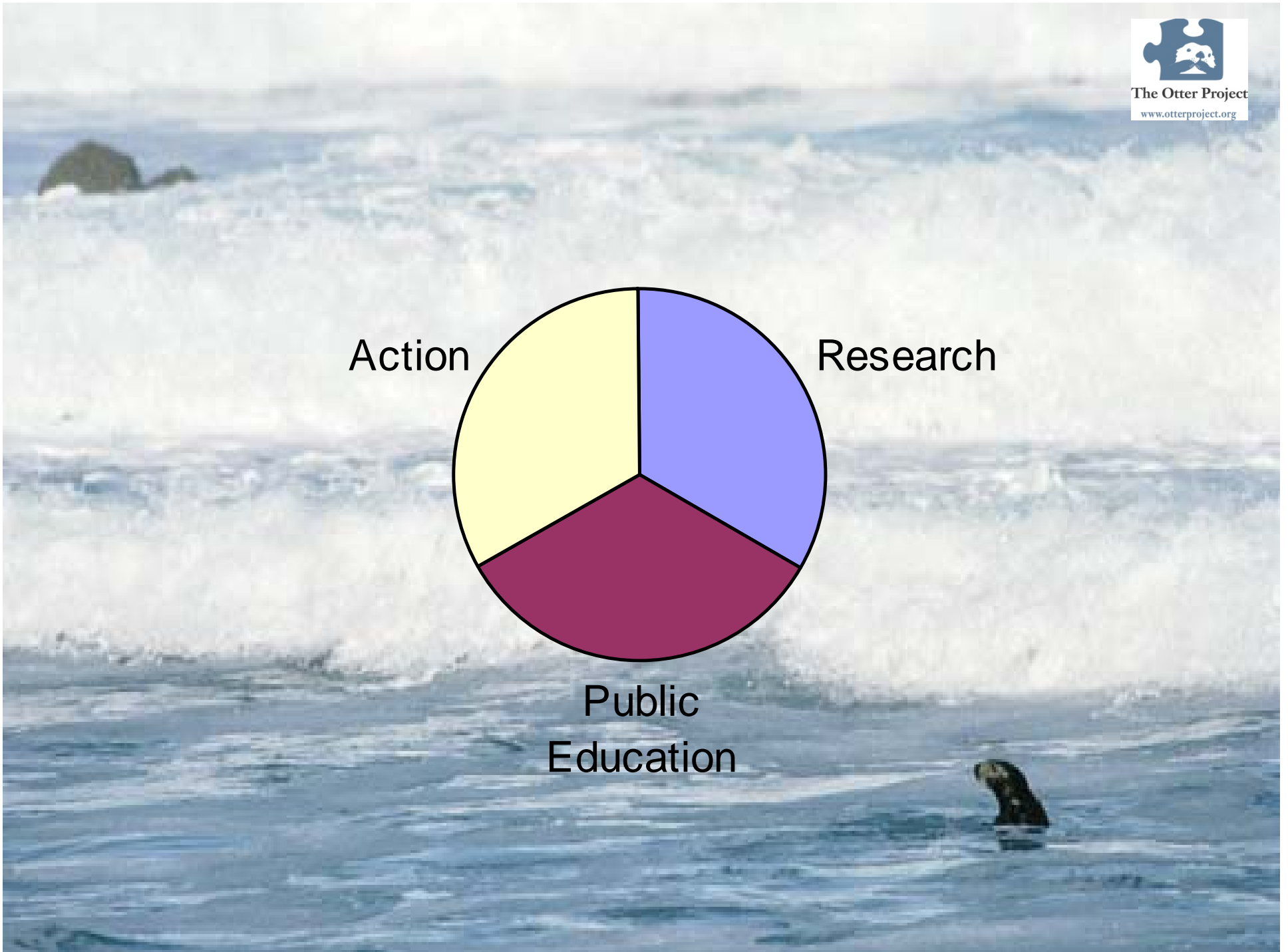
