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Coral Reef Degradation in the Indian Ocean

Status Report 2005



Coral Reef Degradation in the Indian Ocean

Status Report 2005

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Foreword

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Haji Machano, Card Daniels, Elizabeth Tyler,

Nariman Jickawi & Saleh Yahya

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& Michael Schleyer

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Arjan Rajasuriya, Jerker Tamelander

& Nishanthi Perera

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Meena Dharmaretnam & Riyas Ahamed

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G. Mathews & Dan Wilhelmsen

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Rolph Payet, Jude Bijoux & Pierre Andre Adam

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David Scuter, David Obura, Dan Wilhelmsen,

Charles Sheppard, Matt Richmond, Olof Lindén,

Rolph Payet & Jude Bijoux

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Section 2 Thematic Reports

David Obura, Juliet Furaha & Jervas Mwaura

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Marcos A. M. Pereira & Michael H. Schleyer

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Executive Summary

SYNOPSIS

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lā _g` [fW] lāg` fclW] EagfZ3e[SS VfZVWfS^
S Vi WfW ;` V]S AUs dWad fZSf,

Status of Coral Reefs

- Wl[aZk[LS^lā V]fla` aX_ S k dWlā f] gW
fa W] W
- DWahk Xh_ TWSZ]` YSeaUSfWlāc^_ adS]fk [e
YMS^keai S VbsUZki [fZi [Wb dSUSZS YW]
dWVlā_ badf]a` aXSVg^f S VghM[Wlāc^lā_ Ž
_g` [fW]
- DWahk [e_ adWb[Va` dWefZSfSdWfSfWi [fZ
[_S SYWScWSeadSdWVafWlā_ fZW EgWUWax
afZVZg_ S V]fgd]S UW
- DWahk [SdW egTWf fa Zg_ S [EgWUWZse
TW dSdWZ
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ZseSUWbSfWfZVWVdSf]a` USgeWtk
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□ WVa^aY]LS^lā_ badf]a` aX dW
□ Wlā V]fla` aXfZW dWefZSf ZSV eg W]W
WfWclhWlāc^_ adS]fk Se S dWg^f aXfZW 7^
@]ra i W]W adWg^ WST^Wa fZVadWaxfZWegZ
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- W]Sa` eXidlā f] gWlāc^dWVWdSf]a` SdW
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□ AbW SUUe ~eZ] Y S V Wb^a]f]f]a` aXafZW
lāSef^ dWg dW SdWg dWg^f W [_S k lāg` Ž
fclW Se S dWg^f g` Wb^ak_ Wf S V S ^SU aX
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^] Wi [fZ lāSef^ W]WdSf]a` -
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- ;`eg`U`W`f`ba`f`[US`i`i`[`fa`d`W`f`Z`W`S`i`e`S`V`d`W`g`S`f`a`e`S`V`_`b`a`h`W`W`d`W`W`f`z`

Actions Necessary to Achieve Sustainable Use of Coral Reef Resources

Research and Monitoring

- 5a`f`g`W`fa`d`W`f`Z`W`W`h`d`a`_`W`S`^`_`a`[`f`a`d`Y`b`a`Y`S`_`W`[`W`S`U`l`a`g`f`d`k`e`a`f`Z`S`_`S`S`W`W`f`W`Z`U`e`f`a`e`S`d`W`S`W`g`e`Y`f`Z`W`W`f`S`H`S`T`W`W`d`S`f`a`S`V`e`a`f`Z`S`_`S`S`W`W`f`d`S`W`W`S`T`V`S`b`f`W`fa`U`a`b`W`[`f`Z`U`S`Y`Y`e`f`g`S`f`a`e`z`
- 7`Y`S`W`a`_`g`[`f`[W`[`_`a`[`f`a`d`Y`S`V`_`S`S`W`W`f`[`a`d`W`f`a`d`S`W`S`d`W`e`a`X`Z`W`_`b`a`d`S`U`a`X`L`a`d`^`d`W`W`S`T`e`Z`T`W`S`h`a`g`d`e`f`Z`S`S`d`W`a`f`W`h`d`a`_`W`Z`f`S`^`k`W`W`S`V`[`Y`S`V`e`W`g`d`W`a`_`_`g`[`f`k`e`g`b`b`a`d`X`d`e`g`e`Z`f`S`[`S`P`W`a`g`d`U`g`e`W`
- 5a`f`g`W`fa`W`W`a`b`d`W`S`L`U`S`S`U`f`k`[`f`Z`W`W`a`fa`d`W`-`U`S`^`k`S`W`W`e`_`S`S`W`W`f`[`e`g`W`Z`

Management and Governance

- ;`U`S`W`Z`W`S`d`S`a`X`L`a`d`^`d`W`e`g`d`W`f`k`g`W`W`_`S`Z`S`W`W`f`S`V`[`U`a`b`a`d`S`W`_`S`S`W`W`f`d`S`W`W`W`i`[`f`Z`[`f`Z`W`T`a`S`W`W`X`S`_`W`a`d`e`a`X`[`f`W`S`W`U`a`S`e`S`^`l`a`W`S`V`U`S`U`Z`_`W`f`_`S`S`W`W`f`[`a`d`W`f`a`W`W`Z`f`h`W`k`W`S`i`[`f`Z`S`V`Z`S`e`W`[`e`g`W`e`g`L`Z`S`e`b`a`^`g`f`a`[`e`W`_`W`S`f`a`S`V`U`a`S`e`S`^`W`W`a`b`_`W`f`z`
- 7`e`g`d`W`S`d`[`U`b`S`f`a`a`X`S`^`d`S`[`W`Z`a`W`W`e`[`f`Z`W`W`W`Z`a`b`_`W`f`S`V`d`W`e`f`a`a`X`_`S`S`W`W`f`d`S`W`W`W`[`a`d`Z`W`f`a`a`b`W`U`Z`S`^`W`e`a`X`L`a`_`_`g`[`U`S`f`a`S`V`S`U`Z`[`W`W`a`i`^`W`E`Z`[`b`S`V`f`d`S`^`b`S`d`W`k`a`X`b`a`U`e`Z`
- ;`_`b`a`h`W`_`S`S`W`W`f`U`S`S`U`f`k`S`_`a`Y`^`a`U`S`^`S`V`^`S`f`a`S`^`S`g`f`Z`a`d`f`[`W`Z`K`W`S`e`a`X`[`S`U`f`h`f`i`a`X`W`W`W`T`Z`W`S`W`_`g`e`T`W`e`f`a`b`b`W`Z`^`_`_`S`k`U`S`a`W`f`Z`W`h`a`f`e`a`X`f`Z`W`b`a`T`W`[`e`S`f`f`Z`W`b`a`f`[`f`[US`^`W`W`i`Z`W`W`W`W`Z`d`a`f`W`U`a`k`l`e`_`l`g`i`[`^`Y`W`e`f`a`X`^`a`i`^`S`i`e`S`V`d`W`g`S`f`a`e`T`W`S`g`e`W`W`h`a`f`W`Y`h`g`b`e`_`S`k`T`V`S`W`W`W`S`V`a`g`f`d`Y`Z`f`U`a`d`g`b`f`a`^`b`c`W`W`e`d`W`b`a`e`T`W`W`W`S`h`Z`[`a`g`d`z`

- E`f`d`W`f`Z`W`S`i`e`S`V`d`W`g`S`f`a`e`i`Z`W`W`W`W`S`d`z`5`S`[`X`k`f`Z`W`W`b`a`e`S`T`[`f`[W`a`X`M`W`W`f`S`W`U`W`Z`
- 7`X`d`W`W`f`a`X`S`i`e`S`V`d`W`g`S`f`a`e`_`g`e`T`W`e`d`W`f`Z`Z`W`W`Z`B`g`[`e`Z`_`W`f`e`S`Y`S`[`e`f`W`e`f`d`U`f`h`W`T`W`Z`S`h`a`g`d`_`g`e`T`W`e`g`L`Z`S`f`f`Z`W`S`d`W`W`g`[`W`[e`[`U`W`f`h`W`Z`
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- 7`U`a`g`d`S`W`a`_`_`g`[`f`k`Z`S`e`W`b`a`f`W`f`a`^`S`V`W`W`d`W`Z`_`W`f`[`b`S`f`W`E`Z`[`b`i`[`f`Z`Y`a`W`_`W`f`S`W`U`W`T`k`W`Z`h`a`h`[`Y`f`a`e`S`[`W`Z`a`W`e`f`Z`W`W`b`a`e`T`[`f`k`X`d`V`d`W`U`a`e`W`S`f`a`a`X`d`W`g`d`W`S`V`W`W`d`W`W`f`a`X`S`i`e`z`
- E`f`d`W`f`Z`W`b`a`f`[`f`[US`i`i`[`^`f`Z`c`h`g`Y`Z`f`Z`W`W`g`U`S`f`a`a`X`W`Z`U`e`f`a`_`_`S`[`W`e`a`X`f`Z`W`S`Y`[`T`W`T`W`W`f`e`a`X`_`S`S`W`Z`_`W`f`z`

Alternative Livelihoods and Income Diversification

- E`f`[`_`g`S`W`Z`W`f`a`V`g`U`f`a`a`X`[`U`a`_`W`[`h`W`e`[`-`U`S`f`a`^`S`V`S`f`W`S`f`h`W`h`W`Z`a`a`V`e`Z`W`W`f`Z`S`f`S`d`W`h`d`a`Z`_`_`W`S`^`k`e`g`e`S`[`S`T`V`S`V`W`a`_`a`[`U`S`^`k`h`S`T`V`S`V`e`a`Z`U`S`^`k`S`U`W`S`T`W`7`[`S`_`b`W`a`X`e`g`L`Z`S`U`f`h`f`[`W`U`S`T`W`X`i`g`^`V`[`S`d`S`e`d`W`S`W`f`a`S`Y`[`U`g`f`g`d`W`S`c`g`S`U`g`f`g`d`W`i`S`e`f`W`_`S`S`W`W`f`h`f`a`g`d`e`_`S`V`_`S`g`S`U`f`g`d`Y`Z`3`i`[`W`W`S`Y`W`a`X`S`U`f`h`f`[`W`e`Z`a`g`^`V`T`W`W`l`a`g`d`S`W`[`a`d`Z`W`f`a`W`e`g`d`W`a`Y`Z`W`[`h`S`T`[`f`k`z`
- ;`X`W`W`S`d`h`W`S`T`e`Z`~`S`U`S`^`_`W`Z`S`[`e`e`f`S`d`W`W`b`W`-`U`S`^`k`S`f`[`b`a`h`[`Y`f`Z`W`W`a`_`a`[`U`W`W`a`b`_`W`f`a`X`Z`W`b`a`a`d`z`
- ;`X`W`W`S`d`h`e`U`g`d`W`a`h`W`_`W`f`e`g`b`b`a`d`X`d`S`f`W`S`Z`f`h`W`h`W`Z`a`a`V`S`V`[`U`a`_`W`[`h`W`e`[`-`U`S`f`a`^`e`Z`W`W`Z`

Education and Awareness

- D`S`e`W`S`i`S`d`W`e`a`X`Z`W`_`b`a`d`S`U`a`X`Z`W`f`Z`k`U`a`S`e`S`^`W`a`k`e`f`W`e`S`V`f`Z`W`_`b`S`U`e`a`X`f`S`d`a`g`e`Z`g`_`S`S`U`f`h`Z`f`[`W`f`Z`h`g`Y`Z`
 - f`Z`W`f`a`V`g`U`f`a`a`X`_`S`d`[`W`e`f`g`[`W`[`^`e`Z`a`^`U`g`d`Z`d`U`g`S`
 - U`a`_`_`g`[`f`k`Z`S`e`W`_`a`[`f`a`d`Y`S`V`_`S`S`W`W`f`S`U`f`h`f`[`W`
 - S`i`S`d`W`e`d`[e`[`Y`b`a`Y`d`S`_`_`W`f`S`d`W`[`Y`e`b`W`-`U`e`W`f`a`c`a`X`a`U`W`k`
 - f`Z`W`e`f`a`X`_`S`e`_`W`[`S`z`

WWWWWWaXLaSeS^ babg'Sf]a`ea` Uač^ dW
 S V fZMhg^ WST]f]k fa UL_ SFWZS YWW]S W
 Sf]a` fZSf i ag^Vbca_ afVgefS^ ST^VeWaX Sfgd^
 dWgdW 5AD6;A [eS dWZLZ bcaYd_ WfZSf
 i Se[[f]SfW] [dWba` eWa fZWWW]Sf]a` aX
 Uač^ dW [fZW` V]S` AUS` i ZWZW egbbad
 'SdWVafcaXfZWag` fdW babg'Sf]a` eS VVa` aŽ
 _ [WfZchgYZ~eZWV fagde_ S V`SdWZLSW hWZ
 _ Wfz 5AD6;A [eS ^aUS^k Vd]HM dMa` S^ [f]SŽ
 f]hWZSf egbbade_ adWZS` dWZLZS V_ a` [facŽ
 [YbcaWefZSf SdWa` VgUfWIk` a` WefZS` d]Ž
 W]efeSf ^aUS^ [e]f]g]a` e] Uag` fdWfZchgYZagf
 fZM W] S V UWfS^;` V]S` AUS` ž 5AD6;A
 Tg]`Vea` V]ef` YUS]f]k [fZW` V]S` AUS` dMa`
 fZSf i Se WST]eZW fZchgYZ_ adWZS` S WSWaX
 W]SfW egbbad Xa_ E]VSeDVMa` S^? Sd` WEUŽ
 WUWbcaYd_ W` V]Sf]h]f]Wax5AD6;A SdWŠŽ
 dS` YW [fa` TdSVTgf [fW]] WfZW W

ž *Ecological and socio-economic monitoring* aXfZW
 ZWfZ aXLač^ dW fZW` bSufeaxZg_ S` Sf]h]Ž
 f]WS VUL_ SFWZS` W]S` V fZWa` dWgWUW`Xd
 UaSeS^ babg'Sf]a` e WWWWf a` Uač^ dW dW
 eadW

ž *Targeted Research* X]UgeW a` g` W]S V] Y WaŽ
 ^aY]S` bcaUaWfZSf SdWV]S` XdZWfZk X` UŽ

f]a` [Y Uač^ dW bcaUaW aX dW hWk S` V abŽ
 f]a` eX dW ST]f]Sf]a` ž

ž *Management and Policy Actions* fZSf geWZWWg`fe
 aX_ a` [fad` YS` V dWZLZ bcaYd_ Wfa_ [f]Ž
 YSfWgfdWS_ SWfa Uač^ dW S` V [bcahWZW
 cgS^ [fk aX X]W dW WWWWf babg'Sf]a` ež

ž *Alternative Livelihoods* fZSf [bcahWZW cgS^ [fk aX
 ^XaXLaSeS^ bWab` Wk bcahV]` YegefS^ ST^V]fWŽ
 ` Sf]hWagduWax] Ua_ WfZSf Va` af dW a` ZSdŽ
 hW]` YUač^ dW dWgdW

ž *Education and Awareness* aXfZW` bSufeaxZg_ S`
 Sf]h]f]W a` Uač^ dW S` V fZW W WXd_ S` SYŽ
 _ Wfz

ž *Networking and Communication* fa V]eW [S]W W
 Šd]Q i

i SFWWackeW eS VUS fZWWdTW S SYWfZdgYZ
VdWf fVhWfja` eZG` fI` I_ [fYsf] YfZWWfdW
i VWWZWbd_ Sk XU aXUad`dW S SYW Wf i adVZ
i [WZ/ ai Wf] fZWA` eWgWUWaX SeeUad`
T^SUZ] YVqHWtkYaTS^U_ SFWZS YWWS_ WdSYZ
US^kaThageS VS [_ WfSWdadfk dWgd` YSfja`
Xh_ fZWWH(ch` _ WfS^SYWUWf] fZWS WfW Uag` Z
fdW S V fZW` fW Sfa` S^Ua` _ g` [fk fa Ua` TSfYaTS^
U_ S fZS YWZfZagYZ [f [ei [Wk SUWfW fZSf Uad`
T^SUZ] Ya` egLZ Wad_ age YWYcbZ[U dSW [e bdZ
_ Sd[k SfdTgST^Wa ST` ad` S^k WWSW aSfW bWZ
fgdW fZVg` Wk] YUSgWaXfZW W dSW aSfW Z
bWfgdaSdWsd` WefS` YTPVS V SdW af S_ WST^Wa
VdWf_ S SYW Wf] fVhWfja` eZ I Z[VZW_ bSufeax
XfgdWad`T^SUZ] YWmfelS TV_ Wad`fWfZdgYZ
fZWS S k[eaxbSfW eaXT^SUZ] Y[Wf]X dW WfZSf
SdW W egeUWf]T^Wa T^SUZ] YS V SdSe i ZWfZW
ebW WsdWStg` VS fl [Wf]X SdSe fZSf SdW e bch` Wfa
[U dSW aSfW bWfgdW WUfS` V fZW fs] [Y_ W eZ
gdW fa SWgSfWk b dW WfZW WsdSe Se S bafWf]S^
eagdW X W Uad`efa See[ef dW hWk aXW dSW WsdSe
fZW_ S SYW Wf aX S Ufad` Uge[Y [U dSW aSfW Z
bWfgda` adYaTS^U_ SFWZS YW W agf WfZW dS_ e
aXaUS1` Sfa` S^adW W dMa` S^SgfZadf[W? SeeUad`
T^SUZ] Y[eS YaTS^ bchTW fZSf dWgd` dS YaTS^ e`gZ
fla` Z

i [fZ Astrepara Echinopara Montipara S V Poillopara
VZ[TI]f' YYdSfVfZS' _ adS'f'ž

4W VV? SdZS V? Sk IS'ai fa_ Wlg_ VW
T'VUZ' YVWf i SeaTehWsf _ S k efW'Schag' VEd
>S | S i ZW eV eg'KUVW bWf'gd' d' YW TW VV
, a 5ž3YS' l egdWf[TI]f'k fa T'VUZ' YhSdWTV
fi VW'adS'YVWf i [fZ_ S k ArqparaLá'a' [WsbWfZ
[Y bS'WfZS' gegS^S V eVWf^S' [V dWVW eW/W
bSd][g'Sdk hg^ WSTV'; Lá' fcfef fa bcdWage VWf'e
Zai VWf S' g_ TWaXYWfS fZSf egchW bSef VWf'e
eW/W bSd][g'Sdk eVd[f]hVfa [UfS'W i S'WfW bWfZ
fgdW'a' fZ[ealUSe]a' ž3'Sd [Yh a' g' W 'l
' SdfafS^T'VUZ' YaXS^'laaj S' fZWSfVZSd/S' V eX
LáS'ei SedWadWXh_ fZVWV' Wd4Sf[US'aSa' fZV
Wf'UaSe]a'Ed>S | SfZdSfW' Yfa bcdVgUW_ bSfeax
Se_ [Sd_ SY [fgWfa fZaeVWbWfWUVVgd' Y ž

Impacts of the Tsunami of 26th December, 2004

VWS_ SYWá' Wfa LáS^d'WfZbgYzagf fZW' V[S
AUS' Tk fZWfeg' S_ [hSdW Wad_ agek S'úh'e dS'W
d' Y' YXh_ [fW S'f'a' S'fa' [fS'ZVWf'z3' S'ke]eaXZV
bSfW' e aXS_ SYWfSgeW Tk fZWfeg' S_ [S'úh'e efW
efdWUZ' YXh_ fZVb' VS_ S' S' V@[LáTSd;eS' Vef' fZW
Wef' S'úh'e EagfZ 3e[S' ? SV[hW'S VEWUZVW' fa fZW
LáSe]a'Xf 3X[US' f' fZW Wf' eZai WfZSf fZW'bd_ Sk
Xf'adefZSf VWV [WfZW SY [fgWfaX_ bSf'ei VW

- WWWVW'X'j'bagdWfa [U'Wf'feg' S_ [i ShW
- WfSZk_ W'kaXZV'edS' [fZ] i Z[UZSdW'eeffgZ
SfW
- W'W' adZa'aYkaXZV'WV
- W'a' V[f]a' aXZV'WV

WWWVW' ai Z[UZdW'ei VW'f'gSfW' fZW'dWf'bfZ
aXZV'feg' S_ [S' VZai fZW'dW'f'a' aXf'f'W'S' V'WVZ
YkaXZV' ShW' Sel' EgWUW Tk fZW'f'ffa_ fabaYbS'Zk
aXZV'W' dS' VWV [W fZW'adW [fZ i Z[UZ fZW' ShW
efgU] hSdageLáS^d'WZSf'fSf'z VWV'aY[US' Lá_ baž
ef]a' aXZV'W'g' Vsf]a' aXS dW' [ZV' Lá' ea' [Vf'W' LáS^
' [Wfa' Vádha'US' [UchU] egbbad' YLáS^Y'ch' fZf'S' V
[feLá' V[f]a' VWV [WZai i W'f'i SeST'Wfa S'ead'f
adV'efbSfWZV'W'W'kaXZV'feg' S_ [ž

9WVW' h' dW'fZS'f' i W'W'af' fZW'dWf'bfZ aXZV'
feg' S_ [eg W'W' h'k' [ff'W'S_ SYW'8ad'V'S_ b'W_ aef
dW'f'Schag' V'fZV'eS' VaX' SZe' fZV'EWUZV'W'W'V'W'V'
_ SadVS_ SYW'W'fSgeW'ZV'W' i W'W'ZV'W'V'W'Xh_ fZV'W'g'^
XadW'aXZV'feg' S_ [Tk fZV'SV'SUW' adZW' [eS' VeaX
BdSef' S' V>S6 [Yg'W'a' fZW' V'S' UaSe]a'XZV'0'g'XaX
? S' SdS' VS'a' YfZV'UaSe]a'Xf 3X[US' fZV'adW'aX
feg' S_ [i Se YdS'f'k' dW'gUW' S' V fZV'S_ SYW'fa' UadS^
dW'ei Se' W'Y'Y'f'W'

