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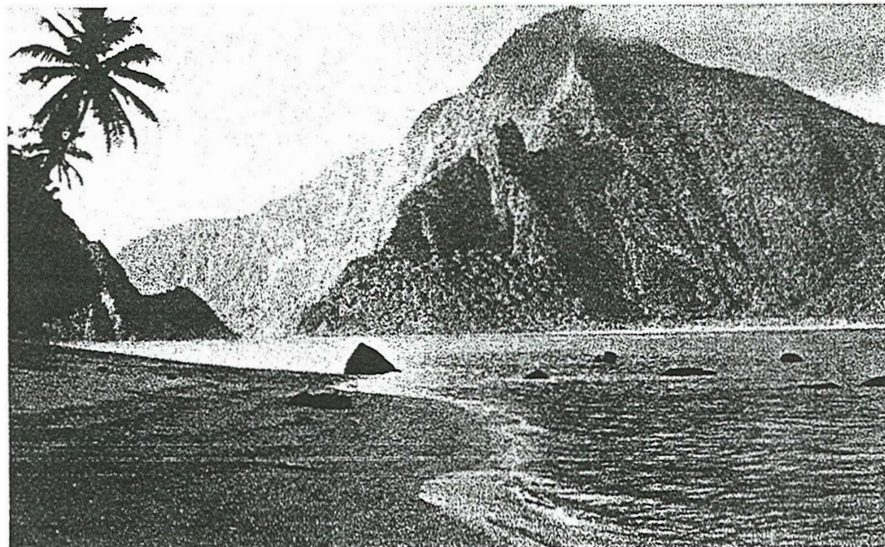
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NATIONAL PARK OF AMERICAN SAMOA

Reconnaissance Survey of Olosega
and Sili Village Lands For
Natural and Cultural Resources

November 9, 1999



NATIONAL PARK OF AMERICAN SAMOA (NPSA)

Reconnaissance Survey of Olosega and Sili Village lands Natural and Cultural Resources

October 20, 1999

Introduction

The National Park of American Samoa (NPSA) is located on three islands in American Samoa Tutuila, Ofu and Ta'u. The Territory is located approximately 2,400 miles southwest of Hawaii. Olosega Island, the topic of this report, is a small volcanic island (5.2 km² or 1,280 acres), with a maximum elevation of 2095 feet. It lies adjacent to the island of Ofu, connected by a small bridge. On Ofu, the existing park protects 420 acres of shoreline and reef.

Authorized by Public Law 100-571 the Park was created in 1988. Its stated purpose is to “preserve and protect the tropical forest and archeological and cultural resources of American Samoa, and of associated reefs, to maintain the habitat of flying foxes, preserve the ecological balance of the Samoan tropical forest, and, consistent with the preservation of these resources, to provide for the enjoyment of the unique resources of the Samoan tropical forest by visitors from around the world.”

The National Park's primary significance includes both the natural and cultural resources. The Samoan rainforest is the only “paleotropical” rainforest represented in the United States. The area is also unique as the furthest eastward extent of many species originating in Southeast Asia. Species variation decreases as distance from the greater landmasses of Southeast Asia increases. Superimposed on this natural history is the culture and its archaeological record. Protecting the traditions, customs, and 3,000-year history of the Samoan people is an important aspect of this National Park.

Purpose of this Report

On April 9, 1998, U. S. Congressman Eni F.H. Faleomavaega wrote to Robert Stanton, Director of the National Park Service, regarding the possibility of including Olosega island lands in the National Park. In subsequent discussions the National Park Service agreed that the Superintendent and his management team would travel to Olosega to discuss this request with Village Chiefs and to visually survey, evaluate, report on, and map the natural and cultural resources on portions of Olosega.

A Park team made up of Charles Cranfield, NPSA Superintendent; Dr. Peter Craig, NPSA Biologist; Epifania Suafoa, NPSA Archeologist; and Sasauli Satele, Student Conservation Association intern met with village chiefs to discuss the project and subsequently conducted the survey over several trips and supplementing team knowledge with that of other experts in marine and terrestrial biology, and archaeology. Villagers guided the NPS team during terrestrial surveys. Further details on assisting experts and methods used for the survey are given within the following sections of this report.

