

An aerial photograph of a coastal town with a sandy beach and blue water. The town is built on a hillside overlooking the ocean. The water is a deep blue, and the beach is a light tan color. In the foreground, several boats are visible in the water, connected by a line of buoys. The title 'REEF Journal' is overlaid in large yellow letters.

# REEF Journal

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# REEF Journal

**Topics related to:**

**Multi-purpose and Surfing Reefs**

**Coastal and Marine Research**

**Coastal Engineering and Construction**

**EDITORS NOTE:**

Welcome to the inaugural edition of the REEF Journal. This publication includes selected refereed papers from the 4<sup>th</sup> and 5<sup>th</sup> International Surfing Reef Symposiums held in Manhattan Beach, California and Lombok, Indonesia. The aim of the symposiums is to provide a platform for experts in the fields of multi-purpose reefs, coastal science and engineering, oceanography, environmental, geology, geography, marine biology, coastal management and planning, and ocean enthusiasts. The main focus is on the sharing of quality literature to inform and promote the use of multi-purpose reefs in the coastal environment to both mitigate erosion and increase amenity.

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Prof. L. Harris, (Ph.D.) USA  
Prof. A. Short, (Ph.D.) AUS  
S.T Mead, (Ph.D.) NZ  
J. Bryne, (Ph.D.) USA, AUS

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T. Martin, USA  
D. Anderson, *Sth Africa*  
T. Maddux, (Ph.D.) USA  
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**Sponsors**



Cover photo: Construction of the Mount Reef. Source: ASR Ltd, 2005

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## INTRODUCTION

### **A Short History of the Surfing Reef Symposia: 1997 – 2009 and Beyond...**

The first conference, called the "1<sup>st</sup> International Surfing Reef Symposium", was a one-day event held on May 5<sup>th</sup>, 1997 in Sydney Australia. Hosted by the University of Sydney and directed by Andrew Pitt, it was a hugely successful start to the conference tradition. The first symposium was a one-day event with more than 100 delegates in attendance. The keynote address was presented by Professor Andy Short who welcomed the delegates and reminded everyone of the reasons why they were there in the first place. These were:

1. To raise community awareness of surfing reefs.
2. To share information with and learn from others about this topic in an effort to promote the best design practices, environmental compatibility and sustainability and to attract wide community support in these efforts.

Looking back at one of the few copies of the proceedings still in existence, this was a legendary event. First off, former surfing World Champion, Wayne 'Rabbit' Bartholemew, gave an introductory presentation describing his hope for the future of surfing reefs in opening up new opportunities for the sport and reducing overcrowding.

This was followed by a presentation from James 'Kimo' Walker, arguably the father of 'surfing science'. His presentation detailed his previous studies, which had for the first time, laid out in quantitative terms, the factors controlling the waves we ride. This is not something to be scoffed at, lawyers, politicians and engineers think and act in quantitative terms and not a lot of them surf. Providing a common ground for surfers to get their point across to non-surfing decision makers was a significant leap forward in the long-term protection of the waves we cherish.

The conference was also notable as it described the world's first three artificial surfing reef projects.

- The Cables Station reef in Perth Australia, designed by a team from the University of Western Australia's Centre for Water Research, led by Professor Charitha Pattiaratchi.
- The Gold Coast or Narrowneck Reef, designed by Kerry Black, Shaw Mead and others from the University of Waikato in New Zealand. This group also presented a paper, which described some of the earliest efforts to numerically model surfing reef performance and the associated shoreline response.

- Pratte's Reef, designed by Dave Skelly in Encinitas, CA. This project was notable in that it was arguably the very issue that led to the creation of the now ubiquitous Surf Rider Foundation and was probably the first time that a private entity was held accountable for the destruction of a surfing resource in the United States, a landmark event indeed.

Other important presentations included an early discussion of the use of sand filled geotextile containers by Eric Fish - this construction technique is now the preferred standard for reef construction, and a discussion of coastal engineering from a surfing-centric point of view by Steve Fitzhenry.