DW'fZS'f' i W'W'af'W' [h'k' W'W' i S'W'f' [fZag' S
eZS'ai UaSe]a'XZV'egUZ' Se]fZaeV'f'a' eLá_ bcd' YfZV'
? S'V[hW' i W'W'f'ea' af eW'agek S' W'W' TMSgeW'fZV'
feg' S_ [i Se' af ST'W'fa Tg[V' gb [fa S'f'S' TdS] [Y
i ShW'6_ SYW'a , aXf'd' UZ] YS' V'fSTg'f'W'adS'e
aU'gd'W'V' [fZ'ea_ V'W'U'g' S'f]a' aXW' W'f' Tgf afZV'
i [eV'S_ SYW' Se_ [_ S'ž

DW'f'af'W'fa' eZS'ai UaSe]a'XZV'W'f' S'V'SV'SUW'
fa W'W'W'UZS' W'e aXW' VZ[TI]f'W' eY [-L' f' VS_ SYW'
TMSgeW'fZV'W'ZS' W'e aXW'V[hW'f'W'fZV'bfZ aXZV'feg'ž
' S_ [S' V' Lá' U'W'f'f'W'fZV'W'W'kaXZV' ShW' fa d'W'
U'-Ubad]a' e aXZV'W'W'f' S'V'SV'SUW' UaSe]a' W'fS'ge' Y
Lá' e[W'f'W'V'Zk' [US' VS_ SYW' [ei SebSd][g'Sdk W'Z
W'f'f' 6gfUZ 4S' Fd' Ua_ S'W'a' fZV'W'f' UaSe]a'XEd
>S | S' S' V'a' ea_ W'aXX' Y' Y dW' egd'ag' V' Y fZW
' adZW' Yd' [f]U'eS' VeaXZV'EWUZV'W'W'z3'6gfUZ 4S'
' W'k' ZS'XfZV'W'W'f' S'V'Se TW'fgd' W [fa -W'e aX
g'f'f'V'S' V'eS' V'S' V_ adW'ZS' aXZV'W'V' S' [Y
dW'ZS'e TW' eW'W'k' VS_ SYW' Tk' S'W' LáS^T'aU] eS' V
V'W'V' LáS^fZSf ZSHW'W' fZV'dW'f'W'f' Y'a fZW[hW'
LáS^S' V'W'V' YfZW' W'fa' W'X'g' Vsf]a' aXZV'W'W'
H[d'g's'k' S^d'W' S' [Y [hW' LáS'e i W'W'S_ SYW' i [fZ
_ S' k' fSTg'f'W'Arqpara Lá'a' [W'ZSh' YTW' gb'chafW
S' V_ S' k_ Se[hW' LáS'e fabb'W'S' V'f'd' ebadW' S'dW'
V'efS' U'W' [U'g'V' Y'ea_ W'Prites' Lá'a' [W'ahW' _ [V'S
V'S_ W'W'f'gd'ZV'W'agfZ'a' fZV'W'f' UaSe]a'XEd>S | S'f'
=[d']g'S_ l' S'cdW'Prites' Lá'a' [W'o_ [V'S_ W'W'ZSHW'
TW'W'W'af'W' _ ['S' V'Xh_ fZV'Zad'W' W'

A' afZV'dW'f'af'W'fa' eZS'ai UaSe]a'XZV'W'fZV'
VS_ SYW'fSgeW'fZV'feg' S_ [i SeZ'Y'Z'k'hSd'W'W'f' W'
efW' S' Vi SeV'U'f'f'W' bcd_ Sd'k' Tk fZV'W'V' adZa'aYk
aXZV'W'W'f' V' [feLá' V[f]a' žDW'fZSf ZSHW'ad_ W'a'

South Asia

- DWaLà` f|` gVfaTWWVSWTklacS^` |` |` YVWZ
efqUfhV-eZ|` YbcdUfUW ahWVb`a|fS|a` lba^gZ
fla` S Vem_ Wsf|a` ž
- DWahkXa_ T^SUZ|` YZVSWUacS^` adS|fkaX
|eeai S VbSfUZž VVaf dWahkZSeTW
dWadW|` SdSei ZWVg_ S Suf|hf|WsdW S Ž
SYM egUZ Se |` ? B3e S V_ Sd` Ws UfgSd|W
I ZWVg_ S Suf|hf|WdV|S|` g` dVg`SfW dZ
LahkZSeTWbaač
- W_ bSufe aXfZWfeg` S_ |` a` UacS^` dW i VW
Z|YZ`k hS|STV`S V dS` YW Xa_ ` W|Y|T`W? SŽ
V|hW 9g`XaX? S` Sd|` V|Sifa_ aVW3` VSŽ
_ S S V @|LáTSd;eS Vefifa eWVbSde aXEd
>S |S| @|LáTSd;eS Vefž W aef eWVWS_ SYW
fa UacS^` dW S V SVSUF UaSe|` W aUgdW
i ZWVadS^` |` |` YZSeTW d_ bS fž
- 5a` eVWSTVZS` YWZSHWUgdW|` fZWa_ baŽ
ef|a` aXacS^`Lá_ g` |f|W| ZWVdW|agekVa_ |Ž
` S f dWVW/VZ` ArqpariSdWVY dVSWU Tk
dWVfZSfVZWegch|WfZW T^SUZ|` YWVf
adZSHWa_ |` SFWSeW|T`SYWaX W dWg|fž
- WVST|eZ_ Wf aX Si SdWé d|e|` Y bcaŽ
Yd_ W S V Ua_ g` |fkZSeW dWadS|a`
bdWfeZSe dVg`FW|` eY |`-LS f W|` W|` WZ
efqUfhWacS^` |` |` YS V-eZ|` YbcdUfUW
- W|` fcaVgl|a` aXeWV`SfW|` S|hW|hWZaaV
S V|` Lá_ W|hW|`-Ls|a` dZW W|` fZV9g`XaX
? S` SdZSe dVgUWbdVgdV` UacS^` dWVdVgdW
S V|` bchWfZWa` a_ |UdSgeaX-eZVZS_ |`VZ
- 6 W|fWVadefa SWdVefZVg` W|k|` YUSgeVax
UacS^` dWVWVSV|a` l fZWa` V|fla` aX dWLa` Ž
f|` gVfa W|` VSeS dVg`f aX|` SWVgSfWSi ead
dVg`S|a` d baad WXdW W|` |S|` aXba`|f|US^
i |`^fa efdWfZW`Si eS V|` bchWVXdW W|`
|` eg U|WfSi SdWéaXfZW|` bSufeXZg_ S SŽ
f|h|f|W XW ab|a` eXdSfW|` S|hW|hWZaaVe ad
|` Lá_ W|hW|`-Ls|a` ž

East Africa

- WgdWVgUfM|fla`

S V~eZ babg'Sf[a`ea`_ S kdWZSeWU] Wz? adWZ
hMfZWS_ SWVSgeVfa fZVWXS_ Wadj Tk_ [[Y
ZsedWgUWfZVWVW]hWVeaX WZadVX] Yf YdW
SeTdS]i SWZ Wla`ewgWUwaXZ]ei WWSY[US^k
WV`a`efSW i ZW fZWfeg`S_ [i Se ST^Wfa TdSUZ
X] Yf YdWUSgef` Yi [WbdSVVS_ SWfa LaSefS^La_ Z
_ g` [fW] XSeqUfgdS VLaSefS^Wheja`z;` fZW adf
LSaSa`YfZWSeW S VengfZW LaSfeaXEq >S |S
i ZWVadS^ [[Y]ed_ bS flfZW [MZaXIVSUZWi Se
dWgUWtkZSXS V^aeW] TWSUZVWZfaX_ adWZS
_ i WVa_ a`z;` SVM[f]a`lfZWZ[X] YqTTWWSYZ
_ Wfe VXTVZ] Vxa_ [[Y] bWVdWVWahk Tk
a Wf Y [ffWeg]fSTWegTef e ffQ !aXZ W
LadSW S Vc S df] Yc egd [[Yc La'a` Wc S Vc TW fZU
ad S [qz ;`TM eZaldW I^TM _ [[Y^TM T^TM
Tk' [Sff f]` Y' dW g>Q gWXS V' L hraf` Y' dW Y

e ffQ !aXZ W
Wc S Vc TW fZU
_ [[Y^TM T^TM

3 dMw aXjWwUwS V`Wa`e`Vd WXa_ fZW
 [b`W Wsf[a` aXfW Sf|hW|hWZaaVbaYd_ W]
 Ed >S]S Zse [Wf]-W S `g_ TWaX] W`Xufad fZSf
 _gefTWa` e`WwXdfZVgUwaXs kSfW Sf|hW|hWZ
 `ZaaVbaYd_ W;` adMifa WegdWa` YfWl WaZ
 `a_ [UWwWb_ Wf [f le WwMfS`fZSf S`Xufad fZSf
 fZdWfWfZVgefSf` SIf|fk aXs` kSfW Sf|hW|hWZaaV
 baYd_ WfWwWf]-WS VSWdWV[` S [fVWfW
 _S`Wf[fZWwWY` S V [b`W Wsf[a` aXfZWbaZ
 Yd_ W`Sufad fZSf _gefTWa` e`WwWsdW

- *Financial viability*, VsfW Sf|hW_ gefTWsf VsfSe
 ~`S US`k dMsdM` Y Se fZWwWfUf|hWsf|hfk [`
 i Z[LzbabW WwWdM]agek WSYWS VfZWV gef
 TWs_ Sd W`XdfZWbaVgUf TWY_ S g`XfUgdW ad
 Ydai `i [fZ]` S` SfW Sf|hW|hWZaaV dZWV;X
 fZWwWfWsdWaf_ W [fi [^TWXgf`W
- *Social norms and perceptions the demographic composi-
 tion of the community and gender specific roles*, fZWw
 Xufad b`SkS [badS f bSd [` WwW [` YfZwaZ
 US`SUWfSf|fk aXfZWbaYd_ VS VfZMd [b`USZ
 f[a` e`XdfZW b`W Wsf[a` aXfZWbaYd_ W gef
 TWZadgYZ`k g` WefaaV TWadMf [e]` fbaVgUwZ
- *Expectations and contributions of the target group*, [f le
 WwMfS`fZSf fZWa` fdTgf[a` S V WadefdgldWfa
 S] Ws` SfW Sf|hW|hWZaaV baYd W egUwW
 S VfZWwWwW TWwfeS V [la_ VsdWwWk VjZ
 bSf` WS V g` WwfaaVz`3`ai [` Yg` dSf[e]UjWwZ
 fsf[a` e`aXg` bdUwWfW i WfZ fa bWef [eS egdW
 dMbvWdSf`gdW
- *Assisted economic development*, ~`S US`a`hUwZSf
 SdWwWY W ebW~US`k fa Seef baad b`ab`W [fZ
 ` [fW dWsk_ Wf abf[a` eadLa`SfW`eZag`VTWwZ
 fST[eZW]` adMifa [badhWZwW` a_ [UWwWbZ
 _ WfaX_ S kLaSef`La_ _g` [fVW S V`ea fa dWgdV
 fZWa` YfWl egfSf` SIf|fk aXs`fW Sf|hW|hWZaaV
 baYd_ W`Z`3`a` YfZVfgf[ad` 5aSef aX` V`SfZ[e
 Zse TWw egUwWeg`k SUZ|Ww fZadgYZ fZWwWfST[eZ
 _ WfaX` g_ TWaXWk Wb9dgbe/E 9efi Z[LZ
 SdWla_ b`dW aX i a_ W i [fZ e [Sd]` fWwef
 Wbd_ Sk Xg` Uf[a` aXUSZ E 9 [efZWw` a_ [U
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[`YS Vi [eWgeWAX` S US`dWgdWZ7SUZ E 9 [e
 dMefWwW [fZfZWfgf[ad` ? g`f[eW|UWfaUS`EWfZ
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 Xa_ fZVW? EEEi ZaSf] WSeq` YWsdWwS` Xa_ S
 TS] a` TWsXaXs`fZWE: 9e [fZWwW`a` z` W
 _ a` W`dUwW Tk WsZ_ W TWaXfZWE: 9 _gefTW
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 La` fda` aX_ [WwW S V `as` eZSd] e? adMwW
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 i a_ W [ha`hW [fZWE: 9eZse W`bai WwW fZW
 fa S] Ws_ gLZ fda` W`d`W` eUS`S V W`a` a_ [U
 Va_ S] eS V [b`S [` YWwfa` _ S] [` Yb`dUwWZ

- *Information exchange*, WST[eZ] YSV[S`aYgVS VS
 Sf_ abZWwWaxfge` TW W fZWwWf] Y SYWUK
 S V fZWfcdage dS] W`a`W [e WwMfS`XdfZVgUZ
 UwaXs` kSfW Sf|hW|hWZaaVbaYd_ W
- *Monitoring*, La` dS f_ a` [fad` YledgldW]` adMw
 fa d`ba` V fa US` YWS V SWd`e b`dT`W eSefZW
 S`dW
- *Ownership and empowerment*, [` efgSf[a` ei ZWw
 `SfgS`dWgdWsdWZdSfWwTkS` WfW S`eagdw
 WZ`adM [` hWf`ad`eZw S` Xa_ S afZWdZ
 Y[a` fi [f [e_ badS` fZSf fZwUs`La_ _g` [fk [eWZ
 bai WwWfa` S SYWZw`dai` dWgdWZ
- *Integration and participation*, [` fbaVgUf[a` aXs`WZ
 ` Sf|hW|hWZaaVefZag`VTWwWSeS [` fVW`La_ Z
 ba` Wf aXs` T`dSW`ef`fWk fZSf [` ha`hW`S`eS] WZ
 Za`WWS V dWgdWgeW`fa WwWb`S V TWwW_ S Z
 SWfZW`a`S`la` WS V [fe dWgdWZ`8gfZw adM
 WST[eZ]` Y SfW Sf|hW|hWZaaVe [e S `a` YZw
 g` WWS] [` YZi Z[WZW] [fS`bZS`dW`aXW`La_ Z
 b`WwW [fZ Va` adSe`eS U`yahW_ WfeZag`VTW
 b`dWsdW fa a` WfWZ [US` S V ~` S US` Seef`S UW
 a` UWZWw` adXg` V] YZse~` [eZWZ

;f[eUSdfZSf fZw` ki Skfa TdS] fZWwWwXbahWf
 g` W`b`ak` WfS` VWh`d` _ Ws`WwWsf[a` [efa a W
 SfW Sf|hW` La_ WwWsf]` Yabf[a` efZSf SdWwW`d` Z

_ WfS^k egfS[ST^W~` S UfS^k h|ST^WS V eaUfS^k SUŽ
UWfST^W WfST^eZ_ Wf aXegUZ Su[hf|Wf [^_ S] W
bVb^Wwēhg^ WfST^WS V_ ad|S|Sb|ST^Wfa UZS YW[
XaV egbb^k S V [Ua_ W;` SWf|fa` l fZ^WSu[hf|W
_ gf^TWā` VgUfW[Ua` g` Uf[a` i |fZ bcaYd_ WēbWŽ
U-UfS^k WfY Wfa WgUfS^WS V d|e|S| SdWēaXfZW
Wh|d` _ Wf fZW_ bSufeZSf fZM|Sf|h|f|WZShWS V
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Uahk S V_ S SYWf aXUad` dW bsd[Ug`Sdk
Uad` T^SUZ]` Yvk` S_ [Ud dSfWbWfgdWdM_ W
Uad` Ychi fZ S V dWg[f_ Wf T]aZUe[a` S V dW
dWSTI[fSf]a` -
- ;` fčVgUW fZWdWg` fe aX_ a` [fad` Y S V dWZ
[fa_ S SYWf dčFMWS Vba` [uk WdWb_ Wf
TafZSf` Sf]a` S`S VdMa` S`Wd
- DWgUW bčgdWd` Uad` dWdWgdW S V [Ž
bahWfZWgS`fk aX`XaX_ S k X_ [fW]` UaSaf`
Ua_ _ g` [fWfZdgYZ WZS UW Wd` a_ [UWdWbZ
_ Wf SZ[WdW fZdgYZ fZW] fčVgUf]a` aX] Ua_ W
V[hW]-USf]a` S VSfW S[hW]hWZaaVdZW W
- DS[eWSi SdWd aXZV_ badS UaXUad` dW S V
fZW_ bSfeaxSdageZg_ S Suf[hf]WS_ a` YbWbW
[UaSef`h`^SYWfZdgYZagf fZW V]S AUS ž

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f[hf]Wi [fZ] [feUadWZW Wdax? a` [fad` Y dWZSUZ
? S SYWf S V ba` [Uk 3`fW S[hW]hWZaaVe S V
7VgUSf]a` S V S dWdž;` SW[f]a` l 5AD6;A i [^
Ld` f] gWfa WbS VS VfdWfZW [fe` W ad` aXUWŽ
f[ed_ S SYWf ba` [uk_ S] WdS VyahW_ Wfe` EagfZ
3eSS VfZW Wf d` S Vi WdW ;` V]S AUS ž;` bSŽ
f[Ug`Sd 5AD6;A i [^Ld` f] gWfa Tg[Va` [feLd` STaŽ

d]a` i [fZ dMa` S`Wf]f[W egUZ SefZW WdW ;` V]S
AUS ? Sd` WU[WUWBeaUSf]a` /1 ;A? E3f;G5@
? Sd` WS V 5aSaf` BdaYdS_ W [7Sef 7a

Section 1

Status Reports

East Africa – Summary

keywords 7Sef 3X[US] UadS`dWU UadS`T`SUZ[` Yf dWUdW

1

dWUdW Vž

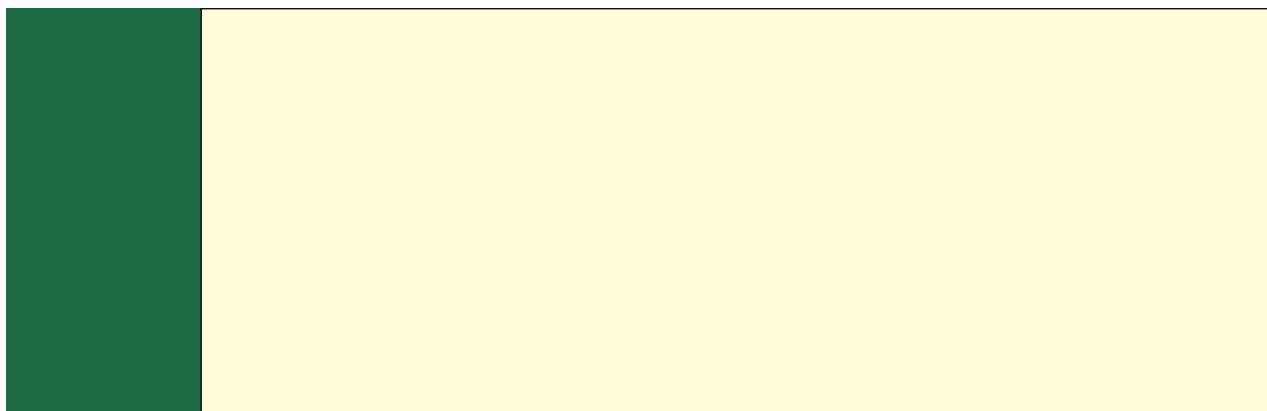
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ABSTRACT

7Sef 3X[US] UadS`dWU UadS`T`SUZ[` Yf dWUdW
7@EA Ž VgUW UadS`T`SUZ[` YS V_ adS[fk aX ž: ai WUdW
XefW dWUdWk ZSeTW dWUdW[dWUdW Magek WUdW
Xh_ afZUfZUS fegUZSe~eZ[Yf S V e'ai Wf[bchWUdW S
S Va` dWUdW f i WUdW WUdW WUdW V adW ž? [adT`SUZ Ž
[YLá f[gWfa S Wf dWUdW[fZUW] a l_ af` afSTk[l
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USeai Se[[fWfa eá Wg^ WSTW Paillqara bWUdW;` fWUdW Ž
[Yh_ S k Aa qara bWUdW S V Paillqara damicaniš i Z[UZ
eg WUdW WUdW _ adS[fk[eZai W'ai T`SUZ[YS V
_ adS[fk WUdW[S V žA` Ya[Y[ULSW[afZUf
fZUf UadS`T`SUZ[Yf gWUdW af` afSTk~eZ[Yf 5chi` aX ad eag Ž
T dS] eS V` ai fZUW WUdW ea Xa` Yf WUdW T] a WUdW dWUdW fa
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W FS IS [SeEaUS`S V_ S SW Wf adW WUdW dWUdW S V
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i [fZ T] a` aY[US` fgV WUdW bch WUdW adWUdW_ b dWUdW hVSeWUdW Ž
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fZUf eZ WUdW S e] a` aX eU a Ž WUdW a_ [U_ a [fad` Yf Zch gYZ S
Lá` ST ad S] h bch YS_ WUdW g eV a` fZUf 5D? @ Eal? a`
d eW eS fW[l X d i Z[UZ 5AD6; A i [^ d WUdW e fZUf
dWUdW a` S` UadW[S fad 9 d WUdW[fWUdW] a` aX 5AD6; A e S Uf] h Ž
f[WUdW S e a U g d WUdW[fZUf S f k S e fZch gYZ fZUf S abf] a` aX
dWUdW WUdW S e W S b b d S UZ Lú_ T[[Y d WUdW S V_ a [fad` Y
bch WUdW eS V U g f] Y S U d e e T] a` aY[US] e U a Ž WUdW a_ [US V_ S Ž
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fZaSWW/ISTWfz9dSW[fVsf]a` [eUWUAS V
_ S SYW Wf ↑] d egLZ Se fZSf a W W Tk d W WUŽ
TSaWUa` U Wfe_ SkZWb dWgUW_ bSufe/: gYZW d a l
[b d W f Zai W W f Z W b a Y a e e l e b a a d i [f Z a g f _ S a d
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fZWTaScV/ISTWfzFa SVSbf fa fZWW U d S e [Y k L a _ Ž
b W S V ↑] W U a ` V f [a ` d 5 A D 6 ; A i e S U [h f [W [7 S e f
3 X U S d W W Y a d W F W f a i S d e S d W W U Ž S e W S b Ž
b a S U Z I ↑] [Y _ a ` [f a d ` Y i [f Z d W S L Z b a W f e d S V
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W S k [[^ S M [Y f Z W W W a b _ W f a X S d W a _ Ž
_ W W W d b [V d e b a ` e W W Z a V a ` a Y k X d S e e W e [Y V S V
T a g ` V S ! [f Z c “

