Supplementary material

Table S1. Range of food items offered to a subset of Zebra Shark hatchlings. Numbers represent the proportion of time the item was offered over the period of time where details on food records were kept for each individual.

Food item	**P357**	**P200**	**P113**	**H440**	**H442**
Clam	0.353	0.263	0.259	0.254	0.181
Squid	0.187	0.275	0.266	0.260	0.189
Shrimp	0.327	0.261	0.264	0.260	0.320
Hoki	0.033	0.059	0.067	0.075	0.085
Mahi	0.013	0.019	0.019	0.017	0.132
Wahoo	0.073	0.009	0.024	0.043	0.021
Capelin	0.007	0.036	0.040	0.024	0.036
Mackerel	0.007	0.005	0.005	0.006	0.004
Herring		0.005	0.002	0.002	0.007
Sardine		0.059	0.048	0.045	0
Mussel		0.005	0.002	0.006	0
Mullet		0.005	0.005	0.008	0.011
Salmon					0.014

Table S2. Morphometrics and genetic assignment (parthenote, suspected parthenote [asterisk], or heterozygote) based on microsatellite genotyping for twelve sharks organized by maternal assignment (italics). Length and mass represent measurements taken at hatching or within 2 days of hatch. All sharks, except H442, are deceased as of the time of this writing.

ID	Genetic Assignment (Dam)	Date Hatched	Incubation Period (days)	Total Length (cm)	Total Mass (g)	Lifespan (Years)
Fern						
P277	Parthenote	8-June-2012	154	26.5	110	1.5
P278*	Suspected parthenote	12-July-2012	154	28	110	0.36
P357*	Suspected parthenote	18-May-2013	158	29	110	0.29
P385	Parthenote (Fern)	13-July-2013	150	28.5	114	0.27
H440	Heterozygote (Fern)	6-Mar-2014	145	29.5	103	2.41
H442	Heterozygote (Fern)	19-March-2014	143	30	104	8+
P505	Parthenote (Fern)	14-Sept-2014	142	26	80	1.52
P503	Parthenote (Fern)	17-Sept-2014	145	33.5	100	6.64
P542	Parthenote (Fern)	11-Feb-2015	147	27.5	94	5.39
Yang						
P113	Parthenote	15-June-2013	142	26	110	1.1
P200	Parthenote	3-Feb-2014	138	28	85	1
Yin						
P255	Parthenote (Yin)	11-Sept-2014	145	27	93	0.65

Table S3. Mean total length (cm) and mass (g) difference per week and rate of change per week (i.e. acceleration) for heterozygotes (H###), parthenotes (P###), and suspected parthenotes [asterisk]. Rate of change was determined as the slope from the linear relationship between the change in length or mass/week and week. The significance of the relationship for each parameter (length or mass) is provided.

ID	Mean ± SD change in length/week (cm/week)	Rate of length change per week (cm/week/week)	Significance of rate change	Mean ± SD change in mass/week (g/week)	Rate of mass change per week (g/week/week)	Significance of rate change
H440	1.99 ± 1.04	0.025	p = 0.5	34.4 ± 22.8	2.84	p = 0.0001
H442	1.76 ± 0.82	0.01	p = 0.7	36.6 ± 25.4	2.57	p = 0.0002
P113	1.23 ± 1.1	-0.05	p = 0.1	23.8 ± 46.5	0.25	p = 0.6
P200	1.22 ± 1.46	-0.001	p = 0.9	45.9 ± 43.5	1.34	p = 0.003
P255	0.97 ± 0.59	-0.02	p = 0.6	11.9 ± 8.9	0.20	p = 0.7
P277	1.91 ± 1.53	-0.10	p = 0.1	33.9 ± 45.5	0.44	p = 0.8
P278 *	1.1 ± 1.02	-0.14	p = 0.06	0.92 ± 35.1	-1.50	p = 0.3
P357 *	0.99 ± 1.02	-0.16	p = 0.005	8.24 ± 16.7	-2.40	p = 0.01
P385	0.46 ± 0.72	-0.13	p = 0.005	2.15 ± 12.8	-1.38	p = 0.08
P503	1.77 ± 0.89	-0.023	p = 0.7	22.8 ± 8.66	0.71	p = 0.2
P505	0.98 ± 0.51	0.015	p = 0.7	6.68 ± 8.25	0.45	p = 0.4
P542	1.34 ± 0.51	-0.05	p = 0.6	9.67 ± 5.55	0.86	p = 0.4

