Table S1. Results of Mann-Kendall tests for monotonic trends in four metrics – MaxN for the duration of the deployment, MaxN at the time of deployment ('Initial MaxN'), time to first arrival, and time to MaxN – extracted from BRUVS deployments targeting blacktip reef and sicklefin lemon sharks and deployed either at random locations or repeatedly at the same location. For the repeated BRUVS, we restricted the analysis to the first 10 deployment days to account for the possibility that the longer deployment duration for this deployment type confounded our ability to compare it with the random BRUVS. Cases where there was significant evidence for a change in values over time (p-values ≤ 0.05) are bolded.

| Species	Treatment	Metric	Statistic	P-Value
Blacktip	Random	MaxN	**2.229**	**0.026**
Blacktip	Random	Initial MaxN	0.437	0.662
Blacktip	Random	Time to Arrival	-0.393	0.694
Blacktip	Random	Time to MaxN	1.493	0.135
Blacktip	Repeated	MaxN	1.304	0.192
Blacktip	Repeated	Initial MaxN	**1.966**	**0.049**
Blacktip	Repeated	Time to Arrival	**-3.467**	**0.001**
Blacktip	Repeated	Time to MaxN	-1.154	0.248
Lemon	Random	MaxN	0.275	0.783
Lemon	Random	Initial MaxN	-0.148	0.883
Lemon	Random	Time to Arrival	1.375	0.169
