)	2.02 (0.88)	0.10 (0.07)
unIDable Sphere	5.84 (1.42)	8.38 (2.64)	2.32 (0.85)	2.43 (0.54)	2.87 (0.61)
Phytoplankton cyst	0.02 (0.02)	0.00 (0.00)	0.00 (0.00)	0.07 (0.07)	0.00 (0.00)
Other	0.00 (0.00)	0.00 (0.00)	0.02 (0.02)	0.61 (0.31)	0.08 (0.05)
Unidentifiable	2.68 (0.38)	4.82 (0.94)	1.20 (0.46)	4.57 (1.27)	4.78 (1.37)

Table S5. Mean percentages (± 1 SE) of prey groups by percent abundance in the stomachs of *Chromis margaritifer* from the Southern Line Islands. Islands listed in order of increasing oceanographic primary production.

Prey Group	Flint	Vostok	Millennium	Starbuck	Malden
Copepoda	84.53 (2.55)	81.67 (1.09)	80.01 (2.51)	66.31 (4.17)	58.42 (5.06)
Harpacticoida	11.34 (1.74)	23.77 (2.90)	32.76 (3.66)	15.93 (2.60)	36.00 (4.84)
Calanoida	1.77 (0.83)	8.39 (1.11)	4.17 (0.73)	5.78 (1.76)	0.59 (0.25)
Candaciidae	1.29 (0.55)	2.73 (0.49)	3.90 (0.69)	1.48 (0.55)	0.43 (0.20)
Other	0.48 (0.38)	5.66 (1.01)	0.27 (0.09)	4.30 (1.44)	0.17 (0.08)
Poecilostomatoida	62.45 (3.48)	44.37 (2.19)	34.75 (2.58)	41.94 (2.85)	13.23 (3.28)
Oncaeidae	52.94 (3.34)	29.82 (1.57)	25.36 (1.62)	35.61 (2.30)	10.69 (3.12)
Corycaecidae	9.50 (1.33)	14.55 (1.33)	9.39 (1.39)	6.33 (0.97)	2.54 (0.56)
Cyclopoida	0.03 (0.03)	0.17 (0.07)	0.17 (0.08)	0.00 (0.00)	0.00 (0.00)
Sapphirinidae	0.03 (0.03)	0.17(0.07)	0.09 (0.04)	0.00 (0.00)	0.00 (0.00)
Other	0.00 (0.00)	0.00 (0.00)	0.09 (0.07)	0.00 (0.00)	0.00 (0.00)
Unidentifiable	0.22 (0.14)	0.86 (0.25)	0.28 (0.13)	0.29 (0.21)	0.65 (.034)
Egg Sacs	8.73 (1.75)	4.10 (0.50)	7.87 (0.78)	2.37 (0.67)	7.94 (1.77)
Other Crustaceans	0.00 (0.00)	0.47 (0.40)	0.00 (0.00)	3.24 (1.51)	0.32 (0.23)
Decapoda	0.00 (0.00)	0.03 (0.03)	0.00 (0.00)	2.11 (1.20)	0.11 (0.11)
Appendages	0.00 (0.00)	0.45 (0.40)	0.00 (0.00)	1.13 (0.61)	0.20 (0.20)
Mollusca	0.20 (0.13)	0.48 (0.16)	1.02 (0.38)	2.53 (0.97)	0.19 (0.11)
Gastropoda	0.18 (0.13)	0.16 (0.07)	0.43 (0.18)	2.53 (0.97)	0.17 (0.10)
Bivalvia	0.03 (0.03)	0.31 (0.14)	0.59 (0.33)	0.00 (0.00)	0.02 (0.02)
Larvaceans	4.41 (0.90)	6.95 (0.73)	5.88 (0.96)	11.96 (2.51)	22.80 (4.54)
Appendicularia	3.78 (0.89)	6.88 (0.73)	5.55 (0.94)	5.44 (1.12)	3.19 (0.63)
Salp	0.64 (0.44)	0.07 (0.04)	0.33 (0.10)	6.51 (2.51)	19.62 (4.52)
Foraminifera	4.72 (1.11)	4.66 (0.96)	6.48 (0.96)	4.09 (1.01)	10.44 (2.12)
Fish	0.54 (0.35)	0.81 (0.33)	2.55 (1.92)	2.88 (0.84)	2.52 (1.21)
Fish Egg	0.50 (0.35)	0.26 (0.11)	1.98 (1.91)	0.34 (0.27)	2.14 (1.22)
Fish Scale	0.00 (0.00)	0.56 (0.31)	0.15 (0.11)	2.54 (0.86)	0.11 (0.08)
Fish Spine	0.04 (0.04)	0.00 (0.00)	0.42 (0.35)	0.00 (0.00)	0.27 (0.27)
Other	5.59 (1.64)	4.96 (0.76)	4.05 (0.79)	8.99 (1.90)	5.31 (1.21)
Ostracod	0.83 (0.83)	0.01 (0.01)	0.00 (0.00)	0.28 (0.28)	0.00 (0.00)
Trichodesmium	0.23 (0.16)	0.00 (0.00)	0.07 (0.07)	1.14 (0.54)	0.04 (0.04)
unIDable Sphere	2.61 (1.27)	3.25 (0.74)	1.71 (0.49)	0.56 (0.42)	0.68 (0.36)
Phytoplankton cyst	0.47 (0.38)	0.18 (0.08)	0.03 (0.03)	0.19 (0.19)	0.00 (0.00)
Fat globule	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	1.35 (1.02)
Benthic algae	0.24 (0.22)	0.00 (0.00)	0.26 (0.15)	0.00 (0.00)	0.27 (0.16)
Other	0.00 (0.00)	0.03 (0.02)	0.10 (0.08)	0.46 (0.35)	0.04 (0.04)
Unidentifiable	1.22 (0.28)	1.49 (0.41)	1.89 (0.31)	6.36 (2.17)	2.92 (0.77)

