

California MLPA Master Plan Science Advisory Team
Round 1 Outputs from Bioeconomic Model Evaluation:
Biomass and Fishery Yield
April 9, 2010 DRAFT

Table 1: Total Biomass and Total Fishery Yield. Total biomass and fishery yield predicted for each of four species for Round 1 evaluations of external marine protected area (MPA) arrays were estimated using the University of California, Santa Barbara (UCSB) and University of California, Davis (UCD) bioeconomic models. The total biomass of each species is estimated at equilibrium for each square kilometer of the study region. Values are scaled relative to total unfished biomass such that values of 0 indicate no biomass and values of 1 indicate maximum unfished biomass. Total fishery yield is the total harvest of each species relative to maximum sustainable yield (MSY) of the species with the existing MPAs (proposal 0). For round 1 evaluations, four species were modeled: Black rockfish, cabezon, redbtail surfperch, and red sea urchin. Model results were calculated for 3 different fishery management scenarios; the results in this table are from the MSY-type management scenario. Total biomass and yield are the average across these four modeled species. In subsequent evaluations, three additional species will be modeled, including red abalone, brown rockfish and Dungeness crab. Due to limitations of the SAT's current evaluation methods, for round 1, proposed MPAs in external MPA array A were considered static rather than mobile. Traditional tribal uses were not integrated into round 1 evaluations of external MPA arrays due to the limited information about tribal uses.

External Proposed MPA Array	Species	Total Biomass (UCSB)	Total Biomass (UCD)	Total Fishery Yield (UCSB)	Total Fishery Yield (UCD)
ExA	Black Rockfish	0.4208	0.30062	0.97036	0.97784
ExA	Cabezon	0.42882	0.44919	0.92166	0.97584
ExA	Red Sea Urchin	0.45005	0.61345	0.99634	0.96994
ExA	Redtail Surfperch	0.44461	0.41461	0.86859	0.89526
ExB	Black Rockfish	0.38622	0.27906	0.99912	0.99669
ExB	Cabezon	0.39412	0.44465	0.98637	0.98308
ExB	Red Sea Urchin	0.45445	0.60981	0.99304	0.98134
ExB	Redtail Surfperch	0.4159	0.38749	0.93158	0.94311
ExC	Black Rockfish	0.40473	0.29025	0.98514	0.99439
ExC	Cabezon	0.40528	0.45763	0.9622	0.95228
ExC	Red Sea Urchin	0.47564	0.61824	0.95383	0.94969
ExC	Redtail Surfperch	0.42764	0.40552	0.89907	0.90412
ExD	Black Rockfish	0.40051	0.27791	0.98789	0.99087
ExD	Cabezon	0.41325	0.46408	0.94673	0.9328
ExD	Red Sea Urchin	0.48429	0.62443	0.93806	0.92701
ExD	Redtail Surfperch	0.47447	0.45556	0.79508	0.83457
ExE	Black Rockfish	0.41422	0.28177	0.97896	0.99029
ExE	Cabezon	0.42059	0.46427	0.92967	0.9312
ExE	Red Sea Urchin	0.49245	0.62611	0.92196	0.91973
ExE	Redtail Surfperch	0.44993	0.4227	0.8493	0.88408
ExF	Black Rockfish	0.38727	0.27906	0.99691	0.99669

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External Proposed MPA Array	Species	Total Biomass (UCSB)	Total Biomass (UCD)	Total Fishery Yield (UCSB)	Total Fishery Yield (UCD)
ExF	Cabazon	0.39405	0.44465	0.98664	0.98308
ExF	Red Sea Urchin	0.45425	0.60981	0.99347	0.98134
ExF	Redtail Surfperch	0.41592	0.38749	0.9316	0.94311
ExG	Black Rockfish	0.38727	0.27906	0.99691	0.99669
ExG	Cabazon	0.39405	0.44465	0.98664	0.98308
ExG	Red Sea Urchin	0.45425	0.60981	0.99347	0.98134
ExG	Redtail Surfperch	0.41592	0.38749	0.9316	0.94311
ExH	Black Rockfish	0.38727	0.27846	0.99691	0.99683
ExH	Cabazon	0.39407	0.4438	0.98662	0.98451
ExH	Red Sea Urchin	0.45418	0.61032	0.9933	0.9796
ExH	Redtail Surfperch	0.41588	0.38873	0.93156	0.94364