AMERICAN SAMOA

American Samoa is a U.S. Territory located approximately 4,200 km south of Hawaii (Figure AMSAM-1). It is the only U.S. jurisdiction in the South Pacific. American Samoa comprises seven islands (five volcanic islands and two coral atolls) with a combined land area of approximately 200 km^2. The five volcanic islands, Tutuila, Aunu'u, Ofu, Olosega, and Ta'u, are the major inhabited islands of American Samoa. Tutuila, the largest island, is also the center of government and business. Rose Atoll is uninhabited, while Swains Island is inhabited by a subsistence population (of about 10 people). Due to the steepness of the main islands, shallow water habitats around the islands are limited and consist primarily of fringing coral reefs (85% of total coral reef area) with a few offshore banks (12%) and two atolls (3%). The fringing reefs have narrow reef flats (50 to 500 m); depths of 1000 m are reached within 2 to 8 km from shore.

Coral reefs in American Samoa provide an important source of food for villagers through daily subsistence use and sales at local stores. They also provide infrastructure and shoreline protection from storm wave action, and are important to the Samoan culture. Other potential uses of the reefs are low at present (e.g., tourism or the aquarium trade).

In recent years, the corals have demonstrated considerable resilience following a series of natural disturbances, including four hurricanes in the past 18 years, a devastating crown-of-thorns starfish, *Acanthaster planci*, invasion in 1978, and several recent bleaching events. Following each disturbance, the corals eventually recovered and grew to maintain the structural elements of the reefs. However, because serious fishing pressure has occurred, the Territory's coral reef ecosystem cannot be considered healthy based on the resilience of the corals alone. Furthermore, climate change impacts (e.g., coral bleaching and disease) are becoming increasingly apparent and pose a major, repetitive impact to the structure and function of local reefs. Additionally, the Territory's high population growth rate (2.1% per year) continues to strain the environment with issues such as extensive coastal alterations, fishing pressure, loss of wetlands, soil erosion and coastal sedimentation, solid and hazardous waste disposal, and pollution.

American Samoa has several MPAs, three Federal, one territorial, and several village-managed. Rose Atoll is designated as a NWR under the joint jurisdiction of the FWS and the Department of Commerce in cooperation with the Territory of American Samoa (WPRFMC 2001). Fagatele Bay National Marine Sanctuary encompasses a small embayment, and the National Park of American Samoa administers land and coral reef areas on four islands. The territory has also established Ofu Vaoto Marine Park. For the past three years, several villages have instituted community-based fisheries management regimes, banning fishing in part or all of their adjacent reef. Each village writes its own fisheries management plan with the assistance of the American Samoa Department of Marine and Wildlife Resources, but the primary goal overall is to enhance fisheries resources on the reefs. Territorial coordination of coral reef decision-making resides with the Coral Reef Advisory Group, a collaboration of Federal and territorial agencies including NOAA, DOI, the local Department of Commerce and the local Department of Marine and Wildlife Resources, American Samoa Environmental Protection Agency, and the American Samoa Community College's Sea Grant Program. [13]

