



# National Ballast Water Management Strategy 2016-2020

## Samoa

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*Supported by*



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## 1. Executive Summary

The importance of coastal and marine environments to every aspect of the lives of Pacific Islanders cannot be overstated. Pacific Island Countries (PICs) maintain resource rights and management responsibilities for over 30million square kilometres of ocean, equivalent to the total land area of Canada, China and the USA. The total population of coastal Pacific Islanders is only 2.6 million. There are 11 square kilometres of ocean for each Pacific Islander. Jurisdictionally, the ocean is 200 times more significant to the average Pacific Islander than it is to the average global citizen.

At this level of importance, the impacts of marine pollution are a major concern for PICs. Marine bio-invasions including via shipping vector such as Ballast Water and Hull Fouling is considered one of the greatest threats to the world's oceans today. Global economic impacts are considered at billions of dollars every year. Some of these impacts include the disruption to fisheries, fouling of coastal industry and infrastructure and interference with human amenity.

Invasions have already occurred in the Pacific region including the barnacle *Chthamalus proteus*, several macro-algae species, harmful planktonic algae species and the Black Striped Mussel *Mytilopsis salleri* from the Gulf of Mexico/Caribbean.

There have been a number of activities to assist the region in addressing the issue of invasive marine species. A regional strategy to address Shipping Related Invasive Marine Pests in the Pacific (SRIMP-Pac) was developed and endorsed in 2006. Guidelines for Invasive Species Management in the Pacific were developed jointly by the Secretariat of the Pacific Community and Secretariat of the Pacific Regional Environment Programme in 2009. These Guidelines included the objective to develop national invasive species strategies. In 2011, model legislation was developed by SPREP to assist PICTs in giving effect to the BWM Convention. The issue of Marine Invasives is one of the Work Plans included in the Pacific Ocean Pollution Prevention Programme (PACPOL) 2015-2020, with a focus on baseline surveys, adoption of the IMO Ballast Water Management Convention, capacity building and risk assessments.

A number of tools have also been developed by the GEF-UNDP-IMO GloBallast Partnerships Programme to assist developing countries to reduce the transfer of harmful aquatic organisms and pathogens in ships' ballast water and prepare for the implementation of the IMO Ballast Water Management Convention. In collaboration with the International Union for Conservation of Nature (IUCN) Global Marine Programme, the GloBallast Programme developed the *Guidelines for Development of National Ballast Water Management Strategies*. The Guidelines were developed in response to requests from countries for assistance in strengthening and developing national regulatory frameworks related to marine Invasive Alien Species (IAS) in particular with respect to the transfer of potentially harmful aquatic organisms and pathogens in ships' ballast water and sediments.

This National Ballast Water Management Strategy for Samoa has been developed in accordance with the GloBallast Guidelines, and was developed primarily during a National Consultation Workshop held in Apia, Samoa on 21-22 October 2015. Funding for the workshop was provided by IMO, with in-kind support from Secretariat of the Pacific Regional Environment Programme's PACPOL Strategy and the Samoa Ministry of Works, Transport and Infrastructure. The strategic priorities for Samoa are set out in section 5, with specific action items for each if the strategic priorities set out in the action plan and implementation timetable in section 8.

## 2. Glossary

**AMSA** – Australian Maritime Safety Authority

**APEC** – Asia-Pacific Economic Co-operation

**BWM Convention** - International Convention for the Control and Management of Ships' Ballast Water and Sediments

**CBD** – Convention on Biological Diversity

**GEF** – Global Environment Facility

**GISP** – Global Invasive Species Programme

**GloBallast** - Global Ballast Water Management Programme

**IAS** – Invasive Alien Species

**IMO** – International Maritime Organization

**ISPS** - International Ship and Port Facility Security Code

**MARPOL** – International Convention for the Prevention of Pollution from Ships

**MEPC** – Marine Environment Protection Committee of the International Maritime Organization

**MWTI** – Ministry of Works, Transport and Infrastructure (Samoa)

**PICT** – Pacific Island Countries and Territories

**PII** – Pacific Invasives Initiative

**PILN** - Pacific Invasives Learning Network

**SPREP** - Secretariat of the Pacific Regional Environment Programme

**SRIMP-PAC** – Shipping-related introduced marine pests in the Pacific Islands: A regional strategy

**STCW** - International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978

**UNDP** – United Nations Development Programme

## 3. Introduction

### 3.1 Background to the issue of Invasive Alien Species

#### 3.1.1 Internationally

Shipping carries about 90% in volume of world trade (IMO 2008) and moves an estimated 10 billion tonnes of ballast water globally each year. This water frequently contains a multitude of living organisms; one study estimates that 7,000 species are carried around the world in ballast water every day (USGS, 2005, cited in GEF-UNDP-IMO 2009). The presence of these species has become a major environmental challenge and there is a growing body of research and documentation of the detrimental effects of aquatic IAS (GEF-UNDP-IMO 2009).

Over two-thirds of the world's surface is covered by water. Open oceans, semi-enclosed or enclosed seas, coastal areas, estuaries, rivers and lakes are host to highly diverse ecosystems that span all of earth's climatic zones. The productivity of these ecosystems has largely shaped development of human society and led to human settlement along coastal margins. Globally the number of people living within 100 km of the coast increased from 1 billion in 1990 to 2.2 billion in 1995, or 39 percent of the world's population (WRI 2006). The number continues to increase (Tamelander *et al.* 2010).

