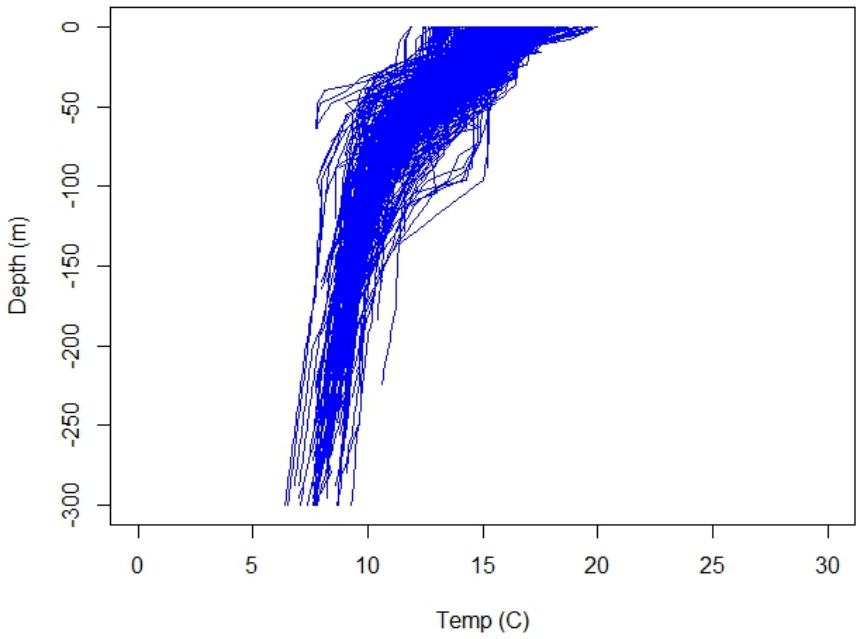
Table S1. Summary information for shortfin mako sharks, *Isurus oxyrinchus*, tagged with pop-up archival and transmitting (PAT) and smart position or temperature transmitting (SPOT) tags. DAL: days at liberty

Shark ID	Sex	FL (cm)	Deployment location	Deployment date	PAT pop-up date	SPOT final date	DAL PAT	DAL SPOT
03-3PS	M	153	32.87°N 117.88°W	28-Jun-03	26-Dec-03	10-Mar-04	181	265
03-4PS	F	157	33.95°N 119.45°W	1-Jul-03	12-Aug-03	20-Dec-03	42	172
03-6PS	F	146	33.95°N 119.50°W	1-Jul-03	31-Dec-03	8-Jan-04	183	191
03-7PS	M	163	33.55°N 118.60°W	3-Jul-03	26-Feb-04	10-Jan-04	238	191
03-9PS	F	152	33.18°N 118.03°W	4-Jul-03	3-Nov-03	7-Sep-03	122	65
04-1PS*	M	169	32.93°N 118.25°W	20-Jun-04	19-Dec-04	01-Sep-05	182	438
04-2PS	M	129	33.92°N 119.02°W	23-Jun-04	24-Jul-04	21-Nov-04	31	151
04-3PS	M	170	32.92°N 118.27°W	27-Jun-04	08-Feb-05	29-Jan-05	226	216
04-12PS	M	104	32.45°N 117.45°W	29-Jul-04	06-Nov-04	18-Oct-04	100	81
04-13PS	F	161	23.93°N 115.98°W	11-Oct-04	05-Feb-05	10-Nov-05	117	395
04-15PS	F	156	34.33°N 121.17°W	18-Nov-04	07-Feb-05	09-Feb-05	81	83
05-4PS	M	125	32.91°N 118.22°W	08-Jul-05	09-Nov-05	09-Nov-05	124	124
05-6PS*	M	150	33.23°N 118.11°W	10-Jul-05	09-Jan-06	04-Mar-06	183	237
05-7PS*	M	177	32.91°N 118.29°W	19-Jul-05	15-Jan-06	04-May-06	180	289
05-8PS*	M	135	33.22°N 118.12°W	20-Jul-05	20-Sep-05	20-Sep-05	62	62
06-1PS*	M	146	25.22°N 113.49°W	31-Jan-06	18-Apr-06	18-Mar-06	77	46
06-2PS	F	126	32.94°N 117.89°W	27-Jun-06	03-Dec-06	09-Aug-06	159	43
06-3PS	M	174	33.88°N 119.50°W	30-Jun-06	07-Feb-07	19-Jun-07	222	354
06-7PS	F	168	33.13°N 118.36°W	12-Jul-06	15-Dec-06	15-Jun-07	156	338
06-11PS	M	134	33.05°N 118.27°W	13-Jul-06	07-Nov-06	07-Nov-06	117	117
06-12PS	M	127	33.21°N 118.05°W	14-Jul-06	01-Oct-06	01-Oct-06	79	79
07-1PS	F	169	32.89°N 118.29°W	03-Jul-07	28-Feb-08	12-Jun-08	240	345
07-2PS	F	176	32.05°N 118.39°W	04-Jul-07	01-Feb-08	24-Jul-08	212	386
07-4PS	M	171	33.58°N 118.54°W	06-Jul-07	29-Aug-07	07-Nov-07	54	124
07-5PS	M	190	33.77°N 119.01°W	08-Jul-07	28-Nov-07	13-Jun-09	143	706
07-7PS	F	190	32.96°N 118.30°W	12-Jul-07	11-Oct-07	06-Jul-08	91	360
07-8PS	F	162	33.69°N 118.82°W	17-Jul-07	04-Dec-07	12-May-08	140	300
07-9PS	M	173	33.69°N 118.82°W	17-Jul-07	18-Oct-07	15-Feb-09	93	579
07-10PS	M	175	33.26°N 118.00°W	24-Jul-07	28-Dec-07	29-Jan-09	157	555
07-11PS	F	201	32.77°N 119.19°W	26-Jul-07	24-Nov-07	11-Aug-08	121	382
07-12PS	F	171	33.10°N 118.98°W	29-Jul-07	29-Oct-07	15-Sep-08	92	414
08-2PS	F	147	32.88°N 118.27°W	20-Jun-08	15-Feb-09	05-Mar-09	240	258
08-4PS	F	178	33.28°N 118.13°W	22-Jun-08	17-Feb-09	25-Jun-10	240	733
08-6PS	M	172	33.78°N 118.95°W	24-Jun-08	19-Feb-09	07-Mar-09	240	256
08-8PS	M	223	33.78°N 118.97°W	24-Jun-08	19-Feb-09	27-Feb-09	240	248