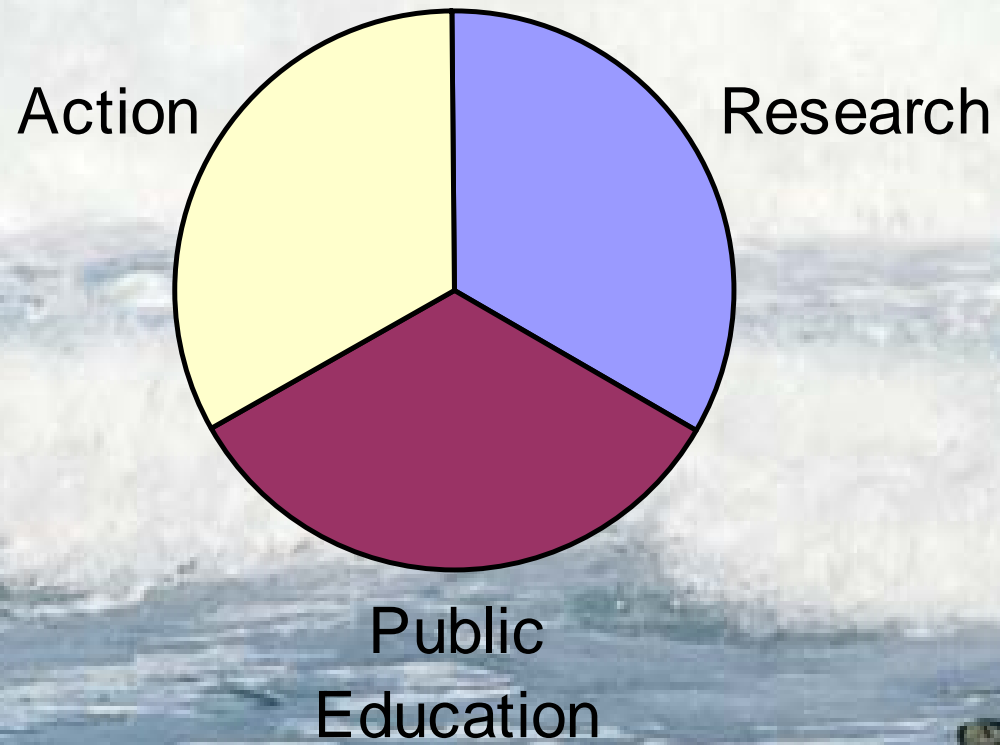