The movement of marine species over large distances has prevailed since the beginning of travel by ship; for example, a wooden sailing ship in 1750 could have carried 120 marine organisms fouling and boring into the hull, and another 30 associated with dry ballast (Carlton, 1999). The introduction of sea water ballast with the advent of metal-hulled ships led to a dramatic increase in the movement of organisms, and of the types of organisms that could be transported. With the current rates of increase in ocean transport the movement of species, a proportion of which may have potential as invasive alien species (IAS), the issue has become of great global importance (Bax *et al.* 2003).

Marine invasions are not just historical. At any given moment some 10,000 different species are being transported between bio-geographic regions in ballast tanks alone (Carlton 1999). And ballast water is just one of an ever expanding list of vectors that mirror the worldwide expansion in trade and tourism (Thresher 1999; 2000). Fortunately, most of these potential invaders die. Many species cannot survive the dark and often dirty conditions in ballast tanks over a long voyage; for others, the environmental conditions at the port of discharge are not suitable. Even when conditions are apparently suitable, most organisms fail to establish, and of those that do establish most fail to become invasive—although some may become invasive after decades (or centuries) of otherwise unremarkable existence (Crooks & Soulé, 1999). Nonetheless, as ballast water has become cleaner, ship's transit speeds have increased, and environmental management of ports has improved, marine organisms are likely to find commercial shipping and other vectors an increasingly hospitable means of transport worldwide.

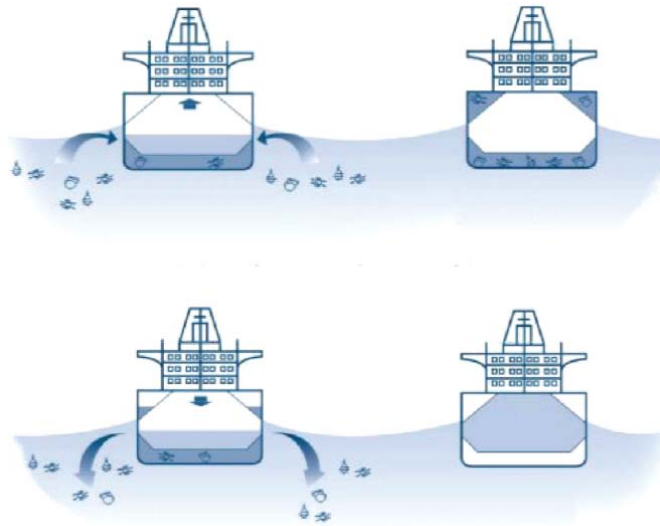


Figure 1: Cross section of a ship showing ballast water and the ballast water cycle.  
From GloBallast, IMO.

When a species is transported outside of its native range and introduced to areas where it does not normally occur, it may under suitable conditions become established and, in the absence of natural predators or parasites, drastically change the ecosystem, its functions and species composition (Molnar *et al.* 2008). Such species are called **invasive alien species (IAS)**: non-native to the ecosystem under consideration and causing or likely to cause economic and/or environmental harm (Clinton, 1999; Tamelander *et al.*, 2010). IAS is widely recognised as one of the most significant threats to global biodiversity (Wilcove *et al.* 1998). In a recent report McGeoch *et al.* (2010) state that invasive alien species alter ecosystem processes, decrease native species abundance and richness via competition, predation, hybridization and indirect effects, change community structure and alter genetic diversity. Island ecosystems are especially vulnerable due to their biological and physical features, and the fact that many are hosts to high levels of endemism. Human activities also contribute to the spread of IAS, such as through deliberate introductions as in aquaculture. Regardless, the main vectors for species transport and the majority of marine species introductions are shipping (Cohen & Carlton, 1998; Ruiz *et al.* 2000; Hewitt *et al.*, 2004).

The CBD Global Biodiversity Outlook 2 (CBD 2006) discusses trends in invasive alien species (headline indicator: p. 34). Invasive species are a global problem requiring responses at all levels. Many countries have established systems to prevent and control IAS and, as part of risk assessments, to predict the likelihood of alien species becoming invasive and the potential ecological and economic cost they may incur (CBD 2006). Invasive species can have devastating impacts on native biota, causing extinctions and affecting natural and cultivated ecosystems. Since the 17<sup>th</sup> century invasive alien species have contributed to nearly 40% of all animal extinctions for which the cause is known. While a major source of marine introductions of alien species is hull fouling and the release of ballast water from ships, other vectors such as aquaculture and aquarium releases are also important and less well-regulated than ballast water. In the marine ecosystem, the movement of non-native species has been well studied. For example, of the 150 species that have arrived in the Great Lakes, 75% originated in the Baltic Sea. Similarly, migration flow from the Red Sea to the Mediterranean through the Suez Canal continues unabated with nearly 300 species of these Lessepsian migrants,

including decapod crustaceans, molluscs and fishes having entered the Mediterranean since 1891 (CBD 2006).

