

EXECUTIVE SUMMARY: MARINE MANAGERS WORKSHOP Camp Orkila, Orcas Island, April 3 & 4 2017

Situational Assessment:

The San Juan Islands are a unique ecosystem with an intact habitat of significant ecological and economic value that needs protecting. We are playing a numbers game. Protection is cheap compared to potential devastation. There is no recovery from a spill and no amount of practice will put the oil back. An oil spill in the San Juan islands is a low-probability, high-consequence event with a high mortality scenario. Spill affects would be immediate, widespread, persistent and expensive. Salmon, water, and oil know no boundaries and the tide will carry the oil all over the Inland Passage within days.

The islands could be left holding the bag economically, environmentally, and socially. We won't have the resources to respond to it. How we respond will be key. Anger, public outrage, and well-meaning volunteers will make response challenging. Key stakeholders and our network will be invaluable.

When things go wrong, many complexities come into play. Treaties, doctrines, and maritime law come into play in a complex dance that would take a long time to sort out.

Risks:

Several current risk factors are in play. Pleasure boats travel in shipping channels create risks to shipping traffic. Several shipping lane pinch point areas in the islands pose higher risk. Barges with bunker fuel present a huge risk, and issues and scenarios should be addressed. Underwater noise due to increased vessel traffic is impacting marine creatures. Tsunamis are a great risk to tank farms. The shipping of dilbit and synbit pose significant threats. We need to find additional funding to prepare properly. MOTCA funds are low right now making it challenging to do the preparedness needed.

Needs:

Actions are being taken to address the risks. These include: increased safety of vessels; training and monitoring of pilots; partnership building among local, regional, and international entities; improvements in safety compliance; regulating ship hull designs; practicing scenarios with multiple agencies; and a maintaining significant oil spill response funds from which to draw.

There are numerous immediate needs that must be addressed. In a time of limited resources and challenging priorities vying for importance, we need to push for protection via legislation and include Tribal entities. Funding should be obtained legislatively or secured via a trans-boundary agreement with Canada to pay for a tug to run south or east of Turn Point to lower risk and response times.

Additionally, trans-border response coordination needs to be specified. There is a strong need for a multi-lateral authority to address the threats now and in the future. Regarding regulatory environment, US and Canada need to pull together and plan across boundaries. We need no-notice exercises to practice in a most-realistic scenario with unique scenarios and the unexpected added to the mix without prior warning.

We need to calculate the additive nature of threats to the total risk and the cascading effects resulting from an event. We need to create a valuation for way of life and quality of life. We need to calculate the value of the island economy and environmental and cultural resource damage should a spill occur. Data should be bolstered. Baseline studies should be conducted to establish prior conditions of the area which can be used in court for determining damages. Update maps with shoreline types well-enumerated and areas indicating feeding areas for killer whales, seals, etc. Forage fish maps need updating and integration with current information.

Structured regional and local planning needs to be bolstered. Continue to test the lines of communication and resource mobilization. The spill contingency plans need updating. Geographic Response Plans (GRP) need to be updated with dilbit and synbit countermeasures. Also of importance is a need to determine strategies for addressing a dilbit and synbit spill if booming and containment strategies are inadequate.

Barriers:

Various potential barriers to effective planning and response exist. Spill response requires looking at multiple complexities: economic impacts, duration of spill response, cost of dilbit spills, US vs CA funds available for response; and spill response to non-floating oils.

Determining the responsible party and holding them to account is complex, muddy, and difficult. The lack of baseline data could make it difficult to quantify the effects of a spill and determine adequate damage assessments. Quantifying soft costs is tricky and easily underestimated.

Local government needs a seat at the table when working with incident command. Information sharing and public interface can be challenging. Regulatory regimes are not focused on the interface of water with the land. The City of Vancouver experienced an inadequate chain of command, a lack of coordination on cleanup and waste management, and a delayed emergency response. A well-intentioned public response can pose significant challenges to crowd control.

A future after an oil spill:

Many communities don't bounce back and remain in a vulnerable state. Do not underestimate the impact of loss of predictability and expect mal-adaptive social responses. People will be disoriented and distressed. Expect a loss of connections: cultural, economic, and loss of expected goods. Expect that recovery will take decades and a new normal - and not necessarily a better normal - will emerge.

