

# All Tied Up: Taking a Closer Look at Humpback Whale Entanglement in Alaska, 1990-2011



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## Background

Entanglements are a significant source of anthropogenic injury and mortality for humpback whales in Alaska. Most events reported to NMFS have occurred in Southeast Alaska, and the majority of reported gear involves crab, shrimp, and unidentified pot gear, as well as gillnet and other unidentified net. These types of entanglement incidents can be life-threatening to humpback whales by inhibiting their ability to move, breathe, and forage. Entangled animals may also experience physical trauma from gear, develop infections from wounds, and be susceptible to other threats such as ship strikes. Impacts such as compromised reproductive success, while not immediately lethal, may be harmful to the population over time. Here we present a summary of humpback whale entanglement events (over 170 cases) as reported to NMFS from 1990-2011.



5/30/05: Fatal gillnet entanglement in actively fished gear, Wrangell, Alaska



5/30/06: Fatal purse seine entanglement, Prince William Sound.



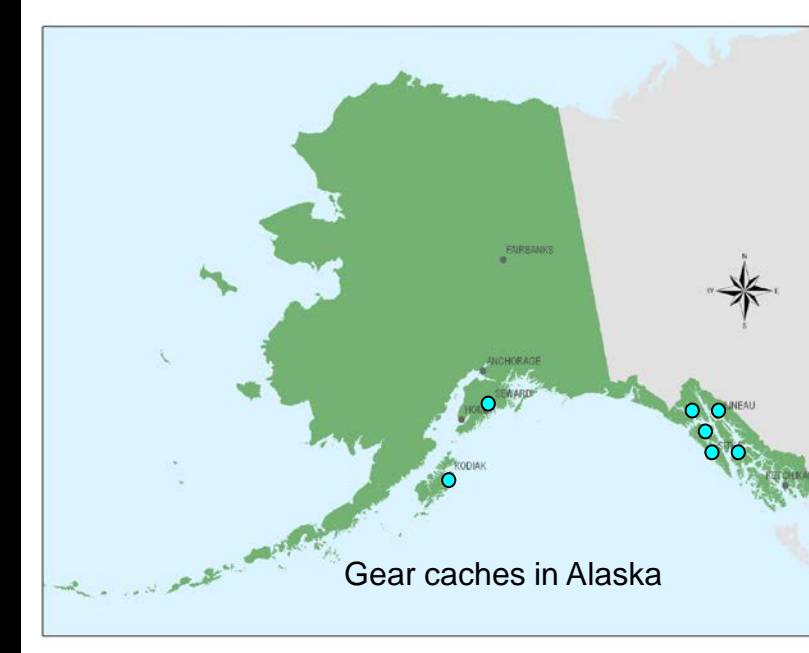
5/30/06: Successful gillnet disentanglement, Petersburg, Alaska

## Methods

We reviewed entangled humpback reports in the NMFS Alaska Regional Database over a twenty year period from 1990-2011. To assess and verify reports, we used a triple blind system in which each author scored the data individually, followed by group analysis of results and a consensus conclusion for each record.

Confirmation of reports was based on a combination of the following factors: reliability and experience of the observer (biologist, fisherman, member of Network, whale-watch captain familiar with local whales and whale behavior); detail of the gear description and whale behavior; corroboration of observation by multiple parties; response effort; photo documentation of event.

It is likely that many entanglements in Alaska go unreported to NMFS. As a result, numbers presented here are likely an underestimate of actual events. In addition, for this analysis we chose a conservative approach and did not include questionable incidents which lacked detail. This methodology further contributes to the likelihood that a greater number of entanglements have occurred in Alaska than are reported here.

