CHANNEL ISLANDS NATIONAL MARINE SANCTUARY ADVISORY COUNCIL

Marine Shipping Working Group

Research Ideas

For Discussion at the Marine Shipping Working Group Meeting on October 7th and 8th

This document lists initial MSWG member ideas on the topic of research needs. These ideas where shared on the SeaSketch Forum and/or in webinars leading up to the October 7-8 meeting. They have also been developed in consideration of research activities that have been conducted to date (per the summary table on research activities reviewed by the MSWG).

1. Fine-scale information on species-specific whale distribution and abundance patterns and seasonality

This may include:

- Offshore sampling (e.g. acoustic, observations) to better understand species distribution and habitat use south of the Channel Islands
- Standardization of existing data (e.g. Naturalist Corps observation records) for survey effort and their integration into fine-scale habitat-density models for the region
- Continuing and/or expanding aerial surveys of shipping lanes and/or other areas

Follow-up questions:

1. What type of whale monitoring (acoustic, cruise sightings, aerial sightings, photo identification) data is most useful and relevant for management?
2. What type of whale monitoring (acoustic, cruise sightings, aerial sightings, photo identification) data is most feasible to collect?
3. How can existing data be integrated?
4. What are the pros/cons of opportunistic observation data vs. data collected in a systematic way?

2. Determine efficacy of onboard thermal (infrared) imagery to detect whales ahead of ships

From Silber et al. 2008: "Thermal imaging devices have proved promising in detecting whale blows in Antarctic waters, at ranges greater than one km but are less effective in warmer climates where blows and ambient temperature differences are less."

From Zitterbart et al. 2013*:* "Its performance is independent of daylight and exhibits an almost uniform, omnidirectional detection probability within a radius of 5 km."

From Burkhardt et al. 2010: "Here we present data from the deployment of a ship-borne, 360°, cooled thermal imager, FIRST-Navy (produced by RDE, Bremen, Germany), which provides a continuous video stream of the ships perimeter. Data collected with this system near Spitsbergen clearly reveal whale blows up to a distance of at least 1.5 km, even at relatively warm water conditions of 6°C. For lower temperatures, detections ranged up to 3 km. Automated detection algorithms are currently under development, with first results to be presented at this conference."

Follow-up questions:

1. Assuming that detection would need to occur in good time for ships to respond - how does this relate to previous discussions on dynamic management options that highlighted the challenges that ships face in responding to real-time information at short notice? Does infra-red offer an improvement over the current dynamic management tools that result in these challenges?

3. Information on ship strikes

Follow-up questions:

1. What was the ship speed?
2. Did they have a lookout?

4. Analysis of past and current vessel AIS data to determine if changes in operations have occurred in recent years. Strike risk may already have decreased.

- Analyze existing vessel AIS data in a particular area (*e.g.*, several hundred miles around the Channel Islands and the LA/LB port entrance) to determine if (a) the number of trips and/or (b) ship speeds have changed through time.
- Quantify the amount of change, if any, relative to a series of specific time frames to provide "before/after" comparisons. (Pre-2008, if data are available; 2008-2010; and 2010-2015 might be reasonable comparative periods.)

If the number of trips and speeds have diminished over time, it is possible to calculate changes in relative risk. If, for example, the number of trips has decreased by 20% and ships are now averaging 12 instead of 15+ knots, a corresponding reduction in risk by up to 35% may have already occurred. If a 35-40% reduction in risk is within a suitable range for the Working Group, no further actions would be needed.

5. Integrated Whale Sighting Network and Reporting System for California (also posted as an outreach and education idea)

Background: Since 1999, trained Channel Islands Naturalist Corps (CINC) volunteers have collected opportunistic marine mammal sightings data while on board participating whale watch and park concessionaire vessels. This dataset informs management actions as well as multiple research initiatives. CINMS and partners recently developed Spotter Pro and Whale Alert, two mobile apps that can be downloaded on smartphones and tablets, and allow users to collect whale sightings in the field and upload data to a cloud server, improving real-time data collection. Spotter Pro has been designed for trained observers and is now used by CINC volunteers in place of paper log sheets. Spotter Pro also collects effort tracklines. Members of the public can also assist with monitoring whales by downloading the Whale Alert app. The *Integrated Whale Sightings Network and Reporting System for California* would build upon these existing programs and integrate them with other related data collection initiatives in California.

Description: A joint NOAA program managed by the Office of National Marine Sanctuaries and the National Marine Fisheries Service that expands, improves, integrates, and coordinates opportunistic marine mammal observation data collection by mariners, researchers, agency representatives and citizen scientists in California. This program would seek to increase the amount of opportunistic data that is collected by leveraging vessels as platforms of opportunity, including commercial vessels, ecotourism operations and whale watch vessels. Existing funding, resources, and staff time would need to be expanded and dedicated to volunteer training, data management, and outreach. Outreach would be two-fold: 1) reaching out to stakeholder groups (e.g. boaters, shipping industry, fishing industry, etc.) to recruit volunteer citizen scientists and 2) connecting the data with scientists and managers to ensure the data is being used in research and management. This idea has both education/outreach and research components.

Education/Outreach: Volunteer citizen scientists are educated on whale identification, the threats to whales, and the ways that sighting data is used to manage and mitigate these threats. This is an effective education/outreach tool because it gives the audience an *action to take*, rather than just providing them with information.

Research: This program would expand the scale and geographic scope of the existing sightings data, with the intent to improve managing ocean users on a regional scale. Whenever possible, effort data would be

collected in concert with sightings data to improve the quality and utility of the data for research and management.

Rationale for MSWG: This idea primarily addresses goal 1 (reducing the threat of ship strikes to whales) by increasing awareness of the issue and creating a larger dataset of real-time whale observation data to inform management actions.

Feasibility or Implementation Concerns: This scale program will require additional funding and dedicated staff. At least one primary program lead, regional coordinators to conduct training, and a database manager will be necessary.

Questions for the Marine Shipping Working Group:

1. *All:* Locally, how do we leverage vessels as platforms of opportunity to fill spatial data gaps (e.g. south of the Channel Islands where whale watch vessels don't go)? What vessels exist and how do we get them enrolled?
2. *John Calambokidis, Jessica Redfern*:
3. Is there a way to design a program to make the data more useful and robust (e.g. collecting effort data through SpotterPro, dedicated staff for data quality control, etc.)? Can this type of data be integrated into existing models?
4. *Kathy Metcalf, Sean Kline, TL Garrett, John Berge, Lee Kindberg, Jeromy McConnell, Kip Louttit*:
5. To date, shippers have not provided much whale sighting data. Is there a way to incentivize participation in an opportunistic marine mammal sighting program? What would make this successful (e.g. more training, dedicated hardware for electronic data collection via apps, etc.)?
6. *Jevon James, Brandon Link, John Ugoretz, Walk Schobel, Megan McKenna, Stephen Whitaker:* Do you see Coast Guard, Navy, or National Park Service staff possibly participating in a marine mammal sightings program, either by utilizing their vessels at platforms of opportunity, or assisting with outreach?

Relevant References:

Koslovsky, Stacie. "Wandering Whale Watches: The Effectiveness of Whale Watches as a Platform of Opportunity for Data Collection." *Masters project submitted in partial fulfillment of the requirements for the Master of Environmental Management degree in the Nicholas School of the Environment and Earth Sciences of Duke University.* (2008).