Summary

The island of Olosega has impressive biologic resources. Although impressive and important to preserve, many of these resources would not be especially significant within the Park. The north shore reef on Olosega, however, does offer substantial differences from other sections of the Park, including Ofu. The north shore has better protection from rough surf and therefore has developed different coral communities. Dr. Craig reports that the north coast of Olosega offers “excellent” coral reef habitat.

The coastal and reef area surrounding the village of Sili on the north side of the island, because of the rich coral and fish community, would complement the reef on Ofu and could be considered for inclusion in the Park along with the trail east of Sili leading to the highlands.

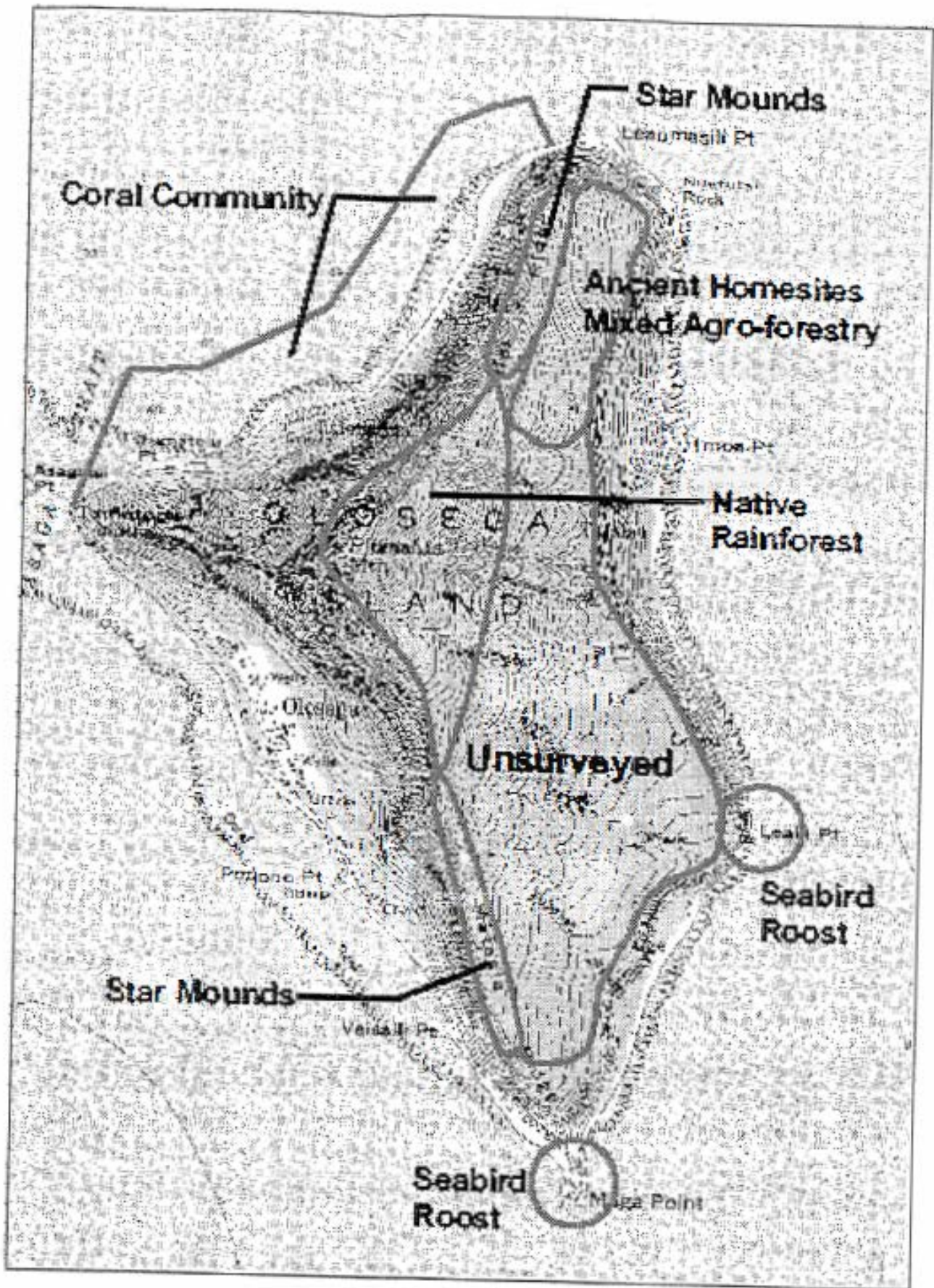
The archaeological significance of the island cannot be understated. Sites on the ridgeline and terraces may offer an important opportunity for the study and interpretation of ancient Samoa. The number and density of star mounds (31), the great number of modified terraces (46) and home sites (14), the subsistence system, and the artifacts available are all important findings. This is particularly significant in that they were recorded in only 3 days of visual surveys on only a portion of the island.

