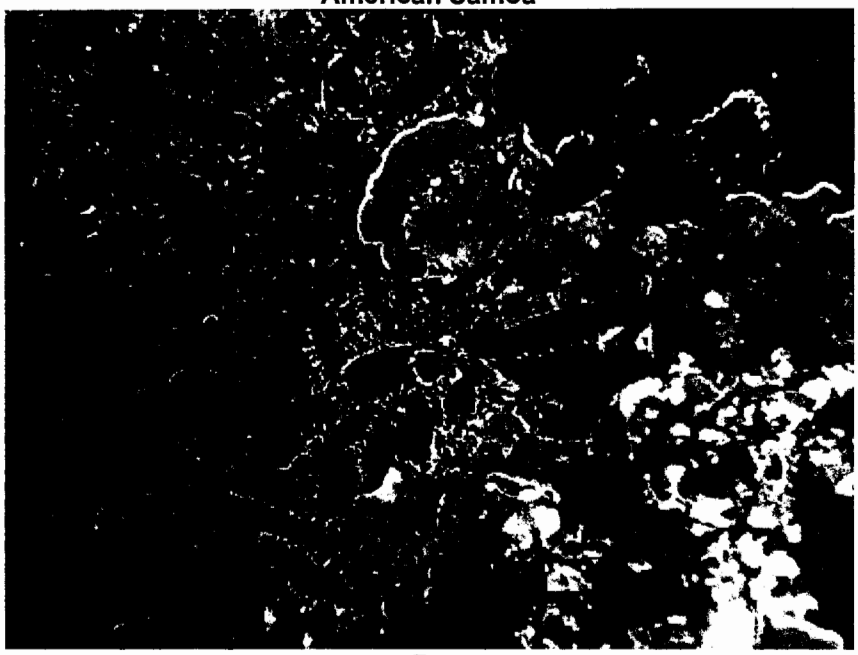
MACROALGAE SURVEYS OF AMERICAN SAMOA

September 8th-28th 2003

FIELD REPORT

Prepared for the Department of Marine and Wildlife Resources
Government of American Samoa
Pago Pago
American Samoa



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Introduction

This report summarises the activities carried out during the macroalgae surveys of American Samoa, undertaken from September 8th to 28th, 2003.This report is in partial fulfilment of the Contract with the Department of Marine and Wildlife Resources, to which the final report will be given by the end of the year.

The surveys were to begin on September 8th but a slight delay occurred due to the sudden cancellation of Samoa Air flights.

A total of 11 field days was possible, comprising of 8 dives and8 snorkels (Table 1).Photographs of most sites and some fauna and flora observed during the surveys were taken.

Methods

Sampling sites were selected with the assistance of Peter Craig, Chris Hawkins, and Elia Henry, and in accord with the American Samoan Coral Reef Monitoring Plan. The coordinates for each site were taken using a Garmin Etrex Global Positioning System on A WGS 84 Datum, except Aoa and Masefau. For the latter two sites surveys were undertaken as closely as possible to where the designated coral reef monitoring core sites are known.

Macro-algae were collected whole including the attachment or holdfasts; smaller turf species were scraped from the substratum. In some cases representative samples were taken when there is an abundance of one or more dominant species per site. These specimens were placed in plastic bags or vials (if they are delicate). A small chisel and diving knife were also employed to remove coralline algae and some crustose algae such as *Peyssonnelia*.Where feasible, estimates were made of relative abundance of the main species at each sampling station.

Algae were later sorted, labelled and preserved in a 5 % formalin/seawater solution. The specimens were pickled for 2 days before the solution was decanted to be recycled. Some specimens were pressed using a standard plant press. The preparation of standard herbarium sheets and microscope slides of voucher specimens will be completed in the laboratory.

Preliminary field identifications of the principal macro-algal species were made; these were facilitated by the use of the recently published Guide of Diane and Mark Littler (2003). Observations of algal communities and associated species were made for each sampling station, to be incorporated in the final report.