Lemon	Random	Time to MaxN	1.303	0.193
Lemon	Repeated	MaxN	-0.342	0.732
Lemon	Repeated	Initial MaxN	0.194	0.846
Lemon	Repeated	Time to Arrival	-0.679	0.497
Lemon	Repeated	Time to MaxN	-0.767	0.443
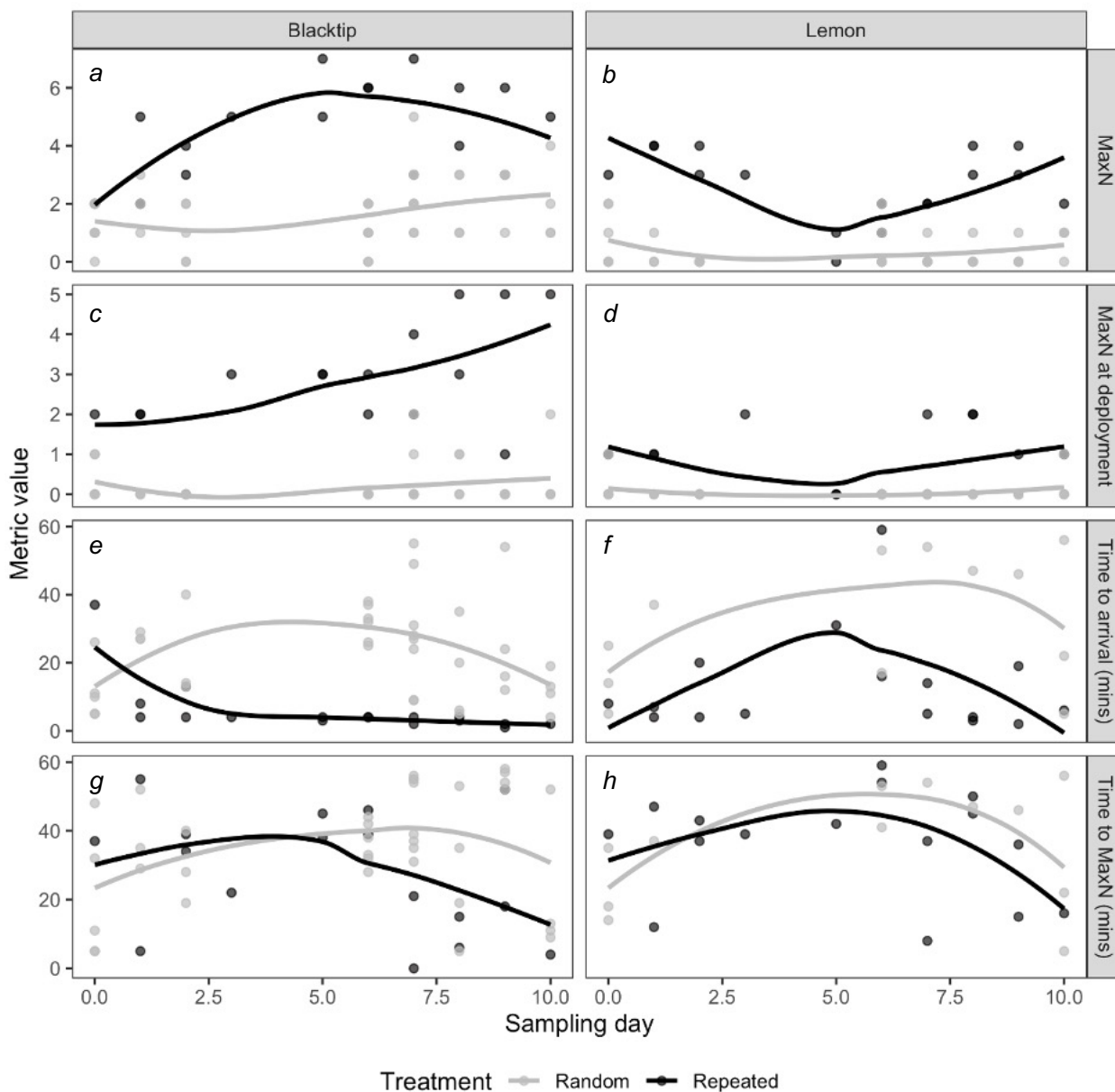
Figure S1. Responses of blacktip reef and sicklefin lemon (*Negaprion acutidens*) sharks to spatially randomized BRUVS (grey) versus BRUVS deployed repeatedly at the same location (black). Temporal trends in each of the four metrics – MaxN (the maximum number of individuals of a species observed on any frame of a video; *a,b*), MaxN at deployment (first 5 minutes; *c,d*), time to arrival (*e,f*), and time to MaxN (*g,h*) – were analyzed as a function of sampling date (x-axes) using Mann-Kendall tests and, for this comparison, data from both deployment types were restricted to the first 10 days of deployment. The dots represent individual BRUVS deployments; trend lines were created using the geom_smooth function with a loess smoother in R.
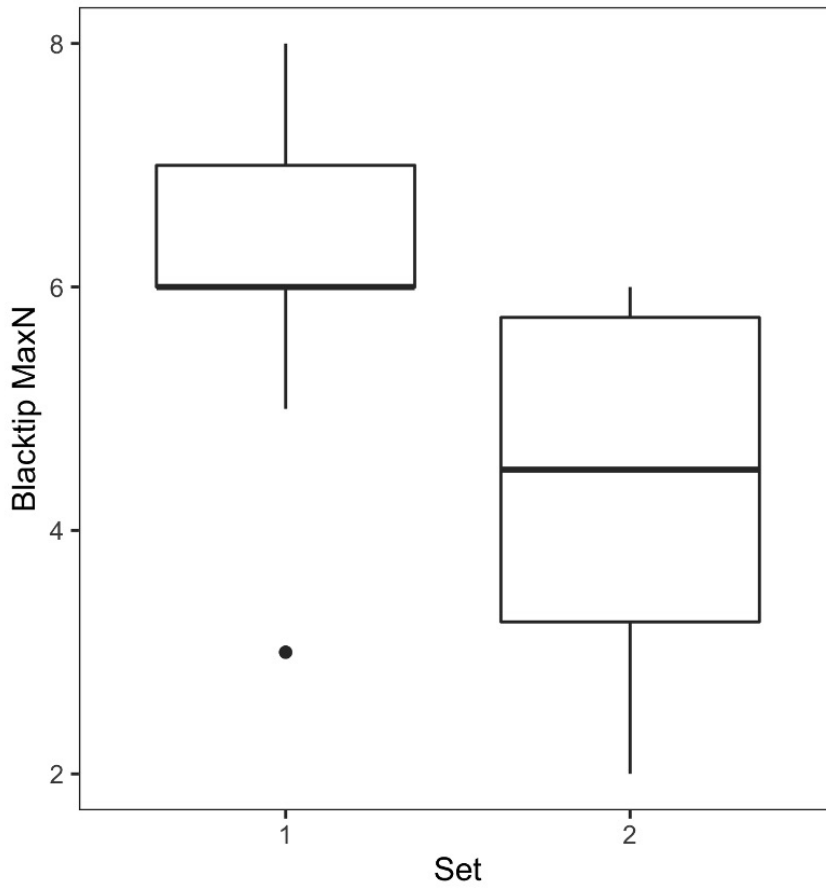
Figure S2. Boxplots comparing MaxN values for blacktip reef sharks detected during the first (set 1) and second (set 2) BRUVS deployment of the day at the same repeated site.