Tag [± /





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SdWTWY WbS` WW fZdgYZ S `W =? 8D; dWSUZ

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i [WbdSVZ

Coral Bleaching

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i SeYWbS^k^ai I S V [ea_ W|SeWfZVbW|WfZSf egZ
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^Wéd|ba^ eWZS^ afZV|H X|dV|S_ b^W|P|o|ill|p|a| dani-
carnis^ V|a_ _ a^ e_ S^A|o|p|a|e|b|W|W|5|ad^T^VUZ|Z
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: ai W|W|f|S|b|W|S|e|fZSf fZV|T^VUZ| Y|U|gd|W|faa^ S^W
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^S|fa^ ZSe|f|fZSf fZW adZW| bSf aXfZW^ V|S^ A|U|S^
dV|S| W| ^ S|Laa^eS^W|gd^ Y? SdLZS^ V3bd^b^W|S|be
VgWfa_ |j| ^ Y|U|S|e|W|Tk fZW|feg^ S_ |aX_ 6 W|W|TW|
I S^ V|U|S|^ ^ k^ a b^W|e|W|f Zaf|b|afe i W|W|e|T^W
a^ @A33 Zaf|b|af UZS|fe X|a_ ^S^ gS|k, 3bd^ Se
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5DFD| X|gdZ|U|S|b|S|U|fk i [^T|W|T|g|f^ S|f fZW|d|Ma^ Z|S^
^W|W|fa T|a|S|W|b|S|d|U|b|S|f|a^ [egUZ^Y|a|T|S|^ [f|S|f|h|W|

Crown of Thorns Seastars

3b|S|U|Z|k|T|g|f|i [W|b|d|S|V| U|d|S|W| 5AFE^g_ TW|e|
d|W|adW| ^ S^ V [^ FS IS [S/? žD|U|Z_ a^ M
b^W|Z| U|a_ _ ž? aZS_ W et all fZ|e|ha^g_ W -
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Sk i W|W|X|S|Y|d|W|S|f|a^ eaX , [V|h|V|g|S|eb|W|
_ eb|d|S|V|ah|W| _ aX|d|W|X|a^ fa^ S [^ W|b|S|f|Z|d|W|
[fZV|Ea^ Ya Ea^ Ya 3dZ|b|W|S|Yaž;` I 5AFE|S|Y|d|W|Z
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- fZV|W|S|d|W|Z|W|S|d|W|f| babg^S|f|a^ e| ^ L|S|I [T|S|d|X|d
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Bioerosion and Coastal Protection

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a^ d|W|W|e|a^ S|d|W|e|S|d| Y|fa T|W|a_ W|S|b|S|d|W|f^ ai I
ea_ W ad_ ad^W|S|e|S|W|f|ZV|T^VUZ| Y|W|W|f|Z|E|g|d|W|e
[^ ? al|S_ T|cg|W| eZai W fZSf ea_ W|W|W|Z|S|V
e_ S^W|W|S|W|a^ U|a|S^U|ah|W|S|f|d|T|g|f|W|fa S|U|a^S|b|W|
fZV|W|W|S|_ W|ad|I|Z|W|a|S^V|h|W|f|k|S^ V|U|a_ _ g^ [fk
U|a_ b^W|f|k|I|S|e|f|^ [U|d|S|e| Yž7|S_ b^W|a|X|L|a|S^f|S^T^W
S^ V|b|S^W|f|Z|S^f|W| ^ S^ V^e|g|T|a|g|W|f|k|U|a^S|b|W|
V|g|W|fa T|a|W|e|a^ Z|S|H|W|W|a|T|e|H|W|W|a|Z|W|W| fZV
d|W|a^ | egUZ Se eagfZW| FS IS [S| e| [^S|d|fa d|W|ade
X|a_ fZV? S^V|h|W|S^ V|5Z|S|ae 3dZ|b|W|S|Ya /EZV|b|S|d|
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The Tsunami

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_ [g|f|W| W|W|S|e| Y| ^ e|W|X|a_ ^ adZ fa eagfZ S^ V
eb|d|S|V|ah|W| , Z|ag|e|A|T|g|S|I [^ d|W|W|f|Z|8|ad|g^ S^W|k

fZW i VV af eMWSf ai fVWfZge VV` af VUW
 ZYZ fVWVW S Va` k[fZW adZ VV fZW bafWZ
 f[S`k VFWTWi bd[Y`ai fVWVWZ4SUZ Wba`
 aUgdW[`adZW = WkSVgWa egbWZfa` YUgdWfe
 [Ua_b`VUZS` WkefW d S V dMbaeffa` aUgdW
 UZS` Y[YfZVZSbVaxa_ VVWVWZ@a VS_ SWi VV
 dMbaW fa egTf[VS` dMba_ g` f[VW A` k a` W[Z
 eS UaXahWgd WUadSeZeTWaTeVHM aXTurbi-
 rariabSfWca_ W, _ Sthce[SZYZUgdWfUZS` W
 XW[YVWefhW_ S YchWkefWe[fZW` g` YS? SZ
 d[WDVWVW = WkS > SdWbSfW SdWSe[k VV S V
 ahWgd WTkfZWeg` S_ [egdWVWZ[fZVWUZWV
 ATgd` 3TVg`S[fiVgWa fZVdZYZ egdSUSdS
 ha`g_ Vsf[as V`ai WefkUdla` Sfvj Wba` eZ[Z[VW
 fZWeg` S_ [_ SkS`ea ZSHVSeWfZWeg` b[YaXea_ W
 `SchW[afVWVTag`WV[bSfeaX7Sef 3X[USfZ[eLagV
 `af TWW[ef] YgleZW Xa_ _ adVWVWV` fabb[Y Xa_
 efa_ eS Vi ShW

bdZWV[hWaUaZMa` a_ [USeWw_ WfaXZWa_ _ g` Z

SOCIO-ECONOMIC STUDIES

5AD6;A [f[SfWS b[af eaUaZMa` a_ [U_ a` [fad` Y
 bchYGS_ _ W[[= WkSi i [fZ Suf[hffWbdSM] Y
 faFS IS [S[/? S`VWZ=[Y` = [Y -I S Z
 ka` k[et al[fZ VchYGS_ WfSMMW~eZVWV S V
 ? B3 Sbb[US[fa` d ge[Y`aLS`dWgdWgeWSe] WbSdZ
 f[Ubs fe[VsfUa`W[fa` z;` hi [fZSee[es UWba_
 @A33 S V; 5D; 1SdM[fa` S`i ad eZabfa [WV]X_ a` Z
 faq` Y bdaqf[W bSf[Ubsf] Y efW S V VVWab S
 95D? @ EaU? a` _ S gS` Xid7Sef 3X[USi [^dSf S
 kSdVWbS` ea` aXfZ[e bchYGS_ Wfa afZWefW[` 7Sef
 3X[US S V fZW ; A[S V Xid S` la` STacS[fa` i [fZ
 afZWadS [S[fa` e[fVWVW[eaUaZMa` a_ [U_ a` Z
 faq` Yz

3eS Ua_b`WVWf fa fZWise[U_ a` [fad` YhSdSTW
 USfgdW[fZWbSf[Ubsfack_ a` [fad` YbchYGS_ _ W
 5AD6;A ZSe bSf[UbsfW [_ adM] ZWfZ eaUaZ
 Ma` a_ [UadS`dWSeWw_ Wfe[FS IS [SS V = WkS
 3` [VVWVWf efgVh X` WVTk68;6 [I VJ_ Z
 [W~eZVWVSe[UfW [hWZaaVe S V Ua` efd[fe fa
 fZVdVWVab_ Wf/? S`VWZ=[Y et al[fZ3 Ua_ Z

BMS? 1/ fi *Recreational Sct*

Coral Communities of the Socotra Islands, Yemen:

Status and Recovery Following the 1998 Bleaching Event

? 3>7= 3ž346G>3L;L¹ I<A: @FGD@7D ~ >K@6A@ 6 7H3@F;7D

EaUf5a`eWf[a`S V6Ww_b_WfBaY5_ _WBAž4aj IES SSKVW



Uad⁵ Yahi fZ²ad eSf _ aef VWV dFW S Vi WAg⁵ S² XFWZ

Outer Islands

VagfW[eS VefWf Waf [bSFWVg¹ YfZW T¹WUZ¹ Y W¹ S V` a _ Sad UZS YW¹ ZSd¹ Uad⁵ LahWZShVaUgdWegTevgWf¹ SfZagYZ LahW¹ V¹ Z¹ U¹ S¹ V¹ YZ¹ X¹ X¹ [fa [/-YgdW Tfz V¹ d¹ f¹ W¹ eS VefW¹ VZai W¹ W¹ W¹ Y [-Z US f¹ k¹ X¹ W¹ UZ¹ afZ¹ W¹ ZSd¹ S VeaX¹ Uad⁵ LahW¹ i [fZ ES_ZSShW¹ Y_ adWZS¹ LahW¹ XZSd¹ Uad⁵ eS V 6Sd¹ SStagf z6 [W¹ W¹ U¹ LahW¹ X¹ Td¹ UZ¹ YS V fStg¹ Sd Aarapa S V J W¹ [V eaX¹ Uad⁵ i Z[UZ Sd¹ fZW _ aef La _ a` ZSd¹ S VeaX¹ Uad⁵ Yahi fZ²ad d Sd¹ Wd¹ Z _ Sd¹ k¹ d¹ a e¹ T¹ W¹ adfZ¹ W¹ e¹ [S¹ f¹ k¹

5a_bSc¹ea` aX¹ Uad⁵ La _ g [f¹ W¹ a` Ea¹ Lafd¹ S V fZW¹ d¹ f¹ W¹ e¹ S Ve¹ [d¹ W¹ S W¹ e¹ Y [-US f V¹ W¹ W¹ U¹ T¹ W¹ Z[U¹ LahW¹ i [fZ ZSd¹ Uad⁵ eS VS¹ SW¹ a` Z f¹ T¹ g¹ Y _ aef aX¹ fZW¹ e¹ [S¹ f¹ k¹ T¹ W¹ W¹ fZW¹ i a [e¹ S VY¹ d¹ g¹ b¹ e¹ z_ a` YfZ¹ WZ¹ Sd¹ Uad⁵ d¹ Td¹ UZ¹ Y Aarapa S V_ S¹ e¹ h¹ W¹ ad¹ e¹ i W¹ W¹ Z¹ W¹ Sadyahi fZ²ad ed¹ a` Z e¹ T¹ W¹ adfZ¹ W¹ e¹ [S¹ f¹ k¹

RECOVERY FROM THE 1998 BLEACHING EVENT

Ah¹ W¹ S¹ f¹ ZW¹ ad¹ La _ g [f¹ W¹ aX¹ fZW¹ Ea¹ Lafd¹ ;eS Ve W¹ a` e¹ d¹ f¹ W¹ e¹ d¹ YS V La` e¹ d¹ e¹ W¹ f¹ d¹ W¹ h¹ k¹ X¹ fZW _ Sad T¹ W¹ UZ¹ Y W¹ W¹ f¹ aX¹ h¹ b¹ Sd¹ [U¹ g¹ Sd¹ k¹ S¹ e¹ f¹ W¹ f¹ fZW @Sf¹ g¹ d¹ W¹ S Uf¹ g¹ S¹ k¹ b¹ d¹ f¹ W¹ W¹ la` WaX¹ Z¹ V Sd¹ V¹ b¹ d¹ f¹ W¹ Z W¹ 3d¹ S¹ a` Ea¹ Lafd¹ ;eS VS V fZW¹ d¹ f¹ W¹ e¹ S Vd¹ S V i [fZ fZW¹ W¹ U¹ f¹ a` aX¹ a` W¹ e¹ S¹ ai e¹ f¹ W¹ S fZW¹ S¹ ad¹ [fZW¹ W¹ W¹ S¹ GeW¹ La` W¹ 5ad¹ La _ g [f¹ W¹ aX¹ fZW¹ ad¹ Sd¹ S¹ S¹ k¹ d¹ g¹ d¹ W¹ Sd¹ [U¹ g¹ Sd¹ S¹ S¹ W¹ W¹ S¹ f¹ W¹ f¹ a` z

? a [fad¹ YfZ¹ Wa` Y¹ W¹ W¹ W¹ W¹ a` Y [LS¹ f¹ d¹ S¹ W¹ ad¹ WaX fZW¹ ad¹ La _ g [f¹ W¹ b¹ Sd¹ [U¹ g¹ Sd¹ k¹ [d¹ W¹ S¹ f¹ a` fa fZW¹ d¹ S¹ S¹ Uf¹ k¹ X¹ d¹ d¹ W¹ W¹ U¹ U¹ [S¹ W¹ Z¹ S¹ Y¹ e¹ Zag¹ V¹ b¹ h¹ [W¹ [e¹ Y¹ f¹ e¹ Taf¹ Z¹ X¹ d¹ La _ g [f¹ k¹ W¹ a` Yk¹ S V _ S¹ S¹ W¹ W¹ W¹ h¹ W¹ e¹ z

REFERENCES

6 W¹ S¹ f¹ W¹ > z? z 5 Z¹ W¹ Y 5 z B¹ E¹ 3 T¹ V¹ S¹ [I I? z @ S¹ a¹ W¹ S¹ L¹ S¹ a` h¹ G¹ z` 3 b¹ W¹? z / fiz? a` [fad¹ Y¹ Uad⁵ e¹ Ea¹ Lafd¹ / K¹ W¹ W¹ S¹ ; , I [I¹ ea` 1 5 z / W¹ i Status of Coral Reefs of the World 2000 b¹ z . 9 a¹ T¹ S¹ 5 a¹ d¹ D¹ W¹ ? a` [fad¹ Y¹ @ W¹ ad S V 3 g¹ e¹ d¹ S¹ ; e¹ f¹ f¹ g¹ V¹ a¹ X¹ Sd¹ W¹ U¹ W¹ U¹ W¹

6 W¹ S¹ f¹ W¹ > z? z 6 W¹ S¹ Z¹ 9 z = S¹ g¹ d¹ z 3 z` a¹ Y¹ z d¹ T¹ E¹ 3 T¹ V¹ S¹ Z¹ 3 I I I? z d¹ W¹ [U¹ W¹ 9 z 4 z` 5 Z¹ W¹ Y 5 z B¹ E¹ / fiz¹ d¹ W¹ Z¹ T¹ g¹ [M¹ Y¹ Uad⁵ e¹ S V¹ Uad⁵ La _ g [f¹ W¹ aX¹ fZW¹ Ea¹ Lafd¹ ; e¹ S Vd¹ K¹ W¹ W¹ , 3 laa¹ W¹ a¹ Y¹ d¹ S¹ z [U¹ U¹ e¹ h¹ S¹ V¹ e¹ f¹ z V¹ 3 d¹ T¹ S¹ E¹ W¹ S¹ Fauna of Arabia , , z

6 W¹ S¹ f¹ W¹ > z? z 5 Z¹ W¹ Y 5 z B¹ E¹ 3 T¹ V¹ S¹ [I I I? z` = S¹ g¹ d¹ z / ; b¹ d¹ e¹ f¹ z 5 a¹ d¹ T¹ W¹ UZ¹ Y¹ f¹ z V¹ Ea¹ Lafd¹ 3 d¹ z [b¹ W¹ S¹ Yal K¹ W¹ W¹ ; S¹ k¹ z g¹ W¹ S¹ ; , 3 T¹ g¹ [S¹ V¹ 3 z / W¹ i Proceedings of the International Workshop on the Extent and Impact of Coral Reef Bleaching in the Arabian Region z @ S¹ f¹ a` S¹ 5 a` [e¹ f¹ a` X¹ d¹ I [V¹ W¹ a` d¹ W¹ S¹ f¹ a` S V 6 W¹ a¹ b¹ W¹ d¹ [k¹ S¹ V¹ z E¹ S¹ g¹ M¹ 3 d¹ T¹ S¹ z

6 [? [U¹ a 6 W¹ S¹ fal¹ F¹ z` LS Vd¹ I 7 z / fiz? S¹ X¹ f¹ g¹ d¹ W¹ aX fZW¹ Ea¹ Lafd¹ 3 d¹ z [b¹ W¹ S¹ Yal S V S T¹ d¹ W¹ W¹ d¹ f¹ a` aX¹ a` Yal Y La` e¹ W¹ S¹ f¹ a` W¹ ad¹ e¹ S¹ Fauna of Arabia , z z

7 Y¹ e¹ z I E¹ I [I¹ ea` 1 5 z` 4 S¹ [W¹ H¹ / f¹ i Survey/Manual for Tropical Marine Resources z` V¹ W¹ f¹ a` z 3 g¹ e¹ d¹ S¹ ; e¹ f¹ f¹ g¹ V¹ a¹ X¹ ? Sd¹ W¹ U¹ W¹ U¹ W¹ b¹ z

: a¹ W¹ Z¹ g¹ V¹ W¹ A¹ z / fiz¹ 5 [S¹ W¹ Z¹ S¹ Y¹ Uad⁵ T¹ W¹ UZ¹ Y S V fZ¹ W¹ g¹ d¹ W¹ aX¹ fZW¹ ad¹ V¹ e¹ Uad⁵ d¹ W¹ S¹ Marine and Fresh-water Research , z z

= W¹ b¹ l¹ < z / fiz¹ Laa¹ W¹ a¹ Y¹ d¹ S¹ z k¹ aX¹ Z¹ W¹ ad¹ d¹ W¹ e¹ z W¹ aX¹ fZW Ea¹ Lafd¹ ; e¹ S VY¹ d¹ g¹ S¹ Journal of Biogeography , z .

= W¹ b¹ l¹ < z` A T¹ g¹ d¹ 6 z / fiz¹ d¹ W¹ e¹ aX¹ @ ad¹ Z¹ W¹ Ea¹ S¹ [SS V Ea¹ Lafd¹ 3 d¹ z [b¹ W¹ S¹ Yal ; , E¹ Z¹ W¹ S¹ d¹ 5 z D¹ z 5 z? U¹ S¹ S¹ z S¹ I F¹ z` A T¹ g¹ d¹ 6 z / W¹ i Coral Reefs of the western Indian Ocean T air status and conservation b¹ z , z

= S¹ g¹ d¹ z` F¹ g¹ d¹ W¹ z d¹ z / fiz¹ W¹ Sd¹ W¹ [afab¹ W¹ aX¹ fZW Ea¹ Lafd¹ ; e¹ S V 9 d¹ g¹ S¹ Fauna of Arabia , , z

F¹ g¹ d¹ W¹ z = S¹ g¹ d¹ z E¹ [a¹ W¹ @ z` < a` W¹ 6 z 3 z / fiz¹ [fad¹ S V e¹ T¹ [fad¹ Y¹ d¹ g¹ V¹ z d¹ f¹ z [Y e¹ g¹ d¹ W¹ aX¹ fZW Ea¹ Lafd¹ 3 d¹ z [b¹ W¹ S¹ Yal ; , = d¹ b¹ b¹ S¹ z : Sd¹ [= z ; z / W¹ i Conservation and Sustainable Use of Biodiversity of Socotra Archipelago Marine Habitat, Biodiversity and Fisheries Surveys and Management Report of Phase I b¹ z , z E¹ W¹ U¹ W¹ W¹ d¹ W¹ S¹ UZ¹ ; e¹ f¹ f¹ g¹ V¹ 8 d¹ [X¹ g¹ S¹ z 9 W¹ S¹ k¹

I [I¹ ea` 1 5 z > [V¹ e¹ I A¹ z 5 W¹ S¹ d¹ : z a¹ V¹ e¹ a¹ 1 9 z D¹ g¹ T¹ W¹ d¹ z` F¹ h¹ Y 3 z 7 z / fiz¹ U¹ a¹ Y [LS¹ S V e¹ a¹ U¹ a` a [U¹ z b¹ S¹ f¹ e¹ aX¹ fZW Uad⁵ ad¹ S¹ [f¹ k¹ f¹ z W¹ [S¹ A¹ U¹ S¹ , 3` 7 @ EA ; _ b¹ S¹ f¹ S¹ V¹ S¹ d¹ [Y aX¹ f¹ g¹ d¹ W¹ Z¹ S¹ W¹ S¹ Ambio , , z

INTRODUCTION

3Uf[hf]W egbbadW Tk 5AD6;A [= WkS efSdW []
I Xüge[Ya` S`a` YfWl Uad`dWk a` [fad` YbcaŽ
YdS_ W` fZV# [g` YS? Sq` WDWWhfa fcsU dWahWk
aXdWk Xa_ fZW 7^@[řa Uad`T`VSLZ[Y Wwf
/ATgdđ řz;` SVM[řa` I S dS WwXl[a`aY[US^efgV[W
i Ww egbbadW /ATgdS et alž ři [UgV` YefgV[W
a` fWbWsfgdMGH [fWsl[řa` d TWZ[U Ua_ _ g` [fk
efgUfgd/Uad`dWg[ř_ Wf S V T`VSLZ[ř Uad`!aaJ Ž
S fZVSWk` S_ [ř_ SřaŽS V_ [řaŽ`YS`Ua_ _ g` [fk
efgUfgd/S VT[řaŽ`ře[a` l_ S kaXZW `W Tk d[Wf[ře
Xa_ fZV# WkS? Sq` VS V8[eZW W DWWSLZ;` e[řgfW
5a_ _ g` [řkŽS`W bSf[U]bSfack _ a` [fad` Y Suf[hf]W
efSdW[[fZV6 [S [žZS`V8dS`XagfZW = WkS
i WWS`ea SWW fa 5AD6;A ře badX[řal fa XU[řS`W
d[ř] YS SdW`eS_ a` Y dWgdUgeW`e`XfZW Ww Xid
_ S SYW Wř S Vfa fcs^` W fWZ [cgW`X`dY WWSf[Y
VfS a` Uad`dWk`Sfgei ZW dWgdU`S V fWZ [US^
efS SdW_ [řWž EWW`W`a`ře [] >[W W S V Ebadř` Y
/ ři EagrW et alž/ ři >[W W et alž/ řz
3ffZWWVaX !TM[` [YaX ř5AD6;A Sž
ř[hf]W[] = WkS [UgVW dWWS`a` YfWl _ a` [fad` Y
[[řS[řWS VSeeUřS`W dWWSLZ bca Wfefa [bcahW Ž
[