Digital images were taken of the habitat (substratum), some of the macro-algae and other marine life encountered at each site. The images were taken with a Sanyo AZ3 Digital Camera with underwater housing, and were processed using Photoshop 6.

Preliminary Results

A total of 16 sites were surveyed from 6 islands and islets. It was not possible to survey Ta'u Island of the Manu'a Group due to unfavourable weather. Some of the sites identified in the American Samoa Coral Reef Monitoring Plan were not surveyed due to some logistics and unsuitable weather. In some sites, diving was not possible due to aforementioned reasons and inshore collecting was executed instead.

A preliminary list of algae is provided in Table 2, comprising species easily identified in the field.

Follow-up analyses will confirm these identifications, and many smaller turf species will be added following microscopic examination and consultation of extensive library and reprint holdings in Townsville. The laboratory work will also include preparation of herbarium and microscope slide voucher specimens as required under the terms of the contract.

The macroalgal community at most sites was dominated by non-geniculate crustose coralline algae (Corallinales). There were only a few sites such as Masefau (AS05) and Aoa (AS04) where fleshy species such as *Galaxaura marginata* and *Tricleocarpa fragilis* were common. *Dictyosphaeria versluysii, Halimeda opuntia* and *Chlorodesmis fastigiata*were among the most common macroalgae found in the surveys; all three occur in the shallow subtidal to the intertidal in some places. Some interesting finds during the surveys include *Tydemannia expeditionis* (from Hurricane House, AS 11, and Sili village, AS13 – in the Manu'a Group), *Caulerpa verticillata* (from Pala Lagoon, AS 04), *Caulerpa taxifolia* (Olosega village, AS12), *Caulerpa urvilleana* and *Caulerpa cupressoides* (Mafafa, AS15). Also interesting were finds of *Sargassum cristaefolium* and *Turbinaria ornata* from Nu'utele Island (AS 10). All of these algae represent new records for American Samoa. Nu'utele Island was interesting, as volcanic rocks form tide-pools that are often filled by a strong underwater swell that penetrates from the western side of the Island. Another site worth noting here is the inshore flats of Olosega village and Mafafa. A large bed of *Caulerpa* species exists near the carbonate structure on the sandy shore. These *Caulerpa* species, comprising some 4-5 different species provide substrata for foraminifera.

Acknowledgements

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Table 1. Sites Surveyed

Site		Coordinates		Survey	Description
		LAT	LONG		
AS01	Faga'alu	S14°17.389'	W170°40.549'	Dive	surveyed near the main ava at 10-m depth
AS02	Fatumafuti	S14°17.645'	W170°40.496'	Dive	surveyed northeast of Fatu Rock
AS03	Nu'uuli reef	S14°19.215'	W170°41.812'	Dive	surveys followed the coordinates from Green (2002)
AS04	Pala Lagoon	S14°19.449'	W170°42.121'	Snorkel	surveys from 3 sites; inside the lagoon near the Nuu'uli village, by the runway and near the boat ramp.
AS04	Aoa			Dive	Collected on the eastern side of the bay
AS05	Masefau			Dive	Collected on the eastern side of the bay
AS06	Fagamalo	S14°17.903'	W170°48.612'	Snorkel	coordinates taken on the beach, surveys at 10-m in front of the beach.
AS07	Amanave	S14°19.544'	W170°49.849'	Snorkel	coordinates taken on the beach, surveys at 10-m in front of the beach.
AS08	Fagatogo	S14°16.618'	W170°40.827'	Snorkel	coordinates taken on the beach, surveys at 10-m in front of the beach.
AS09	Aunu'u Is.	S14°16.994'	W170°33.665'	Dive	near the wharf
AS10	Nu'utele Is.	S14°10.167'	W169°41.015'	Snorkel	on the eastern (lee) side of the island
AS11	Hurricane House	S14°10.665'	W169°39.255'	Snorkel	coordinates taken on the beach, surveys at 10-m in front of the beach.
AS12	Olosega village	S14°11.023'	W169°37.162'	Snorkel	coordinates taken on the beach, surveys at 10-m in front of the beach.
AS13	Sili village	S14°10.032'	W169°37.553'	Dive	coordinates taken on the beach, surveys at 10-m in front of the beach.
AS14	Ofu Wharf	S14°09.819'	W169°40.860'	Dive	coordinates taken on the beach, surveys at 10-m in front of the beach.
AS15	Mafafa	S14°10.045'	W169°38.502'	Snorkel	coordinates taken on the beach, surveys at 10-m in front of the beach.
AS16	Nu'usilaelae	S14°10.281'	W169°41.057'	Wading	collection on basaltic rocks

