

Seagrass-Watch

Global Seagrass Observing Network

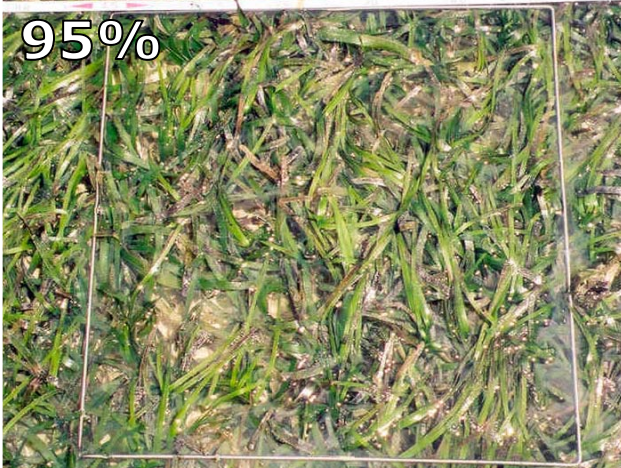
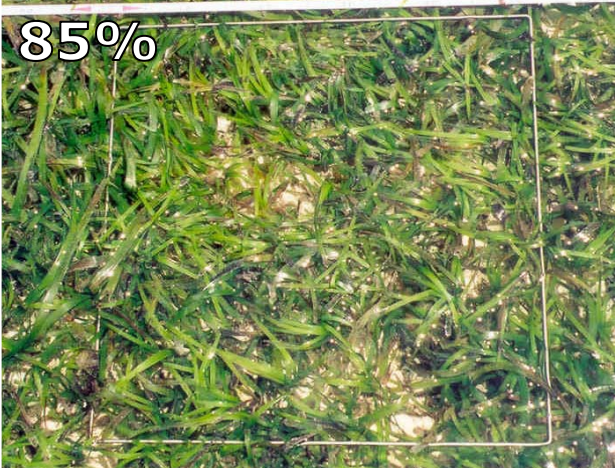
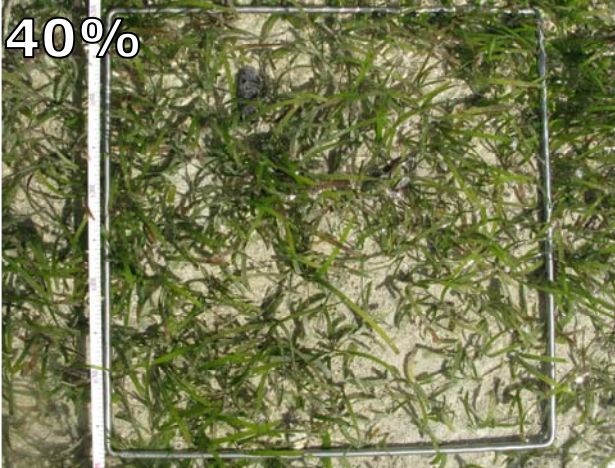
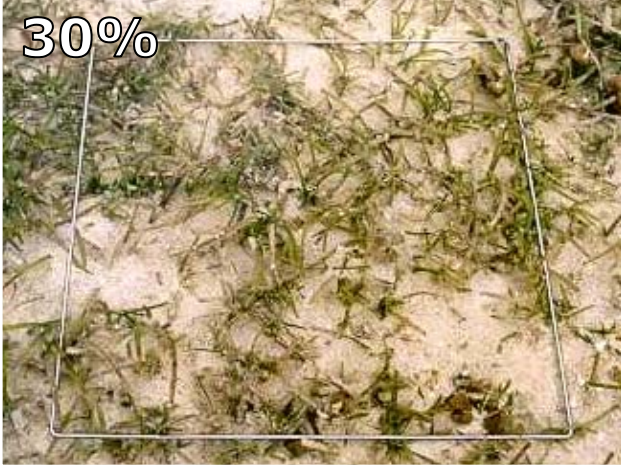
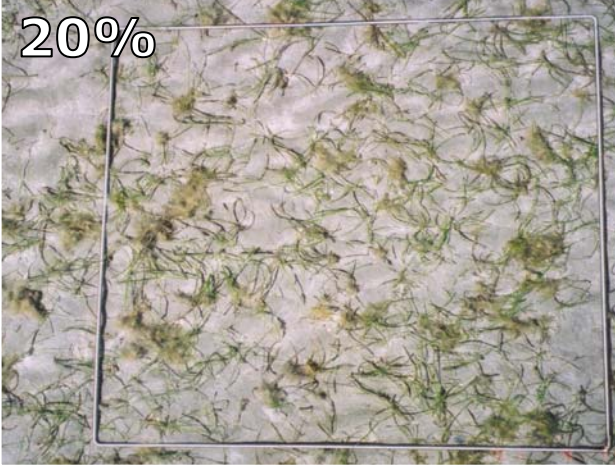