## California Sea Otters:

Immune suppressed otters are swimming in a soup of disease

graph courtesy of Jeff Foott

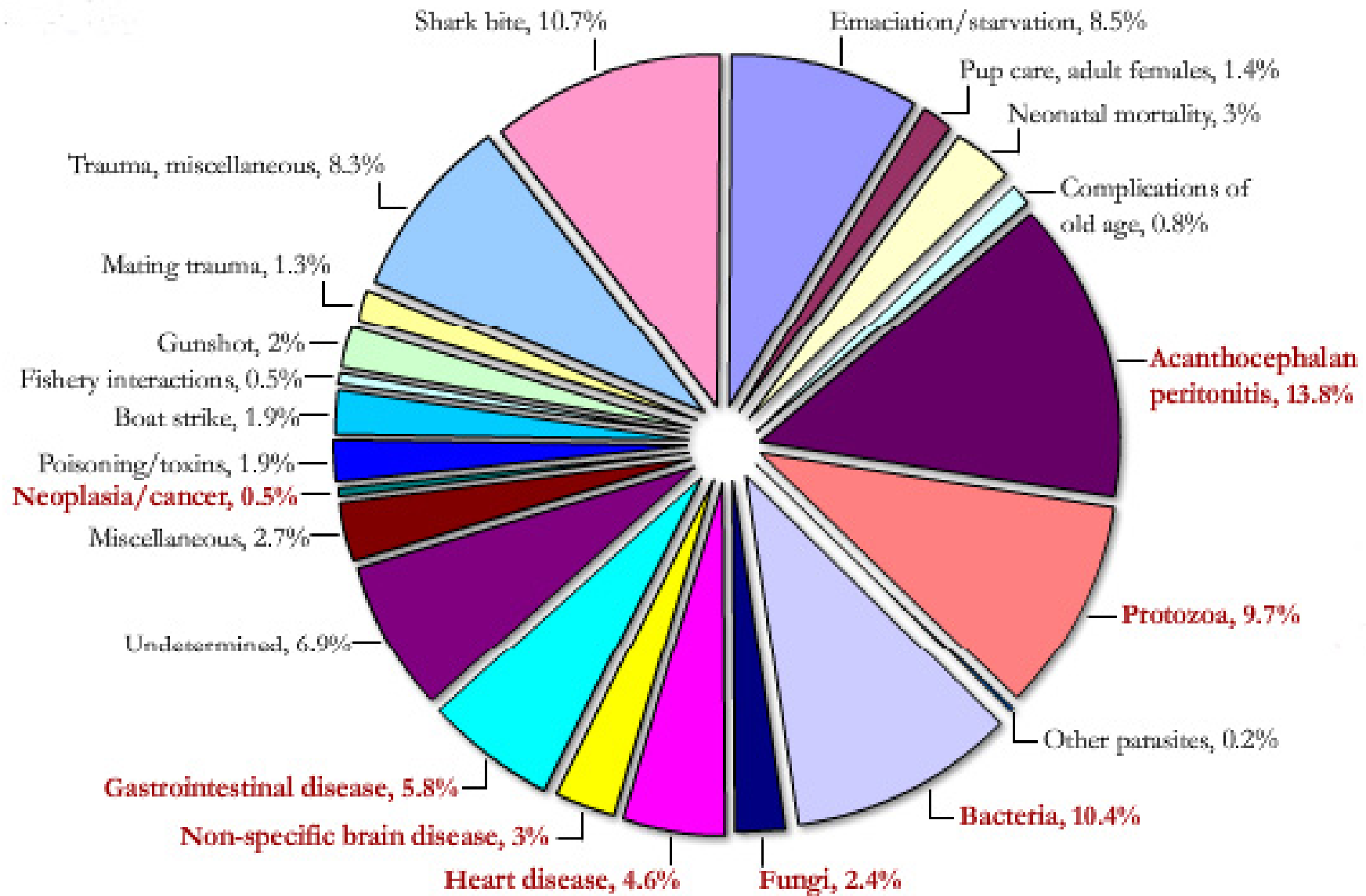




The Otter Project  
[www.otterproject.org](http://www.otterproject.org)