Table S6. Mean percentages (± 1 SE) of prey groups by estimating percent area in the stomachs of *Acanthurus nigricans* from the Southern Line Islands. Islands listed in order of increasing oceanographic primary production.

Prey Group	Flint	Vostok	Millennium	Starbuck	Malden
Algae	61.82 (2.08)	72.09 (1.61)	62.08 (1.61)	69.69 (3.03)	66.89 (2.91)
Early Algae	21.74 (1.32)	21.55 (2.22)	9.45 (0.76)	37.18 (3.90)	23.27 (1.66)
Filamentous	20.42 (1.37)	14.56 (1.67)	4.57 (0.58)	31.4 (4.17)	14.77 (1.52)
Cyanobacteria	0.92 (0.15)	6.86 (1.92)	4.83 (0.61)	3.60 (0.65)	8.43 (1.10)
Net-Like	0.00 (0.00)	0.11 (0.11)	0.00 (0.00)	0.03 (0.03)	0.06 (0.06)
Fleshy Encrusting	0.40 (0.18)	0.02 (0.02)	0.05 (0.04)	0.00 (0.00)	0.01 (0.01)
Diatom	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	2.15 (2.02)	0.00 (0.00)
Late Algae	38.71 (1.77)	47.82 (2.62)	44.89 (1.45)	31.84 (2.91)	41.37 (3.10)
Foliose	19.19 (1.50)	22.34 (2.34)	18.33 (1.40)	6.82 (1.54)	17.61 (1.82)
Complex Cylinder	18.48 (1.50)	13.12 (1.66)	18.28 (1.47)	19.86 (2.27)	17.03 (3.49)
Coenocytic	1.05 (0.29)	12.36 (1.54)	8.28 (0.90)	5.16 (0.34)	6.73 (0.85)
Calcified Algae	1.37 (0.29)	2.72 (0.80)	7.74 (1.91)	0.67 0.34)	2.25 (0.49)
Jointed Calcareous	0.30 (0.13)	2.70 (0.78)	5.15 (1.58)	0.67 (0.34)	1.80 (0.44)
Calcified Crust	1.07 (0.20)	0.02 (0.02)	2.59 (1.09)	0.00 (0.00)	0.45 (0.29)
Invertebrates	9.77 (0.81)	4.46 (0.64)	8.41 (0.83)	6.45 (1.46)	3.25 (1.21)
Invertebrate	4.89 (0.83)	1.70 (0.39)	6.88 (0.86)	6.30 (1.45)	2.75 (1.01)
Foraminifera	4.88 (0.57)	2.76 (0.54)	1.53 (0.33)	0.15 (0.06)	0.50 (0.22)
Other	28.40 (1.47)	23.45 (1.47)	29.51 (1.52)	23.86 (2.49)	29.86 (2.50)
Detritus	20.77 (1.10)	17.66 (1.32)	22.92 (0.93)	19.34 (2.31)	17.48 (1.50)
Fish Scale	0.23 (0.11)	0.04 (0.03)	1.39 (0.67)	0.28 (0.22)	1.22 (0.45)
Sand	7.40 (0.66)	5.75 (0.59)	5.20 (0.57)	4.24 (0.64)	11.16 (1.73)

Table S7. Mean percentages (± 1 SE) of prey groups by estimating percent area in the stomachs of *Ctenochaetus marginatus* from the Southern Line Islands. Islands listed in order of increasing oceanographic primary production. *Ctenochaetus marginatus* was not found at Flint or Millennium, so these islands are excluded.