This conference was important in that it set the stage for future conferences and opened up a forum for discussion amongst concerned, technically minded scientists and surfers that has continued for more than 10 years.

One year later, the second conference was held in San Diego, California. This was a short, 1-day affair organised by Dave Skelly. No proceedings volume was ever produced for this event and the whole thing remains shrouded in mystery!

Fortunately the tradition was revived in a spectacular fashion in June 2003 with the '3<sup>rd</sup> International Surfing Reef Symposium' organised by Kerry Black, Shaw Mead and the crew at ASR Ltd in Raglan New Zealand. This was a full conference, held at the Karioi Lodge, hidden in the rainforest above the world famous Indicators Surfbreak, and attracted delegates from around the world. Papers presented at the 3<sup>rd</sup> Symposium described the leaps forward in research, computing and design, which had taken place in the 6 years since the first conference.

Important papers included

- An overview of surfing science
- The surfing characteristics of the waves around jetties
- A description of the Mount Reef, which has since been built and surfed at Mount Maunganui, New Zealand
- A report on the construction, lack of surf and ultimate demise of Pratte's Reef
- Proposed reefs for India and England, both of which have come to fruition with the completion of the Boscombe Reef in England (UK Summer 2009) and construction of a reef in Kovalam, India slated for late 2009 – 2010
- A section of the conference devoted to reef biology.

It was the stoke from this event that inspired Chad Nelsen and I to host the '4<sup>th</sup> International Surfing Reef Symposium' in Manhattan Beach, California in January 2005. The site was chosen since it was adjacent to the location of Pratte's Reef and home to some of the more consistent beach break in southern California

during winter. At the time, I was an Assistant Research Professor in the Civil and Environmental Engineering Department at the University of Southern California and Chad was the Environmental Director of the Surfrider Foundation – a position he holds to this day. The event attracted a large number of delegates from both coasts of North America and around the world. Select papers from that conference are presented in this volume.

The symposium opened with a keynote address from Bob Battalio, a practicing coastal engineer from San Francisco who is also a regular at Maverick's. Bob set the tone for the meeting by sharing his reverence for science both his stoke for surfing and by describing of the history, mystery and magic of wave breaking and some of the people who have defined the field, such as Kimo Walker.

Eighteen months later the in July 2006, the 5<sup>th</sup> Symposium was held at the idyllic location of Ekas Bay at the newly created 'Heaven on the Planet' surf and eco-resort on the island of Lombok, Indonesia. Kerry Black and Shaw Mead of New Zealand-based ASR LTD once again hosted this conference. The symposium attracted engineers, scientists, and planners of numerous artificial reef projects from around the world to present the merits and benefits of reefs as a form of recreational enhancement and coastal protection. The papers presented were of a high quality and the debate was rigorous and stimulating. Papers from that event are also presented in this inaugural volume of the Reef Journal. The keynote speaker that year was John Hearin who presented a paper with Prof. Lee Harris from the Florida Institute of Technology on: Artificial Reefs for Ecosystem Restoration and Coastal Erosion Protection with Aquaculture and Recreational Amenities.

In May 2009, the conference carried on as the 6<sup>th</sup> symposium was held in Jeffrey's Bay South Africa. This event signaled a turning point in the evolution of the conference as the name was changed to the 'International Multipurpose Reef Symposium' to emphasize the wider uses for man made reefs in coastal protection, ecological enhancement and of course creating surfing reefs. This time, Dylan Anderson of AfriCoast Engineers and Richard Mocke of JFA Consultants in Perth, Australia organized the event. The delegates were again a global group coming from Africa, Asia, North America, Europe and of course Australia and New Zealand. This event was a cracker with the conference marquee tent set up literally on the grass overlooking Supertubes, one of the best surfbreaks on earth (and the waves were pretty good too!). A proceedings volume from this event is being prepared and will appear as a future volume of the Reef Journal.