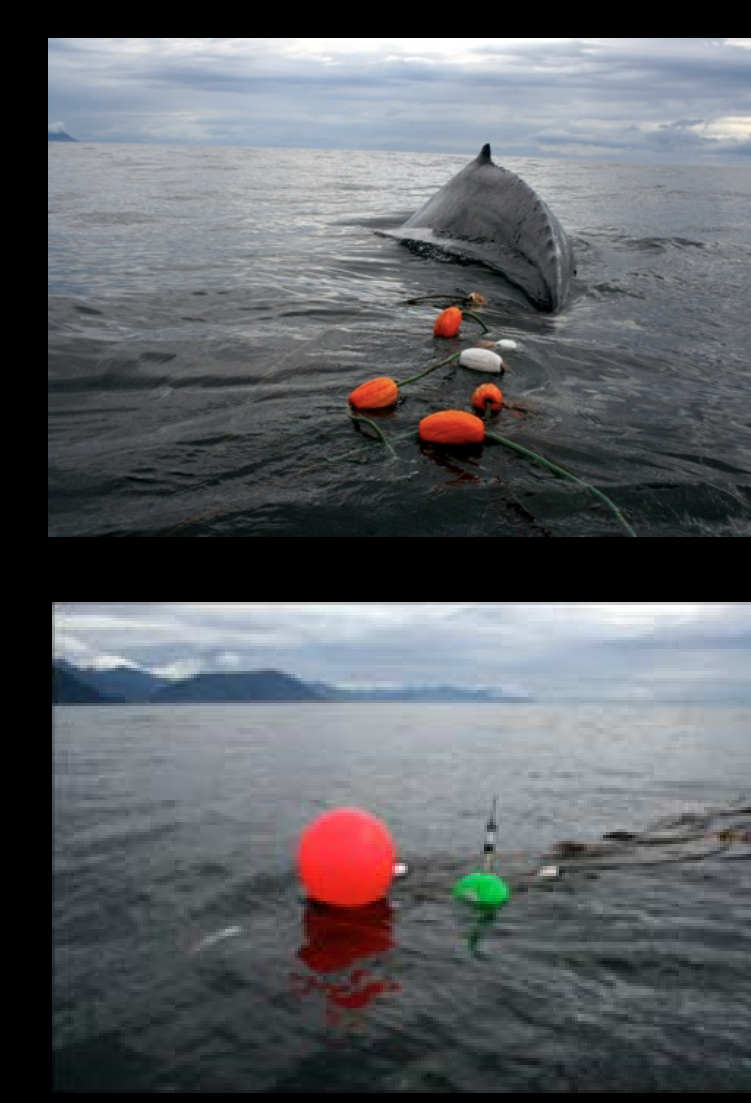