SEAGRASS-WATCH

TIMOR-LESTE FIELD BOOKLET



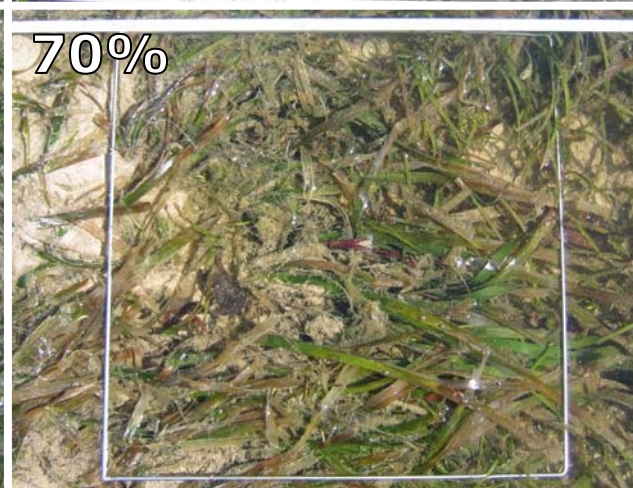
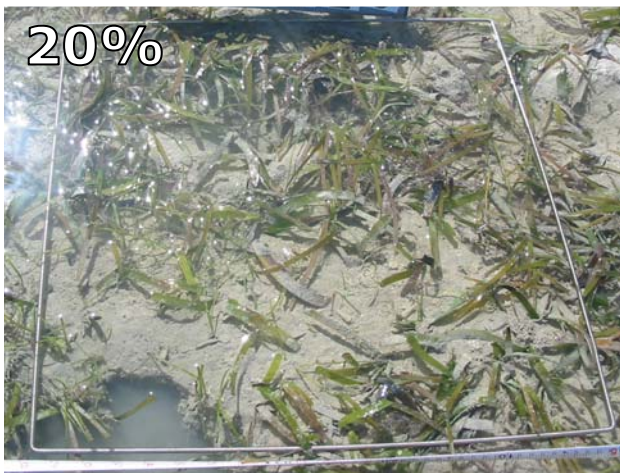
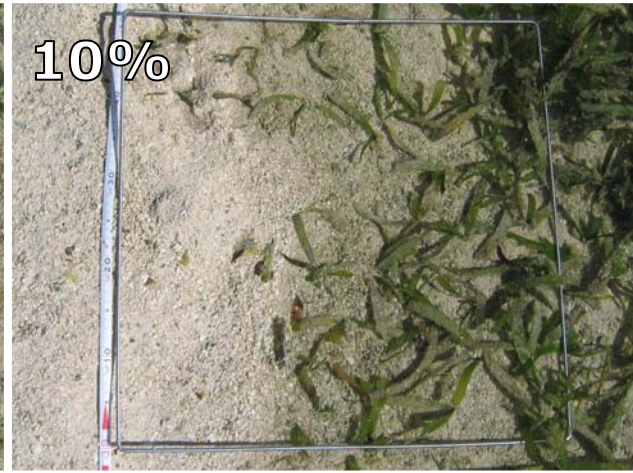
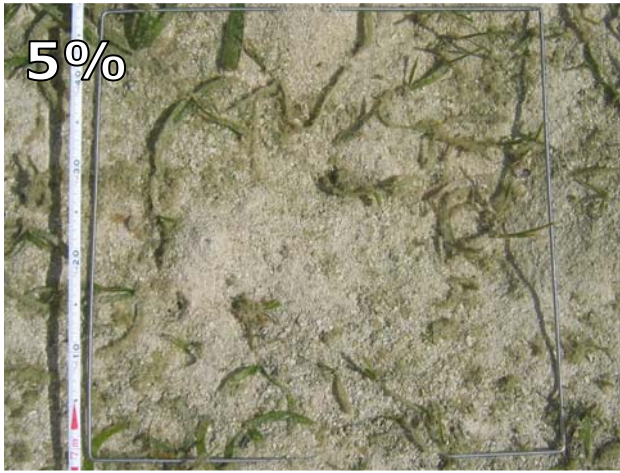
Percent cover standards



