



Chapter 1 Introduction

Summary

Sandwatch provides the framework for children, youth and adults, with the help of teachers and local communities, to work together to critically evaluate the problems and conflicts facing their beach environments and to develop sustainable approaches to address these issues, whilst at the same time helping beaches become more resilient to climate change. Preliminary chapters focus on how to get started with Sandwatch activities and climate change. Documenting the Sandwatch methodology: *Monitoring, Analysing, Sharing, and Taking action* is the major focus of this publication. An activities-orientated approach is used to provide step-by-step instructions to cover monitoring methods and data analysis, including observation and recording, erosion and accretion, beach composition, human activities, beach debris, water quality, waves, longshore currents, plants and animals. The activities are related to (a) sustainable development issues including: beach ownership; mining beaches for construction material; conflict resolution between different beach users; pollution; conservation of endangered species and (b) climate change adaptation issues: sea level rise, rising temperatures, ocean acidification and increased extreme events. Ways to share the findings and create a Sandwatch network are described and methods include the use of local media, websites, social networking and video production. Finally, ways are discussed to design, plan and implement a Sandwatch project that fulfils one or all of the following criteria: (a) addresses a particular beach-related issue; (b) enhances the beach; and (c) promotes climate change adaptation.

Background

Sandwatch is a programme whereby children, youth and adults work together to scientifically monitor and critically evaluate the problems and conflicts facing their beach environments and then design and implement activities and projects to address some of those issues, whilst also enhancing the beach environment and building ecosystem resilience to climate change. Founded on a series of very simple protocols, Sandwatch appeals to persons of all ages and all backgrounds.

Sandwatch can trace its early beginnings to an environmental education workshop held in Trinidad and Tobago in July 1998, organized by the United Nations Educational, Scientific and Cultural Organization (UNESCO). Participants saw firsthand many of the problems facing the coastal zone – problems related to erosion, pollution and poorly-planned development – and resolved to do something about these issues themselves. This was the beginning of what has become known as Sandwatch.

Starting as a Caribbean regional initiative, Sandwatch is now a vibrant, international programme implemented by schools, youth and community groups in Africa, Asia, Europe, and islands in the Caribbean, Pacific and Indian Oceans. Networked via the Internet, Sandwatch is now on its way to becoming a worldwide movement.

At the mid-point of the United Nations Decade of Education for Sustainable Development (2005-2014) Sandwatch presents an example of Education for Sustainable Development in action, and is being targeted as one of several flagship projects for the Decade.

As the world confronts the growing threat of climate change, Sandwatch presents an opportunity to help people and ecosystems respond to present and future changes in a practical manner. Beaches are among the ecosystems most at risk from climate change as they face rising sea levels and increased storms. By contributing to ecosystem health and resilience, Sandwatch can help people from all walks of life learn about climate change and how their actions can contribute to the adaptation process.

Short history and scope of Sandwatch



Sandwatch is also about sharing information. Here a group of students in San Andres discuss how to measure beaches with a representative from CORALINA.



Other representatives from CORALINA talk with a beach user on how to best protect an eroding beach. (CORALINA is the Corporation for the Sustainable Development of the Corporation of San Andres, Old Providence and Santa Catalina)

Sandwatch has been supported from its conceptualisation by UNESCO, primarily through its education and science sectors, and its national commissions. Many other partners are also involved. Sandwatch formally began in 2001 with a regional training workshop held in Saint Lucia with teachers and students from 18 Caribbean countries. Participants were trained to use standardised methods for the measurement of beach changes including erosion and accretion, wave and current action, water quality, and human activities that impact the beach. A manual

was prepared prior to the workshop, with the assistance of the University of Puerto Rico Sea Grant College Program.

Following the training workshop, teachers worked with their students to monitor their beach environments and record their results. A follow-up workshop was held in Dominica in 2003, with the added participation of representatives from the Pacific and Indian Ocean islands. In 2004-2005 Sandwatch groups were invited to enter an international “Community Sandwatch” competition, with the goal of having students plan, design, implement and evaluate community-based beach enhancement projects based on the beach monitoring methods that are an integral part of Sandwatch. The 30 entries, documented on the Sandwatch website (www.sandwatch.org), illustrated the effectiveness of the approach both from a learning perspective and a practical application. Entrants worked with different beach users, ranging from interested tourists to sceptical developers, to preserve the beach environment and displayed their knowledge and communication skills as they utilised the media to their advantage. Selected highlights are shown in Box 1.

Box 1
Selected Highlights from the “Community Sandwatch” Competition 2004-2005

- In Cuba, a Sandwatch group worked with hotel developers and construction workers to raise their awareness about beach flora and fauna and convinced the developers to help move a community of threatened iguanas to a neighbouring more protected site.
- In St. Vincent and the Grenadines, the Sandwatch group restored a degraded coastal area and used the power of the media to help local fishermen change their attitudes and stop polluting the beach and nearshore area.
- In The Bahamas the Sandwatch group worked with hoteliers and tourists to ensure visitors adopted safe and environmentally sensitive practices when snorkelling over a nearshore reef that provides protection to their beach.
- In the Cook Islands, Sandwatch groups saw their beach ravaged by several cyclones, but vowed to replant the vegetation and help the beaches recover after the cyclone season.
- In Cuba, another Sandwatch group included students with special needs in their beach enhancement project, thereby illustrating the contribution that can be made by all members of society.