* Sharks not included in analyses because they lacked sufficient vertical data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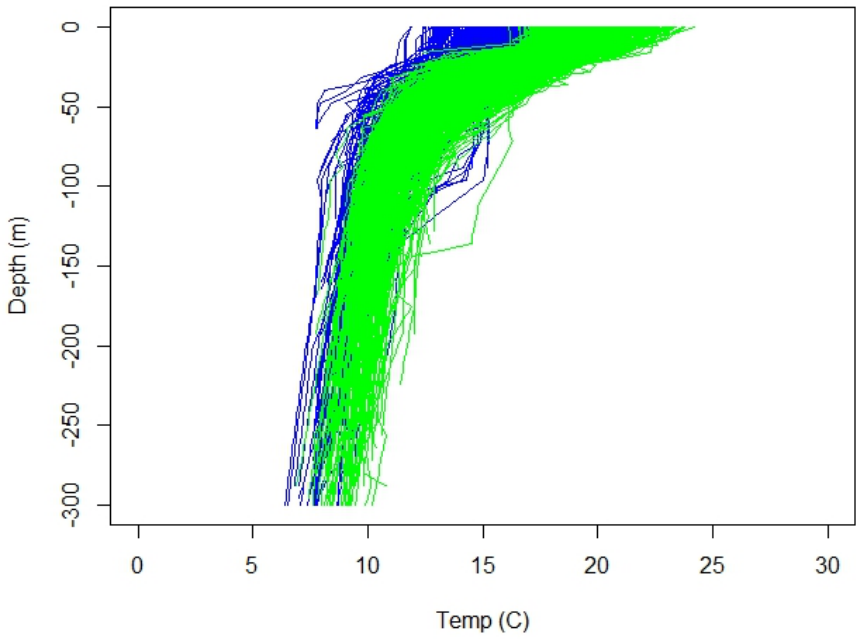
Temp (C)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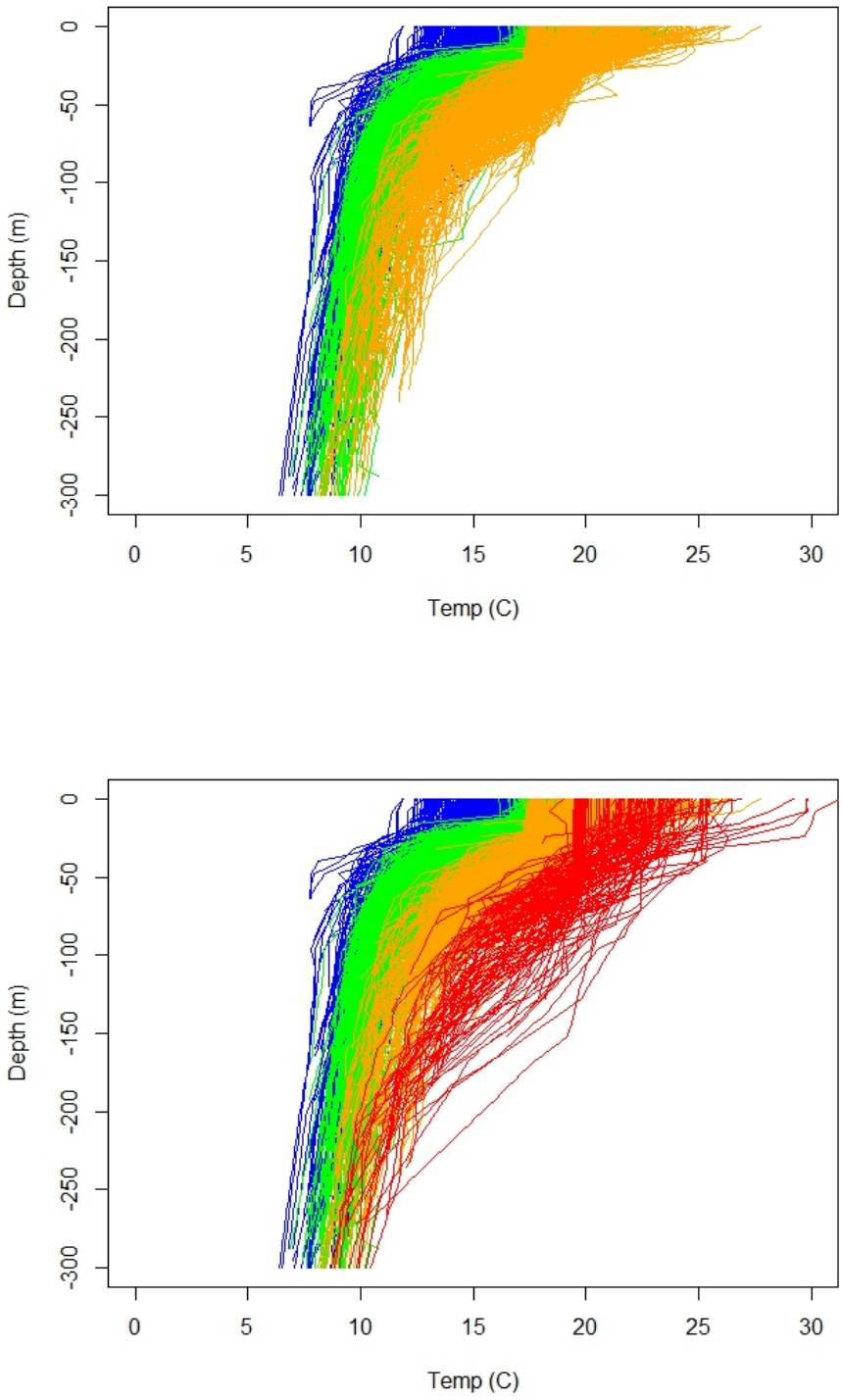

