

Supplementary Materials for
Early evidence for historical overfishing in the Gulf of Mexico

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The PDF file includes:

Tables S1 to S5
Legends for data S1 to S4

Other Supplementary Material for this manuscript includes the following:

Data S1 to S4

Supplementary Text

Table S1.

Temporal and spatial information for all sites included in this study.

Site Name	Site Number	Latitude (N)	Longitude (W)	Period of Occupation
Big Oak Island	16OR6	30.0702	-89.9158	Early Woodland Period, ca. 2470-2150 before present
810 Royal Street	16OR706	29.9590	-90.0637	ca. 1720-1900
1427 Ursulines Avenue	16OR142	29.9661	-90.0685	ca. 1790-1810
626 Bourbon Street	16OR736	29.9582	-90.0658	ca. 1820-1890
936 St. Peter Street	16OR737	29.9593	-90.0670	ca. 1850-1900
Passebon Cottage	16OR142	29.9661	-90.0685	ca. 1830-1900

Table S2.

Mean stable carbon and nitrogen isotope compositions and standard ellipse areas.

Time Period	<i>n</i>=	Mean $\delta^{13}\text{C}$ (‰)	Mean $\delta^{15}\text{N}$ (‰)	SEA	SEAc	Total Area
Pre contact	5	-14.8 ± 1.0	7.4 ± 0.2	0.67	0.90	0.72
1720-1790	20	-17.1 ± 2.0	8.5 ± 0.7	3.74	3.94	10.62
1790-1820	48	-17.1 ± 2.0	8.1 ± 0.6	3.74	3.82	18.28
1820-1850	32	-15.5 ± 4.3	8.3 ± 0.9	9.23	9.54	32.80
1850-1870	34	-15.6 ± 3.6	8.7 ± 0.8	8.86	9.14	40.76
1870-1900	41	-15.1 ± 4.1	8.9 ± 1.3	15.97	16.38	62.77

Table S3.

Accepted (calibration) and observed long-term (check) isotopic compositions and standard deviations (1σ) for standards used in this study. TU = Trent University, IA = Iso-Analytical, CAIS = Center for Applied Isotope Studies.

Name	Material	Number	$\delta^{13}\text{C}$ (‰, VPDB)	$\delta^{15}\text{N}$ (‰, AIR)	$\delta^{34}\text{S}$ (‰, VCDT)	Standard Type	Lab
USGS40	Glutamic acid	NA	−26.39	−4.52		Calibration standard	TU
USGS41a	Glutamic acid	NA	+36.55	+47.55		Calibration standard	TU
IA-R061	Barium sulfate	NA			+20.33	Calibration standard	IA
IA-R025	Barium sulfate	NA			+8.53	Calibration standard	IA
IA-R026	Silver sulfate	NA			+3.96	Calibration standard	IA
"Spinach"	Spinach	NA	−27.44	−0.54		Calibration standard	CAIS
"1577-C"	Bovine Liver Protein	NA	−17.43	+8.19		Calibration standard	CAIS
MET	Methionine	1609	−28.62±0.10	−5.04±0.14		Check standard	TU
SRM-15	Deer bone collagen	104	−26.88±0.05	+6.90±0.08		Check standard	TU
SRM-16	Seal bone collagen	132	−14.81±0.10	+16.91±0.08		Check standard	TU
IAEA-SO-5	Barium sulfate	Unknown			+0.5	Check standard	IA
IA-R068	Soy protein	Unknown			+5.25	Check standard	IA
IA-R069	Tuna protein	Unknown			+18.91	Check standard	IA

Table S4.

Standard deviations for calibration standards for all analytical sessions.

Analytical Session	Standard	Number	$\delta^{13}\text{C}$ (1 σ)	$\delta^{15}\text{N}$ (1 σ)	$\delta^{34}\text{S}$ (1 σ)
CN19-20	USGS40	9	0.03	0.20	
CN19-21	USGS40	7	0.04	0.12	
CN19-22	USGS40	8	0.04	0.09	
CN19-23	USGS40	9	0.04	0.23	
CN19-24	USGS40	9	0.02	0.25	
CN19-26	USGS40	9	0.03	0.24	
CN19-30	USGS40	9	0.03	0.15	
CN20-02	USGS40	9	0.03	0.13	
CN20-03	USGS40	9	0.02	0.08	
CN20-04	USGS40	9	0.02	0.11	
CN20-05	USGS40	10	0.03	0.12	
CN19-20	USGS41a	9	0.04	0.26	
CN19-21	USGS41a	6	0.08	0.26	
CN19-22	USGS41a	8	0.05	0.25	
CN19-23	USGS41a	9	0.05	0.17	
CN19-24	USGS41a	8	0.02	0.18	
CN19-26	USGS41a	9	0.06	0.39	
CN19-30	USGS41a	9	0.05	0.25	
CN20-02	USGS41a	9	0.05	0.25	
CN20-03	USGS41a	9	0.03	0.15	
CN20-04	USGS41a	9	0.06	0.27	
CN20-05	USGS41a	9	0.04	0.26	
Unknown	IA-R061	30			0.12

Table S5.