Table S4. Radiograph observations of groups of spinal deformities, location along the spine and other abnormalities noted for radiographs taken of parthenotes (P###) and heterozygotes (H###) while housed at AoP. Asterisks denote offspring that were provisionally assigned as parthenogenic.

ID	Spinal Abnormalities	Location	Description of abnormality	Other observations
P277	1	Mid-tail, near peduncle	1 shortened vertebra	
P278*	1	Cranial trunk, above pectoral fins	1 hemi-vertebra with dorsally located wedge	Mild kyphosis
P357*	1	Cranial tail, above pelvic fin	4 shortened vertebrae	Mild kyphosis and mild lordosis
P113	0			Midline cleft in the dental lamina of the palatoquadrate cartilage
P385	5	Cranial trunk, above pectoral fins	2 shortened vertebrae with narrow inter-vertebral space	Mild kyphosis
		Cranial tail, above pelvic fins	1 elongated vertebra	
		Mid-tail, below second dorsal fin	1 elongated vertebra	
		Distal tail	1 shortened vertebra	
		Trunk and tail, entire length	multiple vertebrae with variations in length	Mild kyphosis
P200	12	Cranial tail, above pelvic fins	2 fused vertebrae and 4 shortened vertebrae with narrow inter-vertebral spaces	Mild scoliosis
		Mid-tail , below second dorsal	3 fused vertebrae	Mild kyphosis
		Mid-tail , below second dorsal	2 fused vertebrae	Mild lordosis
		Mid-tail, near peduncle	3 shortened and 2 fused vertebrae	
		Mid-tail, below second dorsal	4 fused vertebrae	
		Mid-tail, below second dorsal fin	3 fused vertebrae	
		Mid-tail, below second dorsal	3 fused vertebrae	
		Caudal tail	4 shortened vertebrae with narrow inter-vertebral spaces	
		Caudal tail	3 fused vertebrae	

		Caudal-tail	4 shortened vertebrae with narrow inter-vertebral spaces	
		Caudal tail	3 fused vertebrae	
		Caudaltail	3 fused vertebrae	
		Caudal tail	3 fused vertebrae	
H440	1	Mid-tail, near peduncle	2 fused vertebrae	Focal spinal canal widening
H442	1	Mid-tail, near peduncle	4 shortened vertebrae with narrowed inter-vertebral spaces	focal spinal canal widening
P255	3	Mid-trunk, caudal to pectoral fins	1 elongated vertebra	
		Caudal tail	1 elongated vertebra	Focal spinal canal widening
		Caudal tail	2 fused vertebrae	
P505	2	Cranial tail, above pelvic fins	1 shortened vertebrae with narrowed inter-vertebral space	Mild kyphosis and narrowed spinal canal
		Tail, entire length	Multiple vertebrae with variable lengths	
P503	1	Mid-tail, above anal fin	2 fused vertebrae and 3 short vertebrae	Focal spinal canal widening Mild kyphosis
P542	Not available			