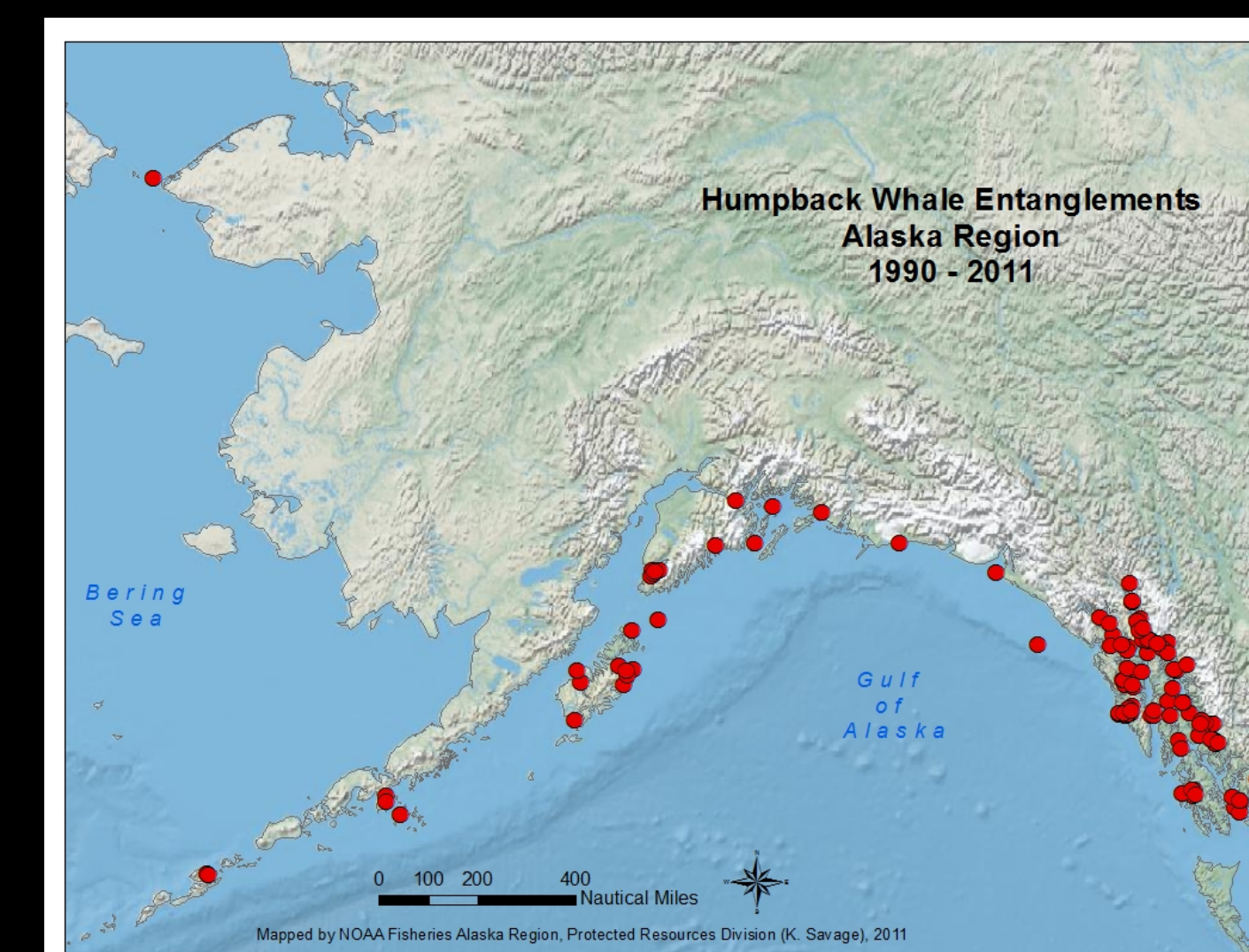