- aX`a`ZWWWh[da`_ Wfe eMSf[YfZW Xa` fZW
 7Sf 3X[US` Xi` Y[YdWk[W eaXagfZW =WkS
 S VfZW7Sf 3X[US` ? Sc[WUadMa` ž
- DW[glf_ Wf [L [fSf[a` SbbVde efa` YW Xad ea` W
 YWMS bdmagek Va` [S f[fZV[Sd] egUZ Se Aro-
 para egUZ fZSf afZW YWMS eZai [Y_ adVgUWag`
 dW[glf_ Wf egUZ Se Cosinaraea` _ Sk TWa` W_ adW
 ba` [Wf [fZWVSDYfgdW
 - Gbi W[Y aXUaa`^ gfdWZ[QZ i SWE` _ Sk dVgUW
 Uad` egch[hs` [fZW? @D Ua` bSdWi [fZ i Sd W
 a[Yafobz[Ua` V[fa` e XdfZW e agfZi S V bSd[UgZ
 Sdk a` VW dWV dWk [fZW eai aXf[VS` S V
 dSa` S` gbi W[YUgdWfež
 - VSTahVSLfaceSdWUe aXfZW Sch[S` SfgdVax
 fZVWMSf fZV[S e[fa` TW WWi Sd_ S VUaa`i SŽ
 fWWh[da`_ Wfd_ S] [YfZW _ adVg` WSTWfa
 SdWVUSWZdSf egUZ SeU_ SFWZS YWtkdWgU` Y
 fZV[USbSU[fk XddWahWž

4. Individually Marked Coral Colonies

I [WbdSVTgf_ aWSTWVUSZ[Yi SeValg_ WFW[
 [=WkSS VFS IS [S Tgf_ adS[fk i Se'ai Ua` Ž
 bSdWi [fZ /ATgd fZBW S Wfk_ Sd WLa`aŽ

` [W[WMSST[eZWSf fi a` Wdk d[W] fZV a` TSs
 ? Sc[WBSd [Wdk fa fSU fZVSVaX[Vh[VgS^
 La'a [WVgd YTWUZ[YWVfd S Vfa [hW[YSVabWž
 UVWbW-UdWba` dWfa TWSZ[Yž Wg TWaXLa`aŽ
 [W_ Sd W[i S V X'ai [YSW[fa` aXgdZW
 La'a [W[hi W W S V dWV[hW/ASTWf
 UahW[Yea` W YWMS[ž8adfZVWMSi [fZ dSž
 ea` STV[S bW[W/O La'a [W[fi fSTW eZai e
 fZSf bS[Yi Se` afW XadS` YWMS [? Sk i WUMf
 Xad Aropara Ua'a [W S fZV5 ad` 9 SdW e dW 8g`
 TWSZ[Yi Sea` keY [-US f Xad Paillqpara S V Monti-
 para S ! S V ! dWV[hW i [fZe S`S_ ag` fe
 [Pariteš Pavra Galaxea Edinqpara S V Faviaž
 ? adS[fk hSdW i [fZ ea` VWWMS eZai [YZ[YZ VVW
 O /Astropara Edinqpara Montipara Paillqpara S V
 S_ S] [g_ aX Xad Aropara S fZV5 ad` 9 SdW ež
 AhMS` TWSZ[YS V_ adS[fk VVhSdW Sdg` V ž
 ;` fWZS V [fSzbW-UW WUW[TWSZ[YbSž
 fW ei WVS S k W TdWk [ATgd / fi Xad Paillqpara
 dbž AXZdWSTg` VS f bW W i [fZ Z[YZ VVW aXs_ Ž
 b[Yi Paillqpara eydouxi eZai W fZVZ[YZ W VVW aX
 TWSZ[YS VP damicorniseZai W'ai W VVW aXTWSZž
 [Yi Tgf TafZ eg W W e[[Sd_ adS[fk dW/~ YgdW fež

Figure 4. a) k 0% 12 gZ Yaf a) 0 Gog " aZ Yaf gZ a zæ z z 2 P. pocillopora damicornis n. P. eydouxi a q. P. verrucosa E ä * * *

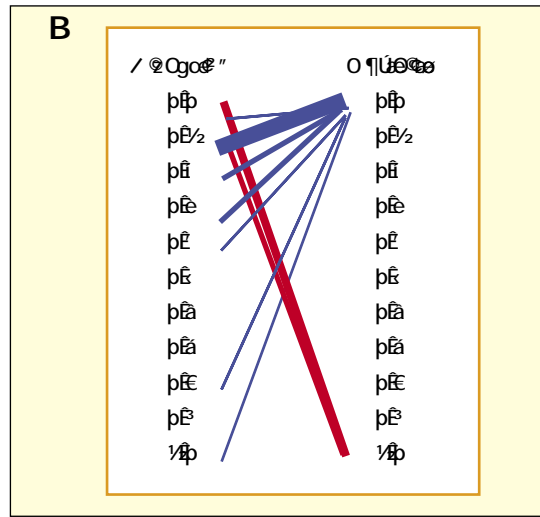
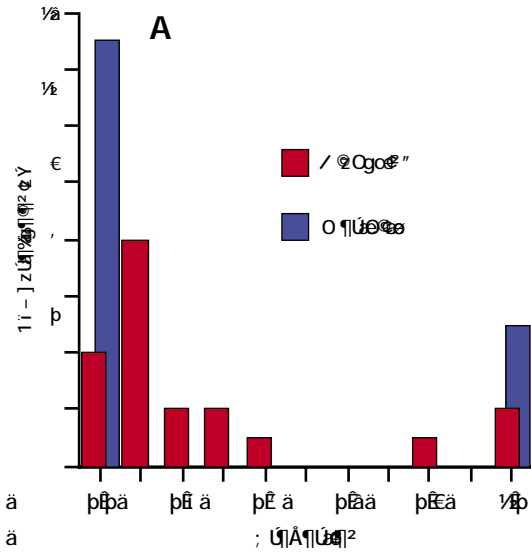


Figure 5. a) O 0- i - äz 0% @Ogoe" äp qä- 11úe000 q0q1 O01112 0 Y11% Pocillopora damicornis äd 11-] OY0d 0Uz ä 1 0012 00 0Ü ä ä ppea00- ä" i 1z ä ää @Ogoe" ä OYä 11äqä00110000ä 1ä ÄÜ00ä ppea00 q11] Yz 00112 Yä z 1z ä 1z g111z q112 ä/ä0 qä/ä0 00ä0 qä0ä000 @Ogoe" ä0qäz OYz q112 ä/ä i " i Yä ppeä0 0- i - ä] @Ogoe" ä OYä " z z 100ä1z g111z q112 2 qä/ä0 00ä ppea00 qä- 0- i - ä- 11úe000 OYz g111z q112 ä/ä i " i Yä ppeä z 1z ä 1z 1z 1z 2 g0ä0 Yä11 ä112 ä11% 0- i - ä] @Ogoe" äp qä- 11úe000 ÄÜ11112 200- äp ä11 ä111z Ogo01112 0ä11 Ä000 0z ä g11- Ä00112 ä11% 0- i - ä] @Ogoe" äp 00ä0 qä- 11úe000 i " i Yä11 001112 0ä- Äz 0Ü- 0 Yä0" ä111z 00112 ä11% 0- i - ä] @Ogoe" äp qä- 11úe000 ä- ä pē 1/äÄ. ä p̄p̄ f̄ä 00ä0 qä" i 1z Yä00Äz qä00- ä] i 10ä1 p̄p̄ f̄ē

P. verrucosa Zai W[fW[WSWWWaXTWSZ[Y Tgf
 'ai W_ adS[fk dSWZ; fczBWM-UhsdSf[a [' UadS
 TWSZ[YS V_ adS[fk i WZai [' *P. damicornis*;
 fz[e bW W TWSZ[Y dSWZWS S hWSWaX Tk
 ? Sk hsk[YTW W W1W S V S_ a' Y[Vh[VgS
 Lä'a [W S VWW[Wfa1Wä a` 3gYgefz? adS[fk aX
P. damicornis[UWSWfa S ShWSWaX Tk 3gYgef
 Lä_ baeWaX Lä'a [WfZSf dW hW X'k/TgW W ~Y
 gdWfS VfZaeWZSf V[W/dW f Wfz? S j L g_ TWSZ
 [YS V_ adS[fk WZai [TkSLä'a ki W W hW W
 dSWW/EbW S reLäW U Wf aX S] UadSf[a i D /
 , ž 1b. ž f1S^Lä'a [WfZSf g W W W TWSZ[Y
 W W eZai W X g^ dW hW S VS^Lä'a [W / / fi
 fzSfi W W W dW Wi [fZ1Wä TWSZ[Y[? Sk eg W W
 _ adS[fk Tk 3gYgefZ Fi a Lä'a [Wi WWS dSWk
 W W Tk fZW-df eg hW aX ? Sk äa [f e` af] ` ai [X
 fZW TWSZW TW W W 3bd^S V fZW W [Y aX

? Sk adVWi [fZagf ZSh^ Y TWSZWZ [e dW f eg YZ
 W W e fzSf g` W W [V Lä V[fä d TWSZ[Y bafW W W
 fZW. *damicornis* Lä'a [W Xä_ Y dSWW f dW e USg e W Tk
 Z[VZ fW bW S f g d W SefZae W ZSf V[V` af TWSZ V W Z

5. Experimental Manipulations

W ZSh W af kW TW W L b W W W W SeS [f W S b S f
 aX5AD6; A dfg V W Tgf i [^TW W [f gb Xä fZW` VZ
 [Yed W adW[H[äS / fZEW W [äS / fZ[e h a g W
 Xid fZW-df W b W W W e [d W S Z [Y f Z W d W h W k a X
 laaj S f Z W S W b a g S f a e [TWSZW Uä S z

6. Tissue Samples/Zooxanthellae

6 W W b W Se S =? 8D; Z AD6; A b d W W [1
 _ a [fad^ Y a X laaj S f Z W S W b a g S f a e / W W e f h W Z
 d W S f a ! V h e a [V U a f i [e b W W a X L a d S e Z S e L a Z
 f [g W f a V S W S T W f z [e T S e W W S S i [^ T W g e W f a

- BZ6IG=, Ua_b^WMfgVka` laajS fZWSVMAhZ
WkS VdW^TWUWsfW ei [fZ5AD6;A SefZWaUS^
[`dfgf]a` S^Zaf/H[ed_ l fi
- ? SefW = WkSEi WW eS Vi [UZ bchYd_ _ W [` bchYd fa XUgea` UaS^dMg]f_ Wf-
- ? SefW 4W]g_ , fWfS[hMfa XUgea` Wa^aY[US^
_ a` [fad` YS V fZWgeWax[` Xd S]a` [` _ Sd` W
_ S SYWfS` Vba^UkVWab_ Wf

DISCUSSION

Wa_ba` WfegV^WVWd^TWStahW [^TW^fWfW
[`faS` S` Sk[eaxZVW^TWUWXLad^dW^]` = WkS
[ei [^WST^WZWWa^aY[US^_ a` [fad` YbchYd_ _ W
fa Ya TWa` V Valg_ Wf]` Y [bSfe fZSf ZSfMS^dSVk
ZSbbWWfa bchWf]` YdWSdae XiddWahWk adXdZW
WfSf]a` l S Vbch]WbchSU]hVSh]UWfa_ S SYWZ
A` fZW]Wf]-US V USbSufk Tg[V` Y e[VWfZW [W
dS` Wax[] WefVWi [^WVWfZWfSbSufk XdLad^
dWXdWZ i [fZ]` fZW S]a` S^dWZL Ua_ _ g` [f
S Vbch_ afVZ]YZWefS` VdVefZdgYZ UaabWf]a` S V
Ua^STadS]a` l Sei WSeUa_bWf]a` z

VfgVkaXdW^TWUWe_ SWW] Ug^fTkfZWVWZ
S]fkaXZVW^ S VfZSf [fUS` TVbb^Wfa S kV] WZ
WfUa_ba` Wf adfZdW^aW^aY[US^kefW e^WZ~eZ
Wk [bSfeS Vba^g]a` l eW U5`S SZS` etal` fZ
I [fZdWf fa Lads^T^SUZ]` YS VU_ SFWZS YW Wf
S VES` / fibch]WZVWV]` [` YeaXS_ WZS [efU
XS_ Wad]i;Z[V@kefb_ S VUa^WYgW/@kefb_ `~
eal` W 14Wfca` etal` 17^_ ch]ef etal` fi
I]dW^chLdSf` Ureaxg Ufa` S^dWg` VS Uk_ ^fZW

Tk

a#

W

alp

!

Tk ;G5@ fa Tq` Y faWZVUWfefe [fWVW [
 LdS` dWdW[WUUS` V U_ SWUZS YWegWZ [e
 S[Y e i [fZ fZWAST]eZ_ Wf aXS _ S SWWfZ
 adWfW` Wf ad] fZWResilienceAlliancebWZVSWW
 Tk V@SfgdW` a` eWfS UkS V[feD faa'] [f/F@5]
 fZ

REFERENCES

- 4W aaM 6zDz: gYZWFzB 8a] W5z` @kefb_1? z
 / fiz5a` Xa f] YfZWadS` dWdeS` Nature 1
 , z
 4Wfca` l<3` WfS_ lB 7^_ ch]eFz 7_ S gWca` lGz
 8a] W5z;ZaM? z? aTWfS z` @kefb_1? z/ fizDVz
 adWdW[WUUS` VVk` S_ [US` VdS`Wz` AmbioW`22

f dW ú ê f

F@5/ fiR2- Reef Resilience Toolkit, Version 2.0. W@SfgdW
5a` eWfS Uż
HMh`l-ā/ fiCoralsoftheworld3gefδ'S ;`dfgfVāX
? Sđ VEUWUMFai`đi^W bbž
H[ed_1EzDā/ fiT eDiversityandBleachingResponsesof
ZooxanthellaeinKenyanCorals6afadaXBZ]^aabZž
6Wsd_ WfaX4[a^aYk G` [hWffkaXKad}Gžž

I Wfi <ā~ ES_1Dā/ fiz7`h[đ`_ WfS^WWW [^S feaX
dWefS UfS VdW[WUWfa Uad^T^WUZ [^Y, [b[Uf[a`eXđ
_ Sđ VđafWfWsdS_ S SYW WfSž Conservation Biology ,
, ž
I [^ [ea`15ā/ fiStatusofcoralreefsoftheworld 200ž
3gefδ'S ;`dfgfVāX? Sđ VEUWUMFai`đi^W3gefδ'Sž

Status of Coral Reefs

ABSTRACT

;` FS IS [S fZVWZSeTWLá` eVWST`VdMhKkaXLáS`dWé
e[UWZW T`VUZ[YVWVh Vb[fVZVaUgdWUvXS_ [ad
LáS`T`VUZ[YV[eaVW 3bd^ ž W[hVáS`LáhWá`
G` Yg`S`LS l[TSdHFS YS l6SdWESS_ lEa` Ya Ea` Yal S V
? fi SdWéi Se_ Wlg_ / , fifa YaaV/ , fž: ai VVW
Sf efWfZSf eg WVvWVW adS`fk/ , _ adS`fkfiSeS
dég`faXZW T`VUZ[YVWV S Vi ZWV SLaŽ`YS`STg` Ž
VS UWéZlYZ`Wž= [fg]S? S-SfdMhKkZSeTW hKk eai ž
DWWf egVWZShW V[SWSe[YZfUZS YW LáS`ebWV
Lá_ baef[a` S VS [USeW eWVW WFS VdWg[f_ Wf dSW
[Lá_bSdWi [fZ ž WWefkaxW-eZSeZai` S
e[YZfWV] W` g` bafWVWSdSeS VSe[YZf[USeW bcaŽ
fWVWSdSe`Wž? S-S;eS V? Sd` WESd S V5Zg_ TWéS V
? Sd` WES UfgSd`fzE_ [SdH [USeW] fZVcbad[a` aXWž
T[hadWá_bde] YdWk-eZLá_ _g` [fVZShMTWw aTeWV]
æ_ VG` Yg`SdWé5ZS YW[fZVWVefkax_ SLaŽ hWVdSfW
ZShWsdWTVW WefWahWfZVWSef-hWVSeVbWV] Ya`
Vb`a[fs]a` VVéS VdWg[f_ Wf egUWé8adV[S_ bVWfBW`TS
fZVZShW USeW i Z[VeS? S-SXVW_ SLaŽ hWVdSfW
i VV aTeWVž VgeVaxWf`gU[hV-eZ] YbcSfUW ahWVž
b`a[fs]a` l`eW_ WfS[a` S Vba`g[a` SdWZW S] S fZcbaŽ
YW[UfZdSefaLáS`dWé] FS IS [Sž3`YS`Lá_bWf]a` S V
faS`VWVWVh l`hi` ž`ŽZad eefSd-eZbdWf]a` / G` Yg`Sfi
S`eaLá` fdTgWfa`eai dMhKkaXLáS`dWé7` h[da` _ WfS`
WgUf]a` l`Lá_ _g` [fk dWgdW_ a` [fad` YbcaYd_ _ Ws V
fZVWST[eZ_ WfaX_ adW_ Sd` WbafWVWSdSeSdVa_ VáX
fZVWadefS] Wfa WZS UWéS[ST`VáS`dWV]b`a[fs]a` ž

i Z[Vad^UahWsf dWa` ? S-S; eS VVWUSeWxh_
fa ž VdWV_ af S WFWsf fZVfi a [eS Ve
i VVWZadVadVa YdSfVWVfZd [ZV? [eS]; eS VdWV
Sf BWTS S VFgf]SDWWSf ? S-S; eS V? Sd` WBSd ž
VdWVf k aXfZWS_ SYW Se_ adVbch` ag` UW a`
eZ^ai SdSe/VZdWVsfefS VVWUSeW[` VVWVfi SŽ
fV/? aZS_ _ W S V ? SUZS al bWž aTēž A` dWV
i [fZagf S kVWV]a` W egLZSeFgf]SDWWSf? S-S fZW
VS_ SYW Seg` [Xd` fZdagYagf fZVWV? aZS_ _ W
et až fž
;` YWVWf Uad^ dWdWahWk ZSe TWYaaV[` SdSe
fZSf VbWVWUW_ [VT^SUZ]` YS V`ai Uad^_ adS[fk
[ž3f b dWVfi [hWad^UahWdS YWxh_ ,
[G` Yg`S /LS l[TSdH FS` YS 6Sd WES`SS_ i Ea` Ya
Ea` Ya` S V? fi SdH fa Z[VZWVWVeaX , ž3_ [ad
T^SUZ]` YW[eaWwUgdW[` 3bd^ i S V[UaSeW
[` Uhi `žZad e eSd-eZ/5AFEI *Acanthaster planof*
VWef[VZShWZai WVVZSVS` Vsf[hW] bSuf a` ZSdV
Uad^ dWahWž WVScWVadeaXqY [-US fUad^_ adž
fS[fk VgWVa 5AFEa` dWVa LS l[TSdfai ` S V6Sd
WES`SS_ /? gZS Val bWž aTēž WVad S`ea WVS[e
_ adS[fk aXUad^eTWa` Y[Yfa fZWS_ [k 3UabqVSW
S VSeqY [-US fdWglfa` [fZWg_ TWaXWVgfd` až
fSPk[`



fZaeVsf = [fgf]S dVWf Y fZWWVW [bSufe aXUad^
 TVSZ] YSfGfg_Tl [ž
 VaTeVHW ZS YWf fZWWVefk aXVUZ X_ [k
 ahVfZVefgVk bVfaVeS V 'SfWf fcbZlUYabgeSdW
 [VUSf]hVXUZS Y' YLa _ g' [fk i ZlUZ _ YZf dVWf
 fZWZS Y' YUad^dVWLa _ g' [fk] = [fgf]STgf`af [^
 Gfg_Tlž VVadVfZVUZS YWUS TWaSe^ S^ S V
 fWbadSdH SgeWtk [bgf aX W ghWVW eZWf fZW
 efVad[fUS TVS dVba eVfa ~eZ] YbdVgdV

INVERTEBRATES

5ZS YWf fZWWVefk aX Sdž hVfVdVfVZShVsdž
 [WTVW VV efVahVfZVbSef -hVWUSb VVWV] Ya
 Vb^af[Sf]a VVVS VdVg[f Wf egUVežSadVMS bW
 SfBWTSfZVZShV UaVam i ZVWf? S-SXVW Sdž
 [hVfVdVfVW i VVaTeVHW 5ZS YWf [hVfVdVfVW
 STg VS UW VV af La` eVfWf TVW VV SdSe fZSf egž
 XWV_ af [fZW TVSZ] YVWfž? [eS]; eS V
 BWTS eZai WS [UaVW VVefkaX^ hVfVdVfVW
 egdVWV /ZVdVgdZ] d 5AFEI YS f US_ d eVUgž
 Ug TWf YsfabaVeS V afZVW]hShVaxLa _ VUS^
 [badS UVfSTWfž agYZ`af eYZVWf efgVkb^af
 fi a5AFEi VVWV [? [eS]; eS V [ž
 3f ? S-S; eS V ? Sd VBSd / ? ; ? Bfi fZW Sdž
 [hVfVdVfVWVefV i VVegbd[e Yk ai Ua bSdW
 i [fZ_ S kdVdSe [G` YgSS VBWTS/ aZS _ W

