

1 **SUPPLEMENTARY**

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3 **Supp. Table 1. Summary of immature green turtle measures and video recorded time.**

Individual number	Carapace Length (cm)	Carapace Width (cm)	Mass (kg)	Video Recorded Time (h)	Date
#1	44	3.2	10	1,5	14/02/2018
#2	55	43.2	37	5,9	20/05/2018
#3	83	73	68	4,0	22/05/2018
#4	80	77	64	3,8	26/05/2018
#5	84	74.8	63.8	3,9	04/10/2018
#6	88,3	74.8	83	6,6	06/10/2018
#7	82	78	67	8,0	08/10/2018
#8	72.7	67.9	59	1,0	10/10/2018
#9	43.3	38.3	9.5	4,8	11/02/2019
#10	83.5	77.2	70	2,2	11/02/2019
#11	94.2	82	99.8	7,8	18/02/2019
#12	100.3	89.5	109	2,2	08/04/2019
#13	79.5	75.4	67.6	14,6	13/05/2019

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6 **Supp. Table 2: Definition and associated category of the behaviour observed from the**
7 **video-recorder data and associated with a unique acceleration-gyroscope-depth signal.**

Category	Behaviour	Definition
	Breathing	Turtle is breathing one time at the surface
Feeding	Catching	Turtle is catching a floating element in water
	Catching jellyfish	Turtle is catching a jellyfish
	Chewing on movement	Turtle is chewing seagrass or algae and keeps swimming
	Chewing stationary	Turtle is chewing seagrass or algae landing at the bottom
	Chewing jellyfish	Turtle is chewing a jellyfish
	Grabbing on movement	Turtle is grabbing seagrass or algae at the bottom and keeps swimming
	Grabbing stationary	Turtle is grabbing seagrass or algae landing at the bottom
	Grabbing the wall	Turtle is grabbing seagrass or algae from a wall or a rock
Gliding	Gliding ascent	Turtle is swimming passively without flipper beat toward the surface
	Gliding descent	Turtle is swimming passively without flipper beat toward the bottom
Resting	Resting	Turtle is resting at the bottom without moving
	Resting active	Turtle is resting at the bottom but it is agitated and moves the head
	Resting in flow	Turtle is resting in the flow leading to passive body movement
	Resting watching	Turtle is resting at the bottom watching behind
Scratching	Scratching	Turtle is scratching its shell
	Scratching head	Turtle is scratching its head

	Scratching camera	Turtle is scratching and the camera touches the rock or other element
	Staying at the surface	Turtle is breathing several time at the surface
Swimming	Stepping back Swimming 1 ascent Swimming 1 descent Swimming 1 horizontally Swimming ascent Swimming descent Swimming horizontally Swimming fast ascent Swimming fast descent Swimming fast horizontally Swimming in place Swimming on the sea floor Prospection Watching Left U-turn Right U-turn	Turtle is moving backward at the bottom Turtle is swimming toward the surface using one front flipper Turtle is swimming toward the bottom using one front flipper Turtle is swimming horizontally using one front flipper Turtle is swimming toward the surface Turtle is swimming toward the bottom Turtle is swimming horizontally Turtle is swimming fast toward the surface Turtle is swimming fast toward the bottom Turtle is swimming fast horizontally Turtle is swimming but stays in place Turtle is moving landing at the bottom Turtle is swimming slowly prospecting on the right and on the left Turtle is swimming watching behind Turtle is turning on the left Turtle is turning on the right
Unknown	Escape Flipper beat Foraging Interaction Landing Obstacle Pursuit Regurgitating Sand Shaking Shaking head Hunting jellyfish	Turtle is escaping to avoid aggression from another turtle. Turtle is scratching its head with its flipper Turtle is touching the bottom to search for something Turtle is touching another turtle with its beak Turtle is abruptly landing at the bottom Turtle is taking an obstacle Turtle is pursuing a second turtle Turtle is regurgitating Turtle is on the ground and sending the sand up with its front flippers Turtle is shaking Turtle is shaking its head Turtle is modifying its trajectory to catch a jellyfish

10 **Supp. Table 3. Difference between the total times predicted and the actual (video-based) ones for each behavioural category in seconds, in**
 11 **percent of the total individual observed time and in percent of the behavioural expressed time for each immature green turtles.**