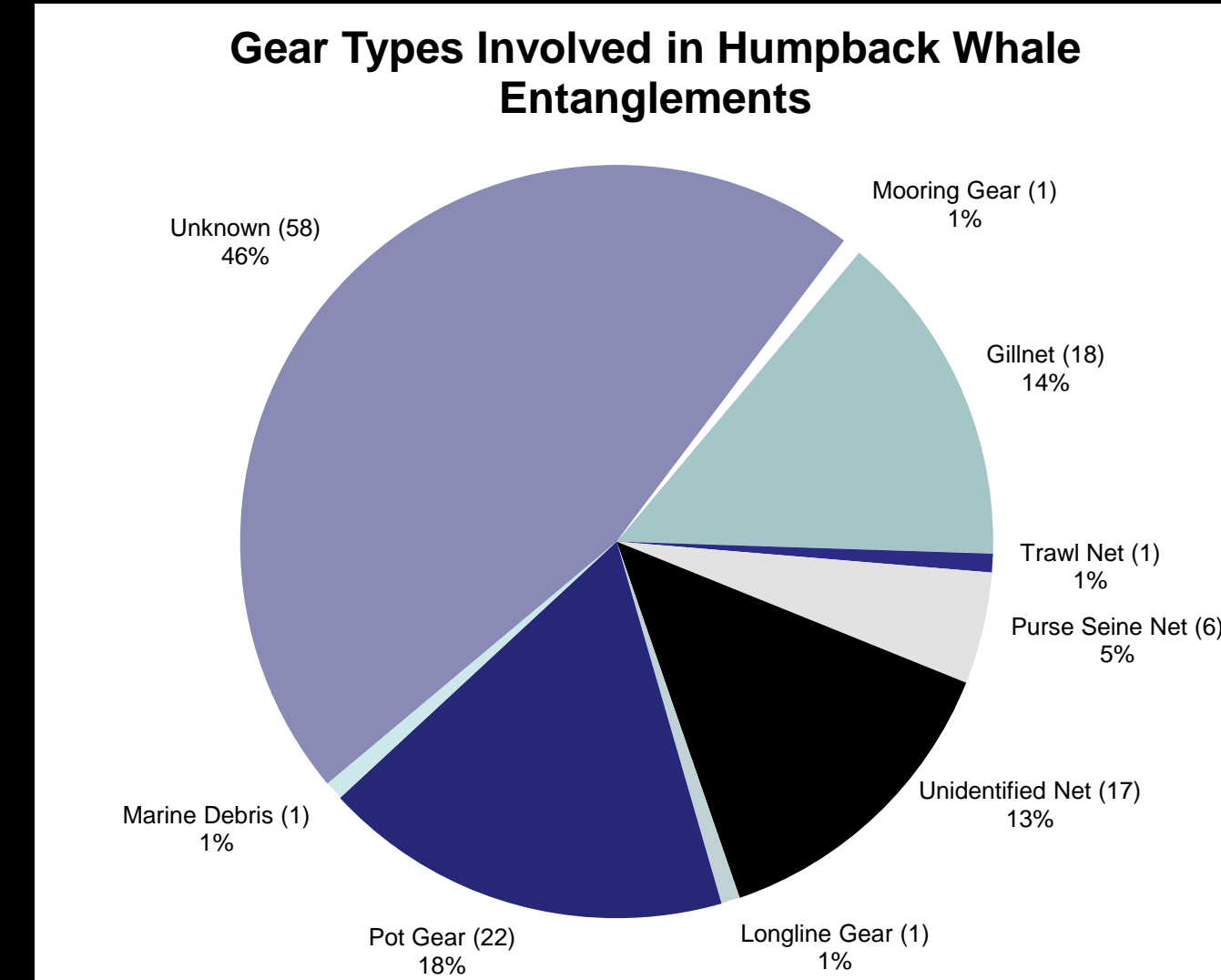
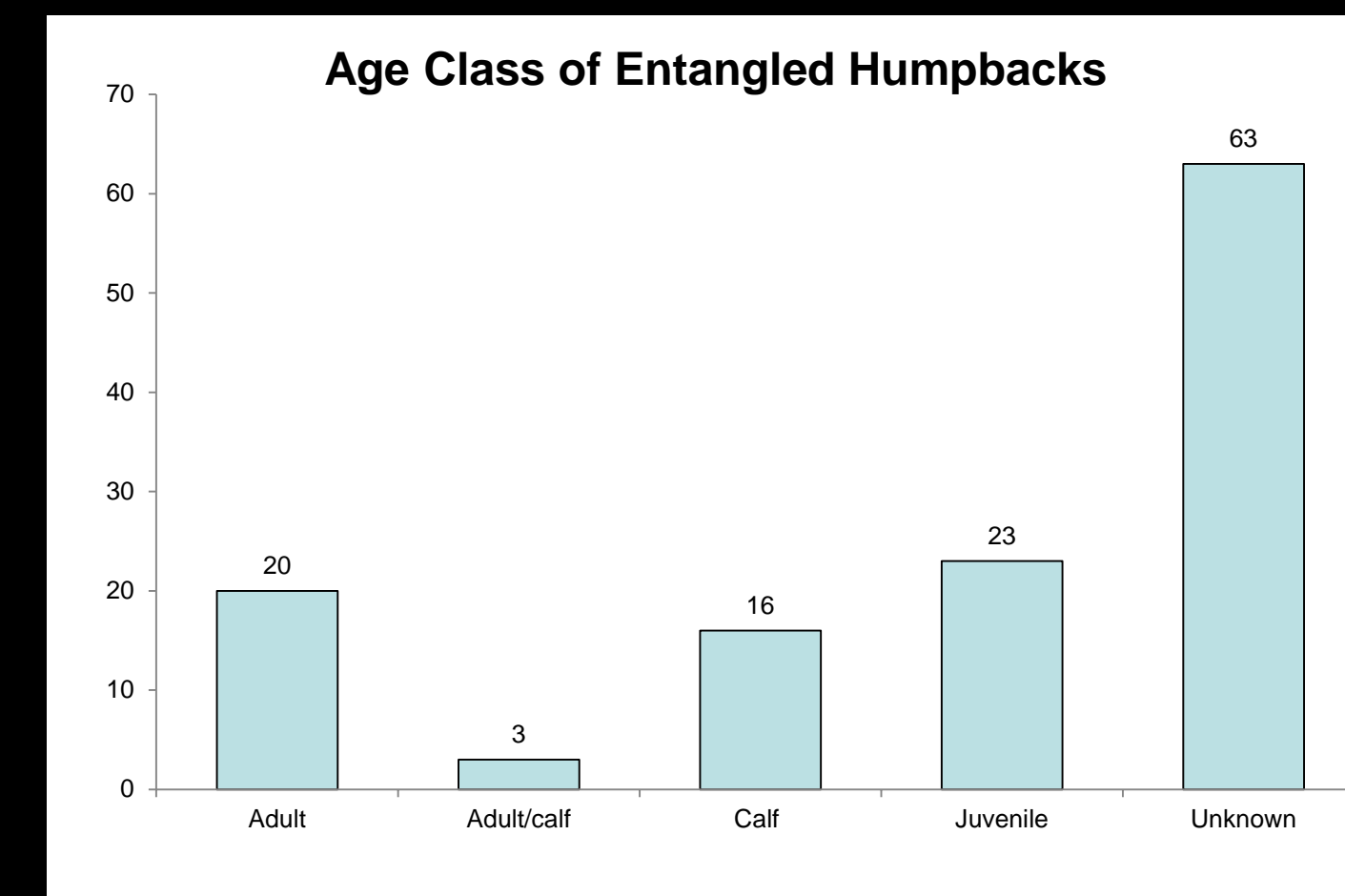