This area on Olosega, between the 300 and 800-foot elevation, is the most significant portion of the Island based on the uniqueness, importance, and integrity of the archaeological resources there. Additionally unique, and associated with this same area, is the remnant agro-forestry system. This system, with further study, could prove to have developed into a sustainable agro-forestry system in relative equilibrium with the natural system.

In addition to the archaeology, there is great recreational potential on the island. Most of the current Park is on steep and rugged terrain, making trail construction difficult and trail use strenuous. The trail opportunity on Olosega, on the other hand, is exceptional based on the low level of underbrush and the low inclination of the uplands. Pre-existing trails throughout the area would require only minor upgrading to achieve National Park standards. The land corridor east of Olosega village includes the connecting trail to the highlands and excellent seabird habitat. The village dump is located in this corridor and would be unmistakably conspicuous to hikers.

Currently the Park manages 350 acres of reef and 70 acres of land on Ofu Island. The addition of a larger land base in the Ofu/Olosega area would provide greater hiking opportunities and increase recreational opportunities beyond that of snorkeling on the reef. The availability of this additional opportunity would help to diversify visitor use and lessen impact on the reef.

The map provided on the following page shows the most important areas of biological and cultural resources associated with Olosega as determined by the NPSA study team during the reconnaissance survey.



The National Park of American Samoa considers the addition of lands for recreation on Ofu/Olosega to be important in diversifying recreational opportunity on the island. The resources of Olosega are significant, but consideration should be given to lands on Ofu as well. In particular, the need to widen the present Park boundary on Ofu beyond the road should be considered. Currently only a strip of beach and its associated reef are protected within the Park on Ofu. Just across the road marking the boundary of the Park is level land ripe for development. Construction in that area is possible and if it occurs will impair park visual resources and threatening reef health. This area should be protected within the boundary of the Park as soon as possible. Any attempt to expand the park on Ofu/Olosega should include consideration of this strip of land.

NATURAL RESOURCES EVALUATION

Site visits and evaluation by:

Dr. Peter Craig, Biologist, NPSA

Synopsis

Olosega Island provides excellent habitat for wildlife, in part because large tracts of land are relatively wild and because the island is free of many of the introduced species that compete with native wildlife on Tutuila Island and in the Tutuila Unit of NPSA. While the wildlife species (flying foxes, birds) present on Olosega are similar to those occurring in existing park units, Olosega includes the presence of the rarer bird species that occur in the territory. There are also small seabird colonies at Maga and Leaia points.

The island has healthy coral reefs, particularly on its north side that offer excellent scuba diving opportunities. Mundy (1996) noted that the reef at Sili is notable for its spectacular coral communities, and Green (1996) recommended that the reefs at Sili and Olosega Village be designated as a 'marine protected area'. However, shallow reefs along the north and southwest shorelines may not be as diverse or scenic as they are in the existing Ofu Unit of NPSA.

While this report focuses on Olosega, it is important to recognize that the natural resources of Olosega are best viewed together with those of nearby Ofu Island. Only several hundred feet separate the two islands; their coral reefs are connected and form a single unit; and, available movement data (from Tutuila) indicate that flying foxes on Olosega Island could easily forage on Ofu Island and vice versa. The two islands thus form parts of a single ecosystem.

Methods

Observations of marine and terrestrial environments on Olosega Island were made July 2-8, 1999. Several hikes, scuba dives, and snorkel surveys around the island were conducted. Territorial bird biologist (Josh Seamon) and bat biologist (Ruth Utzurum) with the Department of Marine and Wildlife Resources (DMWR) were also interviewed for this report. DMWR has

established monitoring sites for birds and fruit bats on Olosega that are surveyed once or twice a year. Several reports by DMWR were also reviewed (listed below).

Olosega wildlife resources

Olosega shares the same fauna found on the islands of Tutuila, Ofu, and Ta'u, but the wildlife habitat on Olosega is somewhat unique in terms of the species composition of forest trees.

