

Supplementary Table 4

Cox proportional hazards models on subset of greater amberjack fitted with external acoustic transmitters in 2018. This subset (n=21 of n=23 total acoustically tagged fish in 2018) was tested to examine the influence of all predictors considered in this study after examining for confounding correlations among predictors. The full model considered length (fork length), fight time, handling time, descender device (not used or used), bait / jig, fishing injury = an injury assessed attributed to the fish being caught with fishing gear (see Methods for details), tagging injury – an injury assessed to be associated with the tagging procedure, surface temperature, and bottom temperature. Of n=23 acoustically tagged fish, one fish did not have fight time data available and an additional fish did not have handling time. Stepwise model selection by AIC was first conducted on this subset of data to evaluate the influence of all these predictors.

Model	AICc	Δ AICc	Predictor	Coefficient (b)	SE	Hazard Ratio e ^b	95% CI for e ^b	P	log-rank test χ^2	d.f.	Overall Model P	n
FULL MODEL												
	42	34.59										
			length	0.196	67.12	1.216	8.9x10 ⁻⁵⁸ - 1.7x10 ⁵⁷	0.998	10.9	10	0.400	21
			fight time	-0.394	303	0.674	1.3x10 ⁻²⁵⁸ - 3.6x10 ²⁵⁷	0.999				
			hand. time	0.666	355	1.945	1.1x10 ⁻³⁰² - 3.6x10 ³⁰²	0.999				
			descender	4.082	3.9x10 ⁴	59.28	~ 0 - ∞	~1				
			site depth	2.823	5015	16.83	~ 0 - ∞	~1				
			bait / jig	10.060	2.3x10 ⁴	2.3x10 ⁴	~ 0 - ∞	~1				
			fish injury	-44.620	4.2x10 ⁻²⁰	4.2x10 ⁻²⁰	~ 0 - ∞	0.999				
			tag injury	34.400	8.7x10 ¹⁴	8.7x10 ¹⁴	~ 0 - ∞	~1				
			surface T ^o	-134	5.9x10 ⁻⁵⁹	5.9x10 ⁻⁵⁹	~ 0 - ∞	0.997				
			bottom T ^o	16.570	1.6x10 ⁷	1.6x10 ⁷	~ 0 - ∞	~1				
2nd BEST MODEL (1 of 8)												
	7.41	2.75	descender	43.17	1.5x10 ⁴	5.6x10 ¹⁸	~ 0 - ∞	0.998	10.9	3	0.010	21
			site depth	-2.55	7.9x10 ³	0.078	~ 0 - ∞	~1				
			descender	-111	2.7x10 ⁴	9.3x10 ⁻⁴⁹	~ 0 - ∞	.997				
2nd BEST MODEL (2 of 8)												
	7.41	2.75	descender	55.440	1.3x10 ⁴	1.2x10 ²⁴	~ 0 - ∞	0.997	10.9	3	0.010	21
			fight time	-0.501	169	0.606	8.7x10 ⁻¹⁴⁵ - 4.2x10 ¹⁴³	0.998				
			surface T ^o	-46.330	2.6x10 ⁴	1.3x10 ²⁰	~ 0 - ∞	0.999				
2nd BEST MODEL (3 of 8)												
	7.41	2.75	descender	62.720	1.3x10 ⁴	1.7x10 ²⁷	~ 0 - ∞	0.996	10.9	3	0.010	21
			bottom T ^o	-2.836	1.4x10 ⁵	0.059	~ 0 - ∞	~1				
			surface T ^o	-151	2.7x10 ⁴	4.2x10 ⁻⁶⁶	~ 0 - ∞	0.996				
2nd BEST MODEL (4 of 8)												
	7.41	2.75	descender	34.090	1.1x10 ⁴	6.4x10 ¹⁴	~ 0 - ∞	0.998	10.9	3	0.010	21
			hand. time	0.243	132	1.275	8.8x10 ⁻¹¹³ - 1.9x10 ¹¹²	0.999				
			surface T ^o	-128	2.4x10 ⁴	3.5x10 ⁻⁵⁶	~ 0 - ∞	0.996				
2nd BEST MODEL (5 of 8)												
	7.41	2.75	descender	60.450	1.1x10 ⁴	1.8x10 ²⁶	~ 0 - ∞	0.996	10.9	3	0.010	21
			fish injury	18.730	6.5x10 ⁴	1.4x10 ⁸	~ 0 - ∞	~1				
			surface T ^o	146	2.5x10 ⁴	3.6x10 ⁻⁶⁴	~ 0 - ∞	0.995				
2nd BEST MODEL (6 of 8)												
	7.41	2.75	descender	40.060	1.0x10 ⁴	2.5x10 ¹⁷	~ 0 - ∞	0.997	10.9	3	0.010	21
			bait / jig	-20.050	1.0x10 ⁴	2.0x10 ⁻⁹	~ 0 - ∞	0.998				
			surface T ^o	-146	2.4x10 ⁴	6.1x10 ⁻⁶⁴	~ 0 - ∞	0.995				
2nd BEST MODEL (7 of 8)												
	7.41	2.75	descender	62.520	1.0x10 ⁴	1.4x10 ²⁷	~ 0 - ∞	0.995	10.9	3	0.10	21
			length	-0.023	30.560	0.977	9.4x10 ⁻²⁷ - 1.0x10 ²⁶	0.999				
			surface T ^o	-134	2.1x10 ⁴	7.9x10 ⁻⁵⁹	~ 0 - ∞	0.995				
2nd BEST MODEL (8 of 8)												
		2.75	descender	59.330	9649	5.9x10 ²⁵	~ 0 - ∞	~1	10.9	3	0.010	21
			tag injury	58.480	1.0x10 ⁵	2.5x10 ²⁵	~ 0 - ∞	~1				
			surface T ^o	-144	2.2x10 ⁴	4.0x10 ⁻⁶³	~ 0 - ∞	~1				
BEST SUPPORTED												
	4.67	0	descender	59.06	9230	4.4x10 ²⁵	~ 0 - ∞	0.995	10.9	2	0.004	21
			surface T ^o	-143	2.08x10 ⁴	7.9x10 ⁻⁶³	~ 0 - ∞	0.995				
NULL MODEL												
	10.94	6.28										21