## Causes of Death



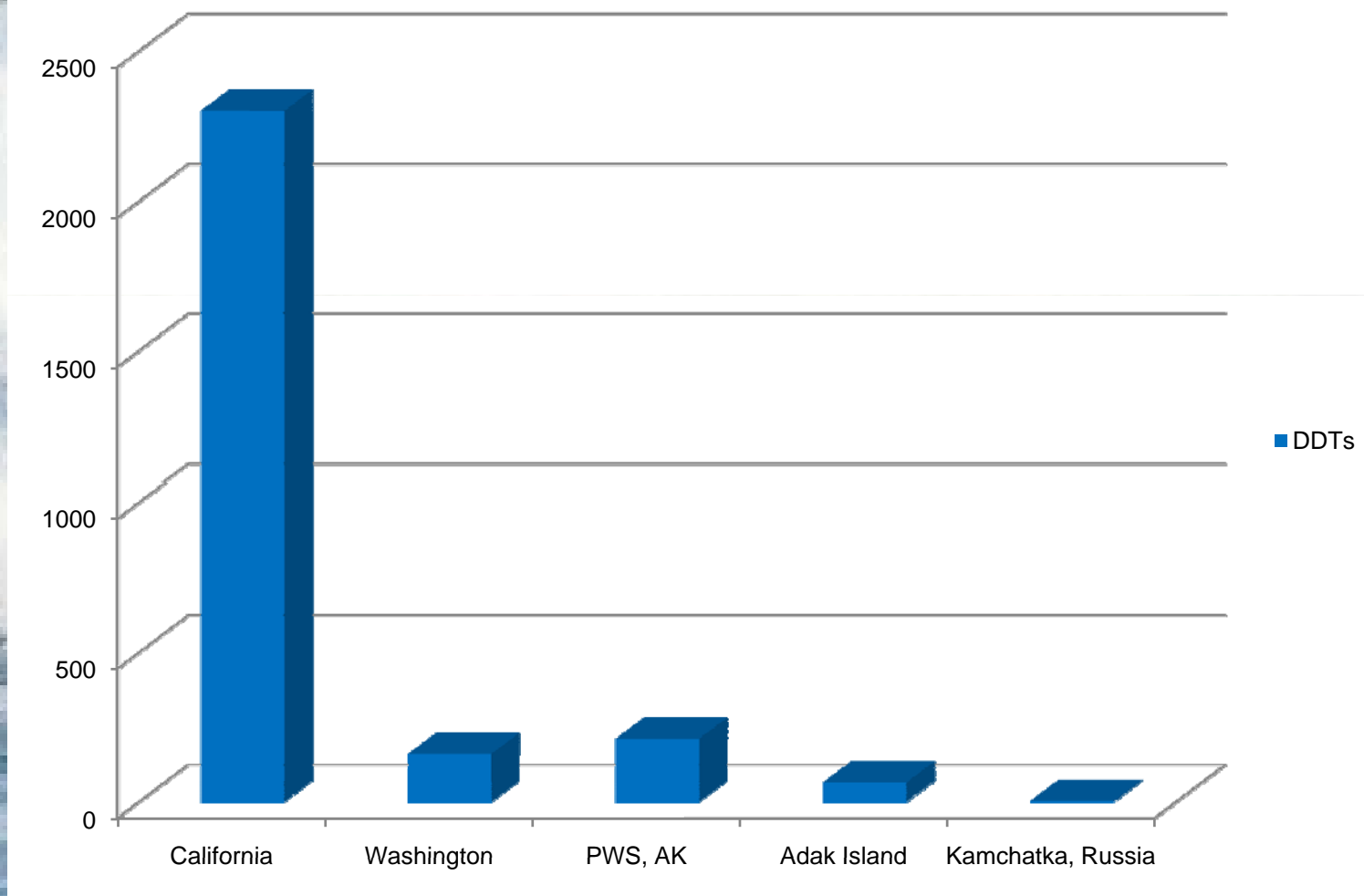


The Otter Project  
[www.otterproject.org](http://www.otterproject.org)