An earthquake or tsunami are likely scenarios creating cascading disasters. We need to plan for these events along with vessel traffic concerns. Expect that what is happening in the Salish Sea will not be their primary concern. Government's role now should be to invest in and require prevention, redundancy, and adaptive capacity. People, nonprofits, businesses, and government should work to build an adaptive economy. Prepare and drill a lot!

Preparedness is predicated and based on trust, bonding, love of place and neighbor. Encourage a diversity of minds in solving the problem. Increase community competence, build political partnerships, support diversity, and build social capital. Strengthen social networks of people who are willing to stay and invest in the community and place.

KEY TAKEAWAYS: MARINE MANAGERS WORKSHOP Camp Orkila, Orcas Island, April 3 & 4 2017

Opening, Introductions, and Keynote: Reflecting on Past Workshops to Address Future Concerns

Arnie Klaus and David Tribolet, Marine Resources Committee

Goals of the workshop:

Explore the impacts of a hypothetical large oil spill at Turn Point.

Understand how affected communities can address the impacts.

Outcomes of the workshop:

- Useful information from our presentations providing context and background.
- Discussion of current and future threats and likely scenarios if a spill occurs. We learned what is currently being done to reduce those threats.
- We learned what our capacity to respond looks like, who the responders will be, and what the legal remedies and complexities might be.
- We learned the importance of obtaining baseline information on this ecosystem, economy, and social fabric of San Juan County.
- We outlined actions and commitments to work on key gaps and needs over the next couple of years.

Welcome

***Jamie Stephens, San Juan County Council, SRC, and chair of the Accountability Oversight Committee
Author, Pipeline project poses major threat to San Juan region***

- National Energy Board and Vessel Traffic Risk Assessment Update. A Risk Assessment produced by the Tulalip, Swinomish, and Suquamish tribes is coming out in a couple months.
- Risk of a spill is very high, traffic has increased greatly, and Kinder Morgan Pipeline will increase that risk.
- Regarding regulatory environment, US/Canada need to pull together and plan.
- We don't know the cost to our economy or environmental and cultural resource damage if a spill occurs.
- Protection is cheap compared to potential devastation.
- What can we do: Push for legislation, meet with Tribal chairs, participate in the legislative process and outreach days such as the Day on the Hill

Keynote

David Anderson, Author, Spill: Oil and Orcas in the Salish Sea

- This ecosystem faces a high mortality scenario. Additional environmental pressures threaten the delicate balance.
- There is no recovery from a spill. Be leery of promises by corporate entities.
- Turn Point is a pinch point for ships, but the area between Buckeye Shoal and Peapod Rocks is just as bad as Turn Point because of swirly currents, fog, and tidal interactions.

- Pleasure boats travel in shipping channels create risks to shipping traffic. Pleasure boaters are not trained to use radar, navigate in the fog, deal with currents, know the area and tricky spots, cope with indecision, or deal with mechanical issues.
- The Coast Guard and shipping industry have addressed many issues to reduce risk of what happened in Prince William Sound (PWS).
- He predicts it's less likely to see a problem with ships. However, barges with bunker fuel present a huge risk and issues and scenarios should be addressed.
- Underwater noise due to increased vessel traffic is impacting marine creatures.

Suggested resources: The Spill (Prince William Sound (PWS)) and Sound Truth and Corporate Myth, and DVD called Black Wave (film from the actual Prince William Sound spill).

Invocation

Patti Gobin, Special Projects Manager for the Tulalip Tribes

Salmon are our way of life. They are the indicator species. It's not about the fight for fish. It's a fight for protection of way of life and the habitat that supports it. Patti gifted the group with a song from her ancestors about listening to the earth.

Ecosystem Baseline – What do we know and what do we need to know?

Dr. Joseph Gaydos, Science Director, SeaDoc Society, author

Evaluating Threats in Multinational Marine Ecosystems: A Coast Salish First Nations and Tribal Perspective and author of The Salish Sea See the data on: www.seadocsociety.com

The Coast Salish study quantified essential protections: those things that depend on harvest revenue, staple food sources, culturally or spiritually significant areas, and Coast Salish life ways. They identified 24 harvestable bird species, 8 fish species, 10 invertebrate species, and plant species needing protection.

