

How much sea turtle bycatch is too much? A stationary age distribution model for simulating population abundance and potential biological removal in the Mediterranean

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Table S1. Size of female loggerhead turtles nesting at the main Mediterranean nesting areas. CCL data from Margaritoulis et al. (2003) (Cyprus, Greece and Libya) and from Ilgaz et al. (2007) and Turkozan and Yilmaz (2008) (Turkey). Nest data from Casale and Margaritoulis (2010). CCL for Turkey converted from SCL through the equation by Bjørndal et al. (2000).

Country	Mean CCL	nests/yr
Cyprus	73.8	694
Greece	83.6	3472
Turkey	76.0	2145
Libya	78.0	726
Weighted mean	79.7	

Table S2. Estimated annual sea turtle bycatch and mortality in the Mediterranean per fishing gear (Casale 2011). Data aggregate both loggerhead (*Caretta caretta*) and green turtles (*Chelonia mydas*). Data are also shown for subareas, because the western basin is also frequented by Atlantic loggerheads while the eastern basin predominantly by Mediterranean loggerheads and by the totality of Mediterranean green turtles, mostly concentrated in the easternmost part (Levantine basin).

	Bottom Trawl	Pelagic Longline	Demersal Longline	Set Net	Total
Captures					
Total Mediterranean	39500	57500	12500	23000	132500
Eastern Mediterranean	38000	17000	12000	20000	
Levantine basin	4500	1500	3500	9500	19000
Deaths					
Mortality rate	20%	30%	40%	60%	
Total Mediterranean	7900	17250	5000	13800	43950
Eastern Mediterranean	7600	5100	4800	12000	29500
Levantine basin	900	450	1400	5700	8450

Table S3. Structure of the adult population of Mediterranean loggerhead and green turtles estimated through a stationary age distribution model.

	Loggerhead turtles			Green turtles		
	Mean	CI95%		Mean	CI95%	
N adults (A_{tot})	15,843	6,915	31,958	3,390	1,894	6,552
N adult females	8,779	4,355	16,360	2,303	1,476	4,162
N nesting females/yr	3,439	1,806	6,222	692	457	1,243
N age classes with 99.9% adults	38	31	47	42	27	73
N age classes with 95% adults	23	18	29	26	15	50
N age classes with 75% adults	11	8	14	13	7	24
N age classes with 50% adults	5	4	7	6	3	12
N age classes with 25% adults	2	1	3	3	1	5
Avg. Repr. Life span (yrs) (ARL)	8.2	6.5	10.4	9.4	5.5	17.4
Annual female neophytes/total breeders (c)	0.26	0.19	0.33	0.30	0.16	0.43
Hatchlings/adult first age class	298	112	632	432	150	992
Eggs/adult first age class	477	182	1010	604	217	1375
Nests/adult first age class	5.1	2.0	10.3	5.4	2.0	12.4

