



# BIODIVERSITY AWARENESS DAY 2006



Your cooperation is necessary to improve our Monthly News letter, so please give us information about coming events and projects.

The World Conservation Union (IUCN), UNEP & WWF defines Biodiversity as the "variety of life in all its forms, levels and combinations which includes ecosystem diversity, species diversity and genetic diversity". In simpler terms, biodiversity means a variety and number of species, habitats and genetic variability contained in species.

The Government of Samoa through the Ministry of Natural Resources, Environment and Meteorology (MNREM) commemorated on the 22 May 2006 the National Biodiversity Awareness Day in Samoa. The theme for the 2006 occasion is "Species Conservation" which focuses mainly on Samoa's diversity of species and ecosystems some of which are known to be threatened, vulnerable and endangered. Examples of these include endemic birds such as the manumea and ma'oma'o, marine wildlife species such as turtles, whales and dolphins and habitats such as the forests, mangroves and coral reefs.

The eventual loss of biodiversity in particular the identified species and ecosystems have been caused mainly by human activities. The rapidly growing human population with the demand for goods and services has consequently put pressure on the fauna and flora resources. Similarly, the rate of economic development is growing at an alarming rate where the extent of damages to the environment and its natural resources - biodiversity is becoming too large to be replenished naturally over time.

Losing biodiversity can also mean a loss in the quality of life. As stewards of biodiversity, it's our call to educate ourselves and work together to make proper decisions for our environment and the biodiversity it provides. "Managing and conserving ecosystems and species is managing people"



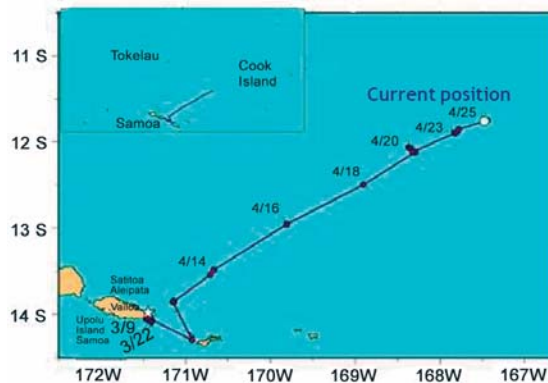
Opening ceremony at Malololelei

### Conservation Efforts

Marine Conservation Section

The Marine Conservation Section conducted the following activities as part of their awareness campaign linking to the 2006 Pacific Year of the Sea Turtle (YOST) and Samoa's National Biodiversity Awareness Day. These included working together with the communities and students through presentations and discussions to promote the protection of species and ecosystems that have been severely threatened by human activities.

1. Tagging and releasing turtles at Malua Theological College
2. Aleipata Community Workshops on Turtles
3. Student Field Trips to Mangrove Conservation Areas
4. Poster on Whales and Dolphins of Samoa
5. Marine Displays



Map of a hawksbill nester journey (Lady Vini's)

importance of the country's birdlife, particularly the proportion of endemic species (23%), and the threats to it have been recognised by the international Council for Bird Preservation who have listed the Samoan Islands as one of the world's "Endemic Bird Area" in need of urgent conservation attention.

### INSIDE STORY

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# Summary of Earthquake Events in Samoa, January - May 2006

Listed in Table 1 is a summary of felt earthquake events recorded at the Afiamalu seismic station (AFI AS095) from the period January to May 2006. Earthquakes with a magnitude greater than or equal to 4.0 on the Richter scale have been listed, as it is these earthquakes that are typically felt by humans according to historical data.

January, February and March were seismically quiet months relative to April and May, which saw a marked increase in the number of total earthquakes progressively. May had the largest number of earthquakes, including the magnitude 8.0 earthquake which occurred on the 3rd of May, and triggered a small tsunami.

It should be noted that the majority of these felt earthquakes occurred along the Tonga trench boundary; a subduction zone area where the oceanic Pacific plate is slowly subducting beneath the continental Indo-Australian plate. As noted in the "Region of occurrence" column given in Table 1, the Tonga region refers to the area on the continental side of the trench boundary, and the Samoa region refers to the area on the oceanic side of the trench boundary.