They enumerated six projects posing a threat: Cherry Point GPT, Fraser Surrey Docks Coal Facility, March Point Refineries (Bakken Oil), Roberts Bank Deltaport, TransMountain Pipeline/Terminal Expansion, Woodfibre LNG Expansion. Fourteen other facilities could be on this list, but are not.

Then they conducted 350 risk overlays of the combined threats and then calculated the level of risk. This study would be relatively easy to update. Currently, there isn't a plan to do that.

- We are playing a numbers game. As the number of vessels increase, the risk increases. If an event happens, clean up will never be complete.
- We need to calculate the additive nature of threats to the total risk and the cascading effects resulting from an event. We need to create a valuation for way of life and quality of life.
- We know the threats: oil spill, underwater noise, vessel strike, nearshore impacts, coal dust accumulation, harbor or pipeline spills, and a nearshore LNG explosion.
- Noise is something we don't know how to mitigate. It is easy to calculate.
- There is a strong need for a multi-lateral authority to address the threats now and in the future.
- To do a resource damage assessment, we will need baseline data.

- While salmon, water, and oil know no boundaries, native people's rights in US aren't recognized in Canada. First nations and tribal representatives were told they couldn't testify on the threats from the Kinder Morgan pipeline. They did anyway.
- There is a charge now for many technical reports and studies. If you need access to data or a report, contact SeaDoc.

Socioeconomic Baseline

Jennifer Mayberry, Manager of Environmental Services City of Vancouver, Evidence Page
Jennifer.mayberry@vancouver.ca

- Regarding the TransMountain project, there are no benefits to the City of Vancouver and every risk imaginable. It is a worst-case location for tankers. This project will triple oil transport from 300,000 barrels/day to 890,000 barrels/day and increase traffic from 5 to 36 tankers/month.
- The City would be left holding the bag. Spill affects would be immediate, widespread, expensive, and persistent.
- The Marathassa spill was a prophetic and highly-publicized eye opener that reinforced the realities of the threat and their lack of preparedness. What they learned:
 - Local government did not have a seat at the table. Their regulatory regime was focused on the water, but not the interface of water with the land.
 - Determining the responsible party and holding them to account is complex, muddy, and difficult. They had little to no baseline data. Their environmental sampling plan had been previously scuttled - exactly the wrong thing to do.
 - Quantifying soft costs is tricky and easily underestimated.
 - They experienced an inadequate chain of command, a lack of coordination on cleanup and waste management, and a delayed emergency response.
 - Information sharing and public interface was challenging and well-intentioned public response posed significant challenges to crowd control.

Rain Coast Conservation Foundation

Ross Dixon, Program & Policy Director

The Rain Coast Conservation Foundation modeled the journey of drift cards dropped at Turn Point to show the potential spatial extent of oil contamination. Cards showed up as far away as Haida Gwaii and Kodiak, AK. To illustrate the impact to multiple recreational users, they overlaid the data with destinations: kayak sites, campsites, beaches, protected areas, and surf spots. This project reached a broad array of the public. They are working with UBC to analyze data they collected.

Recommendations:

- Approval of the Kinder Morgan project will likely result in the extinction of the southern resident orcas should a spill occur. A population below 30 would be functionally extinct with no possible rebound. The population is already stressed.
- A strategic assessment of shipping in the Salish Sea is needed. A trans-boundary study of the impact of shipping on the southern resident orcas is needed.

- An ocean protections plan is underway, but it needs to include sub-surface modeling of where the oil goes and settles. When oil binds with sediment – and the Fraser has a significant sediment load – then it has a greater propensity to sink.
- For noise reduction, regulations work better than incentives. Need to reduce engine cavitation, reduce speed limits, and continue to incentivize updates to vessel design and rudders.
- The vulnerability of these big energy projects is that their costs increase over time implying that delaying them may make them economically unfeasible.

Changes/Challenges since the 2015 Workshop

Eric Von Brandenfels, President Puget Sound Pilots

- Pilots are the first line of defense. Puget Sound Pilots has worked to change the hierarchical culture which allowed the Exxon Valdez accident to happen. They have worked to improve culture, situational awareness, address family challenges that may affect performance, improved technology, conducted drug and alcohol screening, and generally increased training.
- To lower risk of traffic in Guemes Channel with only 42 feet of water, vessel access of this area is limited to periods of slack tide.
- Ships provide Orca pods a zone of separation. Speed reductions significantly reduce noise.
- We need to look at tsunamis as a great risk to tank farms.