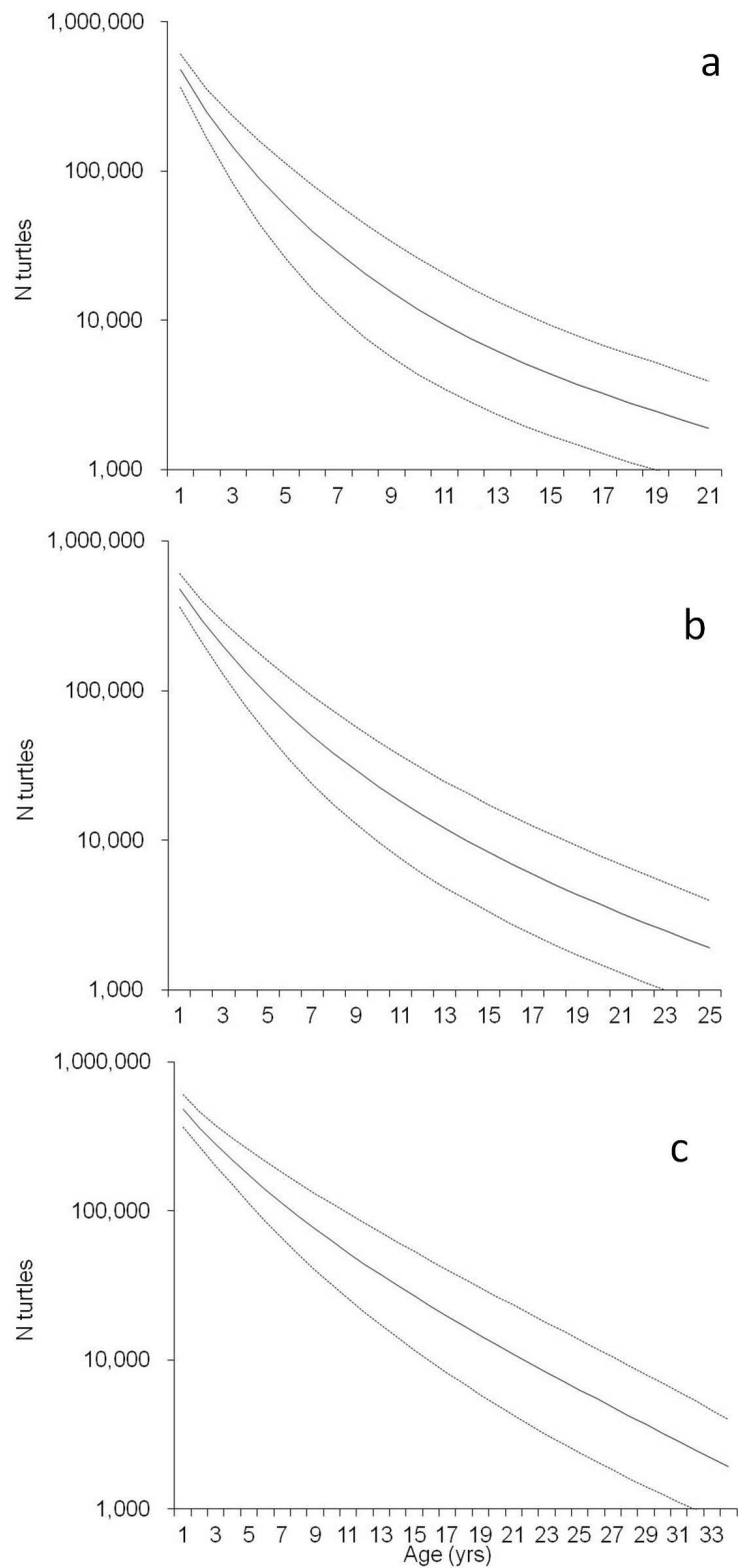


Fig. S1. Mean and CI95% of number of loggerhead turtles in each age class from year 1 (hatchlings) to age at sexual maturity (ASM) from the three models (10 000 replicates) with ASM = 21 yrs (a), ASM = 25 yrs (b), and ASM = 34 yrs (c).