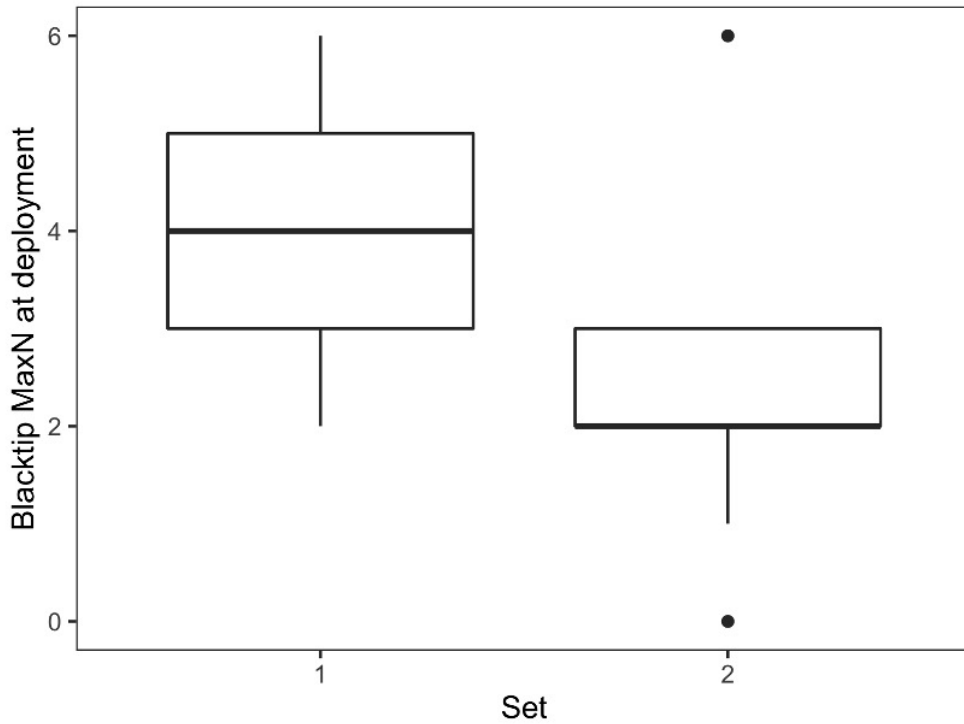
Figure S3. Boxplot comparing initial MaxN values for blacktip reef sharks detected during the first (set 1) and second (set 2) BRUVS deployment of the day at the same repeated site.
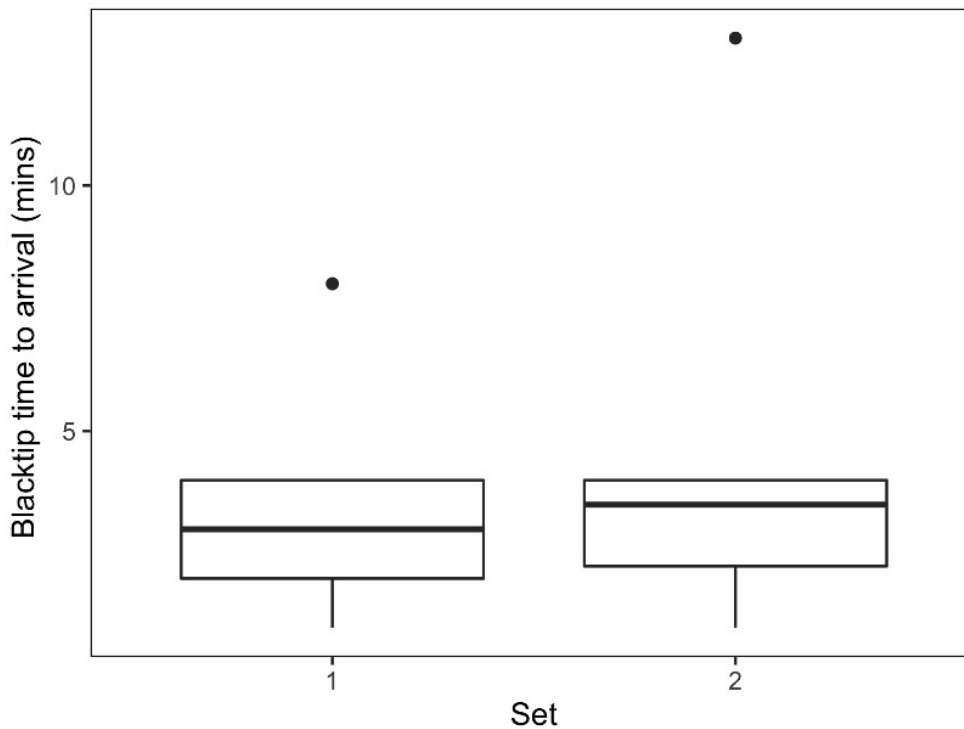

Figure S4. Boxplot comparing time to arrival values for blacktip reef sharks detected during the first (set 1) and second (set 2) BRUVS deployment of the day at the same repeated sit