

Supplemental Tables

Sup. Table 1. Key functional properties of Ecological Status Groups; IA = Thick Perennial Late Sucessional Macroalgae Type, IB = Thick Plastic Late Sucessional Macroalgae Type, IC = Shade-adapted Pllastic Late Sucessional Macroalgae Type, IIA = Filamentous Sheet-like Opportunistic Macroalgae Type, IIB = Fleshy Opportunistic Macroalgae Type (Orfanidis *et al.* 2011)

	Functional Traits	IA	IB	IC	IIA	IIB
1	Thallus morphology	Thick	Thick	Upright calcareous and calcareous and non-limestone crusts	Fleshy	Filaments and like leaves
2	Growth	Slow	Slow	Slow	Rapid	Rapid
3	Light Adaptation	Sun-adaptation	Sun-adaptation	Shade-adaptation	Sun-adaptation	Sun-Adaptation
4	Phenotypic Plasticity	No	Yes	Yes	Yes	Yes
5	Thallus Age	Perennial	Perennial Thallus Base	Perennial Thallus Base	Annual	Annual
6	Succesion	Late	Late	Late	Opportunist	Opportunist

Sup. Table 2. Abiotic parameters: DS = dry season; WS = wet season. Note: pH, salinity, DO, and light intensity have a significant difference between seasons (Kruskal-Wallis Test $p < 0.05$)

Location	Karapyak		Sindangkerta		Sayangheulang		Average	
Variable/Season	DS	WS	DS	WS	DS	WS	DS	WS
pH	6.4±0.4	6.4±0.4	6.3±0.6	7.1±0.6	6.5±0.4	6.5±0.4	6.4±0.5	6.7±0.5
Salinity (‰)	23.7±5.2	25.6±2.1	31±4.2	24±2.6	28.9±2.3	27.3±1.3	27.9±5.2	25.6±2.4
DO	4.1±0.7	7.0±1	5.2±1.1	7.3±1.2	6±1.6	7±1.6	5.1±1.4	7.1±1.3
Light Intensity (Lux)	220±115	785±161	395.1±170	739±139	456±258	731±128	343±205	752±144
Temperature (°C)	28.0±0.3	28.9±1.1	27.6±0.5	27.6±0.5	27.5±0.8	27.5±0.7	27.6±0.6	28.0±1

Sup. Table 3. Estimation of macroalgae carbon stock

Season	Location	Carbon Stock Average (gm-2)	Area (Ha)	Total (ton)	Carbon Stock (ton.ha-1)
dry	Karapyak	47.60	14.70	7.02	0.48
	Sindangkerta	75.60	17.90	13.51	0.76
	Sayangheulang	121.70	53.50	65.13	1.22
wet	Karapyak	71.76	16.31	11.69	0.72
	Sindangkerta	54.88	16.81	9.23	0.55
	Sayangheulang	107.02	59.91	64.12	1.07