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## **ABSTRACT**

Improving the response capacity of coastal communities at risk to tsunami presents an ongoing challenge. This study builds on previous research in coastal Washington that explored warning and disaster response capacity in the tourism sector. It presents the results of a survey undertaken during February 2010. A range of suggestions are made for improving: (1) staff training; (2) exercises/drills; and (3) the provision of tsunami information. Observations from the February 27 2010 tsunami advisory illustrate the effectiveness of many of the current tsunami warning arrangements.

## **KEYWORDS**

Tsunami, response capacity, staff training, tourism.

## **1.0 INTRODUCTION**

Improving the response capacity of coastal communities at risk to tsunami presents an ongoing challenge. This study builds on previous research on tsunami awareness and preparedness in coastal Washington (Becker et al. 2008 and Johnston et al. 2002, 2005, 2007, 2009) that explored warning and disaster response capacity and staff training in the tourism sector in communities on the Washington coast.

## **2.0 METHODS**

Data was gathered through a questionnaire hand-delivered to all accommodation facilities (motels, hotels, bed and breakfasts, RV parks and camping grounds) from Ocean Shores to Moclips on 28 February 2010, which coincidentally was the day following the tsunami advisory from the Chilean earthquake (WSMD 2010). A total of 88 questionnaires were delivered with 26 returns; giving us return rate of 30%. The two-page questionnaire consisted of 24 questions, covering staff training, exercising, signage, knowledge of the Disaster Response Guidebook for Hotels and Motels, demographics and information on the accommodation facility. Surveys were returned by postage paid envelope to Washington State Emergency Management Division. A copy of the survey is included in Appendix 1. A summary of observations from the February 27 2010 tsunami advisory are also included.

### **2.1 Demographics**

Just over half (56%) of respondents were male. Approximately a third (38%) had undergraduate or higher qualifications. The age range was 34-78 years with the mean age of respondents being 55.

### **2.2 Information on Accommodation Facility**

Accommodation facilities comprised of 31% hotels, 23% motels, 23% campground/RV parks, 19% resorts, and 11% other. The largest number of rooms was 165, and the smallest was 8, with a mean of 46. In the high season the largest number of visitors was 504 and the least was 12, with a mean of 126. In the low season the highest number of visitors was 325 and the lowest 3, with a mean of 41. The range of staff employed was from 1 to 307, with the mean being 27. Respondents reported that they had been with the company from 1-37 years, with a mean of 10 years. The status of the respondents were that 70% were managers and 30% were owners. (Owner-managers are classified as 'owners' in this report).

### 3.0 SURVEY RESULTS

#### 3.1 Disaster Response Guidebook

Almost half (46%) reported seeing a copy of the Disaster Response Guidebook (Figure. 1.). Half (50%) reported that their facility had a copy of the Guidebook, and 15% didn't know. All most half (46%) said it was at the front desk, while 31% reported that it was in an office (in one case this was the front desk). Despite approximately half of respondents knowing about the guidebook only 31% stated that the facility actively refers to the guidebook.



**Figure 1** Disaster Response Guidebook for Hotels and Motels published by the Washington State Military Department: Emergency Management Division in 2006.

#### 3.2 Training

In response to being asked whether they had received training for dealing with emergencies, 69% of respondents reported that they had received training. Of those who had training, 83% reported training for each of fire, earthquake and tsunami. Of the other hazards, 78% reported training for storms, 56% for flooding, 22% for hurricane and 22% for non-hazard training. Of those who received training, 44% said that the training was annual, 33% reported training at induction and 33% reported training at another time. Training generally relied on presentation methods, such as talks and videos rather than problem-based methods. Only 35% of respondents stated that training was on-going. A total of 65% of respondents believed that their organisation was committed to training in general.

### **3.3 Exercising/Drills**

Approximately a third (31%) stated their facility participates in community-wide tsunami exercises/drills. Half (50%) stated their facility runs its own evacuation exercises/drills independent of the wider community. Of those, 92% of exercises/drills were for fire, 54% tsunami, 38% earthquake, 31% storm, and 8% for sea rip-currents. Just over half of respondents (54%) stated they have exercises/drills which their facilities run annually or more frequently.