Pacific Pilotage Authority

Brian Young

- Spill prevention is key. Oil in the water is too late. Best case scenario is 15% recovery of the oil.
- Ship size has increased dramatically even if the number of assignments has decreased.
- More ships could be navigated, but world-wide pilotage prevents pressure.
- Position a tug to run south or east of Turn Point. Do an exercise on run times and response rates.
- Most recreational boaters get out of the way. Fog is a problem. Captains use the horns.
- What about articulated barges, towed oil barges... All regulations apply to 100-foot tugboats. Bigger than 10,000 tons, they do not get a waiver.
- All ships have a sweet spot for making the least amount of sound.

The Spill and Impacts - Scenarios from Oil Spill response capacity evaluation, Vessel Traffic System

U.S. Coast Guard - Coast Guard Sector Puget Sound Staff (Jensen, Looper, Todd, and Hagen)

Prevention

- Phase in of protected fuel tanks on non-tank vessels is underway.
- Towing and fishing vessels exhibit better compliance with more responsive, licensed personnel.
- The 2010 Authorization Act is driving down compliance issues with fishing vessels.
- Cooperative US/Canada Vessel Traffic Service (VTS) is the only bi-national VTS in the world.
- The USGS Office of Vessel Traffic Management conducts regular Port and Waterway Safety Assessments (PAWSA) - a structured approach to obtaining expert judgments on the level of waterway risk. The Turn Point operating area uses the results from the **2002** PAWSA.

Preparedness: The following entities are responsible for safety, security and response: Northwest Area Committee; Harbor Safety Committee; Area Maritime Security Committee; Regional Response team; CANUS Joint Response Team. They conduct worst case discharge exercises.

Incident Management: The US has \$5.5 billion in its oil spill response fund which can be tapped if there is no forthcoming responsible party. Equipment caches are primarily concentrated in Seattle and Tacoma.

Response Capability within Puget Sound

Shawn Orr, Spills Program and Washington State Department of Ecology

Since 1991 DOE has built strong partnerships for a robust response and zero spill tolerance. They do 30 practice drills a year. They have the lowest spill volumes in the nation and quick response time. DOE is the responsible state agency and Coast Guard is the federal lead agency. Regulated entities (pipelines, refineries etc.) are also part of the leadership and unified command for a spill.

Emergency Management

Brendan Cowan - San Juan County Department of Emergency Management

San Juan County is the local coordinator. There is also a tribal on-scene coordinator. Someday there will be an unmitigated catastrophe and no amount of practice will put the oil back. We won't have the resources to respond to it. How we respond will be key. Anger, public outrage, and well-meaning volunteers will make response challenging. Key stakeholders and our network will be invaluable.

- Island Oil Spill Association (IOSA) needs more participants, volunteers, and funding.
- We need to test the lines of communication and resource mobilization.
- We need no-notice exercises to practice in a most-realistic scenario with unique scenarios and the unexpected added to the mix without prior warning.
- We need to determine how changes in what is being shipped (i.e. xylene and bitumen) will affect prevention planning, training, and costs of cleanup regimes.
- MTCA funds are low right now making it challenging to do the preparedness needed.

Four Speaker Presentations and Panels

Environmental Impact: Perspectives of EVOS Response in Prince William Sound Exxon Oil Spill

Kimbal Sundberg, Retired Habitat Biologist at Alaska Department of Fish and Game

An oil spill in the San Juan islands is a low-probability, high-consequence event. There are known unknowns and unknown unknowns.

- For **humans**, oil spills are extremely unhealthy; lifetime health and mental health will be impacted.
- **Birds** –250,000 aquatic birds killed. 250 eagles died from eating oiled dead birds. Most oil-cleaned birds didn't survive in the wild. Marbled murrelets and guillemot have not recovered. Sub-lethal effects compromised bird immune systems.

- **Marine mammals** – most die and sink to the bottom. Ironically Stellar Sea Lions experienced minor affects from the spill, but all other mammals were severely affected.
- **Oiled shoreline** – Soft-bottomed communities didn't recover well. Rocky bottom inter-tidal communities did recover some. Fucus zone (yellow seaweed) recovery significantly delayed.
- **Herring fishery** – The herring fishery crashed due to compromised immune systems and toxic exposures of eggs on nearshore algae. This has slowly recovered.
- **Fish** – There are fewer fish today. They have varying levels of negative response to toxicity and immune system exposure.
- Transient **Killer whales** never recovered and are considered extirpated. Resident Killer Whales are slowly responding, but not recovering well.