Prey Group	Vostok	Starbuck	Malden
Algae	7.34 (0.73)	9.47 (0.82)	7.23 (0.99)
Early Algae	4.75 (0.37)	7.24 (0.51)	5.60 (0.75)
Filamentous	4.42 (0.35)	6.19 (0.44)	4.63 (0.66)
Cyanobacteria	0.33 (0.08)	1.05 (0.18)	0.97 (0.24)
Net-Like	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Fleshy Encrusting	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Diatom	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Late Algae	1.90 (0.39)	2.08 (0.51)	1.47 (0.46)
Foliose	0.96 (0.29)	0.17 (0.17)	1.07 (0.37)
Complex Cylinder	0.82 (0.17)	1.90 (0.40)	0.40 (0.15)
Coenocytic	0.11 (0.07)	0.02 (0.01)	0.00 (0.00)
Calcified Algae	0.70 (0.19)	0.15 (0.04)	0.16 (0.07)
Jointed Calcareous	0.70 (0.19)	0.15 (0.04)	0.15 (0.07)
Calcified Crust	0.00 (0.00)	0.00 (0.00)	0.01 (0.01)
Invertebrates	9.27 (1.21)	3.90 (0.34)	1.77 (0.23)
Invertebrate	1.19 (0.14)	2.63 (0.30)	1.19 (0.17)
Foraminifera	8.08 (1.21)	1.27 (0.13)	0.58 (0.17)
Other	83.39 (1.34)	86.64 (1.05)	91.00 (1.03)
Detritus	39.93 (1.19)	46.17 (1.16)	47.02 (1.81)
Fish Scale	0.85 (0.67)	0.18 (0.09)	4.18 (1.98)
Sand	42.60 (1.50)	40.29 (1.55)	39.80 (2.89)

Table S8. Mean percentages (± 1 SE) of prey groups by percent area in the stomachs of *Stegastes aureus* from the Southern Line Islands. Islands listed in order of increasing oceanographic primary production. *Stegastes aureus* was not found at Flint.

Prey Group	Vostok	Millennium	Starbuck	Malden
Algae	15.18 (2.61)	7.13 (0.65)	14.39 (1.55)	18.6 (1.44)
Early Algae	8.11 (1.35)	4.96 (0.35)	8.48 (0.86)	11.15 (0.83)
Filamentous	7.00 (1.18)	3.99 (0.25)	6.61 (0.79)	10.02 (0.83)
Cyanobacteria	1.11 (0.36)	0.97 (0.19)	1.88 (0.33)	1.12 (0.28)
Net-Like	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Fleshy Encrusting	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.01 (0.01)
Diatom	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Late Algae	6.57 (1.40)	2.05 (0.40)	5.73 (1.20)	6.72 (1.06)
Foliose	0.77 90.37)	0.16 (0.10)	0.16 (0.07)	1.23 (0.36)
Complex Cylinder	3.00 (0.76)	0.96 (0.20)	3.32 (1.00)	1.25 (0.26)
Coenocytic	2.80 (0.83)	0.93 (0.29)	2.25 (0.46)	4.24 (0.90)
Calcified Algae	0.50 (0.27)	0.12 (0.05)	0.18 (0.08)	0.73 (0.27)
Jointed Calcareous	0.50 (0.27)	0.08 (0.04)	0.08 (0.04)	0.32 (0.14)
Calcified Crust	0.00 (0.00)	0.04 (0.04)	0.11 (0.08)	0.41 (0.22)
Invertebrates	11.02 (3.49)	12.43 (1.21)	18.71 (1.69)	7.73 (1.16)
Invertebrate	6.71 (3.65)	8.59 (1.20)	18.18 (1.67)	7.25 (1.11)
Foraminifera	4.30 (0.94)	3.83 (0.49)	0.53 (0.12)	0.48 (0.11)
Other	73.80 (2.66)	80.44 (1.28)	66.89 (2.37)	73.67 (1.72)
Detritus	30.73 (1.95)	29.24 (1.02)	33.92 (1.63)	40.16 (2.21)
Fish Scale	0.11 (0.11)	0.05 (0.04)	0.16 (0.12)	0.11 (0.08)
Sand	42.96 (2.35)	51.15 (1.55)	32.81 (2.20)	33.40 (2.53)