Reeftop – *Cymodocea/Halodule*



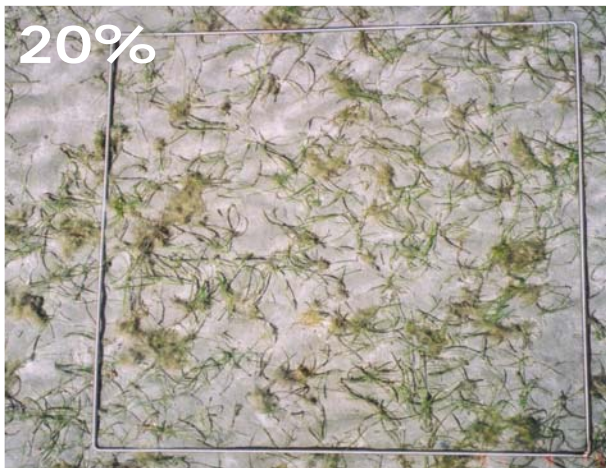
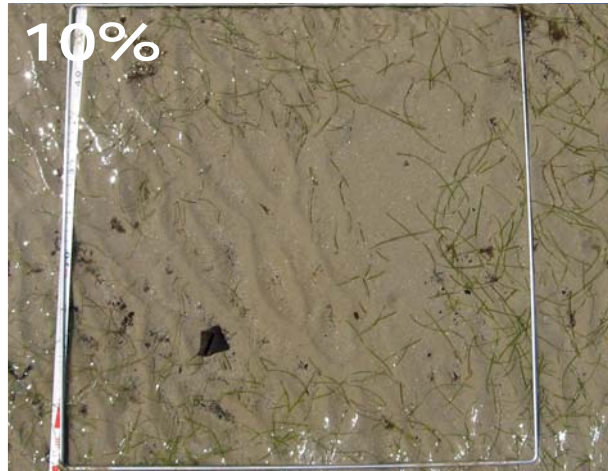
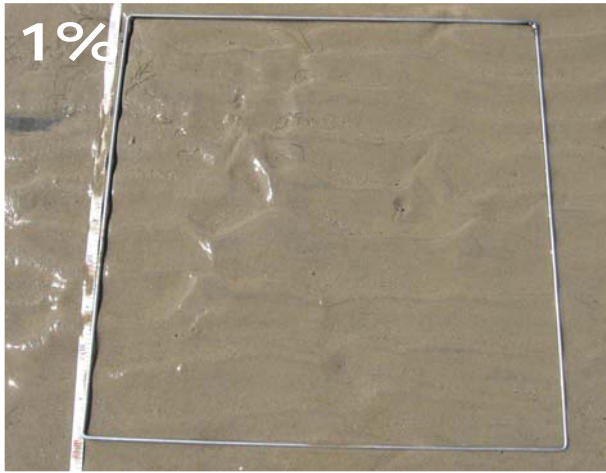
Percent cover standards



Reeftop – mixed *Thalassia/Cymodocea/Enhalus*



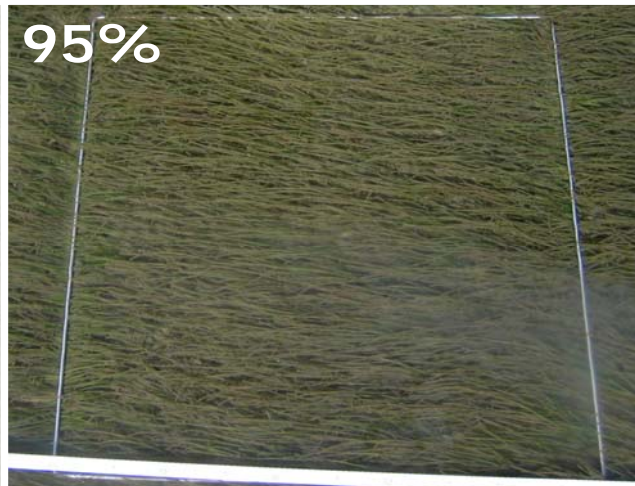