Following the establishment of the Sandwatch website in 2006, the programme has expanded worldwide as networking has become an important component of the programme. In 2006, Trinidad and Tobago organised a Sandwatch fair, inviting more than 13 countries to share their Sandwatch experiences. In 2008 the non-profit Sandwatch Foundation was established to coordinate and promote Sandwatch.

In 2007 the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) compiled overwhelming evidence to show that the earth's climate is changing mainly as a result of greenhouse gases caused by human activities. Partly as a result of this report and the award of the 2007 Nobel Peace Prize to the IPCC and former US Vice-President, Al Gore, climate change became a worldwide concern. Sandwatch, which already had the objective of building ecosystem resilience, was identified as a programme ideally suited to building capacity in climate change adaptation. In 2008, a "Sandwatch and Climate Change" video competition was held, a training workshop was conducted to provide Caribbean Sandwatch groups with the communication skills to effectively convey information on climate change to a general audience, and a dedicated climate change section was established on the website.

The original Sandwatch manual, prepared in 2001, was revised and published in 2005. As a result of the growth and expansion of the programme, new emphasis on networking and communications, and the particular success of the applied approach and its contribution to beach enhancement worldwide, it was decided in 2009 to revise the manual. This new edition includes new information and activities related directly and indirectly to climate change, and new methods that have been developed by Sandwatch groups. It therefore represents a useful tool for both new and established Sandwatch groups.

Objectives of Sandwatch

Through Sandwatch, children, youth and adults work with their local communities, and get involved in the enhancement and wise management of their beach environments.

The objectives of Sandwatch are to:

- (a) involve children, youth and adults in the scientific observation, measurement and analysis of changes in the beach environment utilizing an inter-disciplinary approach;
- (b) assist Sandwatch groups, with the help of local communities, to apply their information and knowledge to the wise management and enhancement of their beaches;
- (c) integrate the Sandwatch approach into the formal and informal education system and contribute to the Decade of Education for Sustainable Development;
- (d) contribute to the understanding of how climate change affects beach systems; and
- (e) build ecosystem resilience and contribute to climate change adaptation.

Sandwatch vision statement

Sandwatch seeks to change the lifestyle and habits of children, youth and adults on a community wide basis, to adapt to climate change by building ecosystem resilience, and to develop awareness of the fragile nature of the marine and coastal environment and the need to use it wisely.

Sandwatch methodology



Taking action based on sound science is the basis of the Sandwatch methodology. The Sandwatch methodology has four main steps: **M**onitoring, **A**nalysing, **S**haring, **T**aking Action (MAST):

- (a) Monitoring the beach: Selection of a specific beach where various parameters are regularly measured, including:
 - observing the beach and preparing a sketch map;
 - people's use of the beach;
 - debris on the beach;
 - water quality;
 - erosion and accretion;
 - beach composition;
 - waves;
 - longshore currents; and
 - plants and animals.
- (b) Analysing the results: Compiling the information into tables, graphs and charts and determining trends as to how a particular parameter changes over time, including:
 - compiling data tables;
 - using graphs and charts to display the data;
 - designing artwork and physical models illustrating the findings; and
 - conducting simple statistical analysis (where appropriate and depending on the group's background).
- (c) Sharing the findings: Communicating the results in the local context, such as with other classes, schools and youth groups, parents, community members and government officials; as well as with other Sandwatch groups worldwide, through the following:

- meetings and presentations;
 - story-telling and drama;
 - written publications such as newsletters, flyers, pamphlets, stories, cartoons;
 - visual media: posters, photographs, videos;
 - networking via the Internet; and
 - websites.
- (d) Taking action: Planning, implementing and evaluating a beach-related activity that fulfils one or all of the following:
- addresses a particular beach-related issue;
 - enhances the beach; and
 - promotes climate change adaptation.

With a strong field monitoring component, Sandwatch tries to 'make science live', yet remains inter-disciplinary with applications ranging from ecology to woodwork and from poetry to mathematics. Sandwatch activities relate directly to topics already included in the primary and secondary school curricula. Sandwatch also provides an approach that can be used by non-school groups such as youth groups, environmental and community groups.

Outline of this publication

Documenting the Sandwatch methodology is the major focus of this publication. Chapter 2 provides some background on climate change and projected beach impacts and discusses how Sandwatch contributes to Education for Sustainable Development. Chapter 3 provides information for new groups on how to get started with Sandwatch. Chapters 4 - 12 outline methods for measurement and analysis of specific components of the beach system:

4. observation and recording;
5. erosion and accretion;
6. beach composition;
7. human activities;
8. beach debris;
9. water quality;
10. waves;
11. longshore currents; and
12. plants and animals.

Chapter 13 discusses the third component of the Sandwatch methodology: how to communicate and share the information with other groups. Finally, Chapter 14 describes the fourth step of the Sandwatch methodology: taking action through the planning, implementation and evaluation of beach-related projects. A glossary at the end of this publication defines the terms used in this publication.