The increases in global maritime traffic and aquaculture and the consequent increases in IAS are now widely acknowledged as a critical trans-boundary problem in marine waters globally (UNEP, 2006). IAS has caused environmental impacts in almost half of the regions considered by the Global International Waters Assessment. In marine habitats there are a greater number of introduced species, but many remain undetected. The impact of IAS in the Black Sea (below) is a powerful example of what can happen when IAS run rampant.

*The Black Sea:* The collapse of the fisheries of the Black Sea during the last 40 years is a *classic case of IAS being introduced when the environment was already severely stressed*. Overfishing had depleted the top predators leading to “fishing down” the food web. Since the 1970s urban and industrial expansion, intensive fertiliser use and atmospheric deposition led to eutrophication, hypoxia and bottom up impacts on the food web. Additional stressors in the 1980s included chemical pollution, the alteration of the inflowing rivers and continued overfishing. In the late 1980s ballast water introduced the combed jellyfish (*Mnemiopsis leidyi*), which by 1989 had spread throughout the Black Sea, reaching densities of 15.2 kg/m<sup>2</sup>. *Mnemiopsis* voraciously consumed anchovy eggs and larvae, while eutrophication and intensive fishing of anchovies and other small pelagic fish continued, resulting in the collapse of the pelagic fisheries of the Black Sea. The anchovy catch fell from 534,000 tonnes in 1986, to only 88,000 tonnes by 1991, with a loss of 150,000 jobs (UNEP 2006).

### 3.1.2 Regionally

*“The transboundary nature of shipping and the inter-connectedness of the seas and oceans dictate that no one port or country can effectively control the spread of (IAS) via shipping. In order to be effective, countries must work cooperatively with both their neighbours and the broader global community to implement harmonized measures. The SRIMP-PAC Strategy provides a regional framework for cooperation between Pacific Island countries and territories and also with Pacific-Rim countries, including through APEC.” (Anderson et al., 2003).*

Information about terrestrial invasive species in the Pacific is well documented: however, this cannot be said for marine invasives, where most of the existing research has been carried out in Hawaii and the American territories and very little in the other SPREP member countries. The difficulties with investigating marine invasives include:

- The cost of carrying out surveys;
- A lack of taxonomic expertise for the identification and recognition of invasives;
- A lack of historical information on when or how invasives arrived; and
- A lack of information on the impact of invasives on the local ecosystems, and the consequent economic impacts.

The importance of coastal and marine environments to every aspect of the lives of Pacific Islanders cannot be overstated. Pacific Island Countries (PICs) maintain resource rights and management responsibilities for over 30 million square kilometres of ocean, equivalent to the combined land

areas of Canada, China and the United States of America. The total population of Pacific islanders is only 6.7 million people and only 2.6 million if the largely inland population of Papua New Guinea is excluded. There are 11 square kilometres of ocean for each and every Pacific Islander. Jurisdictionally, the sea is nearly 200 times more significant to the average Pacific Islander than it is to the average global citizen. At this level of importance, the impacts of marine pollution are a major concern for Pacific island countries and territories (PICTs). For many PICTs the ocean is their only significant natural resource and the good governance and sustainable management of their ocean resources is the key to their economic and social well-being.

Marine bio-invasions including via shipping vectors such as Ballast Water and Hull Fouling is considered one of the greatest threats to the world's oceans today. Global economic impacts are considered at billions of dollars every year. Some of these impacts include the disruption to fisheries, fouling of coastal industry, impact on tourism, and infrastructure and interference with human amenities. Invasions have already occurred in our region including the barnacle *Chthamalus proteus*, several macro-algae species, harmful planktonic algae species and the Black Striped Mussel *Mytilopsis sallei* from the Gulf of Mexico/Caribbean.

There have been a number of activities to assist the region in addressing the issue of invasive marine species. A region-wide study on the management of ship's waste in Pacific Island Ports (Nawadra & Polglaze, 2002) described the capabilities of ports in the region for dealing with waste from shipping and provided a wide-ranging series of recommendations for improvements. It was noted that only a handful of ports within the region (Apra, Guam; Papeete, French Polynesia and Noumea, New Caledonia) had at that time the capability to properly deal with the entire spectrum of ship-generated waste. In May 2015 the Marine Environment Protection Committee of the International Maritime Organization endorsed a Regional Reception Facilities Plan (RRFP) for the Small Island Developing States (SIDS) in the Pacific Region. This plan was submitted by SPREP and co-sponsored by Australia, New Zealand and a number of Pacific island countries. The RRFP will take effect from May 2016 and will allow SIDS to satisfy their waste reception facility obligations under MARPOL through regional arrangements by identifying ports that will serve as Regional Waste Reception Centres.

A regional strategy to address shipping related invasive marine pests in the Pacific (SRIMP-Pac) was developed and endorsed in 2006. A number of tools have since been developed by the GloBallast Partnership UNDP/GEF Project being implemented by the Project Coordinating Unit (PCU) at IMO where SPREP is a Regional Coordinating Organisation (RCO). SPREP together with IMO GloBallast PCU have implemented many activities in the region including the model act development and regional training in various aspects of ballast water management.

