Table S1. Biological metrics used to evaluate coral-reef ecosystem conditions that were related reef processes and ecological principles.

METRIC	KEY PROCESSES	FOUNDATIONAL PRINCIPLES	SUPPORTING CITATIONS
FISH ASSEMBLAGE SIZE	Grazing, disturbance resistance, recovery potential, distribution of diversity across trophic guilds, sustainable provisioning	Allometry, reproduction, niche partitioning, distribution of biomass across fast/slow energy pathways in food webs, size-based fishery regulations	[1] [2] [3] [4] [5] [6] [7] [8] [9] [10,11]
FISH ASSEMBLAGE BIOMASS	Disturbance resistance, recovery potential, carbon sequestration, sustainable provisioning	Food web stability, Nutrient cycling, harvesting quotas,	[11-17]
PREDATOR BIOMASS	Competitive dominance in lower trophic guilds, carbon sequestration, ecosystem function	Predation, competition, diversity maintenance, trophic cascades, food web stability	[13,14,18-20]
FISH ASSEMBLAGE HETEROGENEITY AND EVENNESS	Disturbance resistance, recovery potential	Response diversity, functional redundancy, food web stability	[18,21-27]
BENTHIC SUBSTRATE RATIO[1]	Reef calcification and accretion, carbon sequestration	Competition, slow energy pathways in food webs	[10,16,28-30]
CORAL COVER	Habitat formation and complexity, reef calcification and accretion, carbon sequestration	Nutrient cycling, fundamental niche creation, slow energy pathways in food webs	[31-34]
MACROALGAL COVER	Competition, grazing, carbon recycling	Nutrient cycling, herbivore response, fast energy pathways in food webs	[16,28-30]
CORAL EVENNESS, SPECIES RICHNESS, AND ASSEMBLAGE HETEROGENEITY	Habitat complexity, disturbance resistance, recovery potential	Response diversity, functional diversity, food web stability	[4, 31-35]
CORAL ASSEMBLAGE SKEWNESS	Recruitment, habitat complexity, habitat formation	Allometry, fundamental niche creation, fast/slow energy pathways in food	[16,33,36,37]

		webs, population dynamics	

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