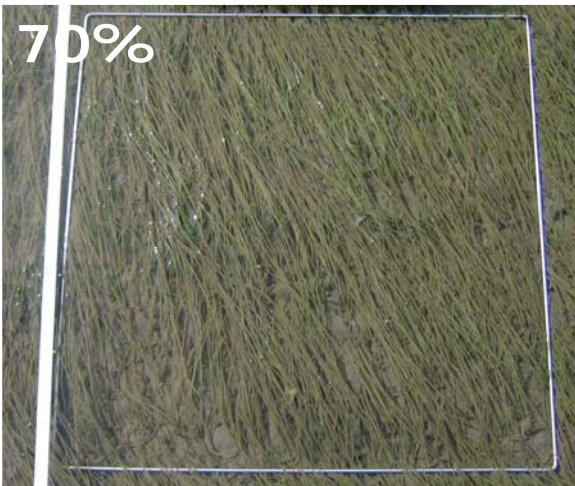
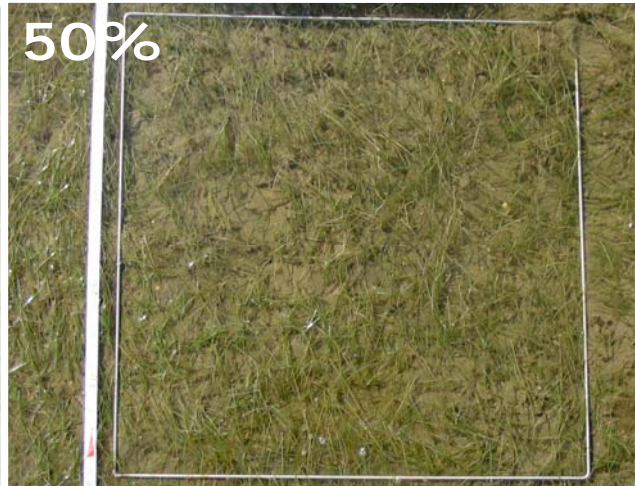
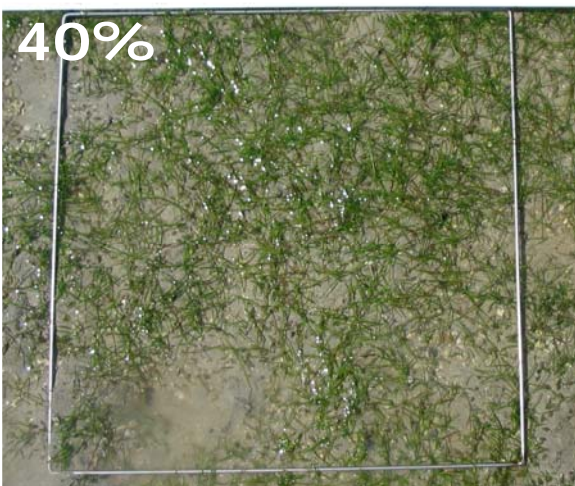
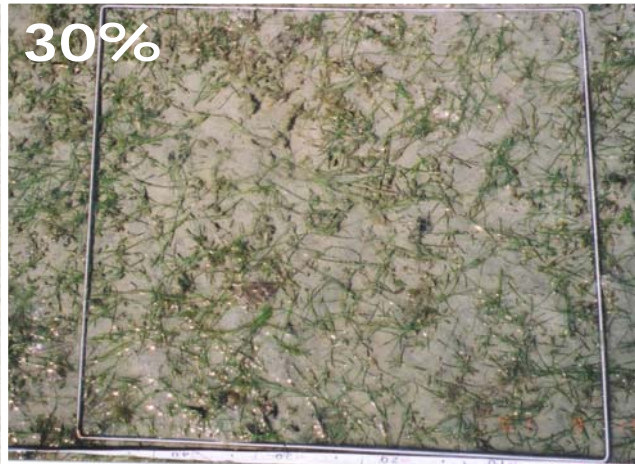
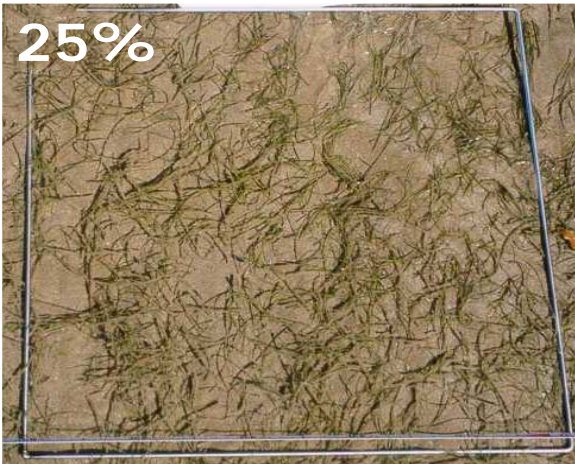
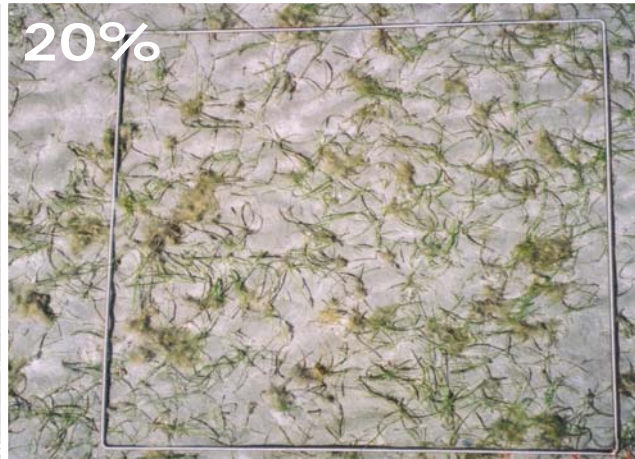
Percent cover standards