The establishment of the Pacific Invasives Learning Network (PILN) through SPREP is coordinating a national, regional and international communications network and the establishment of national teams focussing on invasives: Marine invasives are within the general mandate of PILN.

A number of important initiatives focussed on invasives are also partners within the region, such as the Global Invasive Species Programme (GISP; [www.gisp.org](http://www.gisp.org)), and the Pacific Invasives Initiative (PII; [pacificinvasivesinitiative.org](http://pacificinvasivesinitiative.org)).

The regional invasive species strategy 2000 (see [www.sprep.org](http://www.sprep.org)) was the first regional strategy of its kind in the world, and provided a framework for efforts to increase country capacity to take the five steps in relation to invasive species. This strategy was a lead-in to the establishment of PILN. With respect to marine invasives steps 1 and 2 may be possible, but the remainder are either extremely



difficult and costly, or impossible to implement. There are very few examples where marine invasives have been eradicated, and only then at great cost.

1. Prevent invasives getting to each island;
2. Detect them quickly if they do;
3. Respond rapidly to the incursion;
4. Control the population; and
5. Eradicate the species from the island.

SPREP (Tye, 2009) published guidelines for invasive species management in the Pacific. While focussing mostly on the management of terrestrial IAS, the guidelines do provide a comprehensive framework for IAS management overall. There are nine thematic areas which apply equally to the management of all IAS. The Bio-security Management Action (C1: Bio-security) has direct value for any management strategy for marine IAS.

### 3.1.3 National (Samoa)

The Government of Samoa has given biodiversity assessment and conservation of natural resources a high priority. This was a strong feature of Samoa's National Biodiversity Strategy and Action Plan (NBSAP - Government of Samoa 2001). Under Theme 6 – Biosecurity, Objective 2.4 it states *“Implement the PacPOL Programme to protect native marine biodiversity through the discharge of ships’ ballast water”*. Objective 3: Research & Monitoring is to *“carry out systematic and scientific research based on regular monitoring of the biosecurity management system”*.

The National Biodiversity Strategy and Action Plan 2015 – 2020 National Target 9 is to *strengthen collaboration of relevant Government agencies to monitor and properly manage the discharge of ballast water from ships*. This is to ensure that any approved ship(s) that discharges ballast water in Samoa are carried out in accordance with approved and proper protocols and procedures.

At present ballast water is not permitted to be discharged in Apia. Section 10 of the Marine Pollution Act 2008 provides as follows:

#### **10. Discharge of ballast water-**

- (1) No ballast water containing non-indigenous harmful aquatic organisms or pathogens may be discharged from a vessel into Samoan waters.
- (2) The master of a vessel that discharges ballast water in Samoan waters must –
  - (a) obtain all necessary approvals under the Quarantine (Biosecurity) Act 2005 prior to the discharge; and
  - (b) comply with all voluntary or mandatory ballast water management requirements issued by the International Maritime Organisation and which are in force at the time of the discharge.
- (3) The master of a vessel that intends to discharge ballast water in Samoan waters shall, prior to any discharge, complete and give to the Chief Executive Officer notice of the discharge –
  - (a) which may be a copy of any form of this nature required to be given under the Quarantine (Biosecurity) Act 2005; or
  - (b) in the form approved by the Chief Executive Officer for that purpose.

A Port Waste Reception Facilities Gap Analysis for Apia conducted in February 2014 concluded that reception facilities for garbage, including quarantine waste, are satisfactory, and generally adequate

to the needs of ships using the port. However, reception facilities for sewage and oily wastes are less than satisfactory, and could not be considered to be adequate to the needs of ships using the port. There are currently no reception facilities for oily waste in Apia. Sewage cannot be accepted from international vessels, since it cannot be delivered by truck to the sewage treatment plant for technical reasons.

Samoa is not yet signatory to the Ballast Water Convention, and the Convention itself has yet to enter into force internationally (see below).

### 3.2 Ballast Water Management Convention

The International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM Convention) was adopted at an International Maritime Organization (IMO) Diplomatic Conference in 2004. The Convention will enter into force 12 months after ratification by 30 States, representing 35 per cent of world merchant shipping tonnage. The BWM Convention aims to prevent the spread of harmful aquatic organisms from one region to another, by establishing standards and procedures for the management and control of ships' ballast water and sediments. Samoa has not yet ratified the BWM Convention.

Under the Convention, all ships in international traffic are required to manage their ballast water and sediments to a certain standard, according to a ship-specific ballast water management plan. All ships will also have to carry a ballast water record book and an international ballast water management certificate. The ballast water management standards will be phased in over a period of time. As an intermediate solution, ships should exchange ballast water mid-ocean. However, eventually most ships will need to install an on-board ballast water treatment system.

A number of guidelines have been developed to facilitate the implementation of the Convention. The Convention will require all ships to implement a Ballast Water and Sediments Management Plan. All ships will have to carry a Ballast Water Record Book and will be required to carry out ballast water management procedures to a given standard. Existing ships will be required to do the same, but after a phase-in period of less than five years, depending on the scheduling of MARPOL surveys for the particular vessel.