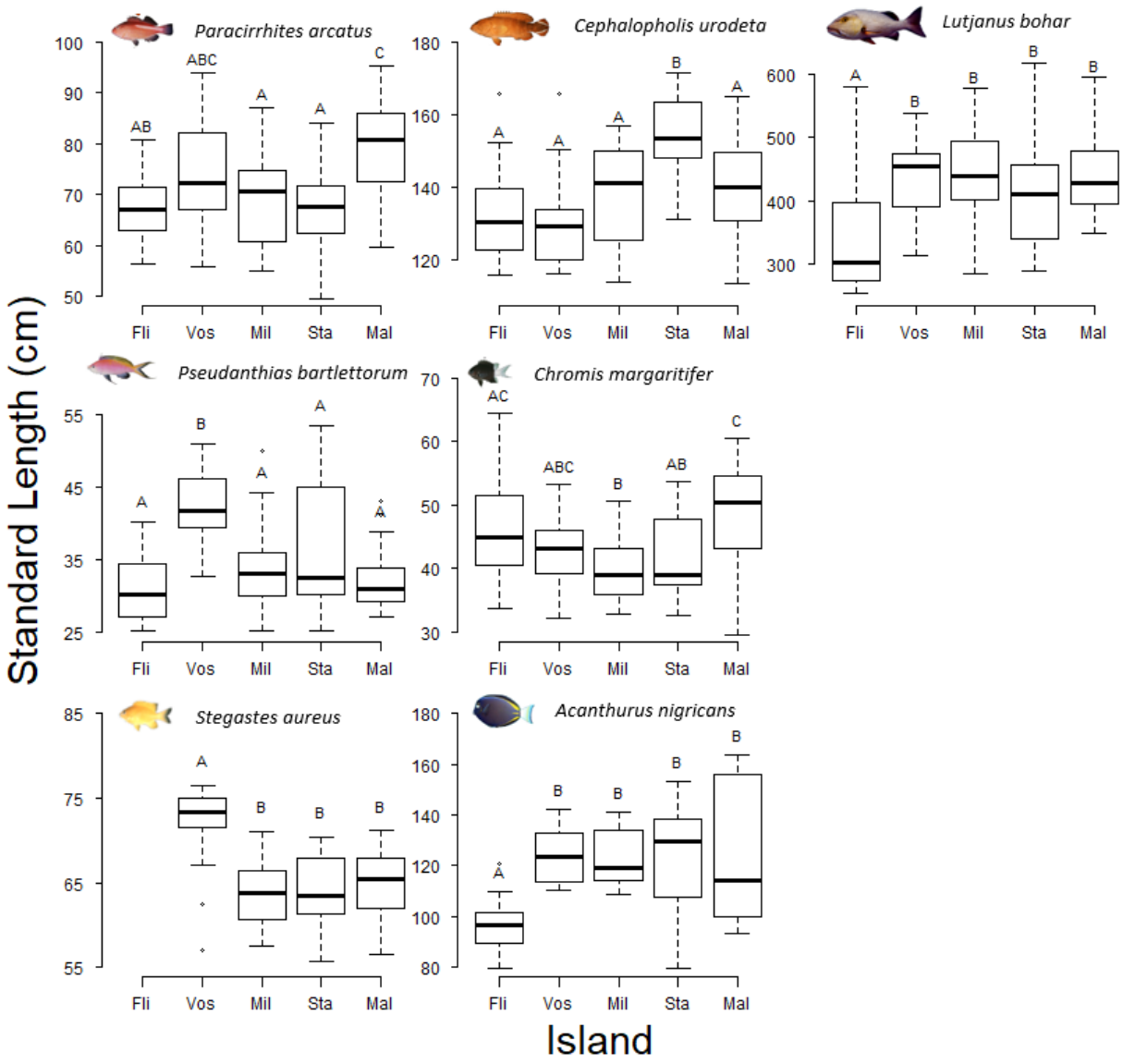

Figure S1. Boxplots showing the standard lengths of individual fish used in this study, separated by species and island. A one-factor ANOVA revealed significance in all species across the islands, and the letters above the boxplots indicate significantly different groups. Although these tests were significant, there appears to be no consistent bias of body size with increased PP_n.