Abbreviations: hand. time = handling time, fish injury = fishing injury, tag injury = tagging injury, T^o = temperature

Supplementary Table 5

Cox proportional hazards models on subset of greater amberjack fitted with external acoustic transmitters in 2018. This subset (n=22 of n=23 total acoustically tagged fish in 2018) was tested to examine the influence of all 2018 fish with fight time data available after previous model selection efforts did not find support for both fight time and handling time having an influence on survivorship in a subset of fish (n=21) for which both fight time and handling time were available for all fish. The full model considered length (fork length), fight time, descender device (not used or used), bait / jig, fishing injury = an injury assessed attributed to the fish being caught with fishing gear (see Methods for details), tagging injury – an injury assessed to be associated with the tagging procedure, surface temperature, and bottom temperature. Of n=23 acoustically tagged fish, one fish did not have fight time data available and an additional fish did not have handling time. Stepwise model selection by AIC was first conducted on this subset of data to evaluate the influence of all these predictors.

Model		Predictor	Coefficient (b)	SE	Hazard Ratio e ^b	95% CI for e ^b	P	log-rank test χ^2	d.f.	Over-all Model P	n
AICc	Δ AICc										
FULL MODEL											
33	25.67										
		length	-0.058	22.1	0.943	1.4x10 ⁻¹⁹ - 6.3x10 ¹⁸	0.998	11.2	9	0.300	22
		fight time	-0.195	184	0.823	2.6x10 ⁻¹⁵⁷ - 2.6x10 ¹⁵⁶	0.999				
		descender	-1.841	4.3x10 ⁴	0.159	~ 0 - ∞	~1				
		site depth	-2.438	1.4x10 ³	0.087	~ 0 - ∞	0.999				
		bait / jig	-	66.460	9.0x10 ³	1.4x10 ⁻²⁹	~ 0 - ∞	0.994			
		fish injury	-47.86	1.9x10 ⁵	1.6x10 ⁻²¹	~ 0 - ∞	~1				
		tag injury	14.79	2.9x10 ⁵	2.6x10 ⁶	~ 0 - ∞	~1				
		surface T°	-78.96	1.1x10 ⁴	5.1x10 ⁻³⁵	~ 0 - ∞	0.994				
		bottom T°	-41.77	8.3x10 ⁴	7.2x10 ⁻¹⁹	~ 0 - ∞	~1				
2nd BEST											
8.16	0.82	bait / jig	-21.03	1.44	7.4x10 ⁻¹⁰	4.4x10 ⁻¹¹ - 1.2x10 ⁻⁸	<0.001	7.67	2	0.020	22
		surface T°	-76.33	5.13	7.1x10 ⁻³⁴	3.1x10 ⁻³⁸ - 1.6.3x10 ⁻²⁹	<0.001				
BEST MODEL											
7.33	0							11.2	3	0.010	22
		bait / jig	-61.07	1.2x10 ⁴	3.0x10 ⁻²⁷	~ 0 - ∞	0.996				
		fish injury	-41.32	4.8x10 ⁴	1.1x10 ⁻¹⁸	~ 0 - ∞	0.999				
		surface T°	-148	2.7x10 ⁴	2.7x10 ⁴	~ 0 - ∞	0.996				
NULL MODEL											
11.19	3.86										22

Abbreviations: fish injury = fishing injury, tag injury = tagging injury, T° = temperature

Supplementary Table 6

Cox proportional hazards models on subset of greater amberjack fitted with external acoustic transmitters in 2018. This subset (n=22 of n=23 total acoustically tagged fish) was tested to examine the influence of all 2018 fish with handling time data available after previous model selection efforts did not find support for both fight time and handling time having an influence on survivorship in a subset of fish (n=21) for which both fight time and handling time were available for all fish. The full model considered length (fork length), handling time, descender device (not used or used), bait / jig, fishing injury = an injury assessed attributed to the fish being caught with fishing gear (see Methods for details), tagging injury – an injury assessed to be associated with the tagging procedure, surface temperature, and bottom temperature. Of n=23 acoustically tagged fish, one fish did not have fight time data available and an additional fish did not have handling time. Stepwise model selection by AIC was first conducted on this subset of data to evaluate the influence of all these predictors.