Parties to the Convention are given the option to take additional measures which are subject to criteria set out in the Convention and to IMO guidelines. The Convention places obligations on Flag States, Port/Coastal States as well as ships. Flag state obligations include putting in place appropriate legislation and arrangements for the survey and inspections of registered vessels and issuing/inspecting the required documentation, as set out below. Port State obligations are primarily set out in the IMO Guidelines for Port State Control under the BWM Convention (Resolution MEPC.252(67) adopted in October 2014). These Guidelines include procedures for ship inspections, sampling, control actions and reporting requirements.

#### *International Ballast Water Management Certificate*

Ships of 400 gross tonnage and above are subject to the survey by the Administration or by an organization recognized by the Administration. After completion of a survey, an International Ballast Water Management Certificate has to be issued by the Administration or by an approved Classification Society.

#### *Ballast Water Management Plan*

Each ship is to have on board and implement a ballast water management plan that is approved by the Administration. Such a plan is to be developed taking into account BWM Convention requirements and relevant guidelines. The ballast water management plan should include:

- Ship's name, shipowner's name and address, flag, port of registry, gross tonnage, IMO number, length, beam, international call sign;
- The total ballast capacity of the ship in cubic metres;
- A brief description of the main ballast water management methods used on the ship; and
- Ballast tank arrangement etc.

Additionally, the ballast water management plan is to include designation of the officer in charge of reviewing the plan and ensuring that the plan is properly implemented. The plan is to be written in the working language of a ships' personnel and kept on board the ship and available for inspection by port/flag State authorities. The plans developed for each ship in accordance with the requirements of Ballast Water Management Convention are to be regularly reviewed by shipowner, ship operator and ship master. Any amendments to the plan should be approved by the Administration.

#### *Ballast Water Record Book*

Each ship is to have on board ballast water record book written in the working language of a ships' personnel and kept on board the ship and available for inspection by port/flag State authorities. Each operation concerning ballast water is to be fully recorded in the ballast water record book and each entry signed by the officer in charge of the operation concerned. Officers duly authorized by the Administration may inspect ballast water record book on board any ship, and may make a copy of any entry.

Entries in the ballast record book are to be made on each following occasions:

- When ballast water is taken on board;
- Whenever ballast water is circulated or treated for ballast water management purposes;
- When ballast water is discharged into the sea;
- When ballast water is discharged to a reception facility; and
- Accidental or other exceptional uptake or discharge of ballast water.

### 3.3 Shipping Activity

Our Pacific leaders have stated that Pacific Countries are not Small Island Developing States but are in fact Large Ocean States. Our leaders have said – the Pacific Ocean is our lifeblood. The Pacific Ocean is vast, in fact comprising 98% water, 2% land.

As Large Ocean States, island members of SPREP such as Samoa are overwhelmingly dependant on shipping for economic survival. Shipping in the region can be grouped into the following broad categories:

- Transit shipping: Ships which pass through the region without stopping, en-route to other destinations;
- International shipping (as distinct from transit shipping): Ships calling at the major ports of the region from outside the region, either with incoming cargo or tourists (cruise ships) or exports;
- Regional shipping: Ships trading (both cargo and passengers) between the countries and territories within the region;
- Domestic shipping: Ships trading (both cargo and passengers) within each country in the region;

- Foreign fishing fleet: Fishing vessels from distant water fishing nations operating within the region;
- Domestic fishing fleet: Fishing vessels from the Pacific islands themselves; and
- Miscellaneous: Special purpose vessels such as Navy ships and research ships and smaller vessels such as tourist vessels, yachts and private pleasure and fishing craft.

In Samoa, Apia Port is the sole commercial Port, handling about 97% of all foreign trade cargoes for the country and is regarded as the lifeline of the country with its livelihood largely depending upon import and the rest on transportation by sea.

Apia Port is connected with South Pacific countries such as New Zealand and Australia, as well as the Far East, United States and Europe. Most of these countries are served with container and Ro-Ro ships. Irregular services are provided by small cargo vessel and oil tankers and passenger cruise liners cruising the South Pacific call at Apia Port several times a year. The Main Wharf of Apia Port was constructed in 1966 for conventional cargo handling purposes with the provision of full scale port functions such as a 12m deep and 185m long berth. The New Wharf Extension (166m) was commissioned in November 2003.

According to the Samoa Bureau of Statistics, 256 international sea going vessels were cleared at the Apia Port in 2014. Information was obtained with respect to 196 of these vessels, as set out in Table 1 below.

Type of vessel	Numbers of vessels	Percentage
Container vessels	108	55
General cargo vessels	46	23
Mineral oil tanker vessels	22	11
Roll On/Roll Off vessels	20	10

*Figure 2 – Number of vessels cleared at Apia port 2014 by type and percentage*

The analysis of cargo discharged at the port of Apia indicated that one hundred and seventy seven (177) vessels discharged a combined total of 338.1 thousand metric tonnes of cargo, of which 82 percent (277.2 thousand metric tonnes) came from the Oceanic region (mostly from New Zealand, Fiji and Tonga), 13.1 percent (44.4 thousand metric tonnes) from Asia (mostly from Korea and Singapore), 3.5 percent (11.9 thousand metric tonnes) from the American region (all from USA) and 1.4 percent (4.6 thousand metric tonnes) from Europe (all from Netherlands). Of the one hundred and ninety six (196) vessels arrived, only one hundred and fifteen (115) vessels returned with outward cargo of which seventy seven (77) were Container Vessels and thirty eight (38) General Cargo Vessels.