Means and standard deviations for check standards for all analytical sessions.

Standard	Analytical Session	Number	$\delta^{13}\text{C}$ (1 σ)	$\delta^{15}\text{N}$ (1 σ)	$\delta^{34}\text{S}$ (1 σ)
MET	CN19-20	7	-28.60 \pm 0.03	-5.08 \pm 0.24	
MET	CN19-21	6	-28.60 \pm 0.05	-5.21 \pm 0.21	
MET	CN19-22	6	-28.60 \pm 0.06	-5.06 \pm 0.17	
MET	CN19-23	7	-28.56 \pm 0.05	-5.16 \pm 0.17	
MET	CN19-24	6	-28.59 \pm 0.04	-5.13 \pm 0.15	
MET	CN19-26	7	-28.60 \pm 0.02	-5.15 \pm 0.14	
MET	CN19-30	7	-28.56 \pm 0.06	-5.07 \pm 0.19	
MET	CN20-02	7	-28.58 \pm 0.03	-5.09 \pm 0.09	
MET	CN20-03	7	-28.60 \pm 0.03	-5.16 \pm 0.11	
MET	CN20-04	7	-28.61 \pm 0.03	-5.14 \pm 0.13	
MET	CN20-05	7	-28.60 \pm 0.03	-5.01 \pm 0.05	
SRM-15	CN19-20	6	-26.91 \pm 0.03	6.86 \pm 0.10	
SRM-15	CN19-21	5	-26.89 \pm 0.04	6.83 \pm 0.10	
SRM-15	CN19-22	5	-26.87 \pm 0.03	6.93 \pm 0.13	
SRM-15	CN19-23	6	-26.85 \pm 0.06	6.99 \pm 0.12	
SRM-15	CN19-24	6	-26.90 \pm 0.03	6.86 \pm 0.16	
SRM-15	CN19-26	6	-26.91 \pm 0.03	6.86 \pm 0.13	
SRM-15	CN19-30	6	-26.86 \pm 0.04	6.93 \pm 0.10	
SRM-15	CN20-02	6	-26.88 \pm 0.03	6.87 \pm 0.18	
SRM-15	CN20-03	6	-26.87 \pm 0.02	6.85 \pm 0.07	
SRM-15	CN20-04	6	-26.89 \pm 0.04	7.01 \pm 0.18	
SRM-15	CN20-05	7	-26.89 \pm 0.03	6.90 \pm 0.05	
SRM-16	CN19-20	5	-14.79 \pm 0.02	16.90 \pm 0.09	
SRM-16	CN19-21	4	-14.81 \pm 0.03	17.12 \pm 0.21	

SRM-16	CN19-22	4	-14.77 ± 0.09	17.13 ± 0.05	
SRM-16	CN19-23	5	-14.79 ± 0.02	17.18 ± 0.15	
SRM-16	CN19-24	5	-14.82 ± 0.04	17.10 ± 0.18	
SRM-16	CN19-26	4	-14.85 0.04	17.10 0.06	
SRM-16	CN19-30	5	-14.78 0.01	16.96 0.14	
SRM-16	CN20-02	5	-14.79 0.04	17.03 0.10	
SRM-16	CN20-03	5	-14.81 ± 0.03	16.97 ± 0.03	
SRM-16	CN20-04	5	-14.79 ± 0.02	17.28 ± 0.07	
SRM-16	CN20-05	5	-14.82 ± 0.04	17.00 ± 0.12	
Spinach	UGA 1383	4	-27.20 0.16	-0.16 0.03	
Spinach	UGA 1577	7	-27.19 ± 0.15	-0.05 ± 0.14	
1577C-B	UGA 1383	4	-17.61 ± 0.12	8.11 ± 0.08	
1577C-B	UGA 1577	7	-17.58 ± 0.06	8.15 ± 0.05	
IA-R068	Unknown	16			5.26 ± 0.15
IAEA-SO-5	Unknown	14			0.33 ± 0.15
IA-R069	Unknown	16			18.88 ± 0.24

Data S1. (separate file)

Osteometric results for fish from all time periods binned by 10mm increments

Data S2. (separate file)

Statistical comparisons of mean size between sequential time periods.

Data S3. (separate file)

Elemental and isotopic compositions for all samples.

Data S4. (separate file)

Standard deviations for sample replicated from all analytical sessions.