Coastal - low



Percent cover standards



Coastal - high



Percent cover standards

2%



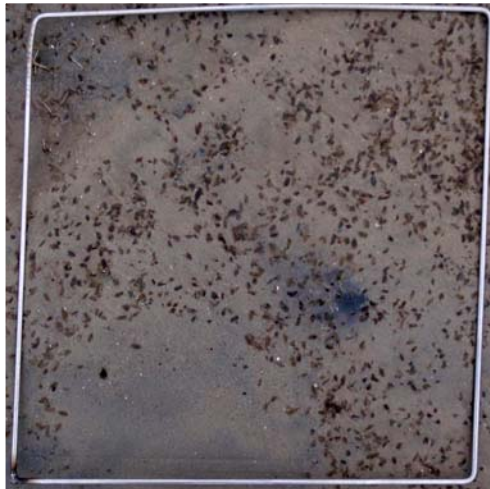
5%



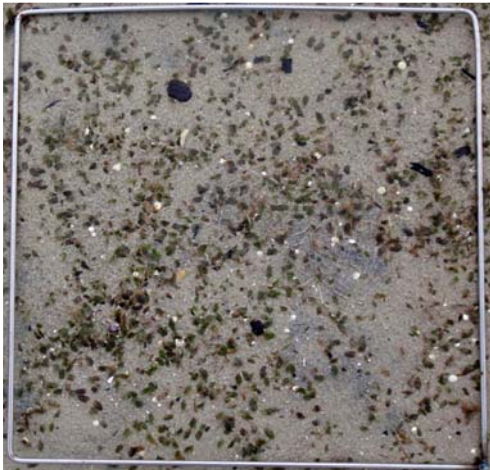
7%



17%



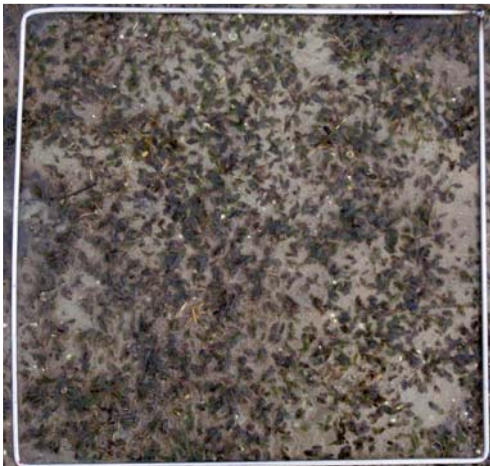
25%



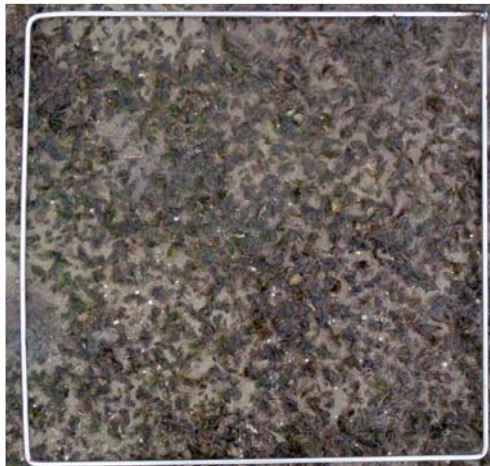
38%



60%



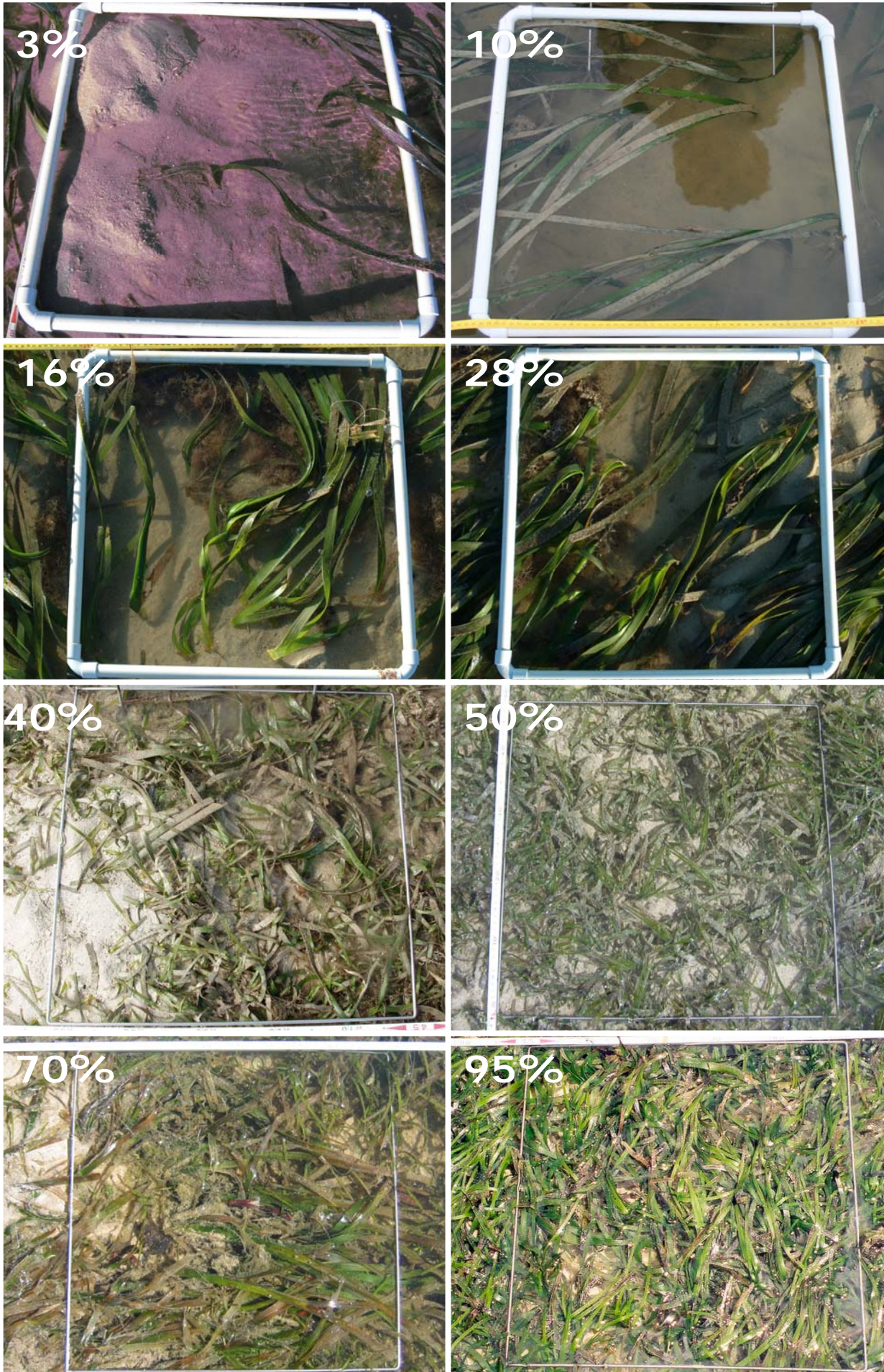
70%



Coastal – *H. ovalis*



Percent cover standards



Reeftop – *Enhalus*



KÓDIGU ESPÉSIE DU'UT TASI

Ea

Enhalus acoroides



- naruk loos (>30cm) tahan hanesan fita ho ninia ninin lulun an tama.
- rizoma mahar ho nia tarak/fulun kór metan naruk no nia abut hanesan tali