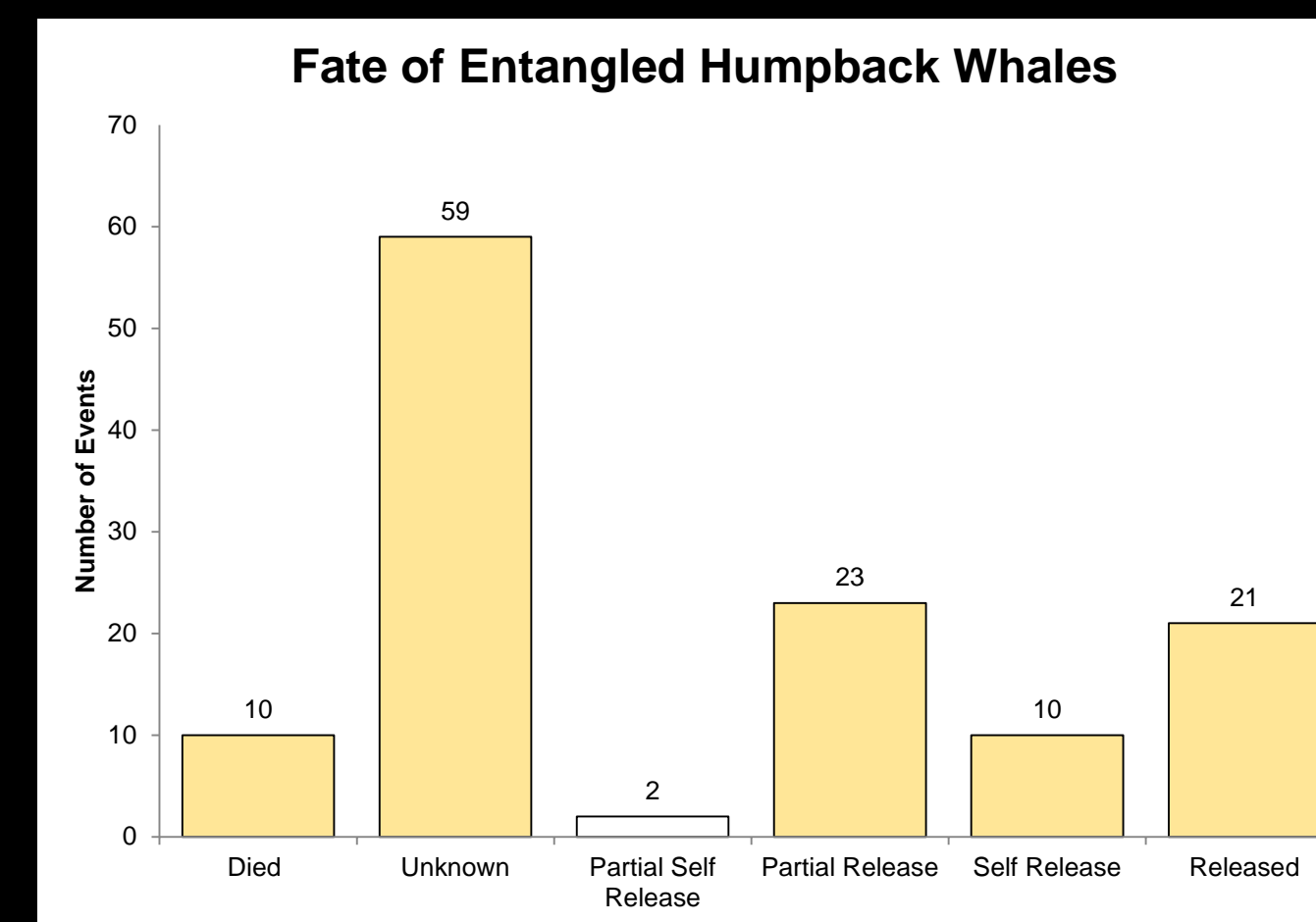