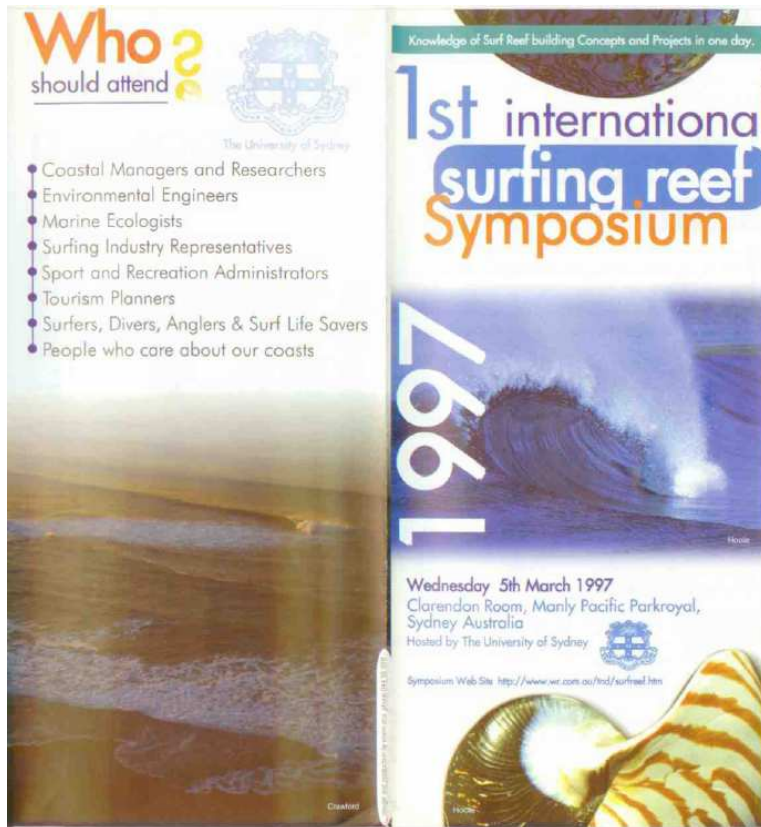


Figure 1: Promotional flyer from the 1<sup>st</sup> Symposium.



Figure 2: The logo and flyer art from the 3<sup>rd</sup> Symposium



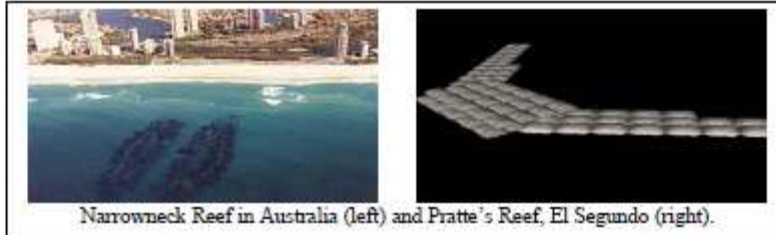
# The 4<sup>th</sup> International Surfing Reef Symposium

Natural and Artificial Surfing Reefs, Surf Science and Coastal Management  
January 12 – 15, 2005, Manhattan Beach, California

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Narrowneck Reef in Australia (left) and Pratte's Reef, El Segundo (right).

## MISSION:

To foster an open dialog between surfers, scientists, ocean enthusiasts, and coastal zone managers on the topic of surfing science, artificial surfing reefs, human impacts on surf zone environment and the economy of surfing.