Thalassia hemprichii **Th**



- tahan hanesan fita, forma kurva ho naruk 10-40cm
- tahan nia tutun kabuar, hanesan kadó nia nehan utoan
- sélula tannin badak, naruk 1-2mm iha nia tahan
- rizoma mahar ho kuak (fitar) entre dikin (pucuk) sira

Cymodocea rotundata

- tahan nia tutun kabuar
- tahan kloot (luan 2-4mm)
- tahan nia naruk 7-15cm
- tahan nia uat 9-15 longitudinál
- tahan nia kós dezenolve ho di'ak

Cr



Cymodocea serrulata

- tahan nia tutun hanesan kadó nia nehan
- tahan nia luan (5-9mm)
- tahan nia naruk 6-15cm
- iha uat 13-17 longitudinál
- iha rizoma ne'ebé forte

Cs



Ho

Halophila ovalis



- tahan nia uat 8 ka liu
- laiha fulun iha tahan nia superfisie
- tahan nia ninin kabeer
- tahan nia naruk 5-20mm

Hd

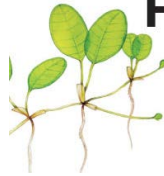
Halophila decipiens



- tahan ho forma ovál, tutun meik utoan
- tahan nia fulun iha parte rua hotu
- iha uat 6-8
- tahan nia ninin hanesan kadó nia nehan utoan

Hm

Halophila minor



- tahan nia uat menus husi 8
- tahan ovál ki'ikoan, nia luan menus husi 5mm
- tahan nia ninin kabeer
- laiha fulun iha nia tahan

Hu

Halodule uninervis



- tahan nia tutun hanesan kabuar
- iha uat sentrá 1
- rizoma mamar, iha tahan nia fitar ho kór metan moos

Si

Syringodium isoetifolium



- tahan hanesan supermie ne'ebé ki'ik.
- silindriku ho diamentru 1-2mm
- tahan kontén kavidade ár
- tahan nia tutun sai ki'ik iha nia rohan
- tahan nia naruk 7-30cm

Hp

Halodule pinifolia



- tahan nia tutun kabuar
- iha uat sentrá 1
- rizoma mamar, iha tahan nia fitar ho kór metan moos

Tc

Thalassodendron ciliatum



- nia kain hamrik naruk to'o 65cm no iha tahan ne'ebé moris hamutuk (iha grupu)
- rizoma forsa no hanesan ai
- tahan hanesan fita, forma hanesan tara
- tahan nia tutun kabuar no hanesan kadó nia nehan
- baibain hetan belit iha substratu sira hanesan fatuk ka korál



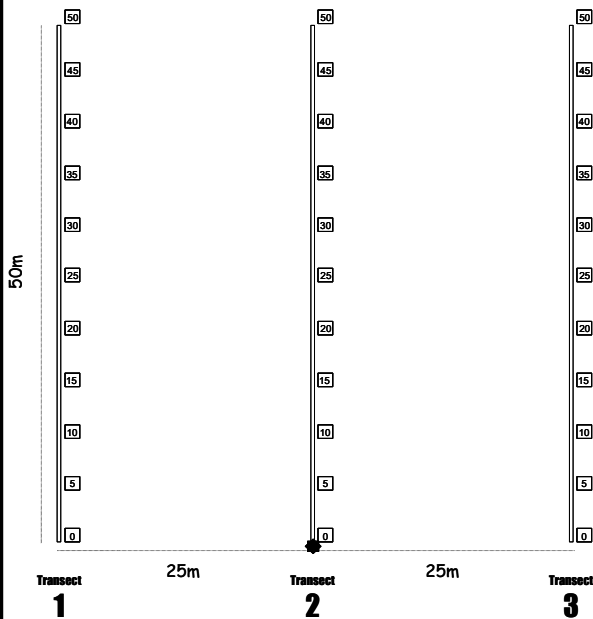
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Ilustrasaun sira labele fó eskala
copyright Seagrass-Watch HQ

Seagrass-Watch Protocols

Source: McKenzie et al., 2003 (www.seagrasswatch.org/manuals.html)

Modelu Sítii



Kuadrat kódigu = sítii + transek + kuadrat

Ez., DL1225 = Dili sítii 1, transek 2, 25m kuadrat

Preparasaun molok halo monitorizasaun

Halo oráriu

Halo oráriu kona-ba tempu atu sai no tempu atu filafali, no saida mak sai objetivu iha loron ne'e no saida mak tenke atinje. Fó kopia kona-ba oráriu ne'e antes ba partisipante hotu-hotu ne'ebé involve atu nune'e sira bele regula sira-nia tempu atu to'o iha fatin tuir oras. Alista mós iha oráriu ne'e kona-ba saida mak voluntáriu sira tenke lori.