### **3.4 Signage**

Just over a half (58%) reported that they have hazard signage at their accommodation facility, and 53% of those reported that signage was for tsunami. This equates to only 31% of all facilities in the sample having reported signage for tsunami. The location of signs varied from being in all rooms to only at the reception desk/lobby.

### **3.5 Personal Experience**

Nearly a half (46%) of respondents reported having experience of some hazard in the past, ranging from: fires, flooding, earthquakes to hazardous chemicals.

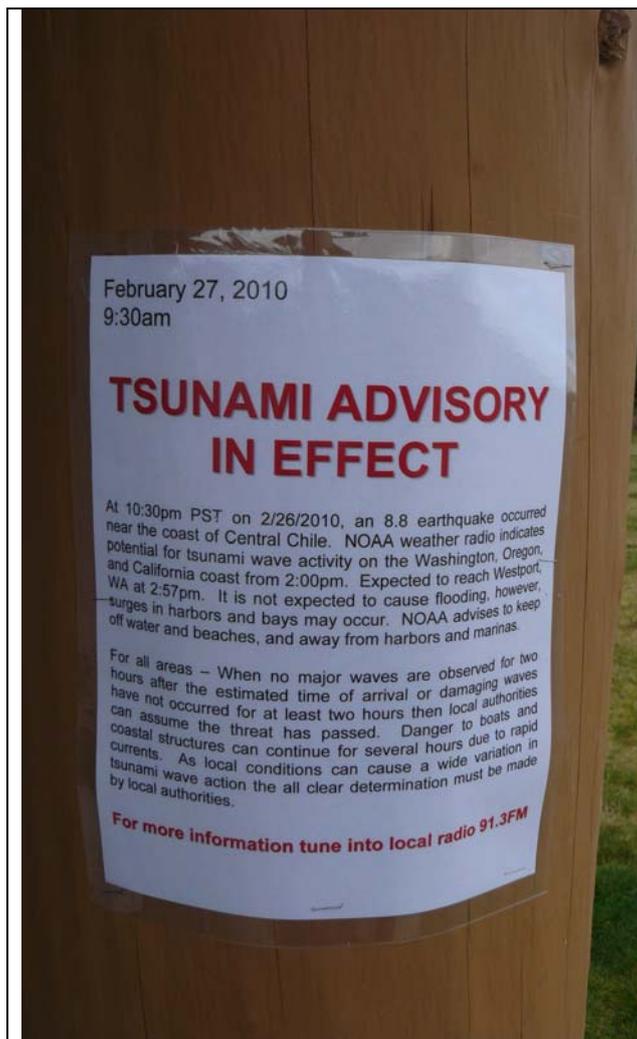
## **4.0 OBSERVATIONS FROM OCEAN BEACH, PACIFIC BEACH AND SURROUNDING COMMUNITIES ON 27 FEBRUARY, 2010**

During the day of the Chilean Tsunami Advisory the research team recorded the following observations.

- There was a strong County Sheriff and Fire Department response in uniform vehicles across the communities visited, advising people to stay off the beach and that waves may arrive after 3pm. They manned road intersections and beach access points and interacted with nearly all members of the public at these points. Many drivers turned around and left the beach areas.
- Emergency services and volunteers placed signage at road ends and dropped leaflets. For example, these were delivered to stores and businesses between 11 and 12pm at Ocean Beach.
- The vast majority of people adhered to the advice they were given, with only a few individuals at several locations choosing to enter the beach.
- Beaches were quiet at 3pm around the forecasted arrival time. Masses of people were back on the beaches by 5pm, with most emergency management resources having been removed from access points at 4pm.
- We were told by members of the public that an all-clear was given about 6pm.
- Members of the public we talked to generally considered tsunami to be a real risk for this coast. Some people were sceptical of the risk from Chile as a tsunami source.