Salish Sea species are already in trouble – various birds, killer whales, salmon, trout, rockfish, mammals, and reptiles. Sea stars should be on the list. They would all be at risk from an oil spill. “The San Juans are in the round-about of tanker transportation.”

- The spill contingency plans need updating.
- Trans-border response coordination needs to be specified.
- Maps are quite old. Shoreline types aren't well-enumerated. Department of Ecology maps don't indicate proper feeding areas for killer whales, seals, etc. Forage fish maps need updating and integration with current information.
- Geographic Response Plans (GRP) need to be updated with dilbit and synbit countermeasures.
- Booming and containment strategies don't work with dilbit and synbit.
- Fraser River freshet and tidal currents impede ability to contain/clean up dilbit. Each day's tide cycle will carry the oil 15 km away and contaminating many beaches and shorelines.
- Rapid dilbit evaporation creates hazardous inhalation conditions; winds will reduce it to small oil droplets in the water column which will eventually sink. Containment will be limited.

Regional Economic Impact of an Oil Spill (Whatcom Watch)

Lovel Pratt, Mulno Consulting

- Spill response requires looking at multiple complexities: economic impacts, duration of spill response, cost of dilbit spills, US vs CA funds available for response; and spill response to non-floating oils.
- In 2012, WA State updated its oil spill response plan. They indicated that the cost would be: 165,000 jobs and \$10.8 billion in annual economic activity. “Any impact to assessed value (of private properties) from oiling of shoreline properties is NOT included.” Homeowners insurance does not cover damage by oil spill. Don't count on it settling quickly. She recommends that oil spill responders must do a cost-benefit analysis for shoreline property damage.
- Using Enbridge Oil Spill as an example: Longest timeframes in recovery were only calculated to a max of 12 months. They estimated \$1.2 billion for clean-up based on \$56,000-\$65,000 per barrel.
- Canada has \$1.36 billion in oil spill funds. US Oil Spill Liability Trust Fund provides \$1 billion per spill. The total fund has \$5.5 billion which would quickly be exhausted if there were a spill associated with product from TransMountain or KinderMorgan using the estimated costs per barrel stated above.

- The vast majority of vessel traffic is Canadian.
- The Northwest Area Contingency Plan is currently being updated to address non-floating oils.

Legal Implications

Randy Gaylord – San Juan County Prosecuting Attorney

When things go wrong, many legal complexities come into play: human factor, jurisdiction, communication interfaces, calculating impacts and damages, and determining how to orchestrate recovering the money lost.

- Local government – The role of local government is rather limited because of the supremacy clause of the Constitution. Congress has regulated vessel construction and response and they have given authority to entities that will have supremacy.
- Treaties – Look at 1846 US and Great Britain and 1852 agreements – open use of the waterways on the border. They form a backbone for lanes of travel and provide an overlay for vessels plying the waters of Rosario, Georgia, and Haro Straits
- Doctrines – Maritime law dictates principles regarding who can travel within certain waterways. The ‘Doctrine of internal waters’ – special waters that give local governments ability to dictate use. International entities want to have the ‘right of innocent passage’ that is unrestricted.
- Baseline studies – You must have good data of the prior conditions of the area to be used in court for determining damages.
- Common law principles (trespass and nuisance) and statutes will come into play which will always include damages.
- Different entities will be bringing multiple suits against the responsible parties.
- Know the Oil Pollution Act. Strict liability is limited. It would be to the owner of the vessel or the operator of the vessel.

Social Health

No presentation.

Social Resilience

Rebekah Paci-Green, Resilience Institute at WWU

The Institute looks at how we create resilience in response to disasters. They don’t solve the problem but study how to re-create community well-being. The following phenomena should be expected:

- Health facilities are overwhelmed
- Volunteer convergence – People must be turned away and materials you can’t use must be stored or turned away taking valuable volunteer time and space.
- Degradation of transportation infrastructure, reduction of travel options, and reduced access to transported goods.
- Long-term social impacts – Do not underestimate the impact of loss of predictability which brings out spikes in mal-adaptive social responses. People will be disoriented and distressed. Expect a loss of connections: cultural, economic, and loss of expected goods.
- Recovery takes decades and may never be the same; sometimes a new normal - and not necessarily a better normal - emerges.