~ ? SUZS at fi W_S [Ua fctgfae fa _ Sdž
 [hVfVdVfVW [G` YgSS S V BWTS i VVWVgdZ] d
 US_ d eVUgž TWa S V dSd eZž VVadS [e_ d
 fZagYZ Ua _ a` laUgdVW [dVf]hVWk ai VVefVW
 ? ; ? B VVWefVWaX^aTeVW S V SdVWSe fcbabaVe
 [hVfVdVfVW i [fZ Ua eVWSTVWLa a [Uhs^gV i VV
 hVWk ai ž; f[e` af UaVdi ZVZVfZ[e]eVgVfa ahVWb^aZ
 fSf[a` adVgVfa` SfgS^USgeVW VZSSTfSf egfSTf [fkž
 A` ka` W5AFEi SeaTeVWV [? [L S [zEL [Sdž
 `a5AFEi VVaTeVHW [= [fgf]SS VGfg_Tl [bdmž
 agedfgVWž
 : [YZ`g_ TWaX5AFEi VVaTeVHWa` 5ZS Ygg
 4Si VS V5Zg_ TVM Vf LaSf aXG` YgSf [Vdžk
 S V [S Va` GfS [S [bSf aX? [eS]; eS V ? Sž
 d VbVfVWV3dSf [Vdžk /FkV? gZS VaS V
 6S [Vb Vdž aTeV dVdVW] YS eY [-US f [UaVW
 ahVbdVage dVdVe i ZW` a 5AFE ZShWTW aTž
 eVhVsf fZVWVaf [a` ež
 8d_ egdVW eSag` VG` YgS [! fZWWVž
 dfk aXeSgdZ] e eVW efa TVS [VUSfadaX-eZ] Y
 bdeVgdVZaeVefVWVZWg`_ S SWad] ai` fa TW
 ZVf^k ~eZWZShVZ [ZVWgdZ] VVefVW VVWefk
 aXeSgdZ] e i Se ž [VhVgSe... Sf = [LZ S [f
 ? `WTS 3fa^ Ua bSdW i [fZ a` k ž S V ž
 [VhVgSe... XdefVW? WS [4Sk5a eVfSf]a 3dV
 S V5Zg_ TWa S V5ad^BSd dVWV]hVW/FkVW g ž
 bgT[eZVWž

Table 4.ä O zO² äqz² Yca] % OgU; e öz Ue] Uae Yaç ä pä- ä-ä- ä- äO² Yzga] Zaç % U² a] gOca Y

| Invertebrates | Misali Island, Pemba | | Mafia Island Marine Park | | Zanzibar 1999 |
|-------------------|----------------------|------|--------------------------|------|------------------|
| | 1999 | 2001 | 1999 | 2003 | |
| >zOä Ujoe Ya | << ä | €eä | ½ä | eä | ½x ä |
| %O² äj@- Ya | ää | €ä | ½ä | eä | í ä |
| %O² ad]Ä]qYa | pä | ½ä | pä | ½ä | pä |
| / @Oöz Ya | „ ä | ½ä | „ ä | „ ä | „ ä |
| fi3 @ä | pä | pä | ä | pä | pä |
| >æUÿoä | pä | í ä | í ä | ' ä | ½ä |
| 1i q] U² goçä | „ ä | í ä | „ ä | „ ä | „ ä |
| . [j] YæUä | pä | pä | pä | ½ä | pä |
| >zOäji gi -] zUä | í ä | < ä | pä | pä | e |

THREATS

5adS^dWk[FS IS [S SdWZU] YS`g_ TWaXZdUfe
dWade aXUadS^TWSU] Y[` Wdk USgeW Tk dS
fW/bWfgdW[UUSWZSeS WfWS`g_ TWaXdWk[
fZW Wf S V` adZW bSfeaXLS I[TSdS VS'a` YfZW
eagfZW UaSf aXfZWfS IS [S`_ S]` S VZ WfWZU
[` Yi Se_ [VS V` a eY [-US f UadS^_ adS]fkZSeTW
dWadWZ: ai WfW: Sd[e et aZ/ fidWadW UadS^
TWSU] Y[` ea_ WfW aX adZW bSf a G` YgS; eZ
S VZ WfWdW a dWadeaXfWZU] YXh_ fZW adZZ
W bSf aXZWag` fdz

5AFE agfTds] eZShTW dWadW Xh_ V] WfW
bSfeaXfZWag` fdz WfWfW aXfZWagfTds] eZSe
`af TW WfST]eZW Tgf eY [-US f _ adS]fk S_ a` Y
SuhadVeZSeTW aTefWVa` fZVa_ WbSfeaXfS W
DW? gZS Val bWZaTef; f[e` af UfSdi WfZWfZW
aTefWUadS^_ adS]fk [efZWag` f aXfWZU] YS'a` W
5AFE adS Ua_ T] S]a` aXTafZz 8gdZW[hW]Yf]a`
[edWgdWZ

FISHING ACTIVITIES

W_ S]` ~eZ] YWfSgeW[FS IS [S SdWZS V] W
Tse] Wfcb dUab` WeS Vegdag` V` WZ6 WfcbU]hW
~eZ] YWfS H Vk S_ [fW-eZ] Y] ba[ea` d VdY` WeS V
e S^_ WZ` We/TWai [UZafSdW^WZ: ai WfW
fZVgeVaXea_ W^WZ^~eZ] YWfS H egUZ SeVdY` We[
UadS^dWZSe ef]`aUgde [WKS V]eS_ SadfZdS fa
fZW WTWY aXUadS^dWk[fZWag` fdz;` -S gSk

I Vk S_ [fW]Sefei WfWZSdV[a`k ZagbaX
Vh] YSf BW TS/Fk WfWZaTef fZagYZ fZ]e WfcbU
f]hWS V[V]eU_ [SFWad_ aX~eZ] YZSe e] UWTW
TdagYzf g` WfUa` fchZ

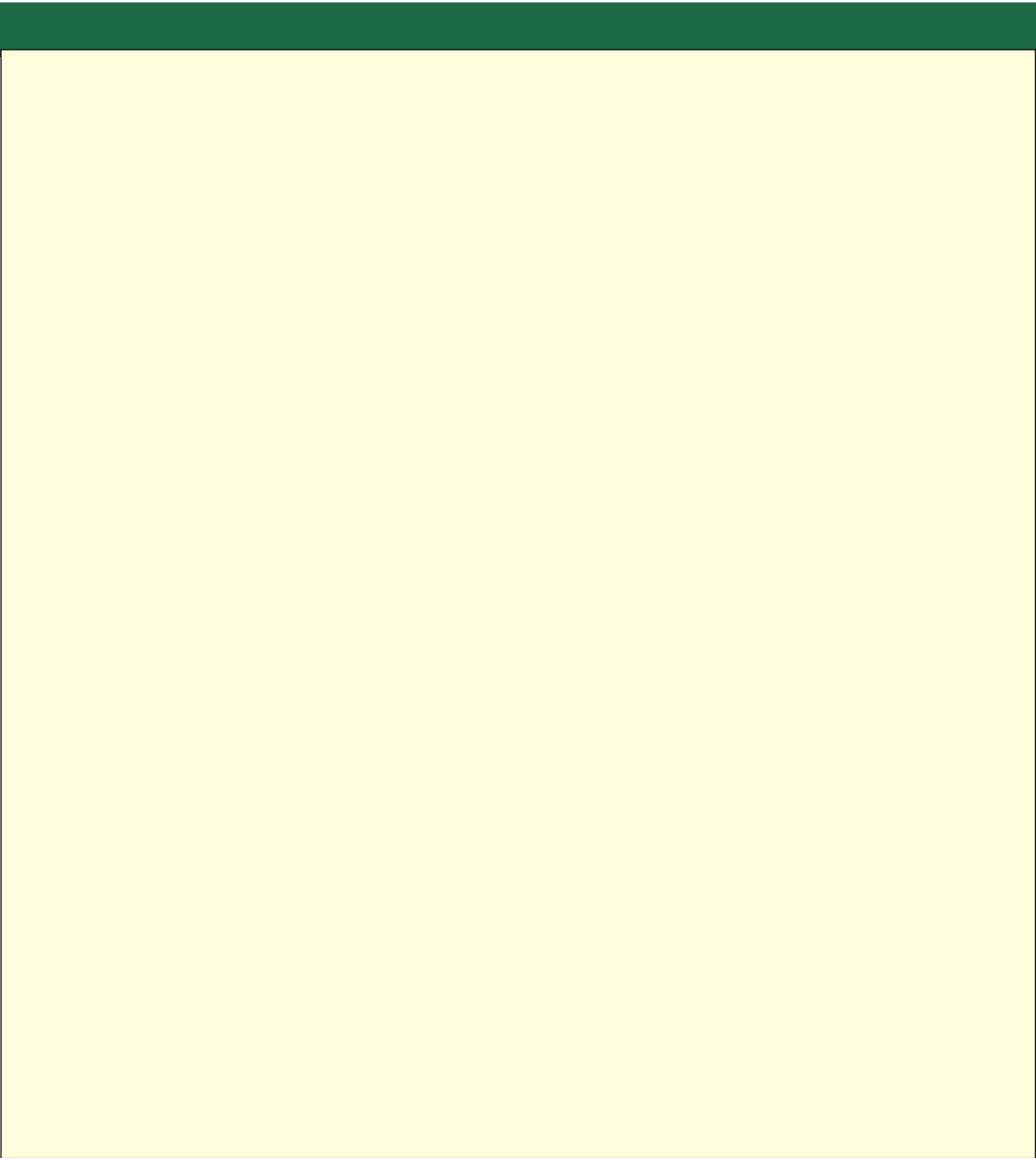
TOURISM

Fagde_ [efZW SadUa` fd]Tgfadfa fZWUa` a_ k[G` Z
YgS/LS I[TSdS V]eTWa_ [Y] UUS] Yk_ badS f
[BW/TSS V? S-SZ Wfagde_ [Vgfc] UUSWfZW
WWS V Xid~eZ S V US` ZshWdW [bSfe a` UadS^
dWefZdagYZ V]h] Y] e` ad W] YS VS UZad` YaXTaSeZ

5adS^VS_ SYWUgeW Tk S UZad` YS V [WbWfWUW
V]hWfUS TWaTefW[` ea_ Wb/SUWZEW] YaXeZWe
Ua^WfW Xh_ UadS^dWZSeagH W]d]ei [Wk bSuf]UWZ
9]S f fdfa` e/Charonia tritonis S_ Sad5 AFE b dWZ
fad SdV]YZ'k hS'gW [fZM]gda f dWWS V fZW ZSHW
TWa_ WfWkdSdW` FS IS [S` dWZ

EFFORTS

W WZTW YaXUadS^dWk [eTWa_ [YS` _ badS f
[egWf V] WfW WfW[FS IS [S]3i SdWfS VWhZ
d` _ WfS^ La` d]age We SdW UUS] Y` af a` k a` S
` S]a` S^ WfW Tgf WfW S fZW h^SYW WZ 3 XW kS
S]ah^SYW ei WfW_ SadaTefSUW WfST]eZ] Y? B3eZ
Wf]gS]a` Zse` ai dWfW SeLa_ _ g` [f]W SdW]Z
[Y S Wf] Y d`W [[f]S] Y fZW WfST]eZ_ Wf aX
? B3di [fZSegbad]hW a W/Sk W TkfZV ahW_ WfZ
LS I[TSdW` FS` ' \$ \$ 3\$ \$ 3F' \$ \$ 3\$ \$ 3
Wf] V S



ai TWY| UadacSW| dZaa^Ugd|Ug'SS VWSZWE
 SdWSFW| Yi ad eZabe WY W fa | UUSWWH|ca` Ž
 _ WIS'Si SdWwē| dZaa'eS V| Ua_ g` [f|W| YWŽ
 WŠž5Zg_ TWeS V5adS^BSd| Ua` VgUfeWUgd|a` eXid
 dZaa^UZ|VdW fa h|ef S V Wd STagf fZVWXX [e|e
 TWYdW|USFW| ? [eS|;eS Vž

REFERENCES

9SbW=ž5ā~ AZ_ S I? ā/ fiz5adS V~eZV|efdTg|fa`
 bSW|e| ? S-S;eS V? Sd| WBSd|FS IS |S ~eZ, ZSI|fSf
 | fWSU|a` ŠHydrobiologia , , ž
 : Sd|d 3žDžEg^W_ S I? ā? aZS_ Wl: ā? [fUZVMEā
 ? gZS Val 5ā dWSI |l@ā~ EŠSYMFā/ fiAn investigation of possible anthropogenic and climate related impacts on change in benthic composition of coral reefs on Unguja Island Tanzaniaž4gVWf|gdVā` eWfS|a` ž6 dSX dWadž bž

? SUZS al: ā/ fiCoral reef fish populations survey in Kitulia and Utumbi sitesžG` bgT|eZWDWad fa ? S-S;eS V? Sd| WBSd| ž bž
 ? aZS_ Wl? žEā~ dWSI |l@ā/ fiMisali island environmental monitoring Coral reef monitoringž bž
 ? aZS_ Wl? žEā~ ? SUZS al: ā/ fiCoral Reef Monitoring Report: Tutia, Utumbi and Mumbiji Reefsž bž
 ? aZS_ Wl? žEā? gZS Val 5ž3āI SY W|9ž? ā? T|W@ā dWSI |l@žEā? aZS_ Wl@ā=gYgd| 4ž>ā~ HWVW 7ā / fiz` fW|S|a` S^5adS^DWW` [f|S|hW6 ag` fckDWad, FS IS |ŠžRegional ICRI Workshop for the Indian Ocean, November 26-28 200ž
 ? aZS_ WlEž? ā? gZS Val 5ž3ā~ ? SUZS al: ā/ fi z5adS^DWW6 WBSU|a` | FS IS |S DWg`feaX? a` [fad` Y Šž;` ,>| Vē 1Aā EagfW|6āI [ZW eā` 16ā~ ATgdS 6ā/WēfiCoral Reef Degradation in the Indian Ocean

keywords ? alS_ T|cgMAd^dM LAd^T^SUZ[Y_ Sq` VbafMWSdSA ~eZLä_ _ g` [f|W LAd^dM_ a` [fad` Y

BACKGROUND

? alS_ T|cgM|Wä` fZMSe LÄf aX3X|USTW W/S|Z

**THE CORAL REEF MONITORING PROGRAMME
IN MOZAMBIQUE**

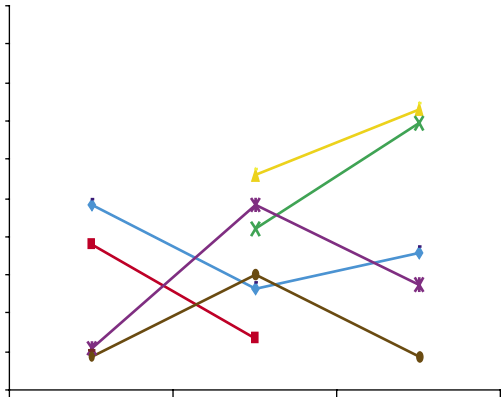
? ;5A3 [f|SfWfZW@Sf|a`S^5aSaS^La`W? S SYZ
_ WfBaYd _ Wkd? alS_ T|cgW` Ua`g`U|a` i |fZ
63@;63 S V|` UaeWa^STadSf|a` i |fZS`g_ TWaX
[`ef|gf|a`eS VVa`adž WbaYd _ VSWdaWfZW
W|dWaSaS^la`WaX? alS_ T|cgV`SVabfeS_ gf|Z

Table 1.ä gocz- z²ä%äz äg OÄg e] i ä " äü- Ä²z² ä%äz ä üO-] ä i zä i ÜO- z z%ä O' z- z² ä ü" ÜO- - zä
 Ç fi=0; È

| Programme/Name | Year | Title | Institution |
|--|------------------|--|---|
| MS ä ; z lú ÜOä ä ä ä ä | ä i ppèä ä | ä =z g lú ÜOä ² Oä- fiB/ äü" äO qä z z%ä ² Yz lú ÜOä ² ä ä ä i ä i ä z ä üO-] ä i z ä | B ² z lú ÜOä ² Oä- fiB È i ü O' |
| BS H n ursä fi i Yä ä ä ä ä ä | ä i ppèä ä | ä © i ² Yä O Ä z g ä Yä g i " ä i Yä z z%ä Yä ä ä i Ä i " { ² ä i Yä i] ü ä i Yä z g ä Yä qz ä i lú ÜOä ² Oä- fiB z O ä ä i lú ÜOä ² Oä- fiB z O ä ä i lú ÜOä ² Oä- fiB | B ² z lú ÜOä ² Oä- fiB q i ÜOä O i ² q O' z n ä O ä i ä |
| G qz ÜOä ä ä ä ä | i p p i ä ä ä | ' ² ä i lú ÜOä ² Oä- fiB ä ä i lú ÜOä ² Oä- fiB - i ² ä q q z Y ä z ä z ä z Y i] i lú ÜOä ² Oä- fiB ä ä i lú ÜOä ² Oä- fiB z ä z g ä Y ä z ä z ä z Y i] i lú ÜOä ² Oä- fiB | B ² z lú ÜOä ² Oä- fiB q i ÜOä O i ² q O' z n ä O ä i ä |
| ; z lú ÜOä ä ä ä ä | i p p p ä ä ä | i Y ä q i lú ÜOä ² Oä- fiB - Ä O ä i lú ÜOä ² Oä- fiB i ² ä q q z Y ä z ä z ä z Y i] i lú ÜOä ² Oä- fiB qz ä i lú ÜOä ² Oä- fiB z O ä ä i lú ÜOä ² Oä- fiB z O ä ä i lú ÜOä ² Oä- fiB | B ² z lú ÜOä ² Oä- fiB q i ÜOä O i ² q O' z n ä O ä i ä |
| % i ² i O ä z Y ä ä ä ä ä | i p p p ä ä ä | i Y ä q i lú ÜOä ² Oä- fiB - Ä O ä i lú ÜOä ² Oä- fiB i ² ä q q z Y ä z ä z ä z Y i] i lú ÜOä ² Oä- fiB qz ä i lú ÜOä ² Oä- fiB z O ä ä i lú ÜOä ² Oä- fiB z O ä ä i lú ÜOä ² Oä- fiB | B ² z lú ÜOä ² Oä- fiB q i ÜOä O i ² q O' z n ä O ä i ä |

Figure 2.ä ä i² q Y ä ä z ä z ä z Y i] i lú ÜOä² Oä- fiB z O ä ä i lú ÜOä² Oä- fiB z O ä ä i lú ÜOä² Oä- fiB
 ä ä i lú ÜOä² Oä- fiB z O ä ä i lú ÜOä² Oä- fiB z O ä ä i lú ÜOä² Oä- fiB z O ä ä i lú ÜOä² Oä- fiB

Xa fZW TWSZ YMM/EUZMM et aĭ fi Tgf
fZWadS^Ua _ g` [fk efgUfgdVWw efa TWZS Y| Yz3
`g_ TWaXUad^ dVWw i WWA` d[UgagēTk fZMSTZ
ēWUMbSd[Ug/Sdk *Millepora* bbzS V/SdWAqpara bbz
egUZ Se A *palifera* ? a` aZbW~U efS Ve aX *Galaxea*
astreata fZWV(SU)ge *Echinopora lamellosa* S VbSUZW
aX *Prites/synarefirusi* WWS^ea aTēW.;` I/SdW
bSUZWaXWSUadS^i WWA` d[Ugagd baē[Tk[UgVZ
[Yz] b'aWŠ SdWē dWf[YXa_ efad_ S V!adS Ž
UA



i [fZ _ adWSt e aXdgf` W_ a` [fad` Y S` V [ULSW
`g_ TWIS V dWdWfS[a` S_ a` YefW8ad VJS_ b`W
SfZagYZ EWUSd5ZS` W|e f dUf`k b d a f W f W [f [e _ Ž
badS` f fa WST[eZ S e Wā V_ a` [fad` Y e f V S` S` W d k
`aUSf[a` fZSf [eegTWf fa ~eZ] Y [adWf fa S` ai Uā Ž
bS d e a` TW W e f W f a W W W [W Z W _ b S f e a X - e Z] Y
a` ~eZ Uā _ g` [f W S V fa S e a e f Z W W W [h W W e a X
b d a f W [a ` ž

W W S d S` e a e Y [-US` f e d M Z W a X U a S e f Z S f ` W W
_ a` [fad` Y e g L S e f Z W b d _ W e S V E W g` V S e 3 d Z [Ž
b W S Y a e ž W W e S` W W f a [U S W Z W g_ T W a X_ a` [Ž
fad` Y e f S [a` e] a f Z W b S U W e g U Z S e S f B a` f S V a A g d h
i Z [U Z S e T W ā _ W ā W a X f Z W S e W f Y d a i [Y W a f] S Ž
f [a` e X i d f a g d e f e W S Y W [d W S f [a` S` e g T S V h] Y
V g d` Y f Z W S e f W W S W

ACKNOWLEDGEMENTS

W S e f Z a d e i a g` V [] W f a W b d e f Z W d Y d f g W f a
? ; 5 A 3 l 5 A D 6 ; A l S V I I 8 X i d X` V [Y S` V` a Y e [U
e g b b a d ž A D ; Z S e S` e a U ā f d [T g f W i [f Z f W Z [U S` e g b Ž
b a d f Z a g Y Z a g f f Z W S e ž 3 ` g_ T W a X` V h [V g S e Z S h W
e g b b a d W f Z W_ a` [fad` Y f W S_ e b d h [V] Y f d` e b a d f
V h] Y W g [b_ W f S V S U ā _ _ a V S f [a ` ž

REFERENCES

3 T d S f W = ž 9 ž E ā ` B W W S ? ž 3 ž ? ā / fiBoasVindas
2001/2002 A survey of tourists and tourism in southern Mozam-
bique? S b g a l 7` V S Y W W I [V [X W
4 W S S Z g l K ā E Z S Y_ S l 3 ā ` E L Z` W W ? ž: ā / f i z 5 a d` e a X
f Z W a g f Z Ž W f ; ` V S A U S , H ; ž V 3 U a` S U S / A U f a Ž
U ā S` [S f a X` a l S_ T [c g M [f Z S M e d g e a` a` e a X U ā d` V e f d Ž
T g f [a` a` e a g f Z W g S f a d S` 7 S e f 3 X [U S d W S Ž Z a d o g s t h e
Verhandlungen , , ž
4 W W ? ā ` a Z S e a` l - ā / f i E c o n o m i c a n d e n v i r o n m e n t a l
i m p a c t s o f n a t u r e - b a s e d t o u r i s m A c a s e s t u d y i n P o r t a d e O u r o
M o z a m b i q u e ž 9 ô f W a d h E U Z a a` a X 7 U ā` a_ [U e S V 5 a _ _ W Ž
U S e > S l 9 ô f W a d` G` [h W f i ž