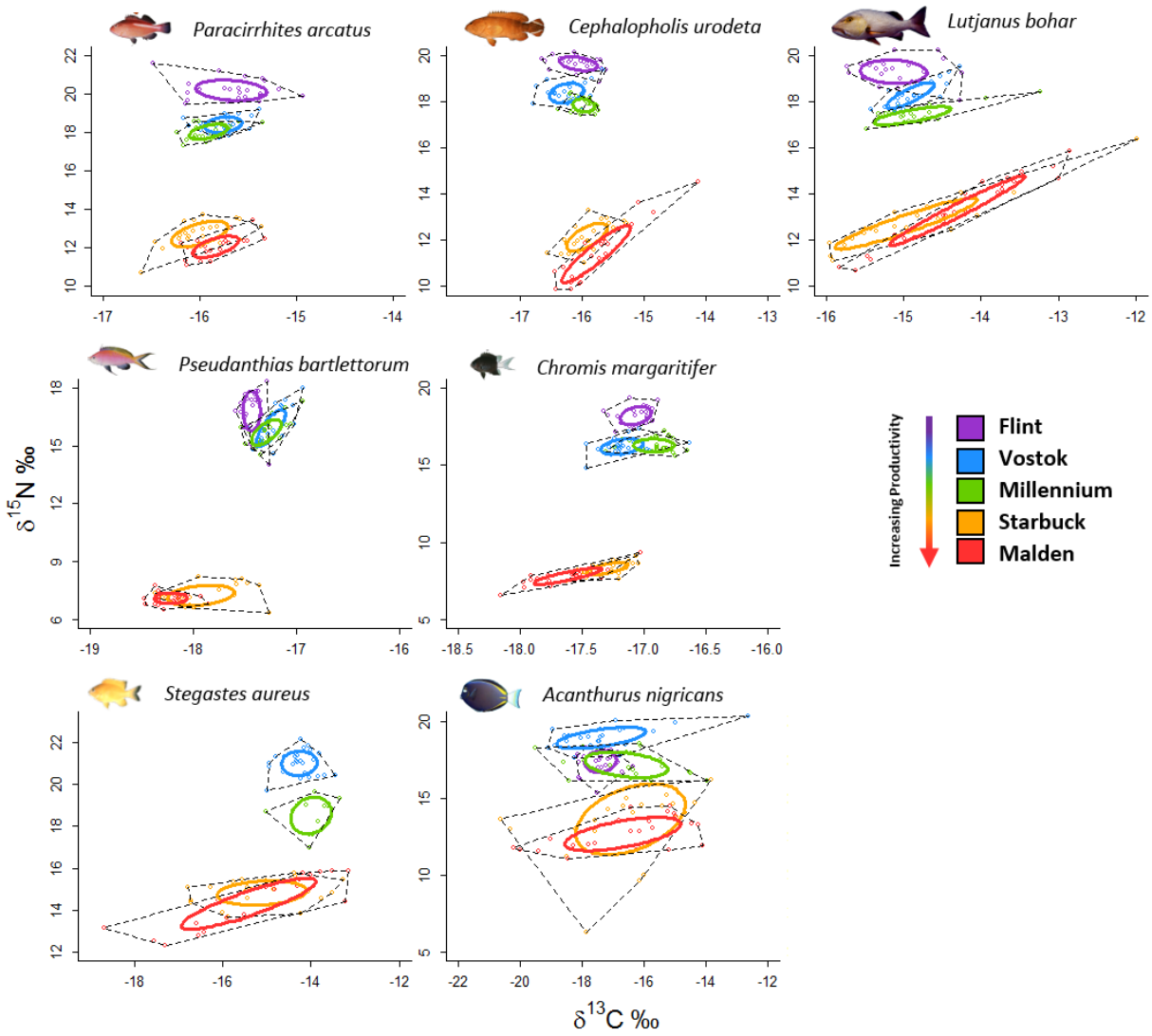

Figure S2. Stable isotope biplots ($\delta^{13}C$ - $\delta^{15}N$) of all eight species in this study. Every point is an individual's signature in bivariate isotopic space, and they are colored by island. The colored ellipses show the population's standard ellipse, a bivariate representation of standard deviation, while the dotted lines demonstrate the population's convex hull. Note that every panel has its own scale to better demonstrate variation of ellipse size and shape among populations within each species.