13 Introductory material was taken, with slight modifications, from Craig (2002) and Craig et al. (2005).

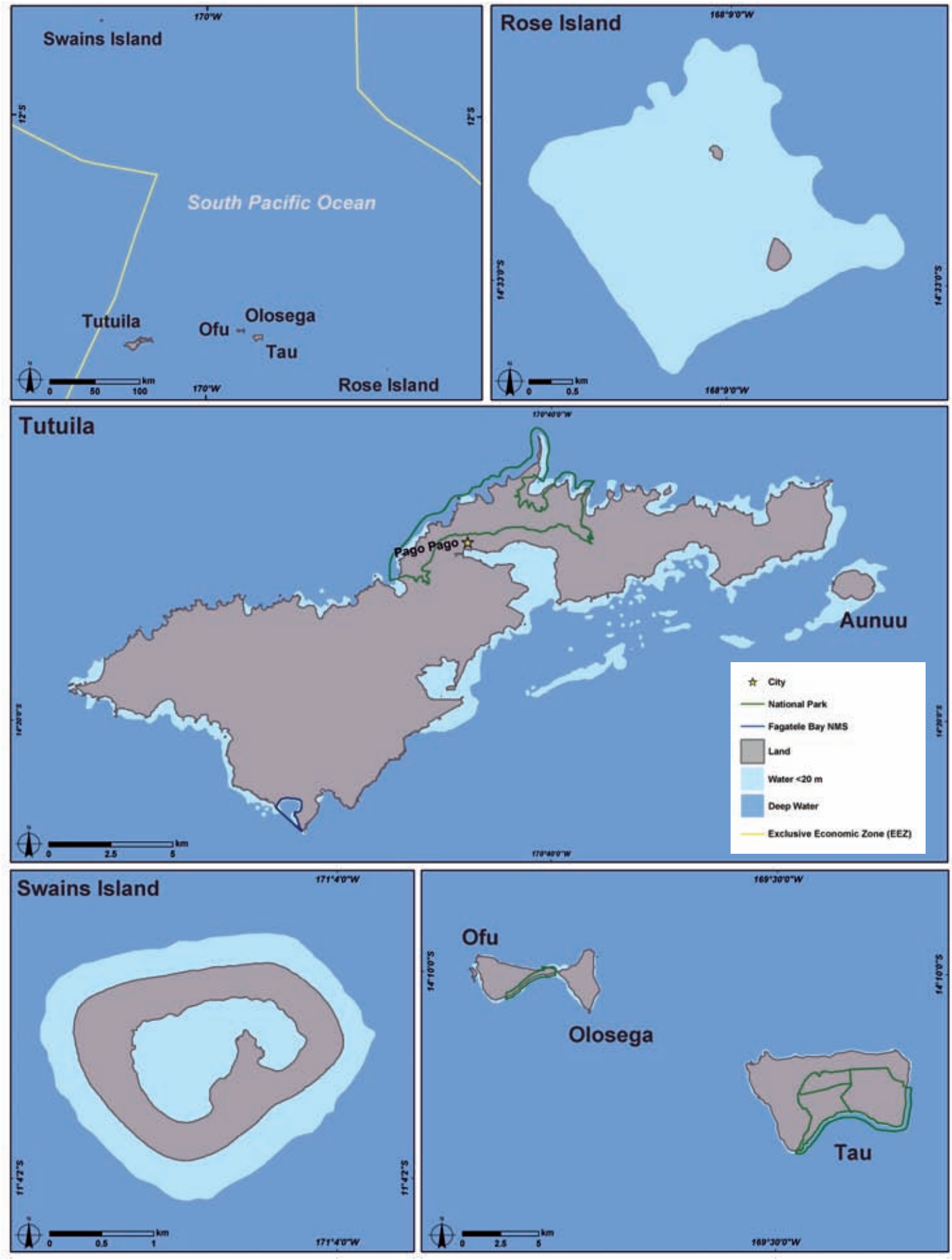

Figure AMSAM-1. Locator map for American Samoa. (See Figure 5 for geographical context.) Map: A. Shapiro. Source: Craig et al. (2005).

Research Needs

American Samoa	FISHING
Management Objective	***Research Need***
Conserve and manage fisheries to prevent overfishing, rebuild stocks, and minimize destructive fishing. *See Jurisdiction-Wide Section for additional research needs.*	Determine sustainable harvest levels and fishing limits for the various fisheries.
	Assess the socioeconomic and biological implications of the recent ban on scuba spearfishing.
	Assess the impact of harvest in subsistence, artisanal, and export fisheries.
Evaluate aquaculture projects that minimize impacts to habitats, fishery stocks, and existing fishing communities.[14]	Assess the cost and benefits of aquaculture of local organisms with regard to their ease of production, economic potential (for local markets and export), and environmental impact.
	Conduct a socioeconomic survey to determine the level of acceptance of aquaculture products in the local market, appropriate products and potential economic returns, and interest levels of potential aquaculture farmers.
	Evaluate a demonstration aquaculture facility(s) that promotes environmentally-friendly culture systems (e.g., green water tank culture and aquaponics) that can be used for training, education, and research.

American Samoa	POLLUTION
Management Objective	***Research Need***
Reduce the impacts of pollutants on coral reef ecosystems by improving the understanding of their effects. *See Jurisdiction-Wide Section for additional research needs.*	Clarify the role of pollution in causing degradation of coral reef ecosystems.
	Evaluate the ability of monitoring programs to detect ecosystem change associated with inputs of land-based pollutants.
	Develop a circulation model for the main islands in the territory, including nearshore waters.
Improve water quality by reducing land-based pollutant inputs and impacts on coral reef ecosystems. *See Jurisdiction-Wide Section for additional research needs.*	Analyze and evaluate coral reef condition and water quality of reef sites adjacent to selected watersheds to help determine the efficacy of the nonpoint source program.
	Develop criteria to use in the review of environmental assessments and environmental impact statements.
	Identify potential modifications to water and sewer facilities and evaluate their effectiveness in preventing cyclones from spilling contaminants into nearshore waters.

14 While managers and scientists in American Samoa take a cautious view of aquaculture, based on negative experiences elsewhere and the industry's potential to harm coral reef ecosystems, the Territory's homogenous economic base makes it attractive to small-scale aquaculture ventures similar to those found elsewhere in tropical areas. It has therefore been recognized that management-driven research, while not currently a priority, may be desired on an as-needed basis in the future.

American Samoa	COASTAL USES
Management Objective	***Research Need***
Reduce the impacts from recreational use, industry, coastal development, and maritime vessels on coral reef ecosystems. *See Jurisdiction-Wide Section for additional research needs.*	Evaluate the effectiveness of land use permits aimed to mitigate impacts on adjacent reefs.
	Quantify soil erosion resulting from coastal development on steep volcanic soils and associated impacts to coral reef ecosystems.
	Evaluate and update BMPs for watersheds.
Restore injured and degraded coral reef habitat.	*See Jurisdiction-Wide Section for research needs.*
Reduce rapid population growth in American Samoa.	Evaluate social, economic, and population impacts on coral reef ecosystems and model the future of these ecosystems with continued population growth.
Evaluate and improve the effectiveness of MPAs as a management tool.	*See Jurisdiction-Wide Section for research needs.*

American Samoa	INVASIVE SPECIES
Management Objective	***Research Need***
Minimize the introduction and spread of alien species.	*See Jurisdiction-Wide Section for research needs.*

American Samoa	CLIMATE CHANGE
Management Objective	***Research Need***
Minimize the effects of climate change on coral reef ecosystems. *See Jurisdiction-Wide Section for additional research needs.*	Identify populations or communities that have endogenous factors which make them less susceptible to the effects of climate change.

American Samoa	EXTREME EVENTS
Management Objective	***Research Need***
Identify causes and consequences of diseases in coral reef ecosystems and mitigate their impacts.	*See Jurisdiction-Wide Section for research needs.*