INTRODUCTION

;` eafZw 3XlU lãd^lã _ g` [f|wXid S lã f| gŽ
g_ Xh_ fZW adVkb|US1SUDM|hVWw| fZWab|UeAX
? alS_ T|cgVafZW Sd| S1eafZW _ af3XlU VleŽ
fdTgf|a` aXZ|eXg` S|` =i SLg'gŽ@SfS~/~YgdVfZAhW
fZWSef kSfH fZVAUS aYbZ|UDWfSLZ;` e|fgfV
/AD;fiZSe lã^WfW S SkaW S VbgT|eZW | Xid SŽ
fla` a` dVWf^SbWfe aXfZWlãd^dVW| fZWdMa` ž
WVZShW UgVWefgV|Wa` lãd^fSj a` a_ kSei WSe
fZWlã^aYkS VfZWlã` V|fla` aXfZWlã lã` fdTgf| Y
faS` g` WfS V| YaXlãd^lã _ g` [fkVWab_ WfSf
Z|YZ S|fgVW

I Z|VZWVagfZ3XlU dVWfSd| [fW| e|VfZW
Sd|WS| | Y| Uf| YSfW|a` ž WfS^X^i [fZ| _ SŽ
d` VdVW|` `adZW =i SLg'gŽ@SfS~/? SbgfSfS V
lã` e|fgfVã` VãXEagfZ3XlUe_ af V|hVWfS VhSgŽ
STVWkV dSdWS V XSY|WUackeV ež W ZShWS
`g_ TWlãX afSTVf|fdTgfVfSd|UZ| T|aV|hVWfS V
a WfdVWVage bafW|fS^ Xid Wafagde_ ž EaX lãd^
lãhV lã` bde| YdVf|hVW XW ebVW VUWefZSf aX
dVWf|f| [S eahV_ gUZ aXfZWagfZW dVWfS VfZW
eãX lãd^lã _ g` [f|wSfS| T|aV|hVWf! gm

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Ea_ WbgT[eZWbdaWf]a`ea` fZWa` YZW Wmfe
aXU_ SFWZS`YW`V[LSFWZSF_ adWm]i [^TWa_ W
_ Sd] S^SeSdg`faXYaTS`i Sd_ [YZ5gdWf_ a` [fadZ
[Ya` fZWEagfZ 3X[US` dW[eTWYybs` WWfa [Z
UgWwUS` aYdbZ[U_ WgdW Wfd B3D [fWef[WS` V
SdYa` [fWefgS]a` eSWf[eZabWfZsfZWA_ T]` W
efgV[Wa` fZWW` Sd] S`dW]i [^WgU[SWZWgfgdW
aX_ adWb[US] fdb[US` Uad` dWZ

CORAL RECRUITMENT

5ad` Sds` eM`W Wf f[W]i WWWW`akW a` fZVdW
S`W` fa egbb`W Wf fZWSTahWfS`D`Wg]f_ Wf
bS]ei WWWW`ag` fWVa` f[WdW ahW Xa_ fZVdW
Vgd` Y? SdZ, ? Sk [egTdgWf kS`H fZ]ebW]aV`S`Z
[YS`WbW]aVeaX`dS` ` [YX`g` V [Wd]WdWdZ
VgU]a` fgmW? S] _ g_ eM`W Wf aUgdW a` f[W
fZsfZSVTW`W`akW`dSf` Wef fZdW` a` fZeS` VfZW
Tg] aXfZW`Wg]fei WWS`hbadVeS` VbaU`^abadVeZ
_ W`V` Yei [^ZabW`kTW` fWb`WST`W` fW` eaX
dW`Ua` ` W]hfk ge` Y egbb`W WfSk aUS` aYdbZ[U
VSS`WdW`Xa_ [feg_ Wfe`Si` SWZ`WZf` dWdW

36 5B GFDeS V 5F6 bda`~WfiWb`akW Vgd` YfZW
efgVkbW]aVZ

REEF SURVEYS

5a` UgdWf i [fZ fZVSTahW ad] hAD; ZSeTW`egchWZ
[YS`^aXfZW`agfZ 3X[US` dW] W`b`ak]` Ydb[V]M]fS`
fdS` eM` [S]` YfWZ` [cg`W`W`abW`X`dfZ]ebgdaeW
D`W`Ua_ _ g` [fk`fg]UfgS`S` Sk[e]eaXfZW]Y]fS`dWdZ
[Ye[eTW]Yg` W]S] W [fZWSTadS`ack S` V [eSf` S
SM`S` UW`dS`WZ`^aXfZW` !— !— hW

Assessing the Status and Improving Management of Coral Reef Resources: Experiences and Achievements in South Asia

63@I ;>: 7>? EEA@l-ž=žB3FF7DEA@ 76I 3D6 l3D<3@ D3<3EGD;K3l<7D= 7DF3? 7>3@6 7D
 ~ @;E 3@F: ; B7D7D3

5AD6;A EagfZ3eS Ž 15a'a_Tal Ed>S]S Egs fZl 6 VMSa` ? Scl VDWLSZ;` dffgMFgfLad l
 FS_ [^@SVg;` VJS @Sfa` S^3cgsfUDWLSZS VdWgdUW3YWH 5a'a_Tal Ed>S]S 5AD6;A!;G5@
 DWa` S^? Scl VbAYS_ - EagfZ3eS5aabWfhw` hca` WfBAYS_ W5a'a_Tal Ed>S]S

keywords Lad`dW EagfZ3eS UaSeS^la` W_ S SYW Wf Lad`dW-eZW WfW SfhWfhWZaaVe

INTRODUCTION

5`adWfa ZSxaXfZW adVie baadbWbWfhw` EagfZ
 3eS/G@;578 - ES_Scl aa`l fZDS_SUZS Ž
 VdS / fi [WfWf~W babg`Sfa` Ychi fZl [eg UWF
 XaV bdaVgUfa` l S V g` WbWVab_ Wf Se fZW_ Sad
 bdaTW e[fZVWma` žAbWSUWefa fZVWb bahWk
 S VS [UaSe` YWWS VXd~eZk bdaVgUfeZSeWŠ
 SFWbdWgdW` UaSeS^dWgdW/VZ-S_ W -6VŽ
 hčS` H[hMS S VS l - 4ZSfSUZSdS` ESd Sd
 - BWS et alā fZ[eha`g_ WZ8adVJS_bW` ; VJS
 fZW g_ TWaX~eZW W [UaSeS^ h^SYW [UaSeW
 Xa_ fi a_ [^a` fa ej _ [^a` TW WW S V
 /? WWS]g_ Scl fZ? adWfW Ychi [YUa_ WJS^
 €WabWf [Y [WZadW SWefa egbbk VbS V` Y
 Wbad_ Scl WfUSeVZSf [fWfUfa` S VVbclhVaŽ
 US^Ua_ g` [fWax~eZ bdaVgUfeS VSUZSb eagdWax
 `gdf[fa` /SszdW 3dg` SUZSS_l - 4Sh` U l
 - 4ZSfSUZSdS` ESd Sd fZ3Tagf S V
 axfZWafS^~eZ USUZW [; VJS S V Ed>S]S dWVŽ
 fhWk SdWfhw Xa_ Lad`dW Tk e` S^ZS W~eZ
 _ W/I SŠd - DSSegdkS et alā fZ3fZagYZ fZ[e
 [eS lā` eVWSTVcbad[fa` axfZW Sfa` S^~eZ USUZW
 fZWVefSf[e] Ue Va `af SWWgSfW [^gdfWZWSUfS^
 efgSfa` [_ S k Scl e[fZVWma` i ZWVg` VdWeaX
 fZageS VeaXbaadbWbWVWVWVea` Vka` fZVbdaVgUfe
 axLad`dW XadXaV S V fhWZaaV/VZ 4W et alā

l=S`S et alā - EZS fZl [et alā -: aa`l
 - E[YZ` 3` VdWd - I Ziff` YZS_l - BSfZ
 fWfa` et alā fZ[eha`g_ WZ
 6gd` YfZWSef XW WWSW af UaSe`dW [EagfZ
 3eS ZShWVW bdaVgUfa` hWk WWSW Tk WfUfhwVgZ
 _ S [bSuf e gUZ Se UaSe` [[Y T Sef ~eZ] YS V fZW
 geWaxafZW WfUfhw~eZ] Y_ WZaVd ahWVb`afSŽ
 ffa` l [UaSeW eW_ WfSfa` VgVba baad`S VgeVbSŽ
 fUW ba`gfa` l S UadVS_ SYW Xa_ TaSfeS V fagde
 dSfW SUf[hfW/x Z_ S et alā - DSSegdkS et alā
 - 4S]ge et alā - 6 ZScl SdW S_ = [dbS]dSŽ
 - BSfWfa` l - DSSegdkS - DSSegdkS fZ[e
 ha`g_ WZ 4k l S^ af ZS XfZW Lad`dW axEagfZ
 3eS i WWSW WWSW i [fZ fZW dSfW [bSufe
 dWadW a` fZaeW Xl` Y` YfZW Wk babg`SfW
 _ S` S V UaSefe: [dUZAM fZ
 ; SWf[fa` l _ af UaSe`dW S Ue axEagfZ 3eS [Ž
 UgV` YfZaeW dVafVdS ei [fZ XW` aUS`Zg_ S [Ž
 bSufe eg WfV WfW e hWad`^T SUZ] YS VegTawgWf
 _ adS [fk Vgcl` YfZW W W` @ [ra W Wf aX li Z [UZ
 USeW eY [~US f [UaSeW [eS VgdS U W W bWf g dā
 I Z [VZ W W W d W W Twai p _ l Y W W S^k d W h W
 Xa_ T^SUZ] Y TW WW S V axfZW UaSe`e [_
 _ S k eZS^ai Scl ei W [W /DSSegdkS et alā -
 I SŠd -? U S` SZS l - DSSegdkS` = Scl Scl
 S fZ S -LSZ]d fZ;` SWf[fa` l fZWeg` S [fZS

Zlf fZWa Sfe TadWf YfZW3` VS_ S EWS V 4Sk aX
4WS^[` 6 WWTW S'ta UgeW ea_ WWS_ SWfa
fZWadS`dWZ
5adS`dWWTfclfa` ZSe`SW fa WWSW bclVglZ
fla` aXWadeW eelUWi [fZ SWW Wfa` bWZ

fz;` SW[f|a`l fZWAcS^TWSZ| Y Wwf [
USgeWS eY [-US f WM| W| fZWahW|aX|hWAcS^|
_ af SdSe / SXd - 3dZgd - ? g^W et aZ
- DSSgdKl -I [ZV eea`l fz4^WSZ| Y
aXWfW|hVdSei SedMadWWS^ta Vgd` Y [BS|
4Sd fZWg^aX? S` SdS VfZWb` VS_ S ;eS Ve/=gZ
_ SdYgd et aZ fz
HM|SSS_ S / fidWWSWB|^S|/ fitk eSfZ
[YfZSfZW SY [fgWaxWf|a` aXZW Sd WWhZ
da`_ Wf| fZWg^aX? S` Sd_ SkTVg` bdWWWfWz
6 Wf|u|hW-eZ| Y_ WZaVe / UgM| Y TSf -eZ| Yf
` WZadWf| ↑ Y eM_ Wf|a` S V ba^gf|a` SdW
USge| YLa` eWST^WS_ SWfa fZWAcS^dWfZdSW

/? D5l fž 8gdZVW fZWYchi [Y fagde_ S V WŽ
 ZS UW Ybač XSU [fWZSHWYBS WW fZW_ Sd WXid
 dWX-eZVWž WYchgbW dS Uglg_ TW ad S_ WFS^
 -eZ Y[S fUS_ IeZSd S Vfgd^W-eZVWZSHWYBS WW
 db[Vk [fZW^ SV[hWS VeY eaXahWYb^alfSf]a` aX
 ea_ VdWXdaagdUWi WdWdAY [eW [fZWWSk e
 /@SeW - EZS] WW^ 3Z_ Wl - 8W/i W) Y
 fiS V [eS Ychi [YLa` UW /D[e] ~ E'g]Sf -
 ? D5l fž
 ;` fW eaX[hWad^LahW fZWdWaeXfZW^ SV[hW
 SdWahW Ysf hsk [Y dWWSXWfZW_ See T^WUZ] Y



Figure 2 ä fi UÖüzz% 1? eü" äp äezäD Oq Oz Yfää
 Photo:ä&B>>1 '1 äM &'=É

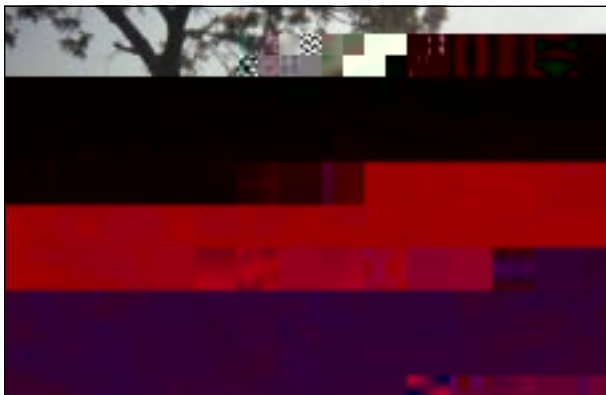


Figure 3 ä O e zqä UÖYä ä Oäü OüÜa Üa O" Oäa
 Photo:ä 1 äH'. &t . 0 >>31É

S V_ adS[fk [hi ZW , aXZVad^Sea` fZW
 eZ^ai dWESfeV[W/LSZ[d fZ[e]ha'g_ Wž@W dWg[fZ
 _ WfZSeTWW` af[UWfS^e^fWž: ai WdWd fgV[W] Vž
 USfVd dS[hW baadegbb'k aXSchSWaXfZWVWge Aro
 paa i Z[UZi Sea` UWZW af STg` VS` fa` fZWdWd
 i Z[VafZVUad^d egUZ Se Pavona Va_ [fWZVSeW Ž
 T^SYW^X W dWg[fe/LSZ[d et aā fZDVg` feegYWf
 fZSf dWahWk aXLaS^La_ g` [fWfa bdW^WUZ] Y Wž
 Wei [^TW^ai adfZSfSUZS WY fZWad^ebWVLa_ Ž
 badf]a` aXfZWdWd [eg` Wž Sk/LSZ[d - LSZ[d
 fZ[e]ha'g_ Wž WdWd dWd SdW^ TWfWLa` V[f]a` ž
 8gdZVW fZWdWd[hWk Z]YZ Uad^LahW dWadW Vgd` Y
 egdMēLā VglfW [fZWVWg dMā [l egYWfe
 fZSf fZW_ aef dWdW_ bSufe aXfZW^WUZ] Y aX
 _ Sk` af ZSHVW Se YWYbZ[US^ki [WdWd S]e [Ž
 f[S^k fZagYZf/LSZ[d Sž Wgē S_ [ZSVS
 ` WY[TWdW [bSf a` ahW^Lad^LahW Tgf dWž
 _ Wf Tg[V gb fZSf _ Sk_ S] WZWg Tgf Wgē eg[fSTW
 XadLad^Ychi fZ Sei W^See^Vi SefVā fZWdWd baeW
 egTēgWf fZdSfe fa dWd^ dWdSdSe/G@7B -
 LSZ[d fZ[e]ha'g_ Wž

Sri Lanka

6 Wf gL[hW-eZ] Y_ WZaVd egUZ Se fZVgeVāXTaffa_ Ž
 dW WēS VT^Sf -eZ] Y La` f] gWfa VS_ SYWad^dW
 [Ed>S] S/× Z_ S` et aā - DSSegdkS et aā -
 BWdS et aā - DSSegdkS fZ[e]ha'g_ Wž 5 ad^_ [Ž
 [Y[eef^bdSf[UW dWg`f] Y] WfWelhWVWUZ Wdēa` l
 WdWd^k Sā` Y fZWagfZŽ WdW S V WfWY Ua Sefž
 7hWfZW Sd` WdWfWWSdSe [Ed>S] SdWg_ S Ž
 SWW S V [Uad^ Y Zg_ S` Suf[hf[W La` f] gWfa Wž
 YdWVZWdLa` V[f]a` /DSSegdkS` = Sg` SdF Sf -
 DSSegdkS - DSSegdkS et aā fZ[e]ha'g_ Wž 6 W] W
 [USUZW aXdW~eZVWZSHWYBS dWadW [dWd^
 SdSe [Ed>S] S/DSSegdkS` = Sg` SdFZ W -
 BWdS et aā - I [ZVW eea` et aā fž 3 eY [-Ž
 US f WdWdW fZW g_ TWaXTgffWk -eZ/5ZSWāŽ
 Va` f[VSW_ S kaX Z[UZSdWgē S^k SēaUSfWi [fZ[hW
 Uad^ ZSeTW aTēhW a` dWd^dW/DSSegdkS`
 = Sg` SdFZ Sf - I [ZVW eea` et aā fž
 G` La` fch^W fagde_ ZSe USgeW La` dWd^WWS_ Ž

SYVaUadS^dWk[Eq>S |Sz8adMS_b^W : [] |SVgi S
@Sf[a^S^BSd] fZWV^SeZTaffa_ TaSfeS VfZVMS Uzade
Tds] fZWadS^d S V^aUS^h[efadfdS_b^WadS^ea` fZW
dWESfe/DSSegdkS fž

? aef aXZVWa_ [S fXd_eaXWWTg[V^ YUadS^e[
_ S kaXZVWZS^ai UadS^ZSI]fSfe/. _ fii VUWVfckW
Vgd YfZVW^SUZ[YWVWf [ž VWSVUadS^dWk
SdWSdWk Va_ [SFW Tk S^SWfg` [USV S V UadS^Z
_ abZSdS e/DSSegdkS ~ =Sg` SdS S - DSSeZ
gdS fž: ai VVW egch]hS^S_ a` YUadS^eYchi [Y[
VWVWf S^W/O _ fii SeYUSVW bch[V^ YSbafWf]S^
eagdWax W dWg]fžDWahWk aXT^SUZW UadS^e[
eZS^ai dWZSI]fSfeZSeTW hsdST^VWV WdfWtgf
Zse[YWWS^TW e'ai /DSSegdkS fžDWWf egZ
hWk[V]USVZSf fZWV^eTWVWdWahWk a` ea_ VbSUZ
dWk;` fZWVsdWk? Sd` WES UfgSd Aarpara cythe

e[TVWdfZW S SWWf aX-eZVWS V dVWSUfhZ
 f[W/6 WScf_ Wf aX8[eZVWS V 3cgSf[UDWagDWf
 [bW[Wf] Y [fVGSW UaSeS^ la` W_ S SYW Wf
 /5aSe 5a` dVsf[a` 6 WScf_ Wff S VUa` dVsf[a` aX
 TlaV[hVfk S V_ S SYW Wf aXbcfWFW SUSE/6 VZ
 bScf_ WfaX [V[VX6a` dVsf[a` fi[Ed>S]Sž WāŽ
 'STacsf[a` TW WW 5AD6;A S V@3D3 [Ed>S]S
 Tg[Ve a` bdmAge USbSufk WmWb_ Wf S V egbbad
 bch[VWTKe[VSE3D75 TW WW S V ž;` SVZ
 Vf[a` l e[UW l 5AD6;A ZSeXg` WWS? žUžfgVk
 [hV[Vsf] YfZWbSf[S^S Vfw bacS^ bSfW eaXUaC^
 dVg[f_ Wf [fZW S V[hW/LSZ[det aā fž WāŽ
 YdWāXWēfa` aXWēX^ai [YfZWVfWēhWāC^_ adŽ
 fS[fk ZSe Sēa TW [hV[VsfW fZdgYZ ~W VbWēZ
 _ Wfe/LSZ[d Tfz W5AD6;A bchYē _ WZSe
 Sēa fd[WēVMS^bVabVsf? D5 [_ WZaVefa Ua` Ž
 VgUfWMS^UaC^dWēgdMēS VSeWē_ WfeaXUdVg[fZ
 _ WfS VWēfa` aXWēZ

8gdZWfZWdfUa_ bchVWēhWēgdMēaXZVWēaX
 fZWf g[fUaC` 5aSe[;` V[Si Wā VgUfWTKegYS` fZl
 6WMSēa` ? Sc[WDWSLZ;` effgfWE6? D;fiSe bScf
 aXfZW5AD6;A BchYē _ WBSfWā l - BSfWē
 ēa` et aā fZ[e ha`g_ Wē dgYZ.fZW` effgf[a` S`USbSŽ
 [fk Tg[V] Yi [fZ]` fZWbchYē _ WE6? D; ZSe WfSTŽ
 [eZWS dWSLZ Yagb Wg[bbWXd dVMSFW_ a` [facŽ
 [YaXUaC^dMS^a YfZWf g[fUaC` 5aSe/BSfWā` et
 aā fZ[e ha`g_ WēEMMS^aXfZWbchWfeUdW agf Tk
 E6? D; bch[Vf gWfēi [fBZ6 žWVW5AD6;A
 XgdZW egbbadW E6? D; [fZWbchYē[a` aXbchŽ
 UWW` Yēaxi a UaSeS^_ S SWWf i ad eZabd S VfZW
 bchVgUf[a` aXA *field guide to stony coral (Scleractinia) of
 Tuticorin in Gulf of Mannar, Southeast Coast of India*
 /BSfWā` et aā fiXdV[fdTg[a` S_ a` YdWēSLZ
 WēWVW YfZWW aXUaC^dWdW