- There was heavy coverage of the event and advisories on the radio and television, which seemed to be consistent with the message being delivered in the leaflet and acted out by emergency manager actions.
- On the day activation and decision-making seemed adequate for an advisory level event, in the observed communities. However, had the event been of a larger magnitude it is unclear what procedures would have been followed in the minds of those we spoke to?
- This event may give a false impression of (a) the effectiveness of the system for a larger tsunami and (b) the situation that can be expected in future events.
- In contrast to our observation at Ocean Beach and Pacific Beach, the Sheriff at Ocean Shores described a different experience with large numbers of people ignoring his and his deputies' advice and continuing onto the beach.
- In regards to the warning system the sirens were not activated. Communications to Emergency Management personnel seemed adequate. Media and people stationed at beach access point were the main sources of communication to the public.
- We noted that 1 hour after forecast arrival there were many clam diggers back on the beach at Moclips. This could have been when the largest waves would be arriving, if the biggest waves weren't the first. In general the 6pm exclusion was cancelled early, possibly prematurely given larger waves may arrive after several hours.

Figures 2 to 6 show images taken on the day of the Chilean Tsunami Advisory (February 27 2010).



**Figure 2** Sign at beach access point (Ocean Beach). A Park Ranger here, who had received a warning and advisory in the morning, was on beach telling people that they were allowed on the beach but he suggested they should not go clam digging. 1:10pm PDT



**Figure 3** Fireman from Greys Harbour Fire Service had been there about an hour. They were passing on the advisory notice to people coming to the beach. (1:45pm, two miles south of Cedar Lane).



**Figure 4** County Sheriff staff in a marked car passing on the tsunami advisory to citizens.



**Figure 5** Distribution of brochures about the warning to the community. Photo taken at 4pm at Pacific Beach. The local fire brigade had four teams from midday out distributing the brochures.



**Figure 6** Message explicitly warning clam diggers at Pacific Beach. Here the 8<sup>th</sup> Fire District was advising people to stay off the beach to until 6pm as the first waves would arrive from 3pm.

## 5.0 CONCLUSION

In our first study in 2005 (Johnston et al, 2007), there was limited tsunami and general hazard response training in accommodation facilities. Since this initial survey, there have been improvements in training, but still in a minority of facilities. This suggests there is considerable room for improvement. However, a majority reported that they felt their facility was committed to training. Previous research (Johnston et al, 2005) highlighted commitment as a key issue for enhancing and maintaining staff training. The Disaster Response Guidebook for Hotels and Motels was found to be beneficial to users (this study and Johnston et al, 2009) and in some ways effectively addresses the issue of commitment. However, the guidebook alone will not necessarily bring about the desired levels of preparedness and needs to be augmented with a range of training interventions, such as:

- Tsunami response instruction to be included in induction training
- Collaborative, on-going training sessions for accommodation providers in the off-season.
- Greater frequency of tsunami specific training for all staff
- Wider involvement of accommodation facilities in community-based exercises/drills
- Increased awareness and use of the guidebook.

Observations from the February 27<sup>th</sup> tsunami advisory illustrate the effectiveness of many of the current tsunami warning arrangements. In general there was a strong emergency management presence and media coverage giving a consistent and effective message for this advisory-level event. However, this event may give a false impression of (a) the effectiveness of the system for a larger tsunami and (b) the situation that can be expected in future events (referred to as normalisation bias; Paton *et al.* 1998). In general the 6pm exclusion was cancelled early, possibly prematurely given that larger waves can still arrive after several hours.