- Those who can leave, will. This out-migration will change demographics with more of those who are place-bound – think of tribes for instance – staying.
- Often there is an increase in the chance of accidents. The levee system failure in Katrina caused the long-term damage. However, disasters that happen after the disaster aren't inevitable.
- There's no planning our way around some things. You can't contingency plan for them. Adding layers of complexity on a complex possibility doesn't always help.
- Transient dysfunction leads to vulnerability.
- Resilience means individual and community well-being in an altered environment.
- Many communities don't bounce back which means returning to their vulnerable state.
- If the disaster is caused by nature, the anger dissipates. It's considered an act of God. However, in an oil spill, there will be significant anger. Disparities are amplified and some fare better than others; this can pit community members against each other and tear communities apart.
- Most important: Channel the anger. Quickly re-write rules and allow for creative responses. Collaborate.
- Rebekah is very worried about an event of this type due to its ability to totally displace and damage our community and its resilience. There could be a result of blaming the victim. People might say they should have planned better.
- Government's role: Invest in and require prevention, redundancy, and adaptive capacity.
- Encourage a diversity of minds in solving the problem. The Coast Guard presentation was not diverse – only one perspective. They might miss something.
- An earthquake and possibly a tsunami are a likely scenario creating cascading disasters. Add this to a tanker oil spill. This wouldn't represent well-thought out scenarios. Add on lack of electricity, blackouts going on for a very long time. Twenty percent (20%) of the bridges on the I-5 corridor could be non-functional. Cell towers may not be working.
- All focus will be spent on the lives at risk. What is happening in the Salish Sea will not be their primary concern.
- Build an adaptive economy. Support diversity. Plan for business continuity. Plan for transportation disruption.
- Prepare and drill a lot! Increase community competence – practice together, build political partnerships, and build social capital. Strengthen social networks of people who are willing to stay and invest in the community and place. This doesn't mean social media. Preparedness is predicated and based on trust, bonding, love of place and neighbor.

Recommendations:

- Prevention is best. Get an additional rescue tug located in this area. Get vessel response plans in place for all vessels.
- Do a study predicting economic loss using tax and business revenue. Lawyers would look at existing numbers of business performance not branding. Consider the reality of damage by association. While all islands might not be affected similarly, tourism suffers unilaterally.
- Don't let the responsible party take credit for the economic boom from workers cleaning up the damage. Watch for "spillionaires."
- Determine and document an ecological baseline. Make sure it's used to establish the value of the damage. The Exxon Valdez settlement of \$1 billion was based on the amount of tax

Americans in a survey said they would pay to not ever have a Valdez event happen again - in spite of other much higher estimates.

- A worst-case scenario is a situation with diffuse ownership of responsibility. The resulting compensation won't be fair.
- Suggestion to check out the San Juan County Department of Emergency Management website: www.SanJuanDem.net

San Juan Ecosystem Protection and Recovery Plan

Marta Green –San Juan Local Integrating Organization (SJLIO)

Composed of representatives from: San Juan County Council, Lummi Nation, Swinomish Tribe, Tulalip Tribes, Puget Sound Partnership Leadership Council, San Juan County/WRIA 2 Lead Entity, San Juan County Public Works Department, San Juan County Health & Community Services Town of Friday Harbor, Lummi Natural Resources Department, Skagit River System Cooperative, San Juan Islands Conservation District, University of Washington Friday Harbor Laboratories, Stewardship Network of the San Juan's/ECO Net, San Juan Water Resources Management Committee, San Juan Marine Resources Committee, San Juan County Economic Development Council, San Juan Community Development and Planning Department

Key takeaways: The San Juan Islands are a unique ecosystem with an intact habitat of significant ecological and economic value that needs protecting. Numerous pressures are impacting the ability to maintain an intact habitat. These pressures require a regional approach. The risk of oil spill and increased vessel traffic needs to be planned for and the additional impacts of climate change and other pressures taken into account.

- They want a consequence assessment now. This could help justify spending more money to address concerns such as an additional rescue tug.

Other helpful information

- <https://www.vesselfinder.com/> This is an app that can be downloaded and tells locations of ships in the channels.