Month	Total number of Earthquakes	Highest magnitude recorded	Lowest magnitude recorded	Average magnitude	Region of occurrence
January	2	5.2	5.1	5.2	Tonga
February	3	5.8	4.8	5.3	Samoa
March	5	6.7	5.4	6.1	Vanuatu
April	13	7.7	5.1	6.0	50% Tonga, 50% other parts of the region
May	22	8.0	4.7	5.8	80% Toga, 20% other parts of the region

Table 1: Summary of earthquake events in Samoa from January to May 2006

The increase in the number of earthquakes in the months of April and May, may be associated with a build up of strain along the Tonga trench boundary in the prior months, followed by a

series of stress or energy release in these two months. It should also be noted that successive to the magnitude 8.0 earthquake on the 3rd of May, a series of aftershocks averaging 5.4 on the Richter scale were recorded.

The information provided may be useful for all members of society in the context of disaster and risk planning as well as management, and also for engineering purposes. For more information, please contact the Geophysics Section of the Samoa Meteorology Division.

(Contact to Mulinuu Tel: (685)20855/20856 Fax: (685)23141)



Approximate location of the earthquake on the 3rd of May 2006

# Geo-Hazards Awareness Workshop for the Media



Geo-Hazards Awareness Workshop

Geo-Hazards Awareness Workshop for Media was held at MNREM Matautu-tai Office on 29th May 2006. The workshop aimed to build the capacity of all media professionals around the country to enable them to understand the nature or science of the three key geo-hazards (earthquakes, volcanoes and tsunamis) that we have chosen for that workshop as well as the mitigation and preparedness measures such as public safety procedures that can help you in providing this information to the public. The emphasis on raising the awareness of

the media is based on the actual fact that media plays a key role in disseminating the information to the public in particular warning and public safety information

### Background

The devastation of countries around the world by disasters of all kinds either natural or human-induced in particular the 2004 Boxing Day tsunami indicate to us all that being prepared is very important. Preparedness includes having a level of understanding and awareness of the nature of any hazard as well as what to do when such a disaster occur. The technology that we have to observe and detect hazards that may pose a threat to all life on earth will be just a piece of equipment and a list of procedures if we do not know how to apply it to save life and property from being adversely impacted from disasters.

Due to the mass devastation that geo-physical hazards such as earthquake, volcanic eruptions and tsunamis can have on any community, education and awareness becomes critical as some of these hazards do not have a window for warning. This awareness workshop is just part of the preparation that we need to do. There are many other things that we need to put in place to strengthen the resilience of our communities.

## WHAT'S BIODIVERSITY ?

### Definitions

The word "biodiversity" is a contraction of the word "biological diversity". Diversity is a concept which refers to the range of variation among some set of entities; "biological diversity" thus refers to variety within the living world. The term "biodiversity" is indeed commonly used to describe the number, variety and variability of living organisms. This very broad usage, embracing many different parameters, is essentially a synonym of "Life on Earth". The biological diversity of an area is generally measured in terms of the range of genetic, species and ecosystem diversity it contains. Genetic diversity refers to the heritable variation within and between populations of organisms. Species diversity is the most widely used measure for biodiversity. Ecosystem biodiversity refers to the variety of habitats or communities of organisms and their geographical, physical and biological inter-relationships.

### Status of Samoa's Biodiversity

A review of the conservation value of a total of 226 South Pacific Islands ranked three of the islands of Samoa highly, Savaii at number 23, the Aleipata Islands number 30 and Upolu number 46. The South Pacific Biodiversity Conservation Programme recognises Samoa as one of five countries participating in the programme that are particularly important for their wealth of biodiversity. The flora is one of the most diverse in Polynesia with about a quarter of plants species are endemic, i.e. they are found nowhere else. The

# Climate Change Stakeholders Receive Climate Risk Training

Global warming due to greenhouse gas emissions is causing large scale global climate change. These changes will be felt in Samoa and will have major implications for the country's people, environment and economy. In order to plan for and adapt to climate change, it is essential for Samoa to be able to understand the level of risk involved.