Fig. S1. Daily temperature-depth profiles experienced by tagged shortfin mako sharks, *Isurus oxyrinchus*, as recorded by pop-up satellite archival tags. Temperature-depth profiles are color coded by habitat as in Fig 2.

Table S2. Parameter estimates, standard errors, p-values, and random effect standard errors of models of vertical habitat use by tagged shortfin mako sharks, *Isurus oxyrinchus.* The model took the form y = Sex + Habitat + Behavioral mode + Habitat*Behavioral Mode + Length + (Habitat | Shark) + (Behavioral Mode | Shark) + (Habitat*Behavioral Mode | Shark). Random effects are in parentheses where A | B denotes effect A is conditional on effect B. Habitat A in resident mode is the baseline (i.e. the intercept). Parameter estimates for proportion of time and maximum depth are on the logit and log scales, respectively.

Proportion of Time <5 m	Parameter Estimate	Std. Error of Parameter	P-value	Random Effect Std. Deviation
Intercept	1.448	0.638	0.023	
Sex (M)	-0.230	0.173	0.183	
Habitat A				0.440
Habitat B	0.131	0.196	0.502	0.002
Habitat C	0.096	0.319	0.765	0.470
Habitat D	-1.208	0.333	<0.001	0.525
Behavioral Mode (Resident)				0.313
Behavioral Mode (Transient)	0.257	0.213	0.229	0.541
Resident in A				0.235
Resident in B				0.373
Resident in C				0.676
Resident in D				0.008
Transient in A				0.005
Transient in B	-0.438	0.245	0.074	0.514
Transient in C	-0.633	0.337	0.061	0.037
Transient in D	0.745	0.406	0.067	0.362
Length	-0.010	0.003	0.002	