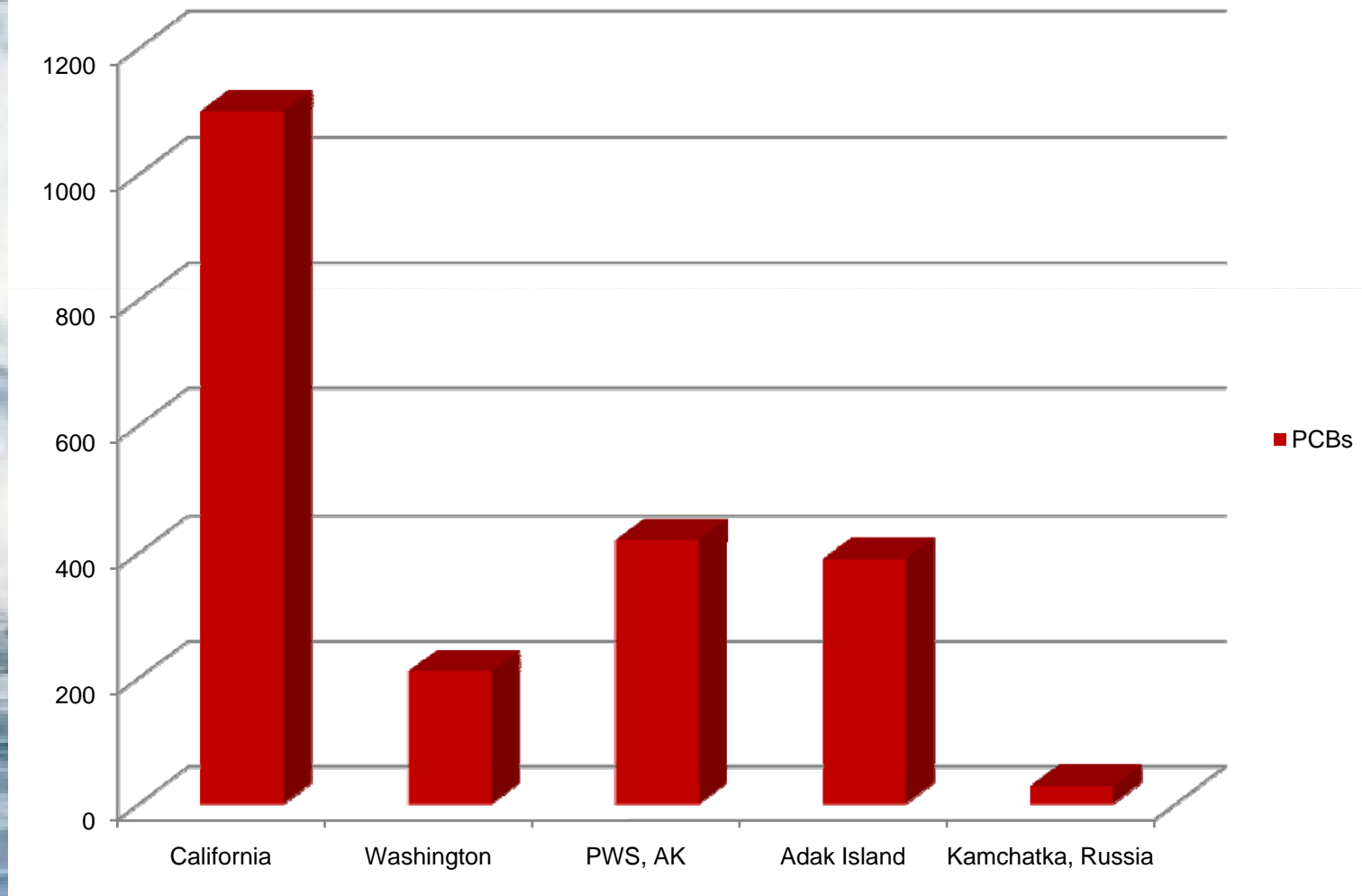


## DDTs



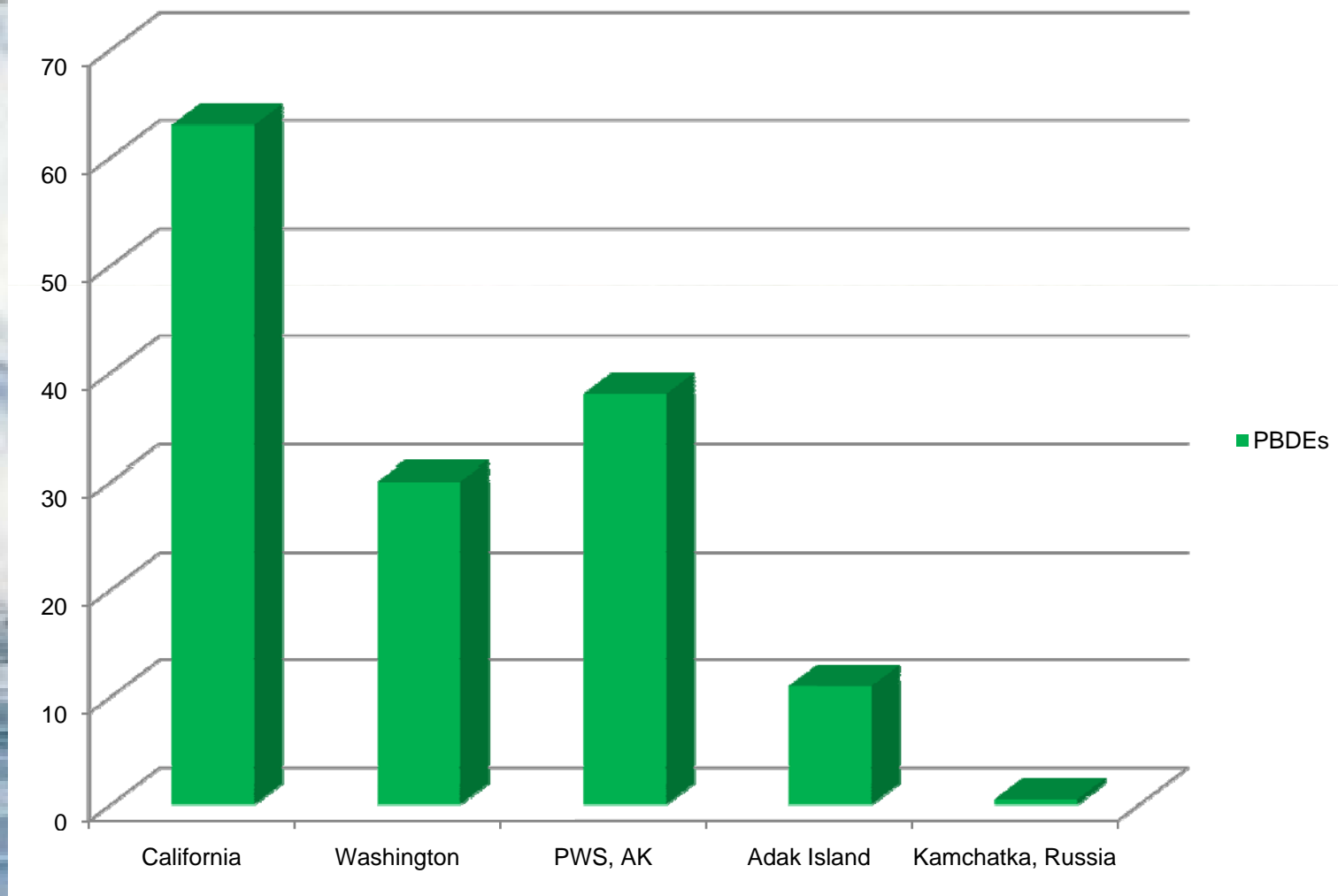


## PCBs



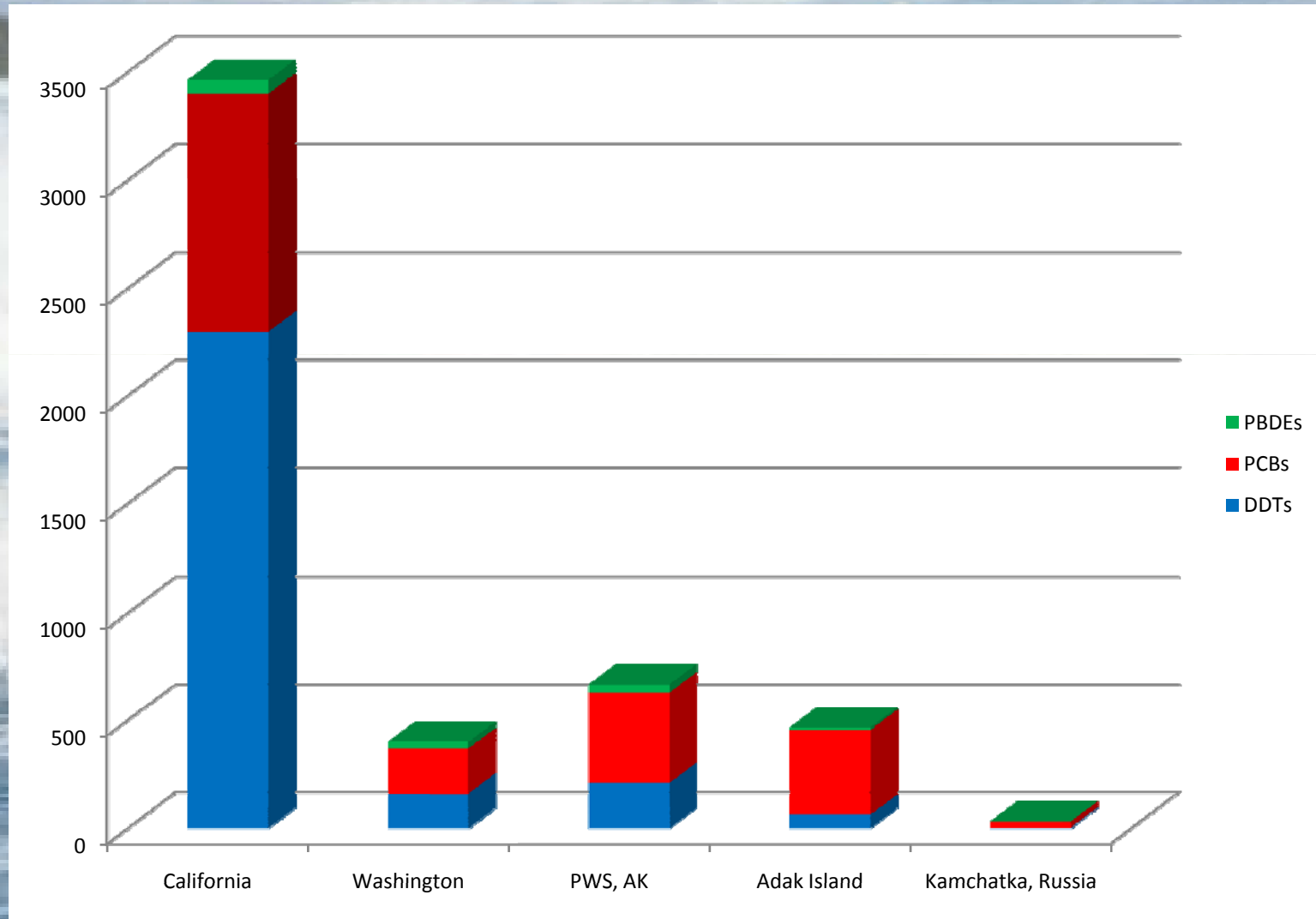


## PBDEs





The Otter Project  
[www.otterproject.org](http://www.otterproject.org)



## **Statistically significant correlates with disease**

- **butyltin**
- **PCBs**
- **PBDE**
- **freshwater**
- **Perfluorooctanesulfonate (PFOS)**
- **Perfluorooctanoate (PFOA)**
- **Mn (manganese)**
- **Cobalt**