During a recent workshop sponsored by MNREM, through the UNDP-GEF funded Second National Communication Project, representatives from key government agencies and other organizations received training on how to prepare a climate risk profile for Samoa. This training was run by Professor John Hay from Waikato University, New Zealand.

According to Professor Hay, a climate risk profile (CRP) is "a tool that assists national policy and decision makers, as well as planners and technical experts, to identify and address the impacts of climate variability and extremes, for both the present day and as a consequence of future changes in climate."

The training workshop introduced participants to the process of climate change and how to assess the risk associated with climate change. However, the most beneficial outcome from the training was the opportunity for participants to conduct their own risk assessments using newly available data on Samoa's climate, provided by the Meteorology Division.

Using basic software developed by Professor Hay, participants were able to assess the probability of certain extreme climate events from occurring and the expected "return period" for these events. In this instance, the "return period" is a statistical measurement of how often an extreme event will occur.

For example, daily rainfall above 250mm is considered an extreme weather event in Samoa. Using the CRP

software, participants were able to calculate how probable it is that we will get a daily rainfall of 250 mm, as well as the return period for such an event. Participants calculated that daily rainfall of 250mm or above has a 0.15 probability of occurring. This means that on average, in any given year there is a 15% chance of there being a day with rainfall of 250mm or above. Put slightly differently, the return period for this extreme event is 6.5 years, meaning that on average Samoa experiences daily rainfall above 250mm once in every 6.5 year period. Participants learnt how to communicate these findings graphically and an example of one such graph is provided here.

As well as using historical climate data to assess the current risk, participants also used data from global climate models to project future probabilities and return periods as a result of climate change. This will greatly improve Samoa's capacity to adapt to climate change.

The training was very well received by all those who participated. In the words of one participant: "Hope there will be more training like this in the future". Clearly, MNREM has tapped into a strong desire amongst key stakeholders to receive hands on, practical, training. As such, future trainings for climate change stakeholders are now being planned.

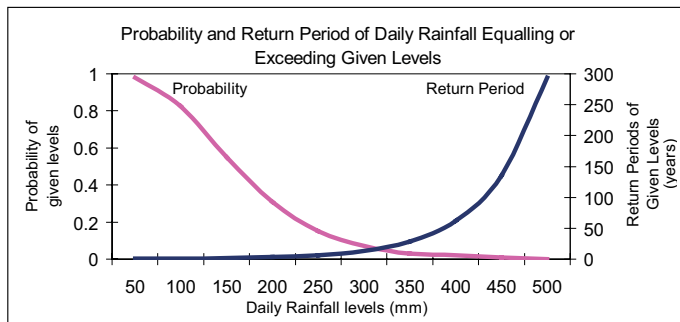
The Climate Change Section would like to thank all those who made this training possible, especially Professor John Hay, who generously donated his time and energy free of charge. Organisations represented at the training were: MNREM Forestry, Conservation, Climate Services, Climate Change, Disaster Management, Mapping and Water sections, Ministry of Finance, Ministry of Agriculture and Fisheries, Samoa Tourism Authority, Electric Power Corporation, METI and Samoa Water Authority.



The workshop was held at Matautu-tai Office on the 8th-9th May



Participants of the workshop



# VAIAATA SANITARY LANDFILL PROJECT

The first phase of the Vaiaata Sanitary Landfill Project was completed with the official opening of the first completed cell for the disposal of solid waste in Savaii on the 25th May 2006. The cell is divided into two sections in order to store separately recyclable solid waste from the rest of the collected waste. The layout design of the Vaiaata landfill will enable the Ministry to effectively facilitate and promote the recovery of recyclable waste material for recycling purposes, and at the same time reduces by 90% the amount of waste to be landfilled in this area.

The Vaiaata Sanitary landfill Project is expected to fully complete within five years. About five similar waste disposal cells will be established later uphill, making this waste sanitary landfill site larger than the Tafaigata landfill in Upolu. The construction of this landfill is funded by the Government of Samoa.