Diospyros trees are a dominant species at mid altitudes. Also, the top portion of the island is unusual in that it consists of mossy forest with relatively large trees (J. Seamon, pers. com.).

a) Invasive Species. Olosega Island, like the other Manu'a islands, is free of many of the introduced species that are serious pest problems on Tutuila Island and in the Tutuila Unit of NPSA: the common and jungle myna birds, red-vented bulbuls, cane toads, African giant snails and the pink cannibal snail (Trail 1995).

However, at least two invasive plant species were found on Olosega: Koster's curse (*Clidemia hirta*) and mile-a-minute vine (*Mikania micrantha*). Ground disturbance by feral pigs, and seed consumption by rodents were also noted throughout Olosega Island.

b) Flying Foxes (Fruit Bats). DMWR estimates that there are small populations of flying foxes on the combined islands of Olosega and Ofu: <100 *Pteropus samoensis*, and <1000 *P. tonganus* (R. Utzurrum, pers. com.). On Olosega, a *P. tonganus* colony is located near ridgetop above Olosega village, and a few *P. samoensis* are present. There are indications that a few of the nearly extirpated sheath-tail bats are present as well (R. Utzurrum, pers. com.). This small insectivorous bat is a candidate for listing as an endangered species.

Both species of flying foxes also occur in the existing Tutuila and Ta'u Units of NPSA. Colonies of *P. tonganus* occur in the Ta'u Unit, and at least occasionally in the Tutuila Unit. The less common flying fox, *P. samoensis*, is also present in both the Tutuila and Ta'u Units.

c) Land Birds. The land birds common to the territory, and present in the Tutuila and Ta'u Units of NPSA, are present on Olosega, but some of the rarer species are also seen on Olosega: Fiji shrikebill are uncommon but consistently seen there, the friendly (shy) ground dove and blue-crowned lory are also present. The friendly ground dove is a candidate for listing as an endangered species. The shrikebill may represent a Manu'a subspecies (J. Seamon, pers. com.).

d) Seabirds. Small colonies of 50-100 brown boobies are located at Maga Point and near Leaia Point on Olosega Island. Brown boobies also are present in the Tutuila Unit of NPSA.

Olosega marine resources

Coral reefs on all islands in the territory are in a recovery phase following two decades of natural disturbances, including three hurricanes. Surveys of corals and fishes throughout much of the Samoan archipelago, including two sites on Olosega Island at Sili and Olosega Village, have recently been conducted by Mundy (1996) and Green (1996). In general, those researchers and

others have found that coral reef ecosystems are in better condition in the Manu'a Islands than in Tutuila or (Western) Samoa.

a) Coral Reefs (20-70' depth). Coral reefs on north sides of Olosega and Ofu islands offer excellent coral reef habitats and scuba diving opportunities. The topography is varied and the corals are healthy and recovering well. Mundy (1996) found that corals at the 30' depth were among the highest in the Samoan archipelago for the number of coral species, number of colonies, and percent coral cover (about 45% in 1995). Mundy stated that "the reef at Sili in particular is notable for its spectacular coral communities".

Green (1996) surveyed fishes at the 30' depth and found that the two Olosega sites (off Sili and Olosega Village) were among the highest in the archipelago for fish species richness and density, and moderate in fish biomass. Green concluded that some of the best reefs in the archipelago occur in the Manu'a Islands, including those at Olosega. Green recommended that reefs at Sili and Olosega Village be designated a 'marine protected area'.

b) Shoreline Reef Flats and Back-reef (0-10' depth). Shallow reefs were not adequately examined during this survey due to rough wave conditions and limited time. However, the limited information available indicates that the existing shallow reefs in the nearby Ofu Unit of NPSA provide more suitable shallow reefs for coral diversity and abundance.

Mundy (1996) surveyed the shallow lagoon at Olosega Village. It ranked lower than the existing Ofu Park Unit in number of coral species, number of colonies, and percent coral cover. Green (1996) combined the Olosega Village site with the Ofu Unit, thus a direct comparison of fish communities is not possible.

The northwest coast reef flat was surveyed only at one site between the island bridge and village of Sili. The reef flat there was not noteworthy compared to the Ofu Unit of NPSA. It consisted primarily of consolidated coral substrates and pink coralline algae, and it had minimal backreef pools as occurs at Olosega Village and in the Ofu Unit of NPSA.