The Otter Project  
www.otterproject.org

August 30, 2002

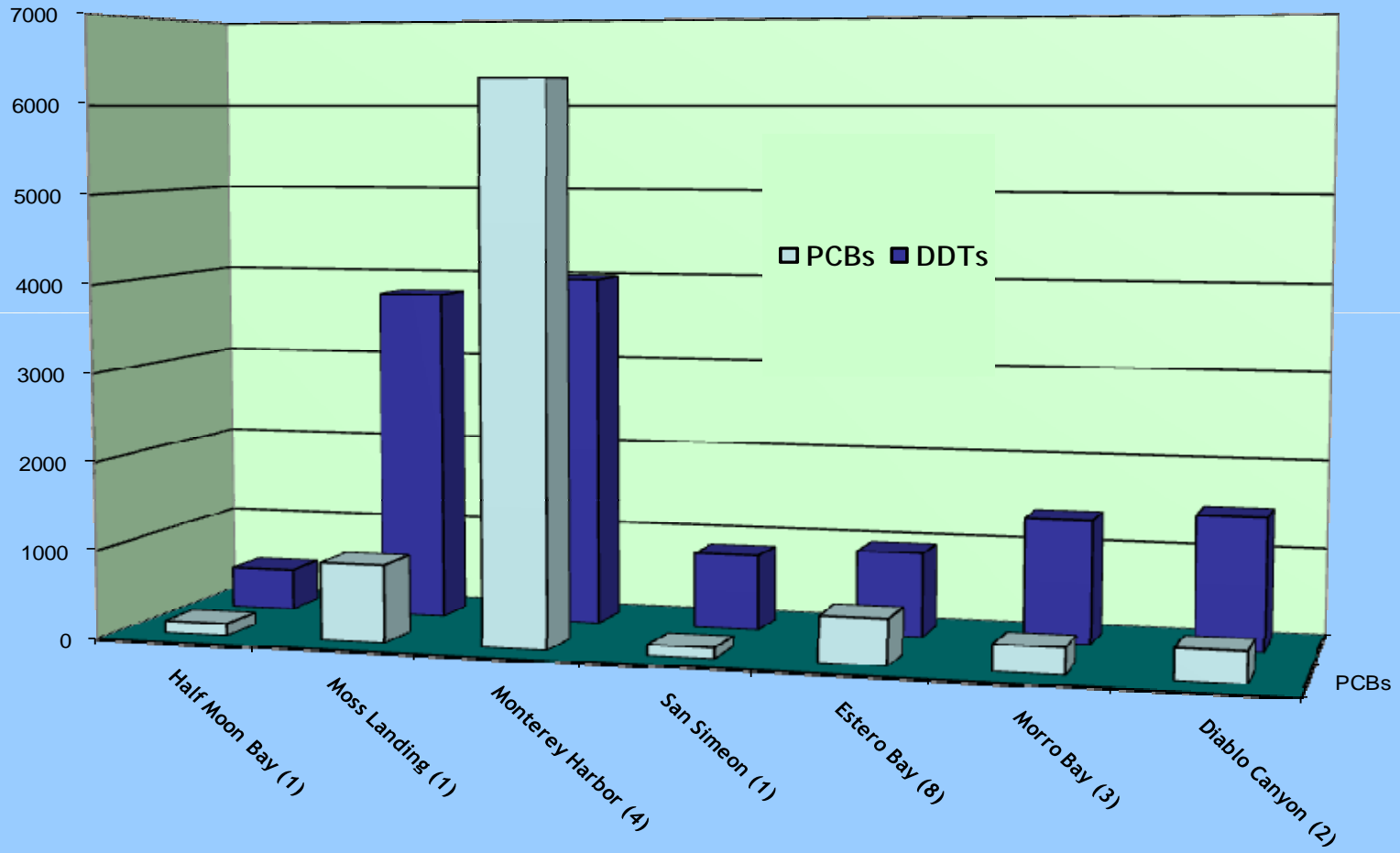
Dear Otter Project,  
For my birthday party  
I asked if some people  
could give a donation to  
the otter project and  
altogether there was \$75!  
I hope to do this again  
next year!

Sincerely,  
Arendo Cham Age 9

FS-46044 © Frank Schaffer Publications, Inc.



# DDT & PCB in Southern Sea Otters



# Pathogen Pollution in Sea Otters



## Bacterial

- *Vibrio parahemolyticus*
- *Vibrio alginolyticus*
- *Vibrio* sp.
- *Clostridium perfringens*
- *Aeromonas* sp.
- *Shewanella putrefaciens*
- *Campylobacter jejuni*
- *Salmonella* sp.
- *Edwardsiella tarda*
- *Enterococcus faecalis*
- *Providencia rettgeri*
- *Staphylococcus* sp.

## Protozoal

- *Cryptosporidium* sp.
- *Giardia* sp.
- *Toxoplasma gondi*
- *Sarcosystis neurona*