Supplement 2. The following material includes additional detail on methodology.

1. Additional information on how receivers from individual iTAG arrays were regrouped to create the arrays used in this analysis

Table S2.1 Overview of the arrays created for this analysis. Array codes represent area (N = North Florida, T = Tampa Bay, C = Charlotte Harbor, S = South Florida), sequential number within area (from northwest to southeast), and habitat (o = offshore, n = nearshore, e = estuarine, r = riverine). See Fig. 2 for map depicting array location.

Array	Number of Receivers	iTAG arrays used	Approximate area monitored (km^2)
N1o	54	25	25
N2o	35	5	250
N3e	40	9	540
N4n	20	51	1500
N5r	13	32	23.5
N6e	3	54	5
T1o	8	6	5
T2o	7	26	600
T3o	18	26	600
T4n	31	1, 26	600
T5n	4	45, 1	50
T6e	26	28	187
T7e	11	33	12
T8r	9	56	31
C1n	20	2	500
C2e	8	15, 52, 2	250
C3e	43	35, 15	65
C4r	60	23	125
S1e	3	47	10
S2e	16	38, 47	9
S3e	8	47	40
S4r	37	31	175

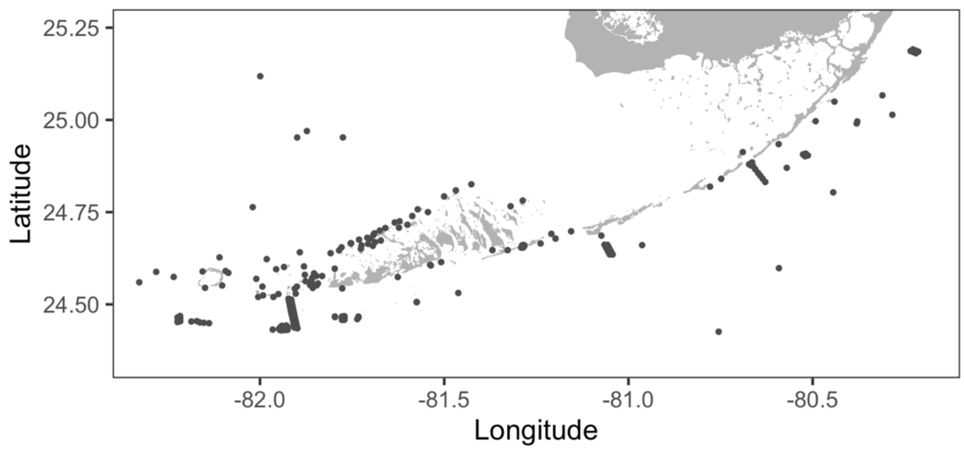

Figure S2.1. Map of acoustic telemetry receivers in the Florida Keys included in the movement analysis of this study.

2. Additional information on clustering variables

Table S2.2 Cluster validity measures for the final movement variables.

Number of clusters	Fuzzy Silhouette Index	Modified Partition Coefficient
2	0.677	0.449
3	0.660	0.420
4	0.707	0.474
5	0.687	0.446
6	0.681	0.436

Table S2.3. Summary statistics for variables used in the movement metrics clustering analysis. These metrics are based on array-detection-day spatio-temporal aggregation levels. Q = quantile, sd = standard deviation.

Variable	Mean	Median	SD	Range	Shape
Distance, 99^{th} Q	71.83	0.001	161.19	0.0001–850.45	Right-skewed
Days between detections, 99^{th} Q	55.64	15.12	92.51	1–621.97	Right-skewed
Days between detections, $99^{th}/75^{th}$ Q	17.61	5.53	29.17	1–343.8	Right-skewed
Residence Index	0.47	0.38	0.38	0.002–1	Bimodal
Seasonality Index	0.13	0	0.23	0–0.95	Right-skewed

3. Seasonality index construction

The seasonality index was calculated by time series composition of the number of monthly detection days for the entire detection period. The R package 'forecast' (Hyndman & Khandakar 2020) was used to decompose the time series into a seasonal and random component, where the seasonal component was approximated using Fourier terms. For each individual, three models were fitted: no seasonal trend, seasonal trend with one Fourier term, seasonal trend with two Fourier terms, and model selection was used to pick the best fitting model via the second-order Akaike information criterion (AICc) as implemented in the R package 'MuMIn' (Barton, 2019) model comparison functionality. The best fitting model was used to decompose the time series into a seasonal (S_t) and residual (R_t) component, and the seasonality index was calculated following Wang et al. (2006) as:

$$F_S = \max\left(0, 1 - \frac{Var(R_t)}{Var(S_t + R_t)}\right) \qquad (S1)$$

4. Movement network cut-off time determination for movement path analysis

Since an individuals' true movements between detections on acoustic telemetry arrays are unknown, choosing a cut-off point for considering two successive detections a movement was challenging. Rather than choosing an arbitrary number, we decided to base this on the data and thus plotted out the days-between-detection days quantiles for each species or species group in the movement path analysis. We looked for the point on the plot (in quantile increments of 5) where the relationship changed from fairly linear to exponential and chose the number of days corresponding to the first quantile after the increase as the cut-off point. If this would result in a >90-day cut-off, the preceding quantile was chosen to avoid creating "movements" that spanned more than two seasons. The resulting cut-off quantiles varied. For example, for cobia it was the 45% quantile (57 days), for the coastal sharks it was 75% (74 days), and for Atlantic tarpon it was 85% (80 days) (Fig. S2.2).

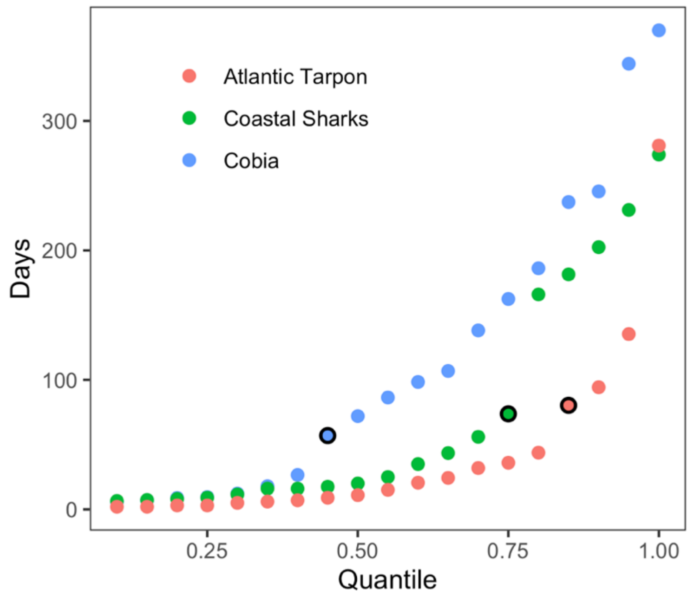

Figure S2.2. Quantiles for number of days between detection days for three example taxa used in the movement path analysis. The cut-off value for considering two successive detection days a movement (highlighted by black outline in the plot) was different for each species or species group and was based on the point where there was a sharp increase in days between successive detection days.

Literature Cited

Bartoń K (2020) MuMIn: multi-model inference. R package version 1.43.17. https://CRAN.R-project.org/package=MuMIn

Hyndman RJ, Khandakar Y (2008) Automatic time series for forecasting: the forecast package for R. J Stat Softw 27:1–22 https://doi.org/10.18637/jss.v027.i03

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