Emá ne'ebé tenke kontaktu

Tau emá ruma ne'ebé ita fiar atu fó alerta bainhira ita-boot no ekipa la fila tuir tempu ne'ebé determina ona.

Seguransa

- Avalia risku sira molok halo monitorizasaun - haree tempu, laloran, nst
- Uza ita-boot nia instink - se ita-boot sente la seguru tenke husik lalais sampling
- Labele tau ita-boot nia an no emá seluk iha risku
- Hatais roupa ne'ebé apropriadu no taka ain
- Proteje an husi raius loro-matan
- Kuidadu ho animál tasi sira-ne'ebé perigu
- Lori Primeiru Sokoru ho ita-boot
- Lori ita-nia telemóvel ka rádio ne'ebé uza atu kontaktu

Ekipamentu no matriál sira-ne'ebé presiza

- 3x50m fita metru
- 6x50cm kabidu plástiku
- kompas
- 1x kuadrat padraun (50cmx50cm)
- 3x fixa-dadus ba monitorizasaun
- clipboard, lapis no régua 30cm
- kamera
- labeller ba kuadrat foto
- fixa padraun ba kobertura persentajen
- fixa ba identifikasaun du'ut tasi

Sampel ida-idak

Iha sítii ho medida 50x50 nia laran tau transek 3 medida 50 paralelu, distánsia 25m husi id aba seluk, no perpendicular (tau loos husi tasi ba tasi-ibun ho angulu 900). Iha kada kuadrat tau sampling, kompleta etapa sira tuirmai ne':

Etapa 1. Hasai foto kuadrat t

- Hasai kada kuadrat nia foto (ka iha 5m, 25m no 45m se limitadu) iha kada transek. Uza kuadrat ne'ebé laiha tali no tau labeller foto kuadrat iha kuadrat nia sorin no fita metru no tau kódigu ne'ebé loos
- Hasai foto husi angulu vertikal, ne'ebé inklui kuadrat tomak, fó label ba kuadrat no fita metru. Koko atu labele iha lalatak ka reflesau iha bee ne'ebé ita hasai nia foto. Haree filafali foto ne'ebé hasai no tau iha fixa-dadus ba kuadrat

Etapa 2. Deskreve sedimentasaun nia kompozisun

- Uza liman-fuan hatama ba sedimentasaun nia parte leten to'o sentímetru balu no sente nia testura. Deskreve sedimentasaun liuhosi sente partíkula sira iha orden ne'ebé dominante (ez. Rai-henek, rai-henek mamar, rai-henek mamar/tahu)

Etapa 3. Deskreve karakterístika seluk no ID/konta makro fauna

- Konta no hakerek (númeru – labele uza símbolu < ka >) ba buat ruma ne'ebé ita interese ba (Ez. Gastropoda, kadiuk, iha evidénsia kona-ba dugong ka lenuk han. Bioturbasaun, sedimentasaun nia forma hanesan laloran) iha koluna komentáriu
- Se bee kobre hotu kuadrat nia sorin ka tomak, entaun sukat bee nia naruk iha cm



Etapa 4. Halo estimasaun kona-ba porsentu du'ut tasi ne'ebé moris kobre área

- Haree tama ba kuadrat husi leten, halo estimasaun ba total persentajen husi tasi-okos(substratu) iha kuadrat laran ne'ebé du'ut tasi taka. Halo estimasaun ba lalatak ne'ebé hamosu husi du'ut tasi.
- Sempre uza padraun foto ba kobertura persentajen (Fixa-kalibrasi) nu'udar matadalan bai ta-boot, atu halo estimasaun kobertura ho loloos, Ez. 27%, 61%
- Se du'ut tasi nia kobertura menus husi 3% ita-boot bele konta du'ut tasi nia dikin (pucuk) no kalkula kobertura nia persentajen uza formula dikin(pucuk) $1=0.1\%$. Nota: Ida ne'e sei boot liu ba dikin(pucuk) husi espésie ho medida boot

Etapa 5. Halo estimasaun ba kompozisaun espésie du'ut tasi

- Identifka espésie du'ut tasi iha kuadrat laran no determina persentajen kona-ba distribuisaun kada espésie ((hahú husi ladún barak, kompozisun total tenke iguál ho 100%)
- Uza matadalan atu halo indentifikasaun ba espésie du'ut tasi, no uza karakterístika barak (liu husi karakterístika 1) atu identifika kada espésie

Etapa 6. Skat kanopi du'ut tasi nia aas

- Sukat kanopi nia aas (iha unidade sentímetru) husi espésie ne'ebé moris domina ho tahan rabat malu, ignora sira-ne'ebé aas liu 20%.
- Sukat husi sedimentasaun to'o iha tahan 3 iha dikin nia tutun. Hatama hotu tahan 3 ne'ebé sukat bai ha fixa-dadus