~ FS_ W\$ WfZ|eha^g_ WZ WSSaTfS|` WS VfZW
WfZge|Se_ YWWSfWS_ a` YUa_ _ g` |fk_ WTWfVgdZ
|` YS b|^af bcaWf |` |f|SfW Tk fZW9 ^aTS^ 5ad^ DWX
? a` |fad` Y@Wf ad /95D? @fi|` dWg^fW|` fZW
bWfWgS|a` S V WbS` e|a` aXfZ|e_ a` |fad` Y bcaZ
Yd_ _ W| |ebcaYd_ _ W\$ X|U|fSfWZWWWab_ Wf
S V | bWWSf|a` aXxfgdW_ S SYWf S|f|a` d
fZdgYZfZWWSf|a` aXSSS V| Xad S|f|a` S VfZW
egUWg^|` ha^hW Wf aXZWTaSWUa_ _ g` |fkZ
8gdZW adM5AD6;A ZSeUaZg` WWea_ V95D? @
|` |f|S|f|hW egUZ Se b|^af eaUaZMa` a_ |UegdW|` |` Ed
>S |S|` /Tk@3D3f|S VSfd|` |` YUgdWa` eaUaZ
Wa` a_ |U_ a` |fad` Y XadUad^ dW|` |` fZW3` VS_ S
S V@|UaTsd;eS Vd;` V|S|`]` °` S

. !|° ° “
f ! 5



Figure 5. ä GzÜ- çgñ- ÄñYae äGz ©ÄCaeñ©ñ zñae aññÜe rä
 '2q©Photo:ä-t.O='É

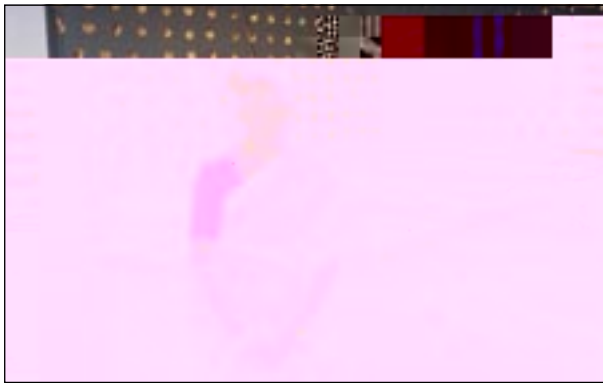


Figure 6. ä fiÜ) äCae² ç" äe² " Yae äGz ©ÄCaeñ©ñ zñae aññÜe rä²q©Photo:ä 1äH'. &t .O>>31É

6gd`Y S V IE6? D; lä`VgUFSedWwX
 Si SdWwec[e] YbdaYcS_ Wa`fZW badS UwaXgeŽ
 fs[`Y dWwbdVgUfhfk[`S`g_ TWaXh`SYW/Sa`Y
 fZWFgf[Üad` 5aSež 8[eZW a_ W adS [eW[`IEWX
 : Wb 9dgbel i Za bSkShfs^eaUS^da`W` fZWwä_ Ž
 _g` [f[WÜä` e[fgfWfZW S[fSMMYcgbzEgchMe[Ž
 hñ[YSf[YfZWWdWwXSi SdWwä aXÜad` dWwSfW
 [egWÜä` VgUfw[`fZWh`SYW/TWadS`V SXWfZW
 US_bS[Y eZai W S egTeS f[S[`ÜdSäW`]` ai`WwW
 S_ a`YfZWÜä_ _g` [fk_ W/TWä/BSfWä` et aŽ fZ[e

ha`g_ Wž? adäñWÜad` _ [`Y Suf[hf[Wsf HWSbSff
 S VTSf~eZ[YSf [dWbgS_ ZShWwSäWÜä_bWwK
 SeS[VdWf dAg`faXZ[eS VWSd[WwGUSf[a` US_bS[Y ež
 3`eal [`SghS]]SS_ I fZW~eZW a_ W SdW ai
 efdä`Ykabbae[YÜad` _ [`Y/BSfWä` et aŽ fZ[eħŽ
 g_ Wž

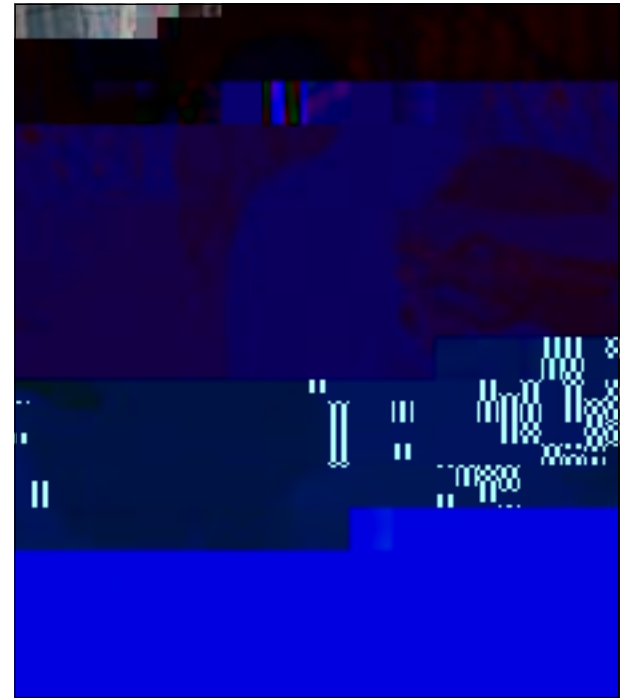


Figure 7. ä \$YozÜ- O` äe` äGz ©ÄCaeñ©ñ zñae aññÜe rä` a OYadñ;
 ÄñqYñPhoto:ä 1äH'. &t .O>>31É

3fDMSi S[` eagfZW Ed>S]SÜad` _ [`Y[eWž
 fWe[hMS V_ S` YchWsdVZShWfWXd-dWaaVXdZw
 bbdVgUfa` aX[Wwä_fZW [WÜad`ež;` S SffWbf
 fa dVgUWZwWZ[VZk WwGuf[hWSU[hf[W fZWfgf`W
 5a` eWsf[a` BbdWf /F5BfiadS [eW~hW ad eZabe
 Vgd` Y fa WgUSfVS Vd[eVS SdWwä aX[egW SŽ
 XW[YÜad` dWwS` VSeeUSfW WäkefW_e_ a` YfZW
 Üä_ _g` [fk_ W/TWäaDMSi Sž
 ;` 4Sff[USaSI Ed>S]S 5AD6;A See[efW[fZWadŽ
 YS [eSf[a` aXS eW[`Sda` Wh[da` _ WfS[[egWZw

fZVaaV egbb'k S V |' Lā_ W'Xd_ S k bWb'W' W'Z
XdW5AD6;A eW'Ve fa _ S] W'āSefS^ Lā_ _ g' [f[W]'
eW'WfW b[af SdSe 'W'W'WWS f a` fZV'āS^ dW'W'Z
eagDU'W'k bch[V] Yabbadg' [f[W'Xd]' Lā_ W'W'W'Z
US[fa` S V S'fW' S[hW]h'W'ZaaVež [eS'ta dW'gU'fZV
bd'ēgdV' dW'Z

;` adW'fa abf_ [eW'ZV'gfbgfeaX5AD6;A bdaW'fd
S VafZV'W'adeSfS' S'W'W'US'W'Z'W'agfZ3eS 5ažbž
W'f[hW' h'ca` _ W'fBdY'G_ W'E357BfZSedM'W'W
bSef bdaW'f S VbS` W'W'adefa W'ST[eZ S'fW' S[hW
'h'W'ZaaVe] Ed>S]SS VafZV'W'bS'feaXZV'W'adVž [e
d'ēgdU'W'g[V'W'fSdW' Yba'Uk_ S] W'ES VY'ag' V'W'W
_ S SY'W'ZSeS S'kaW'fZV'W'ā` e'W'd WS Vbd'W'feS
e'W'X'U'ā_ W'W'f[a` e'Xd'g'gdW' [f[S'hW]' bda_ afZ
[YSW[f'fa` S]' Lā_ W'W'W'f' YSU[h'f[W'W'W'W'W
fž
;fZse[Lābad'fW'fZV' V' Ye aX'hdage[e'f'f'g[a` d
eg'Z Se fZV'3e[S` 6 W'W'ab_ W'f 4S]I g' [h'W'f[W'S V
YahW' _ W'fS^ W'W'f_ W'fd Se i W'Se [V[h'VgS'e i [fZ
V'bW'W'U'W' fZ[e~W'Z? ad'ahW'fZV'W'Ve d'abW'āS'd'Z
Y'a` S' LāžabW'f[a` a` fZV'W'eg'W'fZ'ch'gYZ fZV' f'W'Z
YahW' _ W'fS^ _ S V S'W'ā'E357Bz W'U'ā_ W'W'f[a` e
aX'Z[e'd'W'W' S'W'ag'f' W' [B'W'W'W' et až/fZ[e'ha`g_ W'Z

;` Fgf[Lād` l d'W'W'W' h[^SYW'ā_ _ g' [f[W'fS'd'V'ā'W'k
W'W'W'W'f a` ~eZ d'ēgdU'W'ā'fS] W'X'ā_ fZV'āS^ d'W'Z
S'W'ā'ea fZV'āSef/EZS fZ[[et až fž5chi W'W~eZ
[Y'Y'ag' Vd [U'āS'f' Y'W'W'S V'Xd~eZV'W'bd'āV'g'U'fd
S V'W'W' [Y'US'fZV'W'ā_ bW~eZV' W'fa g'eV' ad'W'Z
X'W'f'h'W'S V'W'f'g'U'f[h'W~eZ[Y_ W'ZaVe/6 W'W'S] ES_ g'W
et až fž 8gdZV' W'āS^ _ [[Y'S V T'Sef ~eZ[Y
i Z[UZ ZSe S'd'W'k W'f'cakW S d'Y [-US f bad'fa` aX
_ S k d'W'W' e['^ aU'g'de W'W'f[W] U'āS'W 'Si W'āS'd'Z
_ W'f/6 W'W'S] ES_ g'W'et až -B'f'f'W'ā` l fž W
Fgf[Lād` 5aSef [e a` W'fS'W'fZSf eZag'V T'W'W'h'W Z'Y'Z
bd'ad'fk X'd_ S SY'W'W'f [f'W'W'f[a` e'bd'ah[V] Y S'f'W'Z
'S[h'W'f'W " ° X'd † d

]W' YS' VēSVāXZVbāVgUfeS_ a` Y'aLS^Xd WēFaž
 VŠH Zg' VdWeaX-eZVā' | fZVēdS' SdV_ S|' YLā` Ž
 qVāST'VW' S UŠ^YS' eXh_ fZVāVŠU|hf|Vē
 3'eal | I YdgbeaX-eZVā_ a_ Wi W'VēS' W|
 UēST XffW| Yi ZVāVāVW'k_ ag'fW UēSTeSdW_ S|` Ž
 fS| W|' fS | eg` f|'fZVēZVZSdWeTVādVāM' YfZV
 Sf_ Sd| W'adZ|YVābdUW/BsfVā` etā|fZ|eha'g_ Vē
 VbāWfZSeSffSfWsfWf|a` Xh_ 'aLS'SgfZad|fW
 S V fZV6 [fd|f 3V_ | [fdS|a` bch|VW X'g' Ve XdfZV
 Lā` fcd|f|a` aXSēZWi |fZ fS | eXidUēST XffW| YZFaž
 VŠH Sdg` V i a_ W|' HWSbSff| SdWWSYW|' fZ|e
 Sff|hf|k | fZ Lā` f|` gagefWē [US'egbbad bch|VW Tk
 E6? D; fZdgYZ fZV5AD6; A BāYēS_ ž3 fcd` Y|` Ž
 fVāV|' VbS' V|' YfZ|ebdāWf | fZ|' fZVēgf|Uād` dāž
 Y|a` S' VVāVfS'k fZdgYZagf fZVēg'XaX? S` SdZSe
 TWēZai` Xh_ afZVh|'SYāSei W'SeXh_ YahV|` Ž
 _ WIS'S V|' fW' S|a` S'SYWU|Vē Vbāh|e|a` aXēgbž
 b'W WfSk |' Uā_ Wfa UāSēS'babg'Sf|a` efZdgYZ Vē
 hVāb_ Wf aXUēST XffW|' YZSeTW WlāgdSYW Tk fZV
 4SkaX4WS' BāYēS_ W4A 4Bā VgVā fZVēSf fgd Ž
 ahVēSfW'ai` abVēS|' YLāēf S' V dVST'V_ Sd| W'Vē
 _ S' V XdfZVWVbāVgUfe/BēS_ S |' ~ @S V|' fē
 8gdZVā Sf HWSbSff|' SdVēgS f|f|W aXYēfcbāVē
 SdVēS' VVSeTkZSfZ Xh_ fZVēST -eZVā Tgf fZV Wf
 Xh_ fZVēSfcbāVēi Se` af geW VgVā 'SU aX|' ai` Ž
 WVāX|fe` gfd|f|a` S' hS'gV' gd i a_ W|' HWSbž
 Sff|i W'VēS' W TkE6? D; |' bchUāē| YfZVēfcbāVē
 XidLā` eg_ b|a` S' VfaVsk |f|ebSd aXZVW|W|' fZV|' Ž
 'SYā@W|Tk|'SYāēSdWai Se|' YXēdē|' |Sd|fS|' |' Yž
 WēSfcbāVē Lāg' V'Sēa TVāLS'k_ Sd| WWSfZagYZ
 SW|f|a` S' egbbad XidS|U|'f|Vā 'āY|ef|UēS' Vbā_ af|a`
 i ag'VfZWTWVWV/BsfVā` etā|fZ|eha'g_ Vē W
 Sff|hf|VāXē6? D; ZShVā` fdTgfWfaS_ adWVUWf
 gf|'l|Sf|a` aX_ Sd| VāVāgdUW'S V fa ēa_ WVWf dāž
 VgUWbahWf|' h|'SYāXZVēgf|Uād` 5aSež
 3fDVāS| S|' eafZVā Ed>S |S| UādS^ _ |' |' Y|eVž
 fVēh|WVāS| -F5B fē>SdVēSēaXZVāVā
 ZSHVWfgd W|' fa b'SVēgeaXZ|X|' YēW|_ WfēS' V|
 Se S Lā` ēVgWUW TVēZ Vāē|a` |' fZVēSdV|e ēVWV
 5adS^ _ |' |' Y|e Se fV|badSd|k UgdS|'W |' _ |Vž e
 fZdgYZ |' UāSēW 'S| W'adUW Wf|i Z|UZ dāg'fW |'

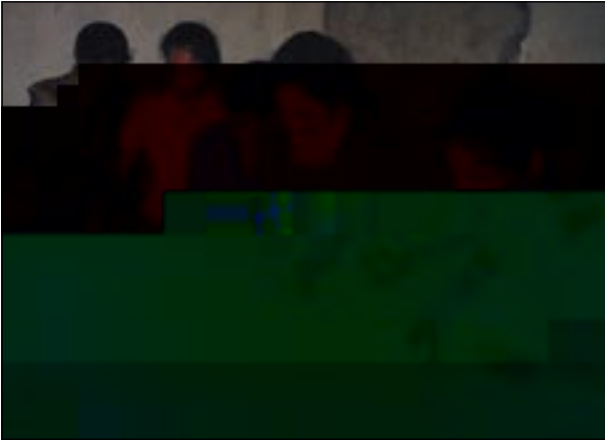


Figure 8. a fi'Uāē- ēzUāzgz ēzāēē' ēē ā Cē āU|qi gi
 ā|'ēāē-z'' Cō Oā Uā O'' Cēā
 Photo: ā 1ā'. &|. 0 >> 31 ē

fZVāēē aX|' Uā_ W'adS` g_ TW' aXbāb'WāXi Z|UZ
 S|agf i W'Vā a_ Wž 6gWfa 'SU aXS'fW Sff|hVā
 _ S k UādS^ _ |' Wēfgd W fZVēSffWf|a` fa S' afZVā|' Ž
 'VēS'bdSf|UābāSUZ|' YēVfgd'WVē/F5B fē8gōž
 fZVā fZVbā-fST'WādS^ _ |' |' Ydāg_ Wcg|U' k a' UW
 TVēZ bSfcd' Y Tk fZVābā|UWVWV S V |e UgdWf'k
 Lā` f|' g|' Ya` S' SdVēS'V
 6gd' Y ! I fZVēgf'W5a` ēVēSf|a` BāWf|
 i |fZ egbbad Xh_ 5AD6; A| fcd| W i a_ Wi Za
 i W'VWWSYW|' UādS^ _ |' |' Yfa_ S| Wā|d_ Sfd TS|] e
 S' Vi aaVUēh|' Yē|' S' SffW|bf fa bch|WVZV i |fZ
 S' S'fW Sff|hVā|hVZaaVi |fZ|' fZVāgdē ēVācd' 3XV
 S ēVW aXfcd|' |' Y i adēZabd S Y|X ZageV| Se Lā` Ž
 fcd|fWā` fZVTVēZ TkF5Bē W a_ W dVWVēēēēž
 S UW|' ēV|' Y fZVbāVgUfe |' Uā` g' Uf|a` i |fZ fZV
 fgd'Vē S|UZ|' Yfagde_ fZSf |eLā` Vg|fW TkF5Bē F5B
 S'ēa bā_ afVēfZVāgf'W Sf ZafVē|' fZVēSdSē |e|eS
 ~cd' ēVā aXS' a` YZVā Wad TkF5B fa |' hā'VWādS^
 _ |' Wē|' fZVā_ g' |fkZTSāW fagde_ |' Vgēck Sf
 DVāS| Sž; f |e` af VbWVW fZSf S' fZVēSd|' Wi a_ W
 i |' hVfgdV|' fa fZVW aUgbSf|a` Xg' f|' Vē|' UWādS^
 _ |' |' Y|eēf|' adVbā-fST'Vē ai W'Vāi ZV fZVāgdēž
 |e_ |' Vgēck|' fZVēSdSēSeTW XgdZVāVāVābVā fZVāV
 |eLābVāēē|' X S' S' SdVēS'VWā_ _ |' |' Y|' fa fagōž

SUWA SFW S[HW] U_ Vgd W WZ6 Zsd SWZ S_

- 4chi`14z7a~ 6g:`WDzB/ fiz WWhda`_WIS^_Z
 bSfeaxLad^_ [`Ya` Uad^dWk^ fZV SV|hWz *Environmental Conservation* / fi , ž
- 5Wd: žESWV1? žI SZWM3ž` I [ZV eea`16ž/ fi
Assessing the impacts of the 1998 coral bleaching on tourism in the Maldives and Sri Lanka/g` bgT[eZWZDwad`bdWsdWxid
 fZV6AD6;A BchYd_1EfaU`Za^_1Ei WWž
- 5ZS`Vd_aZS`1B13`S`V@ž? ž` @S[S]14zGž/ fi
 zEZad^ Wk`S_ [UeaXZVWS] eZSMi Ww;eS`Vdž *Indian Journal of Marine Sciences* , , ž
- 5a``W-ž: ž/ fiz6 [egdlS`UVS`VdWahWkaXlad^SeW]ž
 T`SWz *Coral Reefs* , ž ž
- 6S eae`ZEWZWM3žDžI Sd [U]1Dž? ž5`Sd W=žDž`
 4chi`14z7a/ fiz3`S`SkeleaX-eZUa`_g` [fk dWba`eW
 faUad^_ [`Y[fZV SV|hWz *Environmental Biology of Fishes* , , ž
- 6W[S] ES_gW1H`BSffWa`1-ž` BSffWa` 7Vi SdVd`ž=ž
 / fiz6 WfcbU[hW-eZ] Y[dW[S`V`S`YchVdSeafg]ž
 Uad` UaSaS`i S[Wz *Proceedings of the National Seminar on Marine and Coastal Ecosystems Coral and Mangrove Problems and Management Stra- yof*

D[e]l? ž-ā~ E'g]S Dā/ fiz W SV[hW3`Sf]a` aX
3fa^ēš;`? U5`S SZS IFzDā EZMScM 5žDž5ā~ A TgēS
6žAā/WēfiCoral Reefs of the Indian Ocean; their ecology and
conservation Ž ž
Dai S lDā/ fiz5 adS^T\WUZ]` Y, Wl S^SVsbSf]a` [dW
UadS^ek_ T]a` fēš Nature , ž
ES_ Sc]aa` l-ā/ fiz eegWax[hWZaaV egef]` SPVWwWibž
_ Wf]S VYahW S U,W4Skax4WWSž Ambio /, fi , ž
ES]fZ[hW? ā/ fiz FcdSVkfa` UēšW]bad aX-eZS V
~ēZkbaVgfeXh_ Wx Šž

E>E35l fS VfZSf [fi SeV] Ugf fa dWY [lWS_ Ž
SYWfa afZVdWZSI[fsf kbWegLZSeeS` Vefa` VŠ VchU
dWefZSf Vā` af egbaaf e[WfVWSY[VWādS`Lā _ g` [Ž
f[Vž [e dWād [eTSeW a` dWg`feaXbdWS Vbaef fegŽ
`S_ [dW_ a` [faq` Y a` eZS^ai UādS^ dWZSI[fsfe
i ZWWS_ SYWfa dWefgUgdas VfZVWg`f] Y^aeaX
[hWādS`eUS` TWY [lWS VcgS f[~WSe[kž
EZS^ai UādS^ dWZSI[fsfe i WgegchMW S'a` YfZW
`adZi Wf fZVagfZS VfZWef UaSfeaxEd>S`]S/~YŽ
gdWfz6 SSWd[T]` YfZVahWax[hWādS`S VfZVdW

efgU[hW-eZ] YS V g` Lā` fca^W dWgdWZShaf` Y
ZSe[` USeWdb[Vk- WWi [fZ]` _ Sc[` VbaafWWSdSē
/DSSegdkS et a[ž fž? aef dWZSI[fsfe dV[S]` Wž
YdSW S` V ZW[k Yb^a[fW /DSSegdkS et a[ž fi
Wbqadfa fZVeg` S_ [[6 WWTW ž WfegŽ
`S_ [USgeWXdZWS_ SYWfa_ S` kUādS^dW@3D3l
5AD6;A!;G5@!95D? @! E>E35l - ;G5@Ž
5AD6;A! fž BdW [Sck aTeWsf[a` e [VUSFW
fZSf [fi SefZVZS^ai UādS^ZSI[fsfefZSf eg WVVWVWŽ
e[hWVS_ SYW/@3D3l 5AD6;A!;G5@!95D? @!