Proportion of Time <10 m	Parameter Estimate	Std. Error of Parameter	P-value	Random Effect Std. Deviation
Intercept	2.255	0.665	<0.001	
Sex (M)	-0.337	0.182	0.064	
Habitat A				0.307
Habitat B	0.331	0.197	0.093	0.002
Habitat C	0.016	0.289	0.955	0.315
Habitat D	-0.982	0.584	0.092	0.492
Behavioral Mode (Resident)				0.359
Behavioral Mode (Transient)	0.218	0.235	0.353	0.651
Resident in A				0.350
Resident in B				0.390
Resident in C				0.544
Resident in D				1.240
Transient in A				0.007

Transient in B	-0.570	0.231	0.014	0.011
Transient in C	-0.297	0.321	0.354	0.009
Transient in D	0.514	0.644	0.425	0.556
Length	-0.012	0.003	<0.001	

Proportion of Time >50 m	Parameter Estimate	Std. Error of Parameter	P-value	Random Effect Std. Deviation
Intercept	-2.571	0.454	<0.001	
Sex (M)	0.158	0.119	0.185	
Habitat A				0.228
Habitat B	-0.337	0.155	0.029	0.143
Habitat C	0.146	0.224	0.514	0.502
Habitat D	0.648	0.487	0.184	0.054
Behavioral Mode (Resident)				0.008
Behavioral Mode (Transient)	-0.058	0.177	0.742	0.402
Resident in A				0.277
Resident in B				0.148
Resident in C				0.002
Resident in D				1.090
Transient in A				0.003
Transient in B	0.576	0.190	0.002	0.004
Transient in C	0.231	0.245	0.345	0.019
Transient in D	0.009	0.528	0.986	0.096
Length	0.004	0.002	0.060	

Proportion of Time >100 m	Parameter Estimate	Std. Error of Parameter	P-value	Random Effect Std. Deviation
Intercept	-3.407	0.353	<0.001	
Sex (M)	0.103	0.086	0.235	
Habitat A				0.107
Habitat B	-0.193	0.111	0.083	0.003
Habitat C	-0.377	0.142	0.008	0.002
Habitat D	-0.226	0.191	0.236	0.003
Behavioral Mode (Resident)				0.002
Behavioral Mode (Transient)	-0.109	0.130	0.401	0.210
Resident in A				0.005
Resident in B				0.002
Resident in C				0.112
Resident in D				0.003
Transient in A				0.002
Transient in B	0.286	0.151	0.058	0.010
Transient in C	0.635	0.197	0.001	0.240
Transient in D	0.616	0.309	0.047	0.563

Length	0.002	0.002	0.238	

Max Depth	Parameter Estimate	Std. Error of Parameter	P-value	Random Effect Std. Deviation
Intercept	3.361	0.340	<0.001	
Sex (M)	0.095	0.090	0.293	
Habitat A				0.088
Habitat B	-0.262	0.099	0.008	0.122
Habitat C	-0.498	0.147	<0.001	0.202
Habitat D	-0.256	0.146	0.080	0.001
Behavioral Mode (Resident)				0.172
Behavioral Mode (Transient)	-0.077	0.110	0.482	0.307
Resident in A				0.143
Resident in B				0.250
Resident in C				0.311
Resident in D				0.118
Transient in A				0.000
Transient in B	0.418	0.114	<0.001	0.000
Transient in C	0.660	0.162	<0.001	0.001
Transient in D	0.487	0.181	0.007	0.001
Length	0.007	0.002	<0.001	

Table S3. Deviance explained by models of vertical habitat use by tagged shortfin mako sharks, *Isurus oxyrinchus*. Deviance explained is reported as the percentage of deviance explained by fixed effects (percentage of the deviance explained by the full model). The model took the form y = Sex + Habitat + Behavioral mode + Habitat*Behavioral Mode + Length + (Habitat | Shark) + (Behavioral Mode | Shark) + (Habitat*Behavioral Mode | Shark). Random effects are in parentheses where A | B denotes effect A is conditional on effect B. Habitat A in resident mode is the baseline (i.e. the intercept).

Metric	Error Distribution	Deviance Explained (%)
Proportion of Time <5 m	Beta	17.0 (45.2)
Proportion of Time <10 m	Beta	20.2 (47.1)
Proportion of Time >50 m	Beta	7.7 (23.5)
Proportion of Time >100 m	Beta	3.6 (10.9)
Max Depth	Negative Binomial	9.1 (28.0)