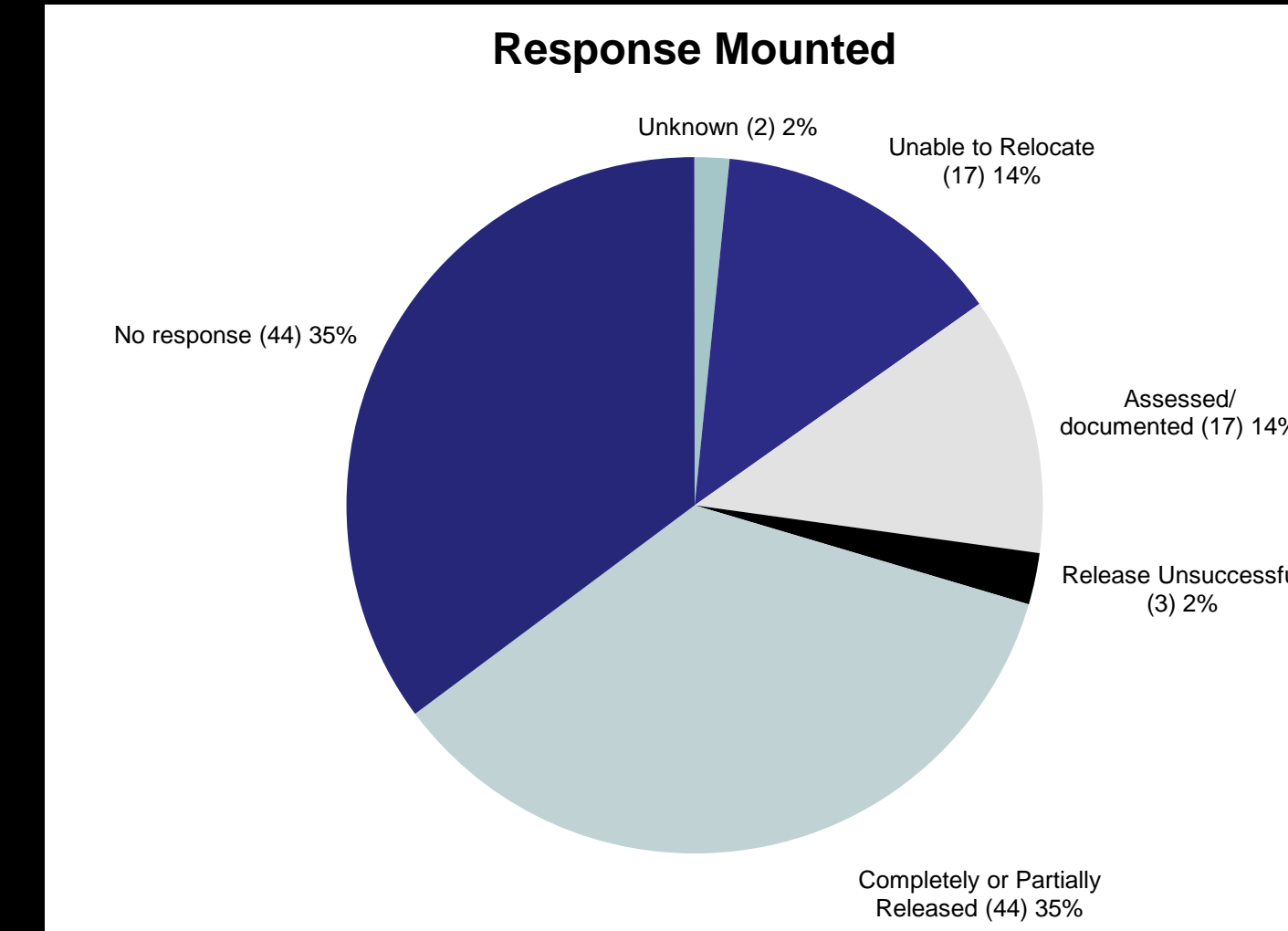