The southwest shore off Olosega Village was surveyed only at one site between the village and the bridge. Coral diversity and abundance appeared to be lower than occurs in the Ofu Unit of NPSA. Crown-of-thorns starfish, which eat corals, were common. Mundy (1996) earlier noted that the presence of crown-of-thorns starfish in Olosega lagoon should be monitored.

Nearshore waters on the east side of Olosega were rough when visited. Given that the east side is subjected to easterly trade winds and water currents, it is likely that the east side often has rough wave conditions with few opportunities for safe swimming or snorkeling.

c) Sea Turtles. Relatively few sea turtles remain in the territory due to overharvest and habitat loss (Tuato'o-Bartley et al. 1993). Both the endangered hawksbill and threatened green sea turtle are present. Itano and Buckley (1988) remarked that some sea turtle nesting is known to occur on the remote eastern beaches of Olosega Island. Anecdotal evidence also indicates that infrequent nesting occurs in the nearby Ofu Unit of NPSA.

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VEGETATION SURVEY

Site visit and survey by: Sasauli Satele, Student Conservation Association intern, NPSA

Introduction

The purpose of the survey, conducted on 7/16/99 in Olosega, Manu'a, was to get a general idea of plant distributions on the island. The examined area was along Mataala ridge behind the village of Olosega.

Methods

Four transects were systematically laid northeast in direction. The length of each transect was 50-meters. The area for each transect was randomly chosen, marked with a number and dated. A compass and altimeter was used to take the elevation and direction readings for each site. The width of each transect was 2-meters. All the plants within that area (2m x 50m) and on the outside line were counted. Samples were collected and taken for the plants when clear identity could not be determined at the site. Collin Steele, Botanist at Land Grant, American Samoa Community College identified samples collected. The plant list is provided in Appendix A.e

followed by the *Ma'anunu* (*Tarenna sambucina*), both commonly used medicinal plants for the Samoans. The *Ao'a'uli* (*Diospyros samoensis*) was the third ranked in relative abundance for this site. The canopy was made up mostly of the three dominant species *Matalafi*, *Ma'anunu* and *A'oa'uli*. The height for the canopy at this transect was around four to five meters. The thick canopy also keeps the ground bare of any undergrowth.

The second site was at 545 feet elevation and 42 degrees due northeast. This elevation is considered a starting point for a Lower Montane Forest. The dominant understory species was the *Matalafi* (*Psychotria insularum*), second by the *A'oa'uli* (*Diospyros samoensis*) and the third was the *Elela* (*Garcinia*). The *Clusiaceae* family made up most of the canopy. Collin Steele tentatively identified the *Elela* (*Garcinia*) and noted that the plant is considered rare in Samoa. Groundcover was absent at this point and the average tree trunk diameter was 4 inches.

The third site was at 736 feet in elevation, which was in the upper area of the Montane Forest. The *Matalafi* (*Psychotria insularum*) was still the dominant species at this height and followed by *A'oa'uli* (*Diospyros samoensis*) and *Fau* (*Hisbiscus tiliaceus*). The presence of the *Fau* (*Hisbiscus tiliaceus*) indicates that this area was disturbed by human use at some time in the past. Groundcover and scrub at this point was prevalent, primarily represented by a variety of ferns and *Lau maile* (*Alyxia stellata*).

The fourth and last site was at the 1,965-foot elevation, just below the summit of Mt. Piumafua. The summit area was very soggy and moist and dominated with a mixture of various types of ferns and *Clidemia hirta* (an invasive species) as ground cover. The canopy around the summit was mostly made up of the *Olioli* (*Cyathea decurrens*) and *Astronidium navigatorum* (belong to the family of *Melastomaceae*) and *Fena vao* (*Syzygium samoenses*). The *Astronidium navigatorum* tree trunks were easily a foot diameter, which set them apart from the trees in the Montane forest.

Discussion

The unique thing about the Lowland Montane Forest site examined was the finding of a high concentration of medicinal plants growing in a small area, suggesting that it likely was an agriculture plot for medicinal plants for a *Taulasea* (medicine person). *Ma'anunu* (*T. sambucina*) is one of the medicinal plants that is now rare on Tutuila. The *Ma'anunu* is used like an aspirin for several common ailments by the Samoan people as is the *Matalafi* (*P. insularum*) which is one of the dominant species through the Lowland and Montane forests of Olosega. There should be an effort to preserve these medicinal plants, because many are disappearing from the native forests of Samoa.