Etapa 7. Halo estimasaun ba persentajen kobertura alja sira

- Haree tama ba kuadrat husi leten, halo estimasaun ba total persentajen husi tasi-okos(substratu) iha kuadrat laran ne'ebé taka husi makro alja sira (du'ut tasi ne'ebé kobre independente)
- Makro alja sira la belit iha du'ut tasi nia tahan sira, maibé karik belit iha fatuk, eskeletu sira ka karik namlele

Etapa 8. Halo estimasaun ba persentajen kobertura epifit

- Epifit nu'udar alja sira-ne'ebé belit iha du'ut tasi nia tahan no halo sai aat.
- Dahuluk, halo estimasaun ba médiu husi du'ut tasi nia tahan superfísie ne'ebé kobre ona, no hafoin tahan hira iha kuadrat laran ne'ebé kobre. Ezemplu: se 20% husi tahan mak kobre husi epifit 50%, entaun kuadrat epifit kobre mak 10%. Uza matriks epifit atu tulun ita-boot.
- Labele inklui epifauna iha epifit. Epifauna mak animál sira ne'ebé moris metin iha du'ut tasi nia tahan- Rejista % epifauna nia kobertura iha iha koluna komentáriu / iha koluna mamuk – Labele aumenta ka kahur ba kobertura epifit nian

Etapa 9. Foti espésiemen du'ut tasi bainhira presiza

- Tau amonstra du'ut tasi iha saku plástuku ne'ebé tau ona kódigu no ho tasi-been uitoan. Hili espésiemen du'ut tasi ne'ebé reprezentativu atu asegura katak ita-boot lori du'ut tasi nia parte sira hotu inklui rizoma no abut sira. Koleta du'ut tasi ho nia estrutura fuan no funan se posível

Etapa 10. La'ó ba kuadrat tuirmai

- Repete etapa 1 to'o 8 hodi kobre kuadrat 32 ne'ebé sei iha

Etapa 11. Monitorizasaun remata

- Haree fali fixa-dadus no konfirma katak prienxe hotu ona
- Hasai sasán sira (Ez. Kabidu sira ne'ebé la'ós permanente

Monitorizasaun remata ona

Etapa 1. Fase no aruma sasán

- Fase sasán sira hanesan metru, kabidu no kuadrat, ho bee-moos no husik maran.
- Haree fali sasán atu halo sampel tuirmai no husu materiál foun ne'ebé presiza
- Tau sasán atu halo sampel tuirmai

Etapa 2. Falun no hanehan espésiemen du'ut tasi bainhira koleta cted

- Espésiemen tenke falun no hanehan lalais hafoin koleta. Labele tau iha jaleira liu husi loron 2
- Tau espésiemen iha fatin maran/manas nato'on/ nakukun mínimu durante semana rua. Atu hetan rezultadu di'ak, troka surat-tahan (koran) depois loron 2-3

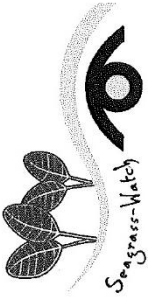
Etapa 3. Entrega dadus hotu-hotu

- Dadus bele hatama ba iha Ms-Excel ne'ebé bele download husi www.seagrasswatch.org. Envia dadus complete ba Email hq@seagrasswatch.org
- Envia fixa-dadus orijinál, foto sira no fixa herbariu

Seagrass-Watch HQ
Ba enderesu kódigu postal, haree
<https://www.seagrasswatch.org/contact/>



SEAGRASS-WATCH MONITORING



ONE OF THESE SHEETS IS TO BE FILLED OUT FOR EACH TRANSECT YOU SURVEY

START of transect (GPS reading)

Latitude: Longitude:

Quadrat (metres from transect origin)	Sediment (eg. mud/sand/shell)	Comments (eg 10x gastropods, 4x crab holes, dugong feeding trails, herbarium specimen taken)	Seagrass coverage (%)	% Seagrass species composition				Canopy height (cm)	% Algae cover	% Epi- cover
				HO	HU	ZC	Water			
1 (0m)	Sand	SC x 3 HC x 1	40	30	70	0	51,17	5	33	
2 (5m)	S	GAS x 3	33	50	50	0	10,17,8	10	18	
3 (10m)	md sand	worm x 1	18	70	20	10	6,8,5	0	48	
4 (15m)	m s	DFT x 1	0				0	17	0	
5 (20m)	m s shell	HC x 3	36	5	90	5	9,17,5	12	57	
6 (25m)	m s sh	-	48	100			1cm	2	96	
7 (30m)	Fine sand	Turtle cropping	0				1cm	23	0	
8 (35m)	FS	SC x 2	0.7		100		1.5cm	18	31	
9 (40m)	S m	CH x 3	23	96	4		2cm	6	17	
10 (45m)	m	Mud wotels x 2 HC x 1	41	2	95	3	2,1,4,6	3	21	
11 (50m)	m s		16	3	7	90	7,1,6,17	38	6	

END of transect (GPS reading)

Latitude: Longitude:

SC = Sea Cucumbers HC = Hermit Crab
 GAS = Gastropod CH = Crab Hole
 DFT = Dugong feeding trail.