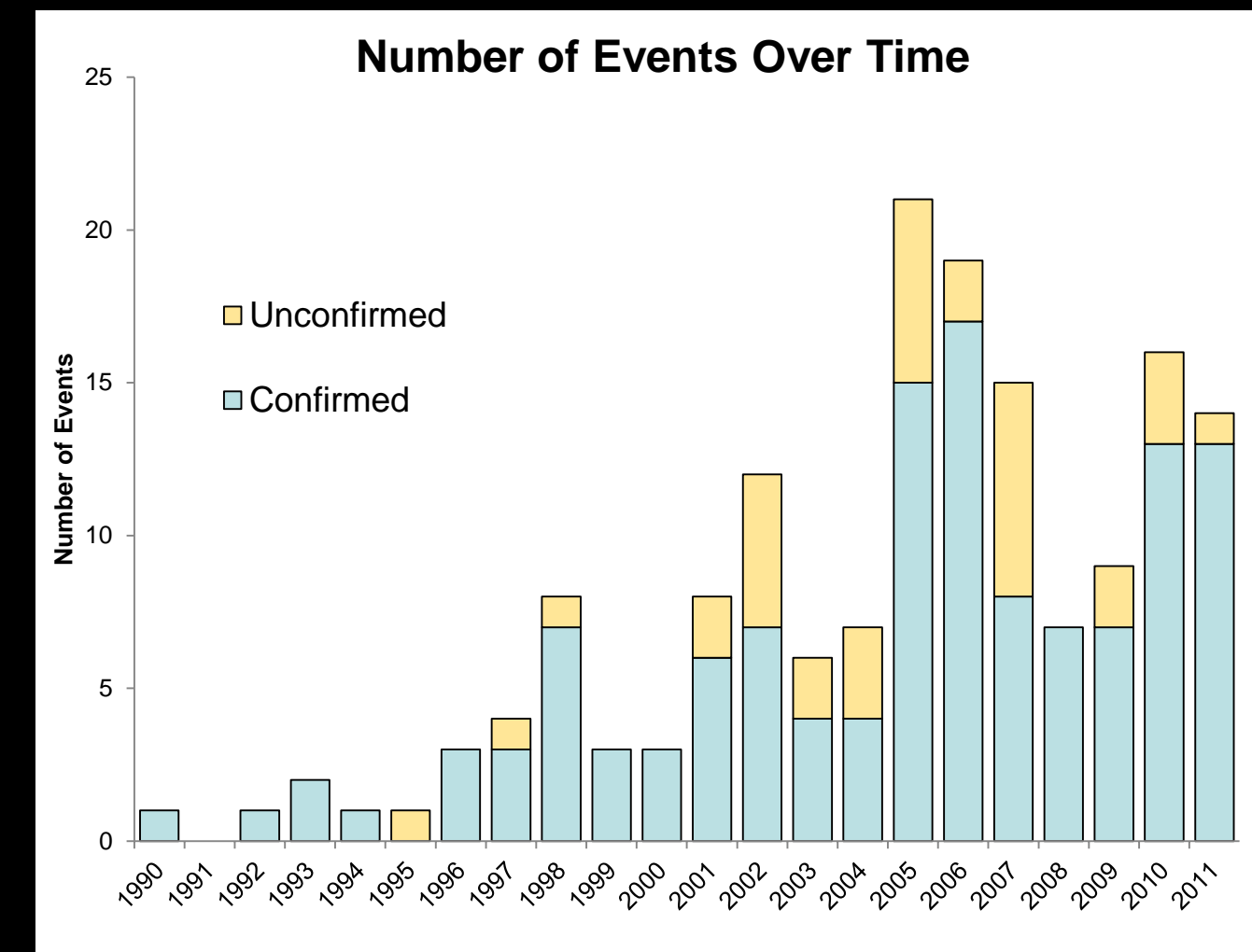