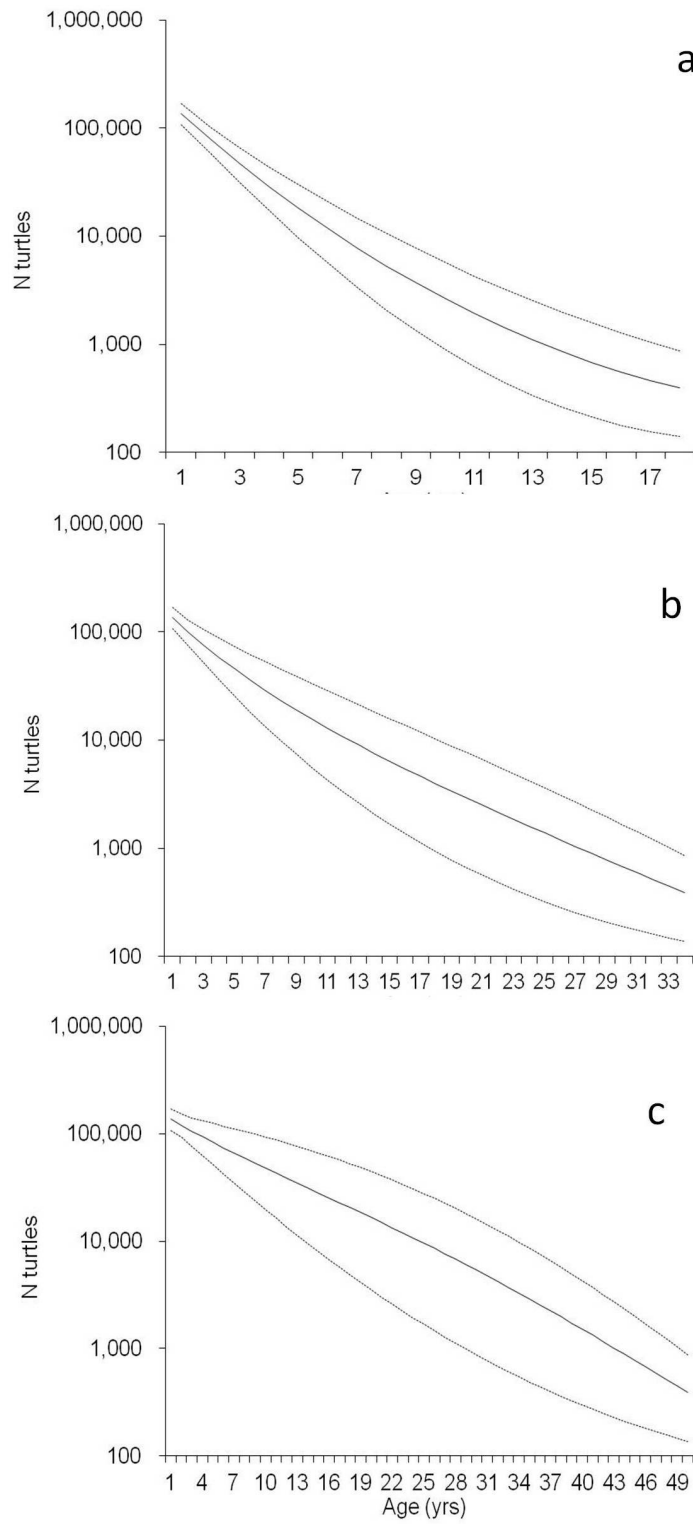


Fig. S2. Mean (solid line) and CI95% (dotted lines) of number of green turtles in each age class from year 1 (hatchlings) to age at sexual maturity (ASM) from the three models (10 000 replicates) with ASM = 18 yrs (a), ASM = 34 yrs (b), and ASM = 50 yrs (c).

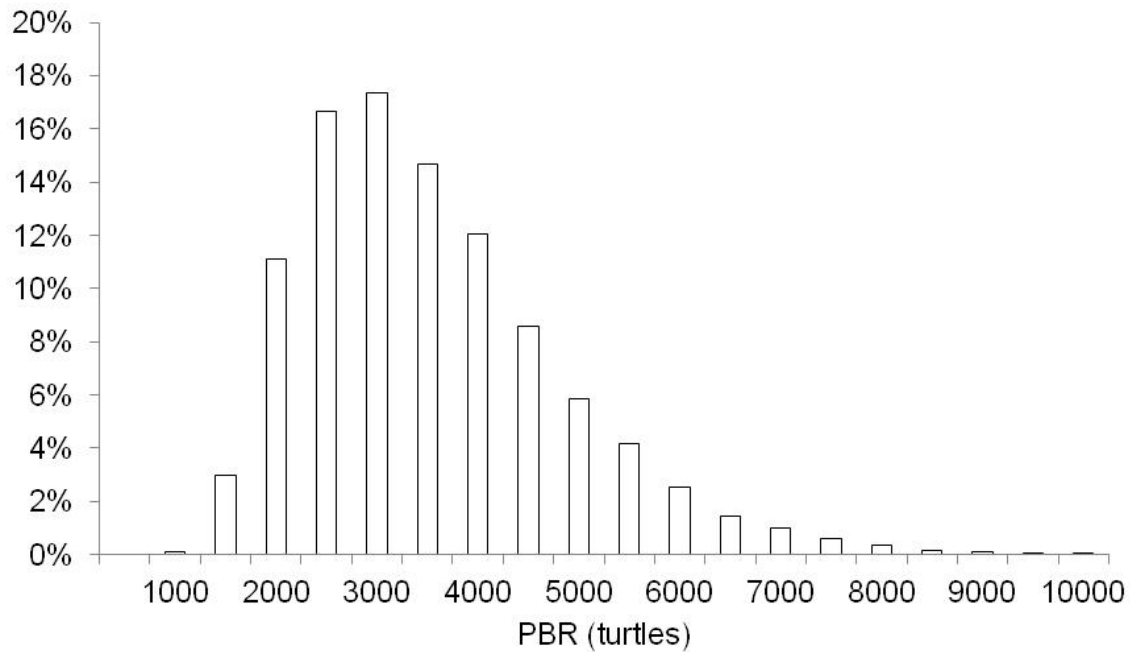


Fig. S3. Example of frequency distribution of Monte Carlo results ($n = 10\,000$) of PBR calculated on the simulation of the abundance of the loggerhead sea turtle population (part at high risk of capture, > 7 yrs). This example concerns the scenario with $ASM = 25$ (considered as the most likely cases) and $F = 0.05$.

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