CgS[IS]hWMSaW_ Wefa Ww [WZW_ bSf

ž afZVh i Z[Uzi Ww S' kXh[Vefi~YgdWfz W
 feq` S_ [ZSV USgeW VS_ SWfa ea_ WáXfZMtd' UZ' Y
 AarparaTk éi Ww] YSi SkbSfeaXfZVWMS VVg_ bŽ
 [YUadS^gTTPVá` [hWáds^SdSž;` S` gSk I fZW
 ZSd/UadS^UahWfi Se ž i Z[ef fZWWS/UadS^ZSV[Ž
 UáSW Xh_ ž / fifa ž / fž Wáds^
 gTTPWZSV [UáSW Xh_ ž / fi fa ž
 / fž? gUZaXfZWHalimechZSVSeTWWéi WfSi Sk
 S V S'S^ UahWZSV Ww] W Xh_ ž / fi fa
 ž / fž 6gWfa 'æe aX[hWáds^d fZWSdS aX
 eg[fsT'WZSI[fsf XiddW~eZ egUZ Se VS_ eW eZ/Ba_ ŠZ
 UWfdVMS' V TgfWek ~eZ /5ZSWáVa f[VSWfZSe WŽ
 U] Wž

Unawatuna

VZS^ai UadS^dWZSI[fsfSfG` Si Sfg` Si SeeWwWk
 VS_ SYWVgd` YfZW T'VUZ[YWwf S V dWahWk
 ZSe TWW ^ai /DSSegd[ksI fž 4k I ZSd/UadS^
 UahWZSV dSfZW ž /~YgdWfiS V fZWa_ [S f
 bWVai WWPoillpara eydaxiS V Poillpara venucosž
 : ai Ww] 'SchMS_ ag` fe aXWfV UadS^ / ž fii Ww
 bdaWfž WWS/UadS^i SefZVdAgf aXfZW T'VUZŽ
 [YZai Ww] [fZSV` afkWtda] Wvai ` [fa UadS^gTŽ

Figure 3. ä fi [- ÁOUY [2 a [%noz ag [öz U [%noz ä - [YáaD] i 2 qO2 ää
 Ýi] YáDzeäeAz YáZg [Uqz qá UááD2 qáA [Yááá 2 O- @
 Oá& ¢ " Cqi ö Cál Oá [2 Oá OÚ É

iil1 sq t r° c š o y
,r 449q e ly Fctat

fZVdWUdF i WWS'ea VS_ SWW Tk fZV_ ahW Wf aX
'SdV_ ag' feaXLaS'gTT'VahWfZVdWUdFz

Talawila

WSS [SUad'Wki ZIUZ[e'aUSWStagf]_ eafZ
aXZVMSdDWX? Sd' WES UfgSdi Se[dW[hWk YaaV
Ua` V[fia` [ž WZS^ai dWZST[fsf [eStagf
_ Xa_ fZVZadWfZSVS [hVZSdUad^LahWlaX ž
/~YgdWfi i ZIUZi SeVa_ [SWTkeWWS^YWWS aXZV
X_ [k 8Sh[VSW/Favia, Favites Montastrea, Leptaria,
Platy o
m' n
veh

;eS V[SbWSe fa TWZVWg f aXW YTk fZW
 Uhi `ZaZ ad e eS eZ / *Acanthaster planci* S faS^ aX
 [VhVgSei WwWadW[S SdS aXSTagf _
 [fZWfgVksdZ

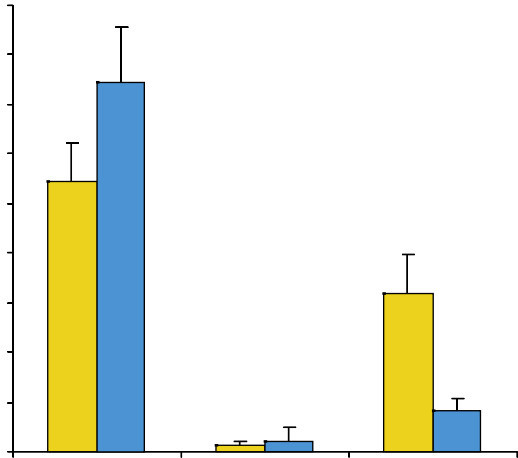


Figure 8. ä fi [- ÄOU Y [2 a [äoz ä [öz U [äoz ä - [YaD] i 2 qO 2 ä
 Yi J YaD ä ä Az YaZ g [U z q ä ä c z [2 ä Y 2 q ä l Q
 ä [2 O ä U rä l 2 ä z ä U ä 2 q ä [Ya ä i 2 O - €

Figure 9. ä fi [- ÄOU Y [2 a [äoz ä [öz U [äoz ä - [YaD] i 2 qO 2 ä
 Yi J YaD ä ä Az YaZ g [U z q ä ä ä fi [U ä Y 2 q ä ä
 1 2 ä z ä U ä 2 q ä [Ya ä i 2 O - €



Figure 10 ä | =ä - zäxi 2 O- äqO- O' z ääq | | UÖä O'ä/z z 2 äDä UÖ" i O- nüz O'ä U' ä- Uä O' " Oö oz U' äU z ä Porites äq | - z Yä
 öö z ä z z 2 ä z Ä | | Y Ö e q ä | 2 ä O' q ä Ä ä q | O' ä O' g z ä | | ä | | i ä 1/2 p- ä | | - ä z ä r o | U' ä z ä f ä Photo: ä = , 1 ä- , > B = J É

TdS UZ| YS V fStg'SfWäqpara äbbzFa fZW adZ aX
 fZWX| Y| YdWfZWW SeS SdS aXSTagf _ fZSf
 ZSV'SdWParitesVa_ W/DSSegdKS et ä | f z 3 egdW
 Lâ VgUFW| ? Sk dMSWfZSf fZMäqpara TS | e
 SfBg` S| gVSZSVW\Sh| YhMk |ff'W|h| YLäd'S V
 _ gUZ aXZWWWdWgUWfa dgTT'W |fZ_ S kLäd'S Lâ aZ
 ` |WahMgd Wz3'fZagYZ fZWeg` S_ [ZSVSeMWW_ Z
 bSuf a` fZleX| Y| YdWk |fi SeWfWf Xa_ fZVbdäZ
 WUWäXg` VefgdTW WSV Läd'S TS | e fZSf 'SdWZSVW
 Läd'S_ adS |fkZSV aUgdW bQadfa fZWeg` S_ |z
 ;G5@ZAD6;A / fidWadW fZSf fZWeg` S_ |
 ZSV e|XW 'SdMS_ ag` feaXLäd'S dgTT'W' BSe| gVSZ
 4SkS VfZSf fZWW Se_ W|g_ fa Z|YZMWS_ SYWä
 | eZadW Läd'S ZS|fSfeSf = S` g` S|f = S| gVSZ S VESZ
 |fZ|hg | fZVMSf |US'aS6 |fd|fz3 egdW Tk @3D3 |
 ? Sk dMSWfZSf fZW_ äf VfdV Wfeg` S_ |VS_ SW

fa Läd'S ei SeSf = [dS] g'S_ l STagf | _ ägfZ aX4SfZ
 f|US'aSi ZMWSdWParitesVa_ WZShMWWWädfWa`
 fZVä dWZadVSTagf _ Xa_ fZVZadW W-YgdW f z
 ;` fZVägfZ Lâ e|WST'WS_ SYW SeäWSFFS YS^W
 i ZMfZWWf|dV|SU dMSdS ZSeTW Wä hMWTk Lâ S
 dgTT'W 3fDMSi S|STagf | _ Wf aXFS YS^WfZWW
 i Se_ | WXd_ S k kMS S VfZWeg` S_ [ZSeV|eäVW
 _ S k Läd'S PaU|e S'dWk VS_ SW VgWfa _ | | Yz
 ? gUZ VS_ SWZSeTW USgeW fa S bSfUZ aXMontipara
 aequituberculata UaeWä eZadW WfW Se |ff'W|hW Läd'S
 fa TWMS_ SW Sf = gVSi WSi i Wf aXFS YS^W'SdW
 S_ ag` feaXLäd'S dgTT'WZShMWW dMefdTgfW Sf fZ|e
 'äUS|a` z W_ bSufeäXZWeg` S_ |Sf BaZWS Wf aX
 I WYS_ Si Wf | |Sdfa = gVSi WSEMM'S afZWle S^
 X| Y| YdWk | fZVägfZ eZai W'ai fa_ W|g_ WfW
 VS_ SWWä fZWeg` S_ |z

CORAL BLEACHING

>ai fa _ W|g_ ^WUacS^T^WUZ|`Y|` eZS^ai UacS^
dWki SeaTefWWSf_ S k^aUf|a`eXa_ ? SdZfa? Sk
ž _ W_ S|` efW| WMSdDWK: []|Svgi S| 6gfUZ
4Sk B|Yw ;eS M 5acS^;eS M Bg` `S|gVSI =SfS |gŽ
V|S V=S^_ g` S|ž W|W|bWf|gdW|W|W|Sf|Z|W|f|W|
Vgd` Y`SfW? SdZ g` f|^? Sk i SeTW| WW »5
S V »5ž3 fW|bWf|gdW|Sg|W| eS^W|T|k|Z|W|A|U|S| aŽ
Y|S|Z|U6|h|e|a` aXZV@S|a` S^3cgS|UDW|gdU|W|D|W|



Table 2.ä / i ä Uä S y o ä Å z g e Y ä z g i l u z q ä e e ä z e ä D Y z g ä

| Butterfly Fish Species | Bar Reef | Talawila | Hikkaduwa NP | Kapparatota | Coral Island | Pigeon Island | Dutch Bay |
|------------------------------|----------|----------|--------------|-------------|--------------|---------------|-----------|
| <i>Chaetodon auriga</i> | „ ä | „ ä | l ä | l ä | l ä | l ä | l |
| <i>Chaetodon citrinellus</i> | „ ä | „ ä | l ä | „ ä | l ä | „ ä | „ |
| <i>Chaetodon collare</i> | l | | | | | | |

Figure 11.ä & Oü q i l O ä g i l ö z l ä O z ä i -] z l i l q i ä U ä S y o ä q ä g i l O e i l i Y ä i ä U ä S y o ä z g i l u z q ä e e ä z e ä D Y z g ä

Figure 12 a fi 1000 1000 i Ya i ae Ua S y o o z U z a i 2 q O a D a c z 1 2 a Y O q a i O a 1 2 O a O u r z O y a U a U a O 2 O a a
 Photo: ä =, 1 ä = , >B='J Ê

AXfZW ebWw aXTgffWek ~eZ dWadWw a`k
 /*Chaetodon melanotus* *C. meyeri*, *C. octofasciatus* *C.*
plebeius *C. trifasciatus* S V *C. trifasciatus* fi S d W a` e V W W
 a T Y S F W a d S` h a d W i Z i f f Z W a f Z W i e b W W X W a`
 S H S Q W k a X i h W F W S W i U g V i Y d W S U f i S` b a k b e
 /3`W - : S d W Z h i h W f z W Z i Y Z W f
 S T g` V S U W a X T g f f W e k ~ e Z d W a d W W S f B i Y a` ; e S V
 S V 5 a d S` ; e S V i` 3 b d` i S e V g W f a S d W g f Z`
 _ W f b g` e W a X a T Y S F W a d S` h a d W W W / *Chaetodon*
trifasciatus *C. trifasciatus* *C. meyeri* and *C. plebeius* a X
 i Z i U Z f Z W _ a e f S T g` V S f i S e *Chaetodon trifasciatus*
 / ~ Y g d W f z V S H S Y W g` T W a X` V h i V g S e b W i _
 S f B i Y a` ; e S V S V 5 a d S` ; e S V i S e S V d a b W Z`
 f i h W z`

DISCUSSION

Feg` S_ [VS_ S Y W f a U a d S` d W e h S d W X h _ ` a h e T` W
 VS_ S Y W` f Z W a d Z i W f a V f d W W S_ S W S f i a` a U Z`
 f i a` e i` f Z W S e f z ; f i S e W i W W f f Z S f f Z W e f g U g d` U a` Z`
 b` V m f k a X f Z W d W S V f Z W e S T W U a` ~ Y g d S f a` i` f Z W
 e g d a g` V i` Y S d S Z S e V d W W f Z W f e g` S_ [i` i` e Z a d W S Z`
 f W e Z` W S_ S Y W a d W e i S e b S U Z k W W i [f Z i` S e i` Y W
 d W e W a e f V W W e h W S_ S Y W S e e W i` d W W W i a` e
 i Z W W S Y i W a d S` e X a` a e W *Montipora* S V T d S U Z i` Y
Aacropora f i W W b a e W f a f Z W a b W e S e g U Z S e i` 6 g f U Z
 4 S k S f F d` U a` S W W Z W S T a g f a` W Z i d V a X Z W W W S e
 i [b W a g f z`
 3 f = [d S` i g` S_ i` f Z W S f f i U S` a S 6 [e d i f i` S d W P a i t e s
 V a` W Z S H W T W W V g` b W a` f Z W a d W a d W i` V i S f i` Y

baeWaxWS/XY/WadSe/WZTcS UZ] Y fStg'SVc V
Xa[aeWad_ efiS VUad^gTT^VE] ['Sd] bSfei WVAZ
badW Xa_ 4W|WSXWS dMWT^SUZ]` Y VWF
S VS Zgd[US WZSf USgeW VFWehWWS_ SYWa XY/W
UadSe/Aacpara cervicamisS V Agricia tenuifoliafiS V
fa ea_ W_ ScahWadSe/? U8|WM fiz EgUZ XY/W
egTefSW/SdWg` afSTWS V US TWWS_ SYW Wk Tk
efad_ Tk— ° T [W efad_ efad

fa TWa`e`T`W`dfZ`V`h`S`^`ai` U`a` V`f`f`a` a`X`e`a`g`Z`Z`
W` U`a`S`e`S`^`d`W`e`z` : [Y`e`M`_` W`f`S`f`a` `Z`e`T`W`] `ai` `fa`
S`h`e`W`K`S` W` U`a`S`^`d`W`e`z` [f`_` W`f`/: a`V`e`a`l` -I` [f`Z`
f`W`T`W`~` : g` f`W` - 4`S`I`U`a`U` ~` E`_` [f`Z` fi`S` V`
` S`k`S`e`a` U`a` f`d`T`g`f`W`a` [U`a`S`e`S`^`S`^`Y`c`h`i` f`Z`i` e`` a`f`Z`W`Z`
[` Y`S` V`T`g`d`S`^`a`X`U`a`S`^`e`@`g`Y`e`W` Da`T`W`f`d` f`z` W`W`
U`a` V`f`f`a` e`Z`S`h`M`T`W`a`T`e`d`h`W`S`^`a` Y`f`Z`W`W`f`d`V`a`g`f`Z`W`
U`a`S`f` W`W`S`^`k` [` : []` |` S`V`g`i` S`@`S`f`a` `S`^`B`S`d`l` =`S`b`S`e`Z`
f`a`f`S`I` W`Y`S`_` S`f`D`g`_` S`e`S`^`S`e`S` U`f`g`S`k`S` V`B`a`Z`W`S`Z`

W`a`h`h`k` a`X`U`a`S`^`d`W`e`z` S`X`W`f`Z`W` T`^`S`U`Z`i` Y`
W`W`f` Z`e`T`W` h`S`d`S`T`W`D`S`S`e`g`d`k`S` fi` f`Z`V`Z`|`Y`Z`W`f`
U`a`S`^`L`a`h`W`i` d`W`f`f`a` fa` d`W`S`d`S`i` S`e`S`f` B`|`Y`W` ;e`S` V`
S` V`5`a`d`^` ;e`S` V`i` Z`W`W`f`a`f`Z` d`W`e`i` W`|`W`a`_` [` S`f`W`T`k`
T`d`S` U`Z`i` Y` *Aarqara* e`b`W`|`W`e`E`a`_` W`a`X`f`Z`W`e`Z`S`^`ai` U`a`S`^`
b`S`f`U`Z`W`S`f` 4`S`d`D`W`Z`S`h`W`Z`ai` ` Y`a`a`V` d`W`a`h`h`k`i` [f`Z`S`
S`T`g` V`S` U`W`a`X`*Aarqara cytherea* S` V` *Podillpara dani-*
cornis i` Z`|`W`a`f`Z`W`f`S`f`U`Z`W` d`W`S`i` [` b`a`a`d` U`a` V`f`f`a` `z`
B`S`f`U`Z`k` d`W`a`h`h`k` a`X`T`d`S` U`Z`i` Y` *Aarqara* e`b`b`z`i` S`e`e`W`S`f`
=`S`b`S`e`S`f`a`f`S`I` W`Y`S`_` S`Z`D`W`W`d`W`a`h`h`k`i` S`e`^`ai` S`f`_` a`e`f`
a`f`Z`W`e`f`W`i` f`Z`W`e`a`g`f`Z`i` S`f`Z`a`g`Y`Z`S`_` a`Y` `W` d`W`e`z`f`d`
X`|`a`e`W`*Montipora* S` V`_` S`e`h`W`a`d`S`^` V`?

WgfgdVXLadS^dWV[Ed >S |SdWV| eg^ UW
 fS| WbWMS^kVgVfa^SU aX_ S SYW WFS V| UaSe| Y
 geVaxWVfUf|Hw-eZ| Y_ WZaVe S V | bSufe Xh_
 ^S V geW/3fZagVZ fZVWVdVSWVgSfWSi eS V dVg^S
 fla^ d fZVWVe| SWVgSfWVbSUfK fa | b^W Wf fZVW
 /DSSegdkS et aZ fi WbWMS^k i |fZ dVsd/ fa dW
 _ | | YS V fZVgVaxWVfUf|Hw-eZ| Y_ WZaVeZ W
 SteWUWaxSfW S|HwVb^ak_ Wf XadZaVW Za SdWVZ
 YSW| Suf|Hf|WfZSf VS_ SYWad^dWVZSe TW |WVZ
 fl~W Sea^ VaxfZW S| dSa^ eXd^SU aXegUWé |
 _ S SYW Wf /B^WV fi Zai W^W^SU aXSfW S|Hw
 Wb^ak_ Wf eZagV^ af TWgeV SeS^ VJgeVfa Wsk
 | b^W WfSfa^ aXVef| YdVg^Sfa^ eZ

ACKNOWLEDGEMENTS

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 @|eZS^ B^WV aXZVed >S | SEgT 3cgS 5^gT Xad~WV
 Se|eS^ UWS^ VVSfLa^W|a^ ž |eefgMki Se|Sd|Wagf
 SeS^ Suf|HfkaXZVad^dWV a^ |fad^ YbchYdS_ _ Vax
 @3D3 ebb^W WfWi |fZx^ VeXh_ 5AD6;A /5ad^
 DWVg VdVsf|a^ | fZW V|S^ AUW fibchYdS_ _ W

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 fi W^5ZS^Ma^a^ fV~eZ^W^S VLa^S^la_ _g^ |f|WaxZVg^X
 aX3cSIS/DWVWVŠZ *Env. Bid. Fish* 25 , žbbZ , ž
 5Zd|fa W|13Z 8W^S Val? Z^ DSSegdkS 3Z / fizDWX
 5ZM| ž3^ W fZdVf fa fZVb|YV^ ;eS VleLad^eŠZ *Sri
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 ? Sd^ VEUWUWb^W| 3gfdS^S ; e|fgfVax? Sd^ W
 EUWUWfai^ d|^W bZ
 : Sd^ W^ Ž|H^W? ž>Z / fiz_ b^|Uf|a^ eaXWV| YbWVŠZ
 1S|a^ a^ fZVWV|f|_ Wf bchUWV^S VLa_ _g^ |fk efgfUgdV
 aX|gffWV-eZVŠZ *Env. Bid. Fish* H^z 1@až , 1bbz Ž ž
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 ing of Coral Reefs Version 1.3* gfdS^S ; e|fgfVax? Sd^ W
 EUWUW
 : aYea 19Z / fizEW_ WfS V fZVW^W Wf aX5ad^SWax
 fZVWVad^ *Pocillopora damicornis* ŠZ *Coral Reefs* , , ž
 >aUzI=Z>aUzI Ž EUZg_ SUW: Z^ EMM žDd / fiz5ad^
 dWV|f_ WfS VdWVWV|a^ a^ S? SV|h^S dWV_ a^ fZe
 S^WVZVad^T^VZU| YWVf aX ŠZ *Marine Ecology* / fi
 , ž
 ? U|WV? ž6Z / fiz^ EgWUWaxVefgd|S Uwa^ Lad^dWV
 la_ _g^ |fk efgfUgdV 4W|VŠZ *Proc 9^ Int. Coral Reef Symp* ,
 , ž
 @gYgW? ž? Z^ DaTWfd 5Z? Z / fiz5ad^_ adS|fkS V
 |^V|Uf|a^ i |fZS^YSW^ dVf|a^ fa eW_ WfS|a^ ŠZ *Coral
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 @3D3 15AD6;A!;G5@!95D? @|E-E35 / fi *Rapid assess-
 ment of tsunami damage to coral reefs in Sri Lanka*; ^W|
 DWad^@až žS|a^ S^3cgSf|UDWagUWdWVZS V6WZ
 h^Wb_ Wf 3YWUz5a^a_ Taž bZ/g^ bgT|eZVWfz
 x Z_ S 1? ž5Z DSSegdkS 3Z^ >| VélA Z / fiz g_ S
 6|efgd|S Uwa^ 5ad^DWV| Ed >S |S 35SefVgVŠZ
Ambio H^z 1@až 1bbz , ž
 x Z_ S 1? ž5Z DSSegdkS 3Z^ A^S e^ 17Z / fizDWV-eZ
 SeW^T^SYW| ^adZ^ W^W Ed >S |S V|efdTg|fa^ bSfW e
 S V| EgWUWax-eZ| YbchUWVŠZ *Env. Bid. Fish* , , ž