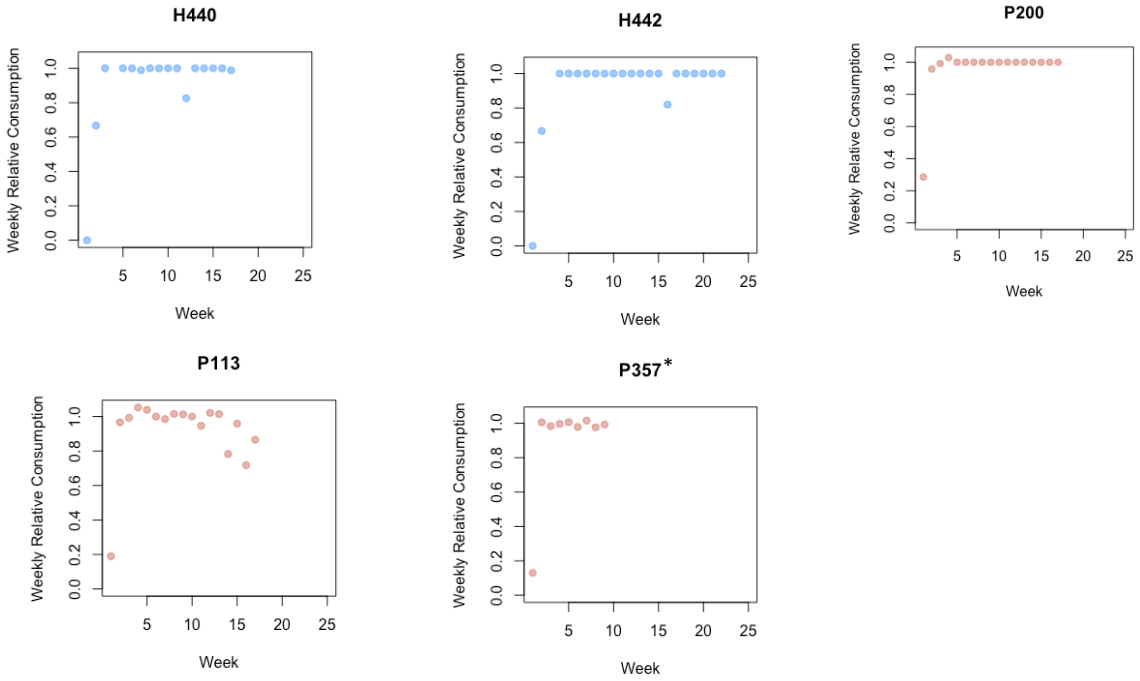

Figure S1. Relative weekly food consumption for heterozygotes (blue, n = 2) and parthenotes (red, n = 3) across weeks where detailed food records were kept. Asterisk denotes offspring that was provisionally assigned as parthenogenic.