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Behaviour	#1			#2			#3			#4			#5			#6			#7		
	s	%t*	%b**	s	%t*	%b**	s	%t*	%b**	s	%t*	%b**	s	%t*	%b**	s	%t*	%b**	s	%t*	%b**
Breathing	6,7	0,1	18,8	101,4	0,5	33,7	25,6	0,2	69,9	27,8	0,2	137,6	47,2	0,3	71,3	30,3	0,1	34,7	70,2	0,2	79,0
Feeding	0,9	0,0	-	31,7	0,2	2,1	78,6	0,6	48,6	110,5	0,8	20,5	56,1	0,4	36,9	1006,2	4,2	51,5	279,4	1,0	401,4
Gliding	0,2	0,0	-	4,4	0,0	0,5	101,4	0,7	27,7	340,8	2,5	65,1	100,0	0,7	47,4	51,6	0,2	18,2	26,1	0,1	2,5
Other	0,0	0,0	-	124,2	0,6	48,2	123,8	0,9	73,3	73,6	0,5	26,0	123,7	0,9	83,8	530,9	2,2	64,9	31,2	0,1	22,9
Resting	4,1	0,1	-	15,3	0,1	0,2	261,2	1,8	3,4	270,8	2,0	5,7	101,1	0,7	1,7	517,7	2,2	4,6	1640,6	5,7	8,4
Scratching	0,7	0,0	-	26,7	0,1	5,2	50,2	0,4	8,7	225,3	1,7	12,6	150,5	1,1	1880,7	33,1	0,1	3,7	223,5	0,8	164,3
Stay in surface	0,0	0,0	-	271,9	1,3	30,3	42,0	0,3	3,0	172,6	1,3	11,2	465,2	3,3	33,4	133,3	0,6	5,2	237,9	0,8	8,1
Swimming	342,2	6,4	6,5	85,3	0,4	1,3	31,4	0,2	0,8	449,9	3,3	11,0	562,1	4,0	8,8	600,3	2,5	10,0	757,2	2,6	15,8
Transition	4,4	0,1	-	68,0	0,3	-	24,3	0,2	-	28,6	0,2	-	44,9	0,3	-	124,8	0,5	-	55,3	0,2	-

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Behaviour	#8			#9			#10			#11			#12			#13			Average		
	s	%t*	%b**	s	%t*	%b**	s	%t*	%b**	s	%t*	%b**	s	%t*	%b**	s	%t*	%b**	s	%t*	%b**
Breathing	2,15	0,1	37	21,7	0,1	37,8	10,8	0,1	39,7	2,8	0	2,118	23,8	0,1	31,818	47,3	0,1	16,1	32,131	0,2	46,87
Feeding	4,796	0,1	-	391	2,3	37,9	261,7	3,2	39,6	72,34	0,3	1130	156,6	0,8	74,617	246,1	0,5	138	207,38	1,1	180,1
Gliding	3,32	0,1	3,3	60,1	0,3	4,78	108,7	1,3	84,3	491,2	1,8	80,69	51,7	0,3	6,7874	2899	5,5	128	326,02	1	39,06
Other	27,93	0,8	62	251	1,5	96,3	107,1	1,3	41,1	151,1	0,5	64,86	192,5	1	74,449	121,9	0,2	64,9	143,02	0,8	60,2
Resting	36,8	1,1	5,2	1169	6,8	16,3	51,89	0,6	8,62	51,44	0,2	0,293	1058	5,5	8,4318	4527	8,6	16,5	746,53	2,7	6,601
Scratching	28,3	0,8	-	108	0,6	169	196	2,4	942	51,68	0,2	29,27	187,2	1	95,889	258,2	0,5	118	118,43	0,7	311,8
Stay in surface	1,45	0	0,3	54,4	0,3	5,27	65,9	0,8	8,06	140,6	0,5	9,471	98,5	0,5	7,4934	272,8	0,5	8,4	150,5	0,8	10,84
Swimming	27,82	0,8	1,4	678	3,9	10,7	35,74	0,4	0,65	457,3	1,6	5,91	366,7	1,9	9,6364	1342	2,5	7,1	441,28	2,4	6,884
Transition	10,82	0,3	-	29,5	0,2	-	14,24	0,2	-	16,02	0,1	-	85,45	0,4	-	115	0,2	-	47,789	0,2	-

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16 * in percent of the total individual observed time

17 ** in percent of the behavioural observed time



Supp. Figure 1. Free-ranging immature green turtle equipped with a device combining a high-frequency tri-axial accelerometer, a high-frequency tri-axial gyroscope, a depth recorder and video-recorder.