

Internet appendix for "A bio-economic model for the ecosystem-based management of the coastal fishery in French Guiana"

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Note: The material contained herein is supplementary to the article named in the title.

This Appendix is intended to be available through internet.

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Table a: Trophic relations matrix, $s_{i,j}$ ($*10^{-12}/\text{kg}$) from calibration. Values given are the trophic effect of species (i) on species (j): positive if j is a prey of i and negative if j is a predator of i .

(i) \ (j)	A.weak.	C.cat.	G. weak.	C. snoo.	Sharks	S.weak.	S. croa.	Triple.	G. cat.	B. cat.	G.grou.	F. mul.	P. mul.
A.weak.	- 24.41	25.59	- 216.8	3.02	- 39.81	1.81	0.70	0.64	- 23.06	1.72	- 202.6	28.57	36.22
C.cat.	- 204.8	- 104.9	- 14.41	- 46.93	- 4.41	- 36.96	5779	- 267.9	- 45.73	2228	- 18.62	7.27	17.28
G. weak.	22.30	1.80	- 3.98	2.14	- 44.67	2.21	6.41	1.48	- 54.18	10.40	- 28.08	1.22	14.43
C. snoo.	- 24.18	- 17.25	- 17.10	- 16.34	- 85.37	- 1.57	- 133.2	- 71.13	- 121.5	0.43	- 26.01	1.76	2.90
Sharks	4.98	0.551	5.58	10.67	- 4.86	0.40	23.51	5.45	35.10	1.30	- 147.7	29.35	25.10
S.weak.	- 59.91	4.62	- 23.82	0.19	- 3.22	- 0.17	22.16	5.67	- 7.16	3.87	- 9.92	6.27	9.47
S. croa.	- 5.64	-46338	- 51.29	16.65	- 188.1	- 177.2	- 26.26	- 2.07	- 10.47	6.98	- 21.08	5.30	20.94
Triple.	- 5.1	28.05	- 11.86	8.53	- 43.61	- 45.36	- 8.12	- 256.2	- 134.7	8.96	- 26.35	4.39	0.78
G. cat.	2.88	5.72	6.77	15.19	- 280.8	0.89	1.31	16.84	- 114.53	4.76	- 9.48	4.93	8.10
B. cat.	- 13.77	-17831	- 83.25	- 3.43	- 10.43	-30.93	- 55.84	- 71.71	- 38.12	0.	- 206.5	0.	0.
G.grou.	25.33	2.33	3.51	3.25	- 30.49	1.24	2.63	3.29	1.18	25.82	- 10.74	22.79	3.86
F. mul.	- 228.5	- 58.2	- 9.79	- 14.05	- 234.8	- 50.19	- 42.4	- 35.12	- 39.44	0.	- 182.3	0.	0.
P. mul.	- 289.8	- 138.3	- 115.5	- 23.2	- 200.8	- 75.72	- 167.5	- 6.22	- 64.79	0.	- 30.88	0.	0.

Table b: Initial stocks, intrinsic growth rates and catchabilities of selected species from calibration.

Species(<i>i</i>)	Initial stocks (December 2005) $B_i(0)$ (tons)	Intrinsic growth rate (r_i) (Fisbase) $*10^{-2}$ (/month)	Intrinsic growth rate (r_i) (Calibration) $*10^{-2}$ (/month)	Catchability fleet $k = 1$ $(q_{i,1})$ $*10^{-7}$ (/hour)	Catchability fleet $k = 2$ $(q_{i,2})$ $*10^{-7}$ (/hour)	Catchability fleet $k = 3$ $(q_{i,3})$ $*10^{-7}$ (/hour)	Catchability fleet $k = 4$ $(q_{i,4})$ $*10^{-7}$ (/hour)
A. weakfish	7,152	2.08	1.97	2	4	0.95	10
C. catfish	301	5.95	5.95	68	31	33	24
G. weakfish	26,816	0.16	0.15	0.41	0.39	0.2	0.88
C. snooks	144	4.21	4.08	41	26	47	4
Sharks	10,370	- 4.72	- 3.67	0.38	0.46	0.25	2
S. weakfish	25,825	0.64	0.69	0.06	0.09	0.1	0.
S.croaker	129	3.44	3.08	13	16	54	0.
Tripletail	1,307	9.34	8.87	0.14	0.08	0.02	0.02
G. catfish	67	2.59	2.70	28	37	68	0.31
B. catfish	36	4.21	4.66	48	18	143	0.
G. grouper	2,040	- 2.26	- 1.92	4	0.49	0.3	0.12
F. mullet	28,902	5.31	3.33	0.005	0.003	0.004	0.
P. mullet	38,718	7.03	5.62	0.002	0.0001	0.004	0.

Table c: 2008 economic data (variable costs, fixed costs and selling prices).