## 6.0 ACKNOWLEDGEMENTS

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## APPENDIX 1 PREPAREDNESS FOR MANAGING NATURAL HAZARDS EVENTS IN THE TOURISM SECTOR

**Q1** What type of facility is this? **(Please check only one)**

<sub>1</sub> Hotel

<sub>2</sub> Motel

<sub>3</sub> Bed & Breakfast

<sub>4</sub> Other **(Please describe)**:  
\_\_\_\_\_

**Q2** What is the **name** of your facility?  
\_\_\_\_\_

**Q3** What is **your role** in this facility?  
**(specify)** \_\_\_\_\_

**Q4** How many accommodation **rooms** does this facility have?:  
\_\_\_\_\_

(Total, including guest and any staff sleeping rooms)

**Q5** **How many visitors per day** does this facility receive, **approximately, on average**,  
(all, including

guests and day visitors)?: **High season:** \_\_\_\_\_ per day    **Low season:**  
\_\_\_\_\_ per day

**Q6** **How many staff** does this facility employ?: \_\_\_\_\_

**Q7** How many years have **you** been with the company?: \_\_\_\_\_

### **Staff hazard training:**

**Q8** Have you received training for dealing with emergencies?    <sub>1</sub> Yes    <sub>2</sub> No

**If 'Yes', for what hazards? (Please check all that apply)**

<sub>1</sub> Fire

<sub>2</sub> Earthquake

<sub>3</sub> Tsunami

<sub>4</sub> Storm

<sub>5</sub> Flooding

<sub>6</sub> Hurricane

<sub>7</sub> Other (give details):

---

**Q9** When was the training?

<sub>1</sub> Annual    <sub>2</sub> Induction    <sub>3</sub> Other (**Please describe**):

---

**Q10** How was it delivered? (**Please give details**):

---

**Q11** Is your training ongoing?    <sub>1</sub> Yes    <sub>2</sub> No

If 'YES' how often are instalments / repeats? \_\_\_\_\_

**Q12** Do you believe your organisation is committed to training in general?

<sub>1</sub> Yes    <sub>2</sub> No

### **Exercises**

**Q13** Does your facility participate in community-wide tsunami exercises/drills?

<sub>1</sub> Yes    <sub>2</sub> No

If 'Yes' please describe your facility's participation:

---



---

**Q14** Does your facility run it's own evacuation exercises/drills independent of the wider community?

<sub>1</sub> Yes    <sub>2</sub> No

**Q15** What for? (**Please check all that apply**)

<sub>1</sub> Fire                                    <sub>2</sub> Storm                                    <sub>3</sub> Earthquake

<sub>4</sub> Tsunami                                    <sub>5</sub> Other (**Please describe**): \_\_\_\_\_

**Q16** How frequently (e.g. monthly, annually etc.) for each?

---

**Signage**

**Q17** Does you have any hazard signage? <sub>1</sub> Yes <sub>2</sub> No

**If 'Yes'** What type (hazard & content)? \_\_\_\_\_

Where are the sign(s)? \_\_\_\_\_  
\_\_\_\_\_

**Q18** Have you had any personal experience with hazards events? **(Please give details):**

\_\_\_\_\_

**In 2006 State Emergency Management produced a DISASTER RESPONSE GUIDEBOOK for Hotels and Motels:**

**Q19** Have you **seen a copy** of the DISASTER RESPONSE GUIDEBOOK? <sub>1</sub> Yes <sub>2</sub> No

**Q20** Does your facility currently **have a copy** of the DISASTER RESPONSE GUIDEBOOK?

<sub>1</sub> Yes <sub>2</sub> No <sub>3</sub> Don't Know

**Where is that copy kept** (e.g. front desk, manager's office, etc.)?  
\_\_\_\_\_

**Q21** Does your facility actively **refer to** the DISASTER RESPONSE GUIDEBOOK? <sub>1</sub> Yes <sub>2</sub> No

**Demographics (responses are kept confidential and used only to check our sampling):**

**Q22** What is your gender? <sub>1</sub> Male <sub>2</sub> Female

**Q23** What is the highest level of education you completed? (Circle one)

<sub>1</sub> School <sub>2</sub> Trade Qualification <sub>3</sub> Undergraduate (e.g. Bachelors degree)

<sub>4</sub> Postgraduate (e.g. Masters, PhD)

**Q24** What year were you born in? 19\_\_\_\_\_



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