The data from three transects shows *Matalafi* (*P. insularum*) as the dominant species starting from the Lowland forest to the Montane forest. There was a clear boundary between the Lowland and Montane forest types. The condition and type of vegetation found in the Lowland and the Montane forest points to a native forest in a stage of transition and recovery from both human and natural disturbance in the past. The vegetation at the summit was completely different compared to the Lowland forest and the Montane forest, which clearly set it apart as to groundcover and canopy.

and Montane forest types. The condition and type of vegetation found in the Lowland and the Montane forest points to a native forest in a stage of transition and recovery from both human and natural disturbance in the past. The vegetation at the summit was completely different compared to the Lowland forest and the Montane forest, which clearly set it apart as to groundcover and canopy.

The summit has large areas of open canopy, which made some sections of groundcover very dense and difficult to walk through. The most common climbers in the summit were the *Freycinetia storkii* (I'ei'e) and the Ava'ava'aitu (*Piper graeffei*). They were found on some of the old fallen trees, remnants from the Primary Forest. Also the presence of the noxious weed *Clidemia hirta* around the summit area is an immediate concern because of the threat it poses to the native fauna. The area the *Clidemia hirta* covered combined with their size and height (about a meter) suggests it is a fairly new introduction to the forest of Olosega.

In general the forest on Olosega is important for the Samoan culture because of the unique plant communities it contains. The area between the 200 and 800-foot elevation represents a traditional mixed agro-forestry system developed over decades of manipulation and cultural use. This mix appears to be relatively stable and may have reached a sustainable equilibrium. To confirm that belief will require further investigation by a trained ethno-botanist. If it is confirmed, this area could be an important cultural and natural case study on long-term sustainable agro-forestry systems in a tropical environment.

ARCHAEOLOGICAL SURVEY

Coordinated by Epi Suafoa, NPSA Archaeologist.

Introduction

Occupation of the Samoan Archipelago dates back as much as 3,000 years BP. Little evidence remains of the ancient island occupants other than stone artifacts. No organic materials such as tapa cloth, leather, or plant materials remain in their cultural context. Therefore archaeological excavations rely on finds of stone and bone tools and stone structures to tell the story of the early Island inhabitants.

Very few archaeological excavations have been attempted in the islands of Manu'a to date. The first excavation for the Manu'a island group was in 1986. In 1987, surveys and extensive excavations were carried out at the To'aga site on Ofu. The To'aga site yielded an unprecedented array of prehistoric artifacts. Other excavations were performed and artifacts collected during road improvement projects on Ofu and Olosega in 1995-96. Other than these few excavations on the coastal strip of Ofu and Olosega, no systematic archaeological surveys have been done in the highlands of Manu'a.

Survey Findings

July 6, Mataala Ridge, the team discovered 15 terraces, 5 oval shaped (2mx5m) fale (house) foundations, 2 rounded (2mx3m) faleo'o foundations, one three faceted grinding rock, 14 stone tools: 11 adzes (7 were broken and 4 were whole and in good shape), 3 grinding facets (5.20 x 5.35 meters). Coral was scattered throughout these 15 terraces. The reason for coral rubble having been brought up to this elevation is unknown. The coral had been greatly disturbed by more recent human land use practices and feral pig activity.

July 7, Dr. Jeff Clark and Epi Suafoa, guides and students entered the forest from the Sili village side of the island and split into two groups. Clark and one of his students surveyed the upper section of Alei ridge (above Sili) while Suafoa and the rest of the group assessed the lower side of the ridge along the coast on the east end of the island. The groups split at the known point called the Malologa (resting area).

Clark's crew, walking up Alei Ridge, identified 5 star mounds, 1 single pointed mound that appeared to be part of a star mound, 14 terraces, 2 small ditches, and two "nutty cracked stones." According to Clark, not every terrace had a house (fale) foundation and some had scattered coral. Dr. Clark attempted to get to the top of Piumafua Mountain but could not due to thick vegetation and limited time.