	Fleets			
	'canots croles' (fleet $k = 1$)	'canots croles amliors' (fleet $k = 2$)	'pirogues' (fleet $k = 3$)	'tapouilles' (fleet $k = 4$)
2006-2009 average boats number	71	60	45	10
Variable costs c_k^v (EURO/fishing hour)	5.83	5.40	8.52	8.22
fixed costs per boat c_k^f (EURO/annum)	8610	8958	3770	29833
Selling prices $p_{i,k}$ (EURO/kg)				
A. weakfish	3.08	2.31	4.00	2.23
C. catfish	1.85	1.49	3.00	1.25
G. weakfish	1.45	1.42	2.50	1.56
C. snooks	2.83	2.09	4.00	2.23
Sharks	1.78	1.07	3.00	0.94
S. weakfish	2.40	1.98	3.28	2.23
S. croaker	1.68	1.89	3.71	1.50
Tripletail	1.97	1.29	1.65	1.97
G. catfish	5.68	4.23	6.00	4.00
B. catfish	1.74	1.73	3.00	1.73
G. grouper	3.73	3.98	4.00	2.43
F. mullet	3.96	2.48	4.20	2.50
P. mullet	3.81	2.00	5.00	2.00

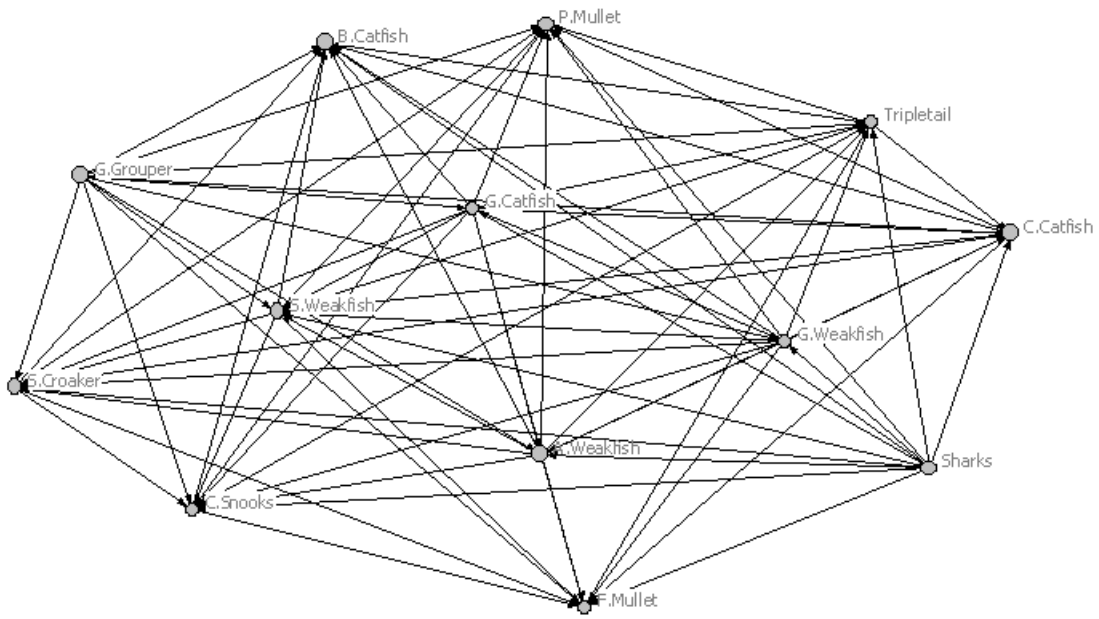


Figure a: Food web with the thirteen main exploited species in French Guiana.