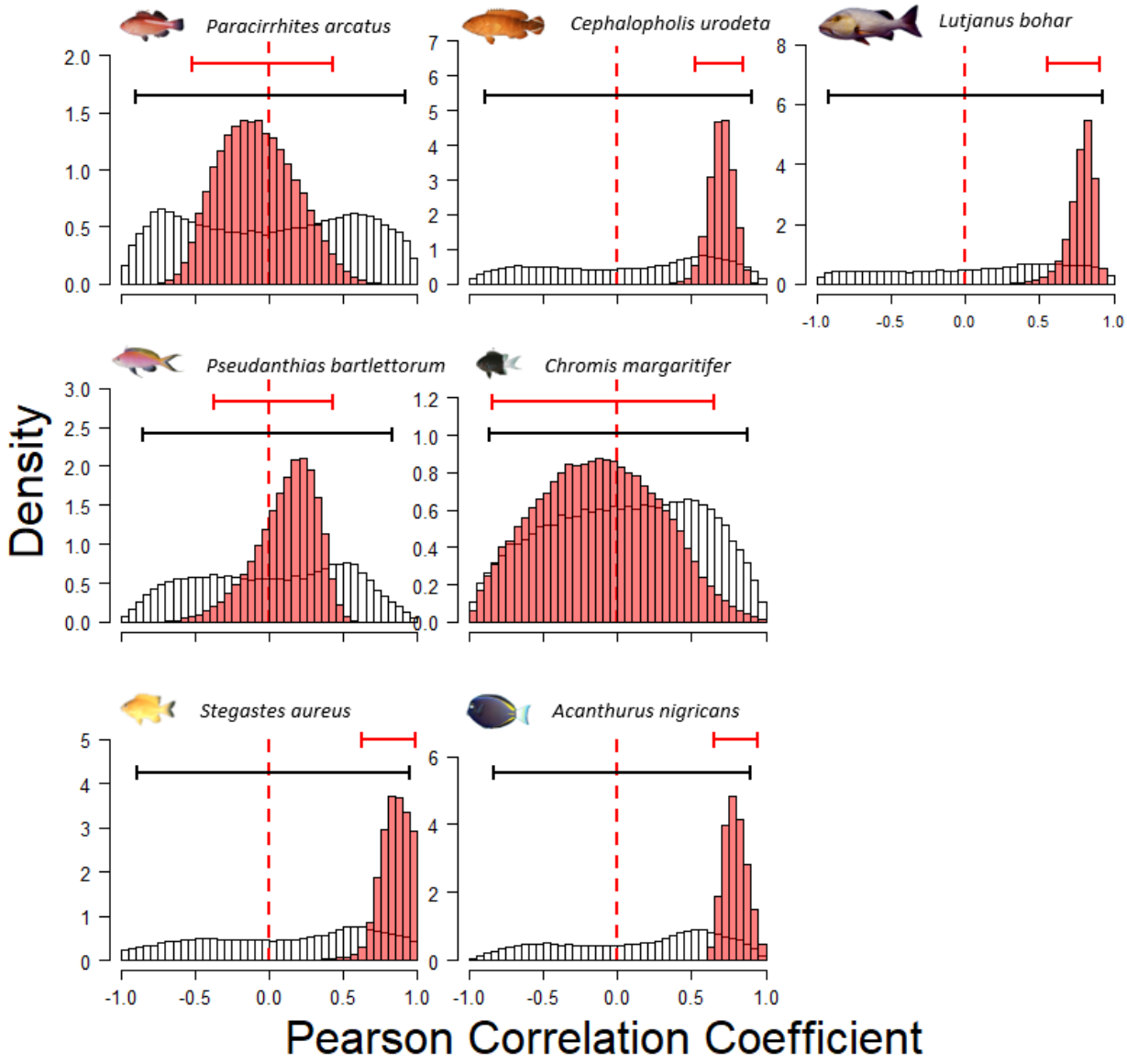

Figure S3. Histograms representing the distribution of correlation coefficients from randomly drawing one sample from the posterior distribution of each species' ellipse area at each island and running a Pearson correlation against the 12-year mean Chl-a value at each island 100,000 times. The y-axis represents density, with the sum of each bar multiplied by the y-axis value adding up to 1. The dashed red line indicates a correlation coefficient of 0. Unfilled distributions represent those constructed from posterior distributions shifted to represent no relationship, while distributions filled with red represent the unaltered data. The bars above show the range of values that encompass the middle 95% of the data and the colors match the distributions.