## Background and History:

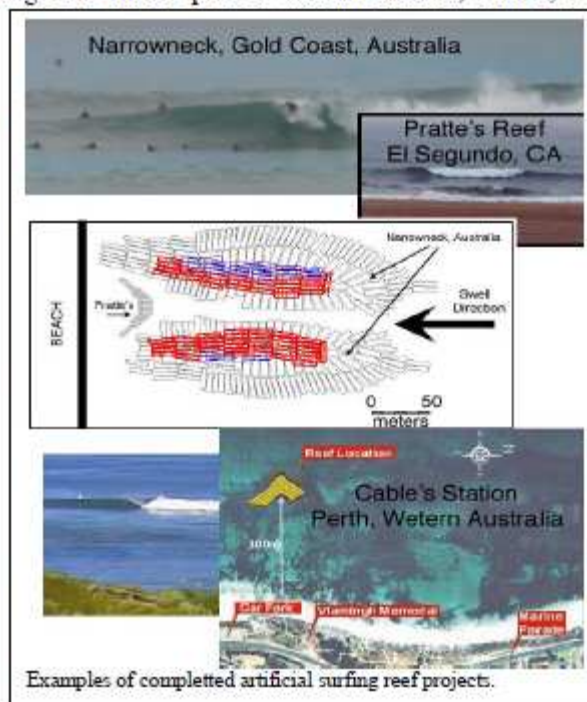
An offshoot of the the traditional coastal engineering world, the study of natural and artificial reefs in the context of surfing has led to a better understanding of coastal processes and the physical characteristics of recreational wave breaking. Over the past 20 years, artificial surfing reefs have emerged as a new coastal zone management tool, one with wide ranging consequences. It is a topic of vital interest for any beach community, especially those in southern California where surfing is a critical part of beach recreation, culture, and economics.

To date three artificial reefs have been built for surfing and countless other coastal structures have influenced recreational surfing for better or worse. A better understanding of how these structures influence recreational surfing will improve our ability to minimize impacts to surfing in some instances and possibly enhance surfing in others.

This event will build on the experience gained and the knowledge that was shared at the previous three symposia. Prior meetings were held in San Diego, Australia and New Zealand.

## Venue:

Manhattan Beach California, with its large surfing population, surf economy and proximity to several universities with coastal science and engineering programs, is an ideal place to hold the event. More specifically, the Joslyn Community Center, within walking distance of the Pacific Ocean, is a City run building with conference and meeting facilities that are appropriately sized for this conference.



Examples of completed artificial surfing reef projects.

**Sessions and Topics:**

Sessions on a wide range of topics will be established, for example: artificial reef design and construction methods, numerical modeling and computer simulations, sediment transport, economic impacts, biological issues and legal and permitting challenges. The organizers would like to provide low cost admission for local surfers and interested citizens in an effort enhance the educational outreach of the conference. The conference will be not for profit. All funding will go towards the costs of running the event and production of a conference proceedings volume, any additional funding will be put towards the 5<sup>th</sup> international symposium.

**Participants and Sponsors:**

The meeting facilities can accommodate up to 100 persons. The current sponsors of the event are the University of Southern California and the Surfrider Foundation. Activities related to the conference include field trips, surfing, and a dinner and reception held at a local venue. Many of the attendees will be from out of the area and will be staying at local hotels.



January surf at El Porto near the conference venue.

**Schedule:**

Wednesday January 12th, 2005 evening get together and icebreaker, location TBD, Manhattan Beach

Thur Jan 13th 2005	7:00am - 10:30am	field trip to local beaches
	11:30am - 3:00pm	presentations
	3:00pm - 4:00pm	catered lunch at or near conference site.
	4:00pm - 7:00pm	presentations, adjourn
Fri Jan 14th 2005	7:00am - 10:30am	field trip to local beaches
	11:30am - 3:00pm	presentations
	3:00pm - 4:00pm	catered lunch at or near conference site.
	4:00pm - 7:00pm	presentations, adjourn
	8:30pm - 12:00am	conference reception

\* If necessary, the schedule can be shifted to accommodate a third day, with the dinner Saturday night.

Figure 3: Promotional flyer from the 4<sup>th</sup> Symposium





**Figure 4: Prof. Kerry Black making a presentation at the 5<sup>th</sup> Symposium in Lombok.**



**Figure 5: Supertubes on the day before the 6<sup>th</sup> Symposium in South Africa.**