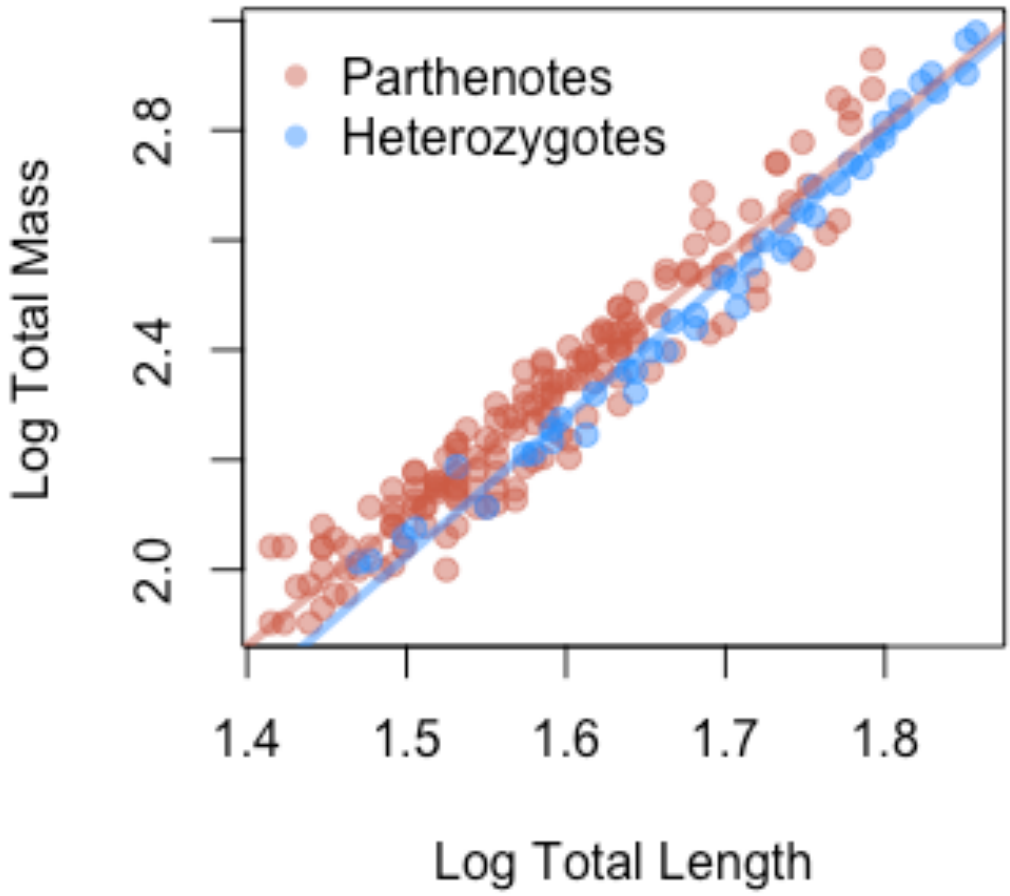

Figure S2. Allometric relationship on log-log scale between total length and mass for parthenotes (red, n = 10 individuals) and heterozygotes (blue, n = 2 individuals). Solid line shows the relationship between two measurements taken multiple times on the same individual. Parthenotes were significantly heavier for their length compared to heterozygotes.