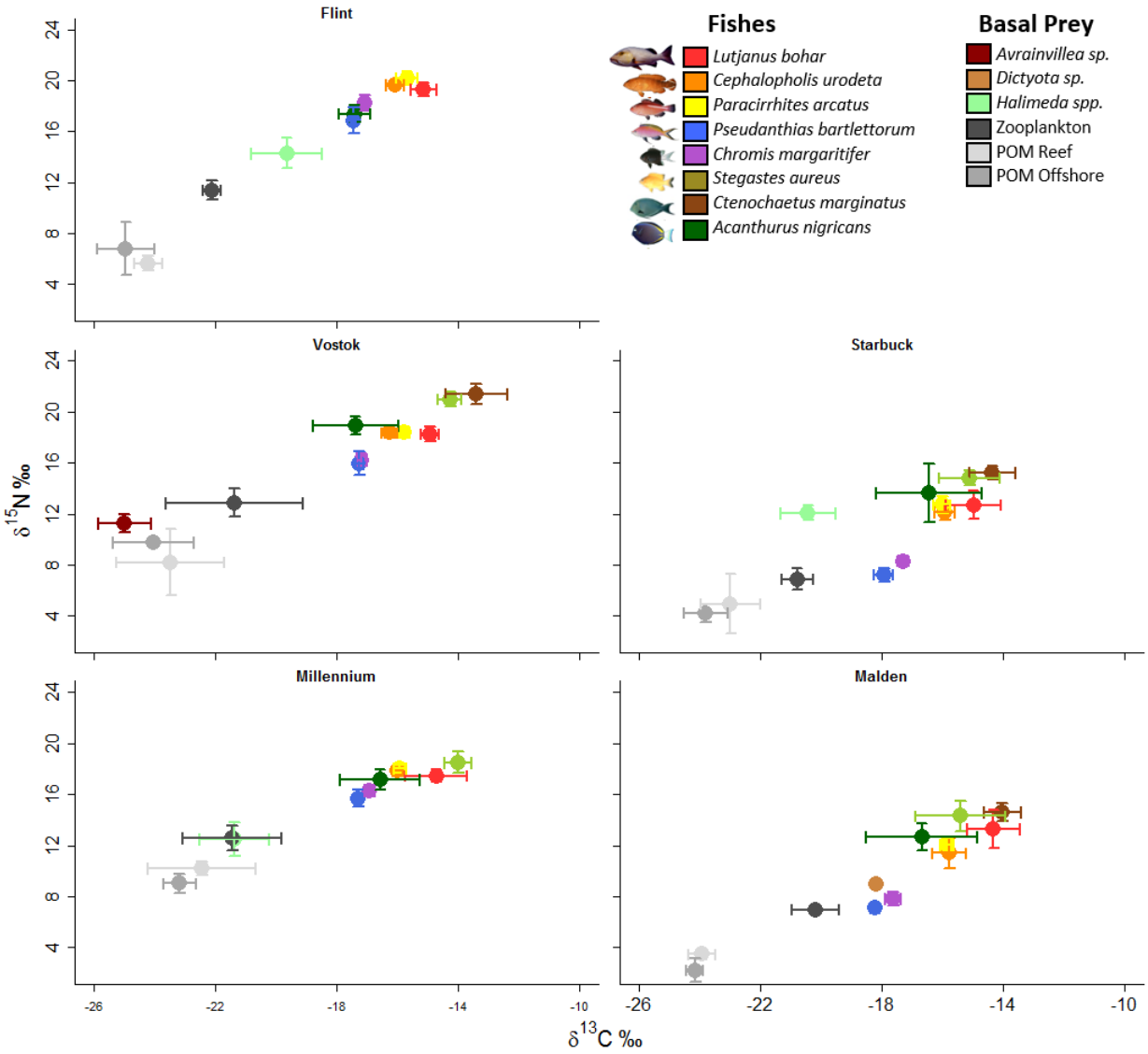

Figure S4. Stable isotope biplots ($\delta^{13}C$ - $\delta^{15}N$) for eight species of coral reef fishes and four examples of basal food sources (macroalgae, zooplankton, and POM collected on- and off-shore) plotted for each of the five Southern Line Islands. All points represent the mean, and the error bars represent ± 1 standard deviation.