### The landfill facilities are designed to

- Effectively divert and collect the generated wastewater into the underground drainage system for treatment at the leachate treatment facility to be constructed during the second phase of this project.
- Effectively promote gas exchange within the compacted waste to reduce the generation of the methane gas (a greenhouse gas), while at the same

- time speeds up the decomposition of waste.
- Effectively facilitate and control the movement of people and vehicles in and out of the landfill site with less supervision.
- Effectively prevent cows from neighbouring cattle farms from entering the landfill site using the surrounding embankments.



Vaiaata Landfill site

Upgrading both waste landfills in Upolu and Savaii is a major accomplishment for Samoa given the unsatisfactory current status at our neighbouring Pacific islands. Having these type of waste landfills is very important for the protection of our fragile islands environment from pollution, as well as preventing public health from the adverse impacts of poor operated waste dumpsites. This is a good story for the neighboring villages of Vaiaata, Tapuelele, Vaiola and others to name a few who have expressed their concern with the old Vaiaata dumpsite.

## EMERGENCY SURVIVAL KIT

Preparedness for all kinds of disaster is very important, having a level of understanding and awareness of the nature of any hazard as well as what to do when such a disaster occur. One of the actions we can do for the preparedness is to prepare the EMERGENCY SURVIVAL KIT below.

- **Food and water- Enough for 3 Days**
  - Canned or dried food
  - A can opener
  - A primus or BBQ to cook on
  - Bottled water (3 litres per person per day)
  - Check and renew the food and water every 12 months
- **Your First Aid Kit**

You should have a complete First Aid kit available in your home. If you can't get a complete one or would prefer to make one up yourself, the following list is recommended by The Order of St. John as a minimum guide suitable for families:

  - Triangular Bandages (2)
  - Roller Bandages, 50mm (1 roll) and 75 mm (2 rolls)
  - Sterile Gauze, 7.5cm x 7.5 cm (2)
  - Adhesive Wound Dressing, 6 cm wide x 1 metre long (1 strip)
  - Plaster Strip Dressings (1 packet)
  - Adhesive Tape, 25 mm hypoallergenic (1 roll)
  - Sterile Non-Adhesive Pads, small (2) and large(3)
  - Sterile Eye Pad (1)
  - Eye Wash Container (1)
  - Eye Wash Solution, Saline Steritube 30 ml (1)
  - Antiseptic Solution, Chlorhexidine Steritube 30ml (4)
  - Safety Pins (1 card)
  - Scissors (1 pair)
  - Splinter Forceps (1 pair)
  - Disposable Gloves (2 pair)
  - Accident Register and Pencil
  - First Aid Manual
  - Card Listing Local Emergency Numbers
- **Emergency clothing**
  - Wind proof and rainproof
  - Sun hats
  - Blankets or sleeping bags
  - Strong shoes for outdoors
- **Supplies for babies and small children**
  - Food and drink
  - Change of clothing
  - Favorite toy or activity
- **Special supplies for those with disabilities**
  - Hearing aids
  - Mobility aids
  - Glasses
- **Your Gateway Kit**

Everyone should have a small bag for a Gateway Kit, ready for evacuation. Most of the items are part of your Emergency Survival Kit. Other items include:

  - family documents
  - Personal hygiene items

## NOTICE BOARD

### CLIMATE CHANGE AWARENESS DAY, 26 July

#### UPDATE WEBSITE

MNREM website has been updated and the following publications are available to download on the internet.

- MNREM NEWS LETTER APRIL

#### PROMOTED STAFF

- Nanai Tony Leutele (ACEO-Forestry)
- Naomi Auvae (Records Supervisor)
- Kalepo Faafeu (Senior Operations and Maintenance Officer)
- Mikaele Teofilu (Senior Landfill Officer)
- Juney Ward (Senior Marine Conservation Officer)
- Masinafae Ngau Chun (Senior Scientific Officer - Hydrology)
- Ese Suisala (Senior Draughtsman General)
- Tualoa Pokati (Draughting Cadet)

#### RESIGNED EMPLOYEES

- Afamasaga Sami Lemalu (ACEO-Forestry)

Corporate Services Canteen every Friday at 5pm

Prepared by MNREM, Capacity Building & Human Resources Development Section, Apia, Samoa

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