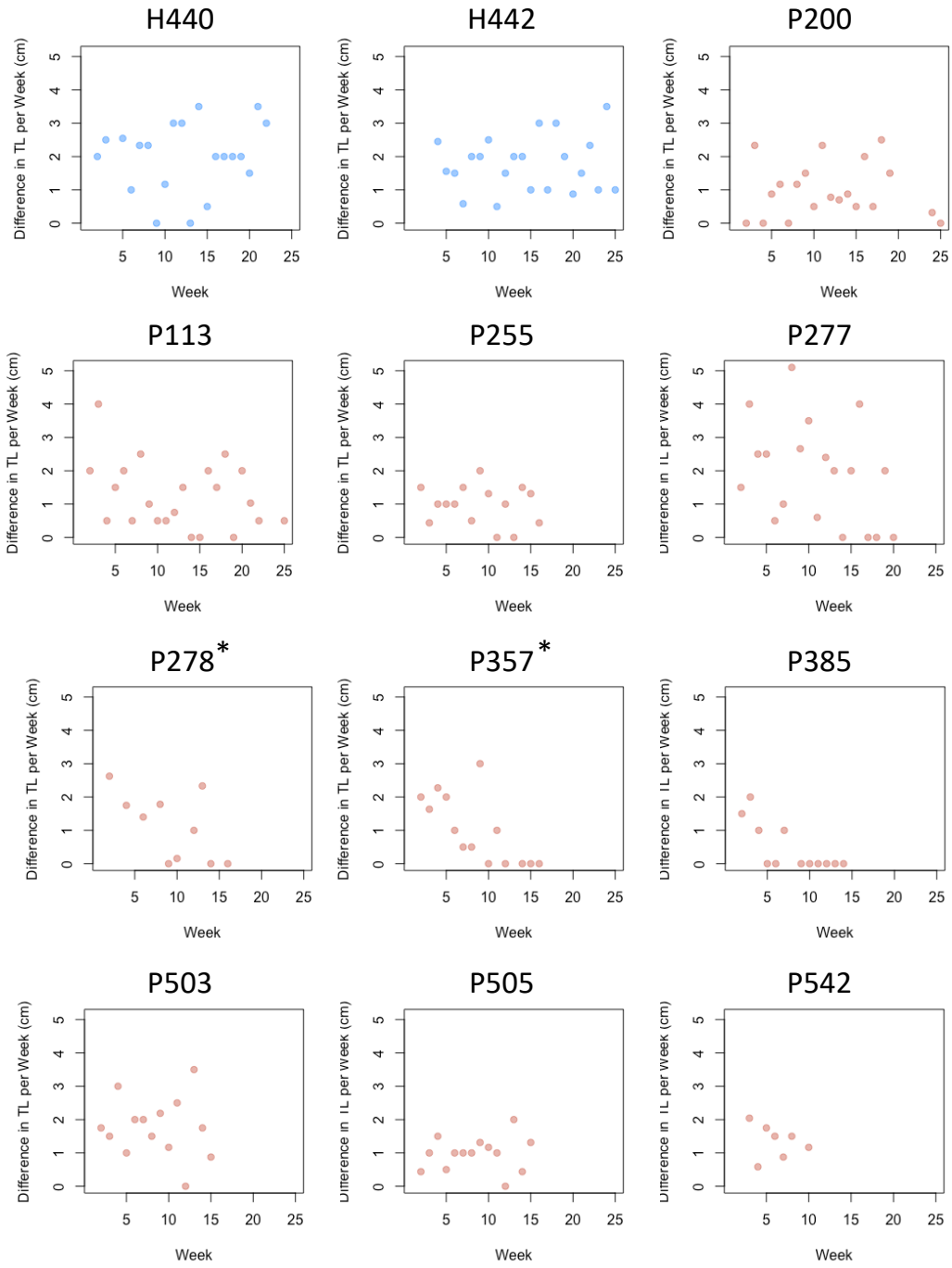

Figure S3. Difference in total length (cm) between weeks is shown for all heterozygotes (blue) and parthenotes (red) across the study period where sharks were measured. Asterisks denote offspring that were provisionally assigned as parthenogenic.