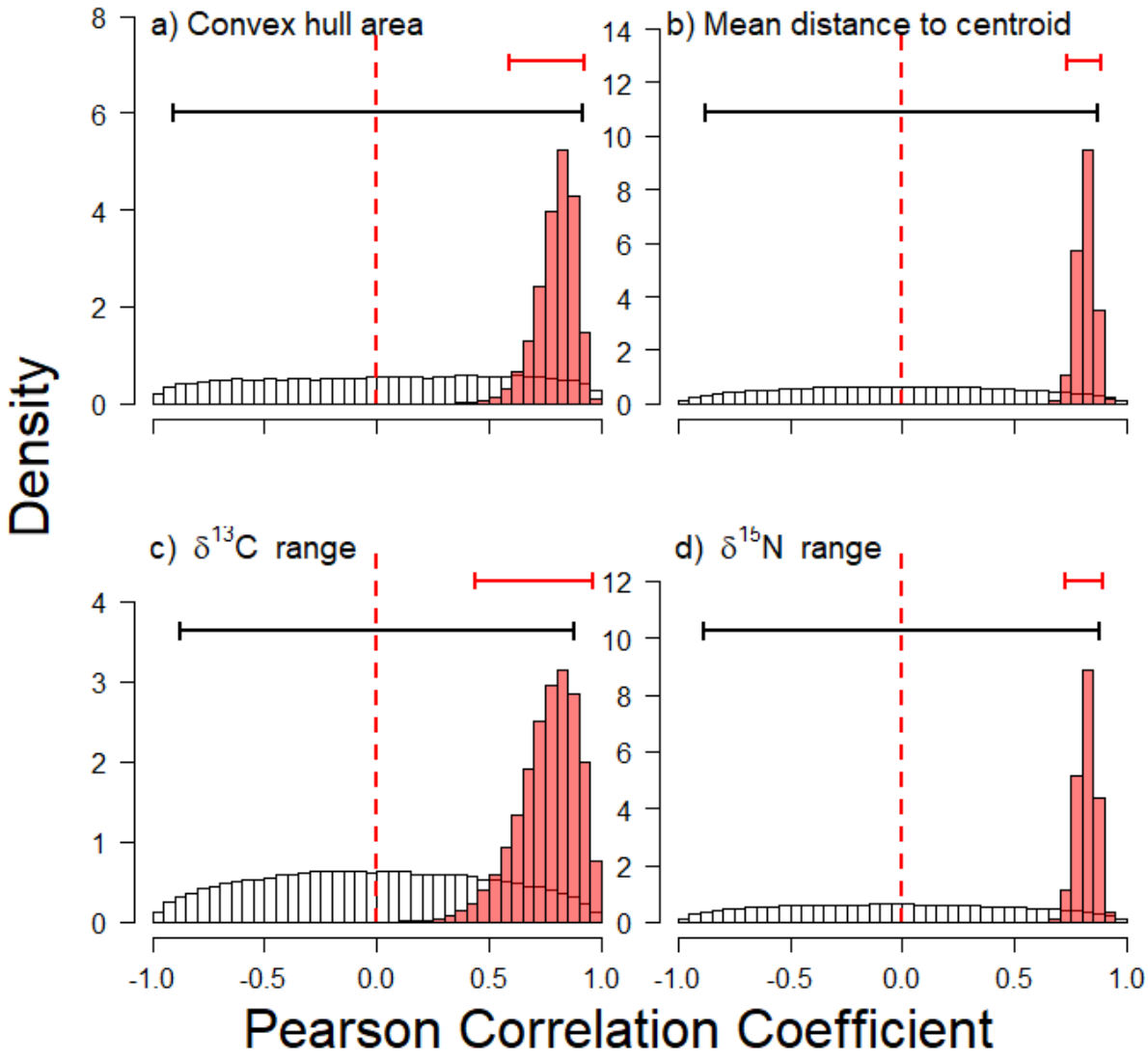

Figure S5. Histograms representing the distribution of correlation coefficients from randomly drawing one sample from the posterior distribution of **a)** convex hull area, **b)** mean distance to centroid, **c)** $\delta^{13}C$ range, and **d)** $\delta^{15}N$ range from every island and running a Pearson correlation against the 12-year mean Chl-a value at each island 100,000 times. The y-axis represents density, with the sum of each bar multiplied by the y-axis value adding up to 1. The dashed red line indicates a correlation coefficient of 0. Unfilled distributions represent those constructed from posterior distributions shifted to represent no relationship, while distributions filled with red represent the unaltered data. The bars above show the range of values that encompass the middle 95% of the data and the colors match the distributions.