The total number of international sea going vessels arrived and departed with outward cargo, and cargo loaded and discharged at the port of Apia for 2010-2014 are graphically presented respectively below in Figures 2 and 3.

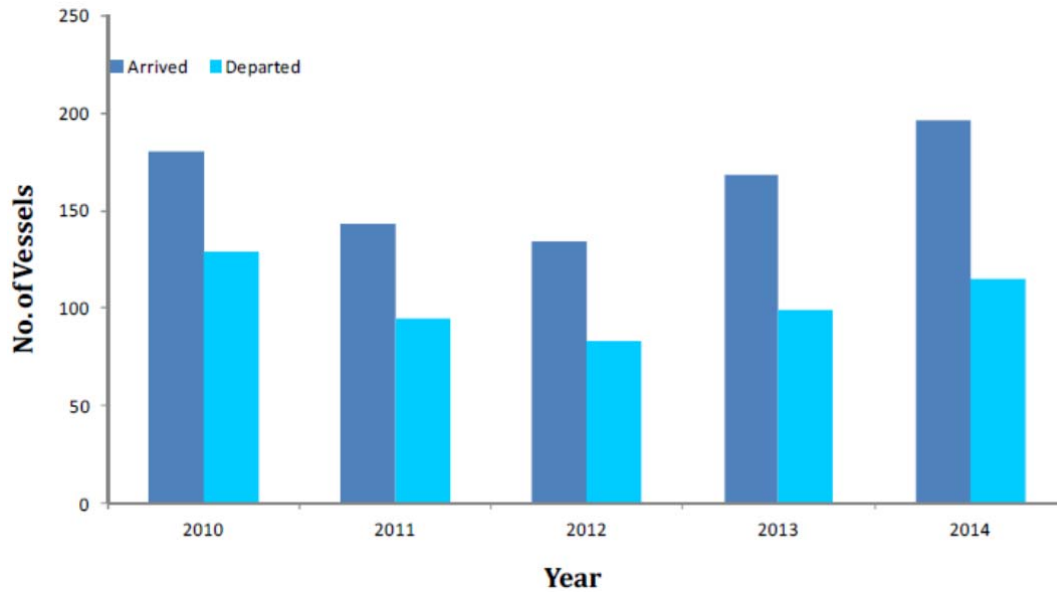


Figure 3 – Number of vessels arrived/departed with outward cargo at the port of Apia (2010-2014)  
Source: Samoa Bureau of Statistics

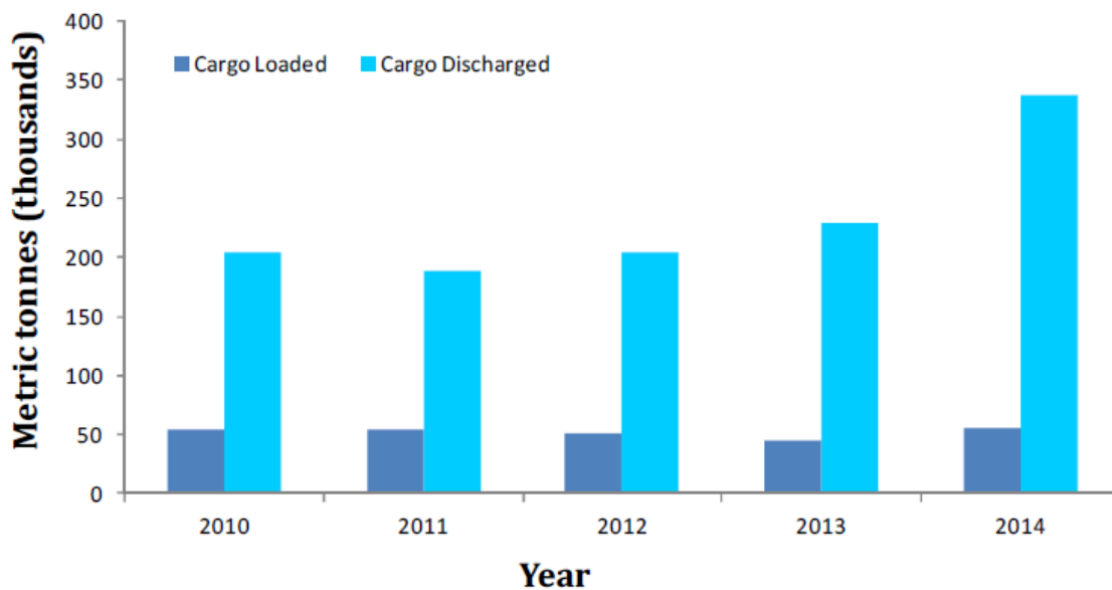


Figure 4 – Cargo loaded/unloaded at the port of Apia (2010/2014) Source: Samoa Bureau of Statistics

### 3.4 Existing Introductions

The first surveys of Apia Harbour were carried out in 2008 and 13 alien species were identified, with two of these – the seaweeds *Spatoglossum macrodontum* and *Codium arenicola* - considered as having the potential to be “invasive”. Most of the 13 introductions occurred within the Harbour, with the likelihood that at least some, such as the crab *Percnon quinotae*, are more likely to have been introduced via ballast water discharge than hull fouling.