Epi Suafoa's crew identified 17 terraces, and a primary agriculture unit that appeared to be associated with several house platforms. There was also a 3.5 foot elevated grave. According to Fu'ega (the talking chief) from Olosega, the grave is a known Tui-Olosega (the king of Olosega). It also appeared to be a temporary residential domain. The group also found an unprecedented array of coral rocks and lithics (basaltic flakes). There were a few completed stone adzes which had been left broken, and a couple of ditches that may have been covered by debris over time. Also found were two grinding rocks, one of which had three smooth oval shaped depressions. The grinding stone is presently known as kava boulder, or *ma'a tu'iava*.

The July 26 survey included Dr. Clark and Epi Suafoa. The team hiked up Mataala Ridge to the summit of Piumafua Mountain. On this trip the team identified 26 star mounds on the ridge between the elevations of 200 feet and 2,000 feet. Almost every flat section of the ridge contained the remnants of a star mound. All were pointing north - northeast, and some had ditches varying from 5 to 7 feet deep associated with the mounds.

According to archaeologists Terry Hunt and Patrick Kirch, no star mounds had been found on the Manu'a island group. However, in these three surveys on one small island the archaeological team identified 31 star mounds. Also recorded were 46 modified terraces, 16 stone tools (3 grinding facets, 2 nutcrackers, 11 adzes), 14 fale alignments, and 7 ditches. Most of the artifacts found on Olosega were well preserved, although feral pig damage is an immediate concern.

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APPENDIX A: OLOSEGA PLANT SURVEY

Plants Species - Family	Samoan Names	Site #1	Site #2	Site #3	Site #4
AGAVACEAE - Cordyline fruticosa	Lau Ti		4	1	
ANACARDIACEAE					
Buchanania merrillii					
Rhus taitensis	Tavai	1	1	2	
ANNONACEAE					
Cananga odorata					
APOCYNACEAE					
Alyxia bracteolosa	Gau			1	
Alyxia stellata	Lau maile			9	
ARALIACEAE					
Meryta macrophylla					
Polyscias samoensis					
BARRINGTONIACEAE					
Barringtonia asiatica					
Barringtonia samoensis					
BURSERACEAE					
Canarium harveyi					
Canarium vitiense					
Garuga floribunda					
CLUSIACEAE					
Calophyllum inophyllum	Fetau		2		
Calophyllum neo-ebudicum	Tamanu		2		
Garcinia myrtifolia					
Mammea glauca					
COMBRETACEAE					
Terminalia catappa					
Terminalia richii					
Terminalia samoensis					
CUNONIACEAE					
Spiraeanthemum samoense					
Weinmannia affinis					
EBENACEAE					
Diospyros elliptica					
diospyros samoensis	Ao'a'uli	6	12	10	
ELAEOCARPACEAE					
Elaeocarpus tonganus					
Elaeocarpus ulianus					
EUPHORBIACEAE					
Aleurites moluccana					
Antidesma sphaerocarpum					
Baccaurea taitensis					
Bischofia javanica	O'a	2	1		
Drypetes vitiensis					
Glochidion cuspidatum	Masame		2	5	
Glochidion ramiflorum					
Macaranga harveyana					

Species - Family	Samoan Names	Site #1	Site #2	Site #3	Site #4
Macaranga stipulosa					
Omalanthus nutans					
FABACEAE					
Erythrina variegata	Gatae	2			
Inocarpus fagifer	Ifi	1			
Intsia bijuga					
FLACOURTIACEAE					
Casearia sp. Nova					
Erythrospermum acuminatisimum					
Flacourtia rukam	Filimoto		2		
GESNERIACEAE					
Cyrtandra samoensis					
GOODENIACEAE					
Scaevola taccada					
HERNANDIACEAE					
Hernandia moerenhoutiana					
ICACINACEAE					
Citronella samoensis					
Medusanthera samoensis					
LAURACEAE					
Litsea samoensis					
LOGANIACEAE					
Fagraea berteriana					
Geniostoma rupanstre					
LORANATHACEAE					
Decaisnina forsteriana					
MALVACEAE					
Hibiscus tiliaceus	Fau		2	11	
MELASTOMACEAE					
Astronidium navigatorum					3
Astronidium pickeringii					
Clidemia hirta					34
Melastoma denticulatum					
MELIACEAE					
Aglaia samoensis					
Dysoxylum huntii					
Dysoxylum maota					
Dysoxylum samoense					
MONIMIACEAE					
Hedycarya denticulata					
MORACEAE					
Ficus godeffroyi	mati - ?	3	1		
Ficus obliqua					
Ficus scabra					
Ficus tinctoria					
Ficus uniauriculata					
MYRISTICACEAE					
Myristica fatua	Atone		2	2	
Myristica hypargyrea					