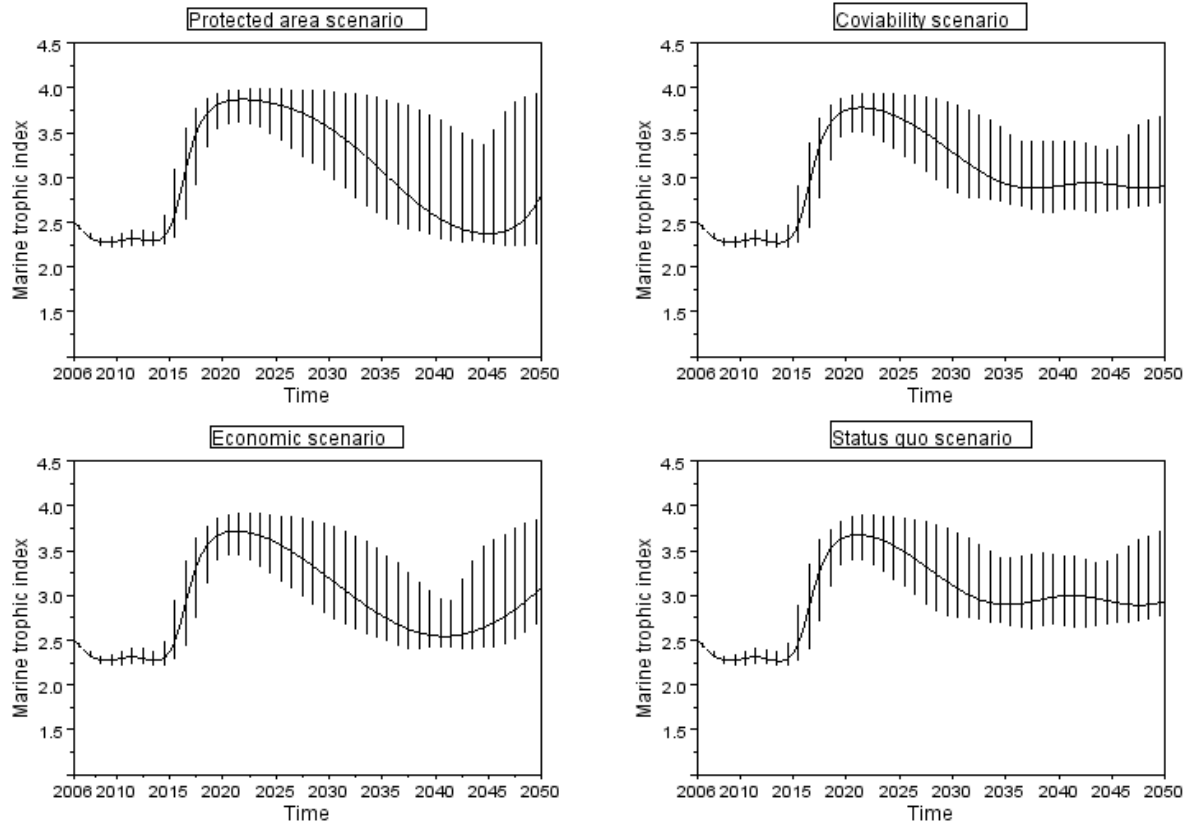


Figure b: Marine trophic index $MTI(t)$ by scenario (solid lines), with uncertainties (vertical lines).

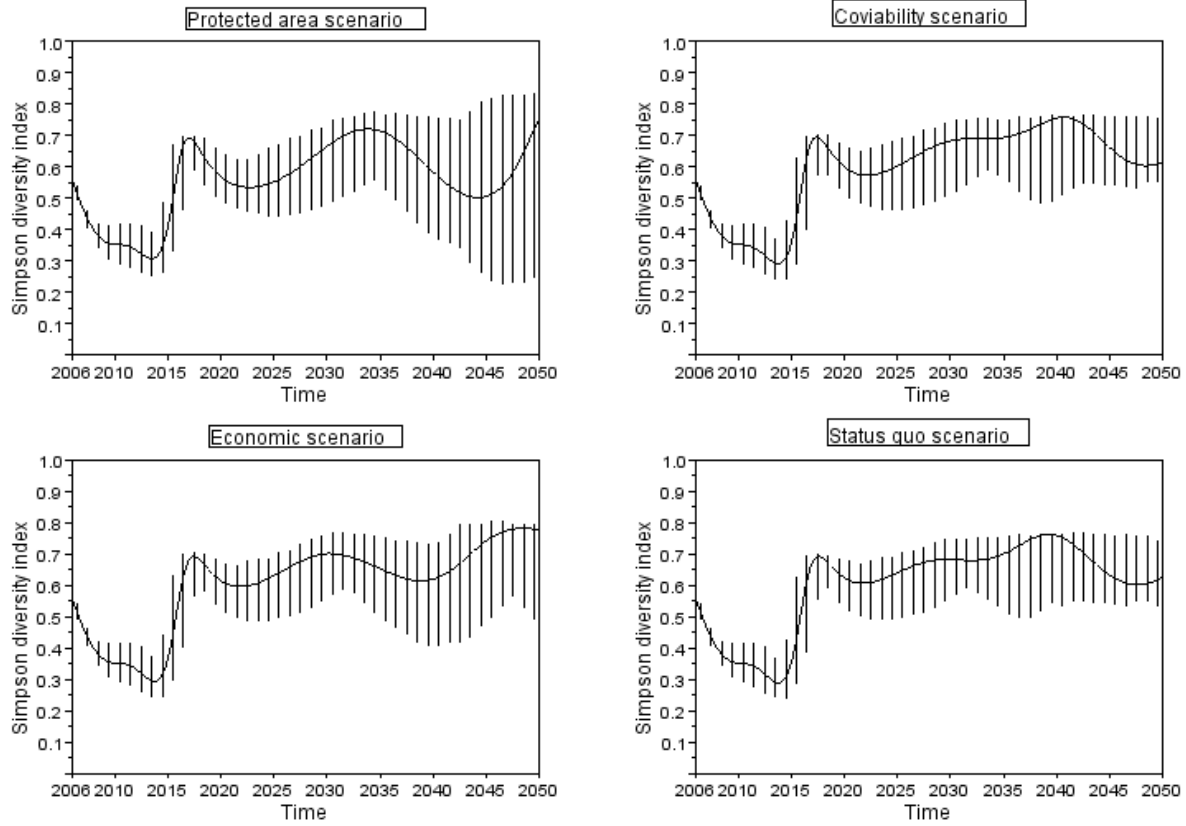


Figure c: Simpson diversity index $SI(t)$ by scenario (solid lines), with uncertainties (vertical lines).