A further study was subsequently undertaken in 2014/15 to identify the distribution and impacts of the two introduced seaweeds, as well as to determine the distribution and density of the Crown of Thorns Starfish (COTS) and to carry out control programs in priority sites for the control of COTS using both bile salt and manual collection. As part of this study, 43 sites were surveyed (35 in Upolu, 8 in Savaii). *Spatoglossum macrodontum* was found at eight sites (Map 1), with *Codium arenicola* not located at any other site.



*Spatoglossum macrodontum*



Yellow dots showing where the *Spatoglossum macrodontum* were found.

One relatively recent report (South, 2012) notes that:

From the information available, it is likely that those marine invasive species so far identified from Apia and district have arrived as bio-foulants of ships' hulls, and on the hulls of recreational yachts. Inter-island ferries which operate between Upolu Island and Savaii, between Apia and American Samoa, and between Apia and Tokelau are likely vectors of IAS and could carry IAS from Apia to other islands through hull bio-fouling.

The database on the ecology of Apia harbour is inadequate and does not provide sufficient information to assist in the development of a port or national ballast water strategy.

It is not presently known whether the other alien species are restricted to the harbour and its environs, or whether they have spread elsewhere within the country. There is now a need for additional survey work to establish whether the original 13 introduced species have been established and become invasive and whether there have been any new introductions.

The Samoa National Invasive Species Task Team (SNITT) was established in 1999 to drive the coordination and implementation of the National Invasive Species Action Plan. The key roles and responsibilities vested in SNITT include:

- coordinate the implementation of the action plan, including prioritisation and delegation of actions, and dispersal of available resources;
- provide technical advice to the Chief Executive Officer on issues pertaining to invasive species; and
- monitor, review and report on the progress of implementation, and direct future work and outcomes.

SNITT meets every quarter to update the various agencies on current project activities and other pertinent upcoming issues and events. SNITT has developed the Samoa Invasive Species Emergency Response Plan (SISERP) which is expected to be endorsed shortly and will replace the current 2005 Emergency Response Plan for Animal and Plant Pests.

The Ministry of Natural Resources and Environment provides the Secretariat for SNITT, and will ensure the Task team is provided with regular updates on progress with the implementation of this strategy.



Surveying for Invasive Alien Species (Courtesy CRC Reef, left; and ORDA, right)

### 3.5 Scope

This Strategy applies to all areas of Samoa.

## 4. Purpose of the Strategy

The purpose of this strategy is to minimise the risks of IAS by seeking to avoid adverse economic, environmental and public health impacts, whilst not unduly impeding trade; and taking a practical approach to ballast water management. This will be achieved by establishing a work plan and a system to monitor the implementation of a ballast water management strategy for Samoa and provide for future revision on the plan.

## 5. Strategic Priorities

- Provide appropriate forum to oversee and review implementation of this Strategy.
- Expedite adoption by Samoa of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention).
- Undertake capacity building in Samoa to ensure effective implementation of the BWM Convention.
- Undertake additional baseline survey work and, based on survey results, consider the need for Economic Impact Assessment.
- Conduct awareness campaign on ballast water management issues.

## 6. Leading Agency

The Samoa Ministry of Works, Transport and Infrastructure (MWTI) was established in May 2003 with the mission to establish, regulate, promote and monitor transport and infrastructure legislations and policies to ensure safe, secure and viable transportation modes and infrastructure assets. MWTI is the Leading Agency for the purposes of the National Ballast Water Management Strategy.

The Maritime Division of MWTI provides the following services:

- Ship Registration;
- Ship Surveying and Inspection;
- Shipping Crew Training and Certification;
- Ship Safety Clearances;
- Seafarers Employment Contracts;
- Security Assessment of ISPS Port Facilities and Ships;
- ISPS Audit of Ports and Ships;
- Approval Training Modules School of Maritime Training;
- STCW Audit Maritime Training Institution;
- Flag State, Coastal State and Port State Implementation
- Technical Advice of International Convention and National Maritime Legislation to Shipping Industries, Ports, Training Institute and Seafarers; and



- Monitor Compliance of International Convention and National Legislation.

GloBallast defines the responsibilities of the Leading Agency for the purposes of a National Ballast Water Management Strategy as follows:

- Integration of the National Strategy into pertinent national policies/strategies and ensuring that necessary legislation is in place;
- Devising and ensuring implementation of necessary scientific, operational and administrative arrangements for all ships visiting the country's ports;
- Ensuring that all key stakeholders are fully conversant with the National Strategy, appropriately trained and properly authorized to act on its behalf, where required;
- Monitoring and reviewing on an ongoing basis how effectively the National Strategy is being implemented and introducing changes, as necessary;
- Ensuring effective enforcement of national laws and regulations;
- Administration of relevant international instruments related to ballast water management;
- Incorporating into the National Strategy improved measures that become possible due to experience gained in operating the National Strategy and/or through developments in research or technology, or changed international requirements or 'best practice';
- Ensuring the ongoing liaison and cooperation of all key stakeholders; and
- Participating in international, regional and national matters relating to BWM.