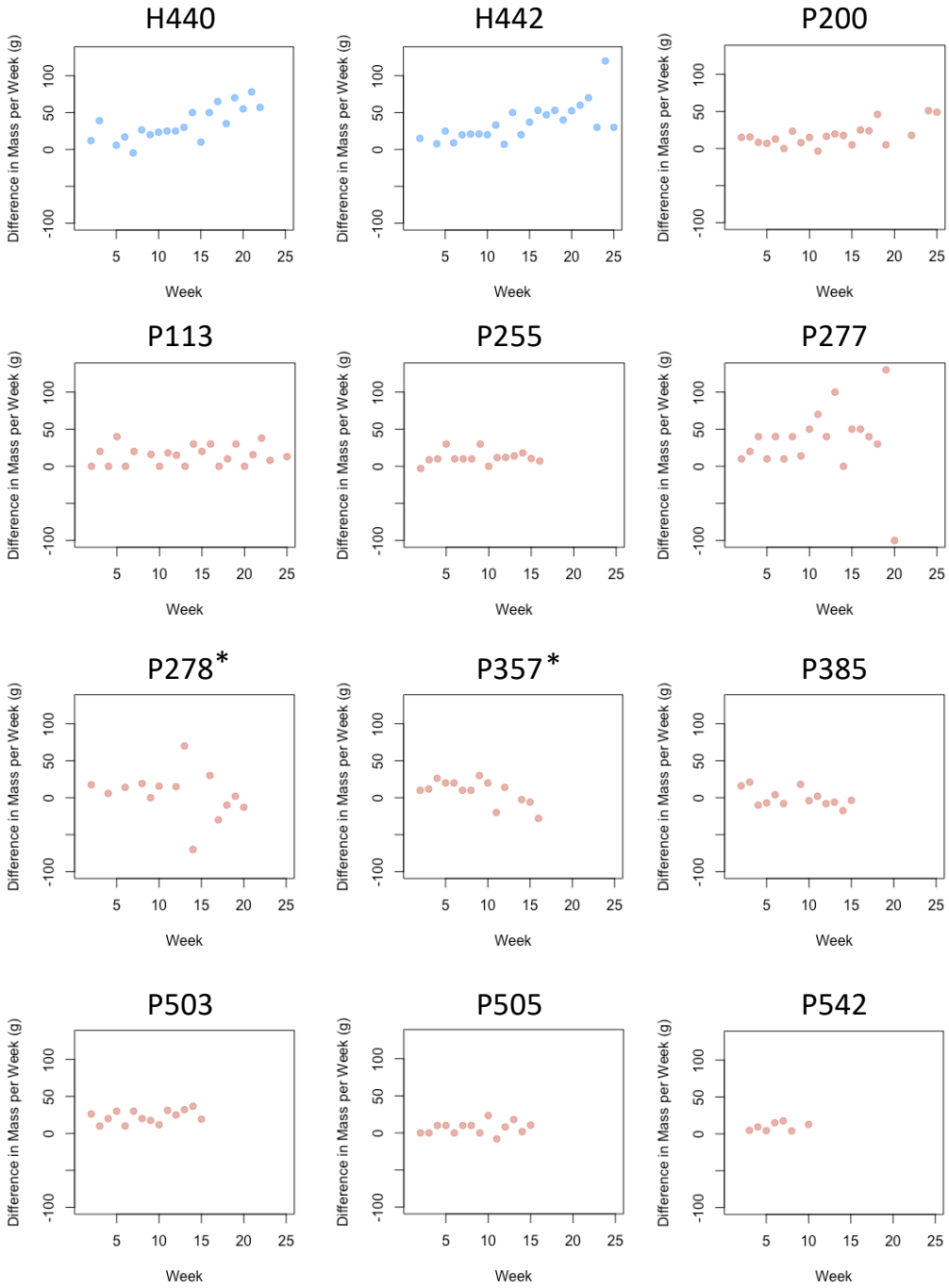

Figure S4. Difference in total mass (g) between weeks is shown for all heterozygotes (blue) and parthenotes (red) across the study period where sharks were measured. Asterisks denote offspring that were provisionally assigned as parthenogenic.

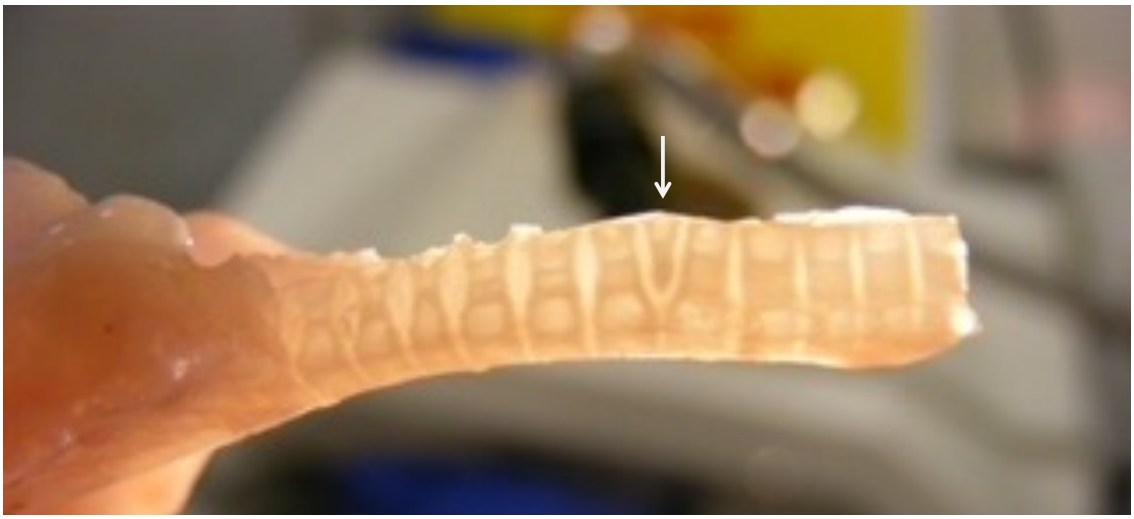

Figure S5. Hemi-vertebrae indicated by arrow found upon necropsy in vertebral column.