Model	AICc	Δ AICc	Predictor	Coefficient (b)	SE	Hazard Ratio e ^b	95% CI for e ^b	P	log-rank test χ^2	d.f.	Over- all Model P	n
FULL MODEL												
33	28.37		length	-0.269	42.28	0.764	7.9x10 ⁻³⁷ – 7.4x10 ³⁵	~1	11.2	9	0.300	22
			hand. time	0.108	230	0.898	1.8x10 ⁻¹⁹⁶ – 4.5x10 ¹⁹⁵	~1				
			descender	13.820	4.9x10 ⁴	1.1x10 ⁶	~ 0 - ∞	~1				
			site depth	-5.345	2791	0.005	~ 0 - ∞	~1				
			bait / jig	-70.510	1.7x10 ⁵	2.4x10 ⁻³¹	~ 0 - ∞	~1				
			fish injury	-21.970	1.1x10 ⁵	2.9x10 ⁻¹⁰	~ 0 - ∞	~1				
			tag injury	-20.820	2.6x10 ⁵	9.0x10 ⁻¹⁰	~ 0 - ∞	~1				
			surface T°	-2.117	2.2x10 ⁴	0.120	~ 0 - ∞	~1				
			bottom T°	-47.490	1.1x10 ⁵	2.4x10 ⁻²¹	~ 0 - ∞	~1				
2nd BEST (1 of 7 equally supported)												
7.33	2.70		descender	43.980	1.6x10 ⁴	1.3x10 ¹⁹	~ 0 - ∞	0.998	11.2	3	0.010	22
			surface T°	-112	2.8x10 ⁴	2.4x10 ⁻⁴⁹	~ 0 - ∞	0.997				
			site depth	-2.650	8620	0.017	~ 0 - ∞	1				
2nd BEST (2 of 7 equally supported)												
7.33	2.70		descender	62.530	1.2x10 ⁴	1.4x10 ²⁷	~ 0 - ∞	~1	11.2	3	0.010	22
			surface T°	-150	2.4x10 ⁴	8.7x10 ⁻⁶⁶	~ 0 - ∞	~1				
			bottom T°	-3.779	1.1x10 ⁵	0.023	~ 0 - ∞	~1				
2nd BEST (3 of 7 equally supported)												
7.33	2.70		descender	60.460	1.1x10 ⁴	1.8x10 ²⁶	~ 0 - ∞	0.996	11.2	3	0.010	22
			surface T°	-146.2	2.5x10 ⁴	3.3x10 ⁻⁶⁴	~ 0 - ∞	0.995				
			fish injury	18.680	6.8x10 ⁴	1.30x10 ⁸	~ 0 - ∞	~1				
2nd BEST (4 of 7 equally supported)												
7.33	2.70		descender	34.290	1.1x10 ⁴	7.9x10 ¹⁴	~ 0 - ∞	0.998	11.2	3	0.010	22
			surface T°	-127	2.5x10 ⁵	3.9x10 ⁻⁵⁶	~ 0 - ∞	0.996				
			hand. time	0.239	131.0	1.270	3.7x10 ⁻¹¹² - 4.4x10 ¹¹¹	0.999				
2nd BEST (5 of 7 equally supported)												
7.33	2.70		descender	40.280	1.1x10 ⁴	1.1x10 ⁴	~ 0 - ∞	0.997	11.2	3	0.010	22
			surface T°	-146	2.5x10 ⁵	2.5x10 ⁴	~ 0 - ∞	0.995				
			bait / jig	20.100	1.1x10 ⁴	1.9x10 ⁻⁹	~ 0 - ∞	0.999				
2nd BEST (6 of 7 equally supported)												
7.33	2.70		descender	59.33	1.1x10 ⁴	5.8x10 ²⁵	~ 0 - ∞	0.996	11.2	3	0.010	22
			surface T°	-151	2.2x10 ⁴	4.5x10 ⁻⁶⁶	~ 0 - ∞	0.995				
			length	0.010	31.950	1.010	6.5x10 ⁻²⁸ - 1.6x10 ²⁷	~1				
2nd BEST (7 of 7 equally supported)												
7.33	2.70		descender	59.500	9923	6.9x10 ²⁵	~ 0 - ∞	0.995	11.2	2	0.004	22
			surface T°	-144	2.2x10 ⁴	2.7x10 ⁻⁶³	~ 0 - ∞	0.995				
			tag injury	58.530	1.1x10 ⁵	2.6x10 ²⁵	~ 0 - ∞	~1				
BEST MODEL												
4.63	0		descender	59.260	9546	5.5x10 ²⁵	~ 0 - ∞	0.995	11.2	2	0.004	22
			surface T°	-144	2.1x10 ⁴	2.2x10 ⁴	~ 0 - ∞	0.995				
NULL MODEL												
11.20	6.57											

Abbreviations: hand. time = handling time, fish injury = fishing injury, tag injury = tagging injury, T° = temperature