## 7. National "Task Force"

The GloBallast Guidelines provide for the establishment of a "Task Force" to oversee and review implementation of the strategy. For Samoa, this role is to be undertaken by the Marine Pollution Advisory Committee established under the Marine Pollution Prevention Act 2008. This Committee is a sub-committee of the Disaster Advisory Committee with the following functions and responsibilities:

- developing, reviewing and implementing the National Marine Spill Contingency Plan (NATPLAN) required under section 21 and related matters;
- assisting in the establishment and maintenance of the inventory of marine pollution response equipment under this Part, and its effective utilisation;
- reviewing the provision and operation of waste facilities in Samoa's ports and setting standards for such facilities;
- ensuring the proper administration and utilisation of the Marine Pollution Levy and the National Marine Pollution Fund in accordance with regulations made under this Act;
- promoting the effective participation of Samoa in any bilateral, multilateral and regional marine spill contingency plans and related arrangements; and
- any other matters related to marine pollution as required by the Minister or Cabinet.

The Committee is chaired by the CEO of the Ministry of Works, Transport and Infrastructure with membership that, according to the Act, must include:

- government representatives from Ministries and agencies which are relevant to the management of the marine environment and the proper management of the POLFUND; and
- industry representatives representing –
  - the shipping industry;

- the oil industry;
- port users; and
- the fishing industry.

Actual current membership is:

- Ministry of Works, Transport and Infrastructure;
- Ministry of Natural Resources and Environment;
- Ministry of Police;
- Office of the Attorney-General;
- Ministry of Finance;
- Ministry of Agriculture and Fisheries;
- Fire and Emergency Services Authority;
- Samoa Ports Authority;
- Samoa Shipping Corporation;
- Local petroleum company;
- Rep from the Fishing industry;
- Rep from Ports users; and
- SPREP.

GloBallast defines the responsibilities of the “Task Force” as being to work together after the development of the National Strategy to provide guidance, oversight, and advice on matters relating to harmful aquatic organisms and pathogens, while the Lead Agency is primarily responsible for administering the operational arrangements.

The Marine Pollution Advisory Committee will, as a priority, develop revised terms of reference to reflect its new additional role, as well and consider the need to revise or extend its membership to include, for example, the Disaster Management Office.

## 8. Action Plan and Implementation Timetable

Strategic Priority	Activities	Responsibility	Year				
			2016	2017	2018	2019	2020
<b>Provide appropriate forum to oversee and review implementation of this Strategy.</b>	Adopt revised Terms of Reference and extend membership, as necessary, of the existing Marine Pollution Advisory Committee to oversee and review implementation of this Strategy.	MWTI, SPREP supported by all stakeholders					
<b>Expedite adoption by Samoa of the International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (BWM Convention).</b>	Adoption of International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004						
	<ul style="list-style-type: none"> <li>Prepare Cabinet Submission –</li> </ul>	MWTI					
	<ul style="list-style-type: none"> <li>Industry consultation for ratification of Convention and development of legislation</li> </ul>	MWTI					
	<ul style="list-style-type: none"> <li>Report to CEO of MWTI</li> </ul>	MWTI					
	<ul style="list-style-type: none"> <li>MWTI to arrange draft legislation</li> </ul>	MWTI					
	<ul style="list-style-type: none"> <li>Submit to Cabinet/Parliament</li> </ul>	MWTI					
<b>Undertake capacity building in Samoa to ensure effective implementation of the BWM Convention.</b>	Conduct training course on BWM Convention Compliance Monitoring and Enforcement for Port State Control officers.	SPREP, support from AMSA					
	Establish ballast sample testing capability in Samoa, taking into account IMO Guidelines for ballast water sampling (Part 3).	SROS, MWTI, MNRE					

	Conduct training course in Port Biological Survey*	SPREP					
	Ensure appropriate sampling equipment is provided to Samoa Port State Control officers, taking into account IMO Guidelines for ballast water sampling (Part 6).	MWTI					
	Assess the extent to which the requirements of the IMO Guidelines for sediment reception facilities (G1) are met at the Satitua Wharf at Aleipata.	MNRE, MWTI, SPA, SSC					
<b>Undertake additional baseline survey work and, based on survey results, consider the need for Economic Impact Assessment.</b>	Conduct additional baseline surveys focussing on Apia Harbour, Salelologo and Satitua wharf to (a) establish whether the original 13 introduced species have been established and become invasive and (b) any new introductions.*	MNRE, SPREP, MWTI, SPA, SSC					
	Consider the need for an Economic Impact Assessment and/or risk assessment, taking into account the results of the additional baseline surveys and the Globallast Guidelines.	MNRE, MWTI, SPREP					
<b>Conduct awareness campaign on ballast water management issues.</b>	Conduct awareness campaign for all stakeholders to coincide with entry into force of the BWM Convention for Samoa.	MWTI					
	Consider possible future measures to address introductions by hull fouling, taking into account SRIMP-PAC and applicable IMO guidelines.	MWTI, MNRE, SPREP					

\* Consideration will be given to combining these two action items.

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