Species - Family	Samoan Names	Site #1	Site #2	Site #3	Site #4
MYRSINACEAE					
<i>Embelia vaupelii</i>					
<i>Maesa tabacifolia</i>					
MYRTACEAE					
<i>Descaspermum fruticosum</i>					
<i>Metrosideros collina</i>					
<i>Psidium guajava</i>					
<i>syzygium brevifolium</i>					
<i>Syzygium carolinense</i>					
<i>Syzygium clusiifolium</i>					
<i>Syzygium dealatum</i>					
<i>Syzygium inophylloides</i>					
<i>Syzygium samarangense</i>					
<i>Syzygium samoense</i>					
OLEACEAE					
<i>Jasminum betchei</i>					
<i>Jasminum didymum</i>					
PIPERACEAE					
<i>Macropiper puberulum</i>					
<i>Piper graeffei</i>					
RHAMNACEAE					
<i>Alphitonia zizyphoides</i>	Toi		1		
RHIZOPHORACEAE					
<i>Crossostylis bifora</i>					
RUBIACEAE					
<i>Aidia cochinchinensis</i>					
<i>Calycosia sessilis</i>					
<i>Canthium merrillii</i>					
<i>Cyclophyllum barbatum</i>					
<i>Geophila repens</i>					
<i>Guettarda speciosa</i>					
<i>Gynochtodes epiphytica</i>					
<i>Ixora samoensis</i>					
<i>Morinda citrifolia</i>	Nonu togi'togi	2		1	
<i>Morinda myrifolia</i>					
<i>Mussaendra raiateensis</i>					
<i>Neonauclea forsteri</i>					
<i>Psychotria forsteriana</i>					
<i>Psychotria insularum</i>	Matalafi	10	15	16	
<i>Sarcopygme pacifica</i>					
<i>Tarenna sambucina</i>	Ma'anunu	8	1		
RUTACEAE					
<i>Euodia samoensis</i>					
<i>Micromelum minutum</i>					
SAPINDACEAE					
<i>Allophylus timoriensis</i>					
<i>Arytera brackenridgei</i>					
<i>Elattostachys falcata</i>					
<i>Sapindus vitiensis</i>					

Species - Family	Samoan Names	Site #1	Site #2	Site #3	Site #4
SAPOTACEAE					
Manilkara dissecta					
Palaquium stehlinii					
Planchonella garberi	Ala'a		2	2	
Planchonella grayana					
Planchonella samoensis					
SOLANACEAE					
Solanum viride					
STERCULIACEAE					
Steculia fanaiho					
THEACEAE					
Eurya pickeringii					
THYMELAEACEAE					
Phaleria disperma					
Phaleria glabra					
Wikstroemia foetida					
TILIACEAE					
Grewia crenata					
Trichospermim richii					
ULMACEAE					
Trema cannabina					
URTICACEAE					
Cypholophus macrocephalus					
Leucosyke corymbulosa					
Pipturus argenteus					
Procris pendunculata					
VERBENACEAE					
Faradaya amicornum	Mamalupe				5
Prenna serratifolia					
	Breadfruit tree	1			
Cocos nucifera	Niu	1	2	1	
Cenchrus echinatus	Vao tuitui		1		
Garcinia - (Clusiaceae)	Elela		9		
Cebrera Manghs	Leva		2		
Smilax	?		1	1	
Ixora Samoensis	Filofiloa			2	
Glochidium	Laga'ali			1	
Commoline ? - Grass type	Grass				5
PANDANACEAE					
Pandanus tectorius	Fasa				
Pandanus reineckeii (450-1000 m)					
Freycinetia reineckeii	l'e'i'e			3	9
Freycinetia storckii (1.8-2.8 cm wide)	l'e'i'e				
PTERIDOPHYTA - FERNS					
	"undercover"			11	67

Species - Family	Samoan Names	Site #1	Site #2	Site #3	Site #4
Cyathea ? Cyatheaceae Family	Olioli				5
LOGANIACEAE					
Fagraea berteriana	Pualulu				1