Table 2. Preliminary field list of marine macro-algae from the surveyed sites (Table 1).

	AS01	AS02	AS03	AS04	AS05	AS06	AS07	AS08	AS09	AS10	AS11	AS12	AS13	AS14	AS15	AS16
Species																
CHLOROPHYTA																
Acetabularia cf. parvula															1	
Bryopsis pennata	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1
Caulerpa cupressoides												1			1	
Caulerpa peltata	1	1				1						1				
Caulerpa racemosa												1			1	
Caulerpa serrulata									1	1	1	1	1	1	1	
Caulerpa taxifolia												1			1	
Caulerpa urvilliana												1			1	
Caulerpa verticillata				1												
Chlorodesmis fastigiata	1				1	1	1	1	1	1	1	1	1	1	1	1
Dictyosphaeria versluysii	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1
Halimeda borneensis				1												
Halimeda cf fragilis	1	1														
Halimeda gracilis	1	1	1		1	1										
Halimeda incrassata																
Halimeda macroloba						1										
Halimeda opuntia	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1
Microdictyon sp.	1				1						1	1	1		1	
Neomeris dumetosa					1											
Neomeris vanbosseae				1			1	1	1	1	1	1	1	1	1	
Tydemania expeditionis											1		1			
RHODOPHYTA																
Actinotrichia fragilis	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Amphiroa foliacea	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1
Amphiroa sp.					1	1										
Champia viellardii	1	1														
Cheilosporum acutilobum	1	1	1		1	1										
Cheilosporum spectabile	1	1	1		1	1		1	1	1	1	1	1			
Chrysymenia kaernbachii			1													

Corynocystis prostrata			1													
Galaxaura filamentosa							1									
Galaxaura marginata					1	1									1	
Gelidiopsis intricata				1				1	1	1	1		1	1	1	
Gelidiopsis repens	1	1	1		1	1		1	1	1	1	1	1	1	1	
Gelidium sp.	1	1	1													
Halymenia durvillei								1								
Halichrysis coalescens	1															
Hydrolithon fosliei	1	1	1		1	1										
Hydrolithon onkodes	1	1	1		1	1	1	1								
Hydrolithon reinboldii	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1
Jania sp.		1			1	1		1	1	1	1	1	1	1	1	1
Lithothamnion prolifer	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1
Mastophora pacifica	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1
Mesophyllum funafutiense	1	1	1		1	1										
Peyssonnelia bornetti	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1
Peyssonneila cf boergesenii	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1
Peyssonneila inamoena	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1
Portieria hornemanni					1											
Sporolithon cf. episoredion	1	1	1		1	1										
Tenaciphyllum lobatum	1	1														
Tricleocarpa cylindrica					1	1										
Tricleocarpa fragilis					1	1										
PHAEOPHYTA																
Lobophora variegata			1													
Dictyota cf pfaffii (see L&L2003)			1													
Sargassum cf. cristaefolium										1						
Turbinaria ornata										1						
CYANOPHYTA																
Symploca hydnoides				1												
Lyngbya majuscula	1	1	1													
SEAGRASS																
Halophila ovalis				1				1								