## Disentanglement Tools and Techniques

Disentangling free-swimming large whales involves a modification of an old whaling technique called "kegging" to make the animal more approachable. Rescuers throw grapples or use hooks on the end of poles to attach to the gear entangling the animal, then attach large polyballs for buoyancy and drag to keep the whale at the surface, slow it down and generally tire it out. Specially designed hooked knives on the end of poles are then used to cut the animal free of entangling gear.

The Alaska Response Network uses telemetry to track and re-locate entangled whales that cannot be disentangled during initial response due to limited resources, condition restraints, or animal behavior. Both Argos/GPS-based and VHF radio transmitters are placed together on a telemetry buoy holding the tags, which is attached to the entangling gear trailing behind the animal. Telemetry buoys, like the disentanglement tools, are strategically placed throughout the state with trained personnel.

## Results

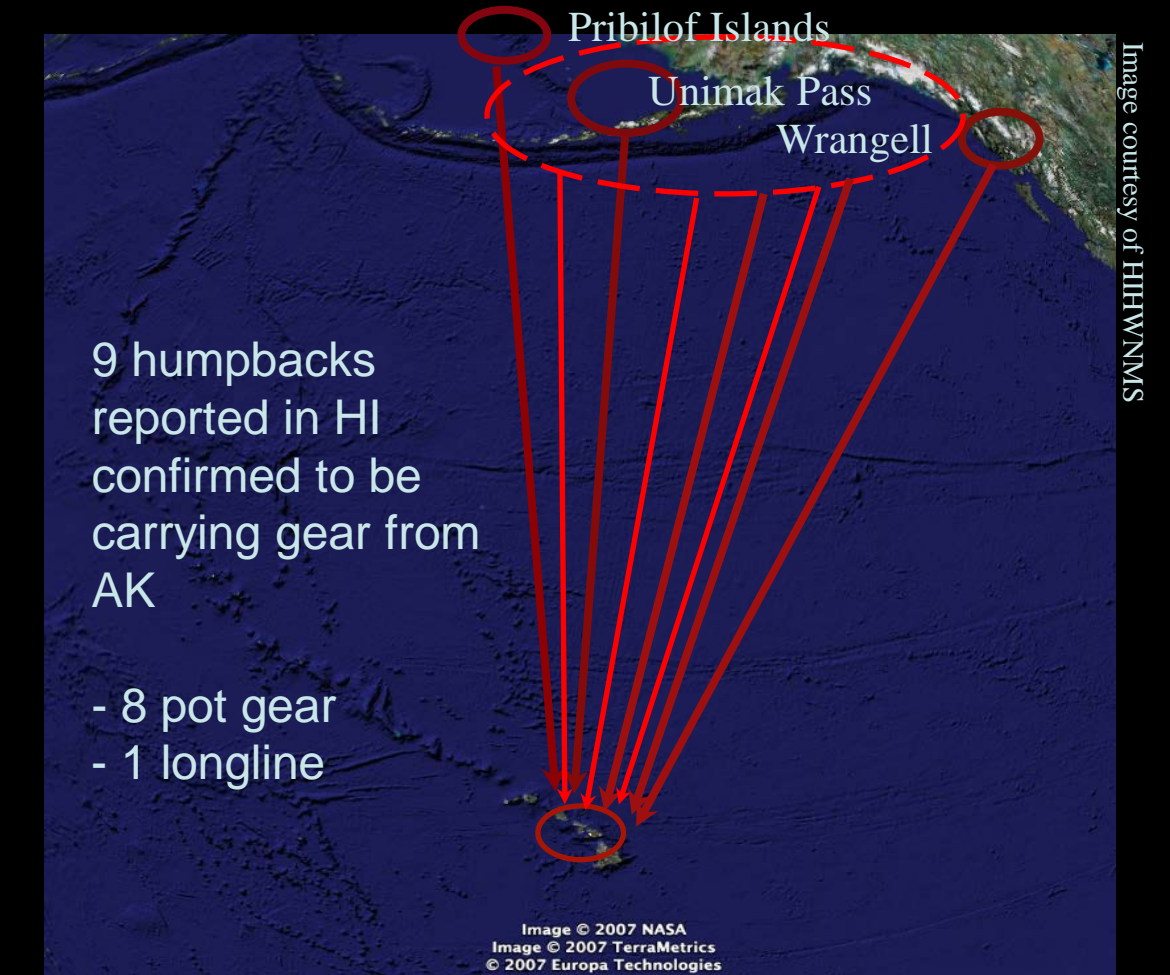


## Case Study—First Use of Telemetry in Southeast Alaska

In August 2006, Network members tagged an entangled humpback in lower Stephens Passage in SE Alaska. The next day the Network was able to re-locate the animal using the transmitters and cut all remaining wraps of gear. Unfortunately, lines remained embedded in wounds and thus attached to the animal. Over the next 9 days and 215 nautical miles, the animal was tracked until conditions cooperated to mount another rescue operation. This time the Network was able to finish the job and completely free the animal from the large mass of trailing gill net gear.

## Alaska Pot Gear in Hawaii: Distance, duration and speed

- Maximum known straight-line distance carried is 2400 nm (from Wrangell, AK)
- Avg minimum straight-line distance is 2175 nm (n=8)
- Avg maximum duration (n=3) is 47 days
- Avg min. speed of 2.2 kts (Max = 2.5 kts)



9 humpbacks reported in HI confirmed to be carrying gear from AK

- 8 pot gear

- 1 longline

## Alaska Response Network Accomplishments

- Grown since inception in 1998, now comprises over 120 participants with different levels of training statewide
- Trainings conducted in 14 communities in Alaska since 2005
- Ongoing partnership with the Hawaiian Humpback Whale National Marine Sanctuary to train personnel and respond to events in Alaska
- Mounted more than 69 on-water responses
- Totally or partially disentangled over 44 large whales to date



## Authorization

Response to disentanglements is coordinated by NMFS Alaska Region Protected Resources Division, and receives authorization under the agency's national Marine Mammal Health and Stranding Response Program (MMHSRP) permit (#932-1905). Disentanglement network response is dependent on upon the commitment of many state and federal agencies, private non-governmental organizations, fishermen, and other individuals working together. Disentanglement may only be attempted by authorized persons who are experienced, trained, knowledgeable, and have proper support and equipment, working under NMFS MMHSRP permit.

## Discussion

### Challenges

Opportunistic nature of reports and lack of detail results in difficulties in:

- Quantifying impact relative to specific fisheries and to the whales themselves
- Evaluating, interpreting and confirming events
- Distinguishing between distinct events vs re-sights of the same entangled animal

### Future Needs

- Improved quality of reporting and efforts to validate reports
- Gear investigation to assign accurately to fishery
- Enhanced capacity to respond (resources, training, coordination)
- Dedicated stand-by vessels to monitor entangled animals until a trained disentanglement team can be mobilized
- Increased public awareness and outreach
- Post-release monitoring
- Overall emphasis on gathering more accurate information for event *prevention* rather than *response* (proactive rather than reactive approach)