



Whale Strike Avoidance in Southeastern Alaska: Charting a Course for the Future

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Glacier Bay Whale Monitoring Program

1985 - present

38th year
in 2022

Describes local whale population trends and life history traits

Provides information on whale distribution for vessel management



114 Alaska Whale-Vessel Collisions (2000-2019) Involved 5 Species

Data courtesy of Kate Savage DVM,
Alaska Marine Mammal Stranding
Network

Beluga (n=1)
Fin (n=8)
Gray (n= 1)
Humpback (n= 90)
Sperm (n= 2)
Unknown (n=12)

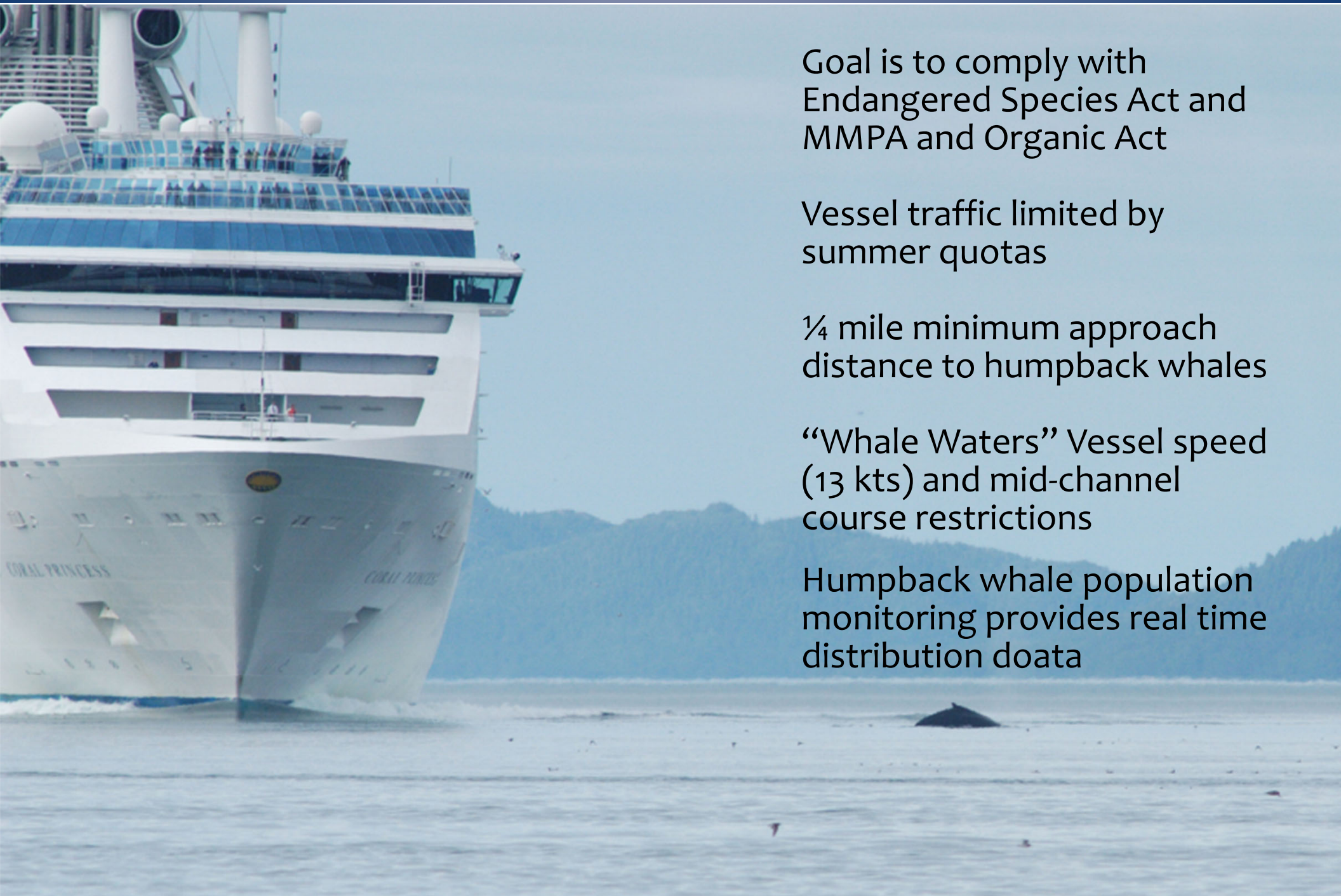
● Dead (n= 32)
● Alive (n=82)



Neilson, J.L., C. M. Gabriele, A.S. Jensen, K. Jackson, J.M. Straley. 2012.
Summary of reported whale-vessel collisions in Alaskan waters. Journal of Marine Biology.



Glacier Bay Whale Management Since 1982



Goal is to comply with
Endangered Species Act and
MMPA and Organic Act

Vessel traffic limited by
summer quotas

$\frac{1}{4}$ mile minimum approach
distance to humpback whales

“Whale Waters” Vessel speed
(13 kts) and mid-channel
course restrictions

Humpback whale population
monitoring provides real time
distribution data

Glacier Bay

“Whale Waters”

Areas of vessel course and speed restrictions due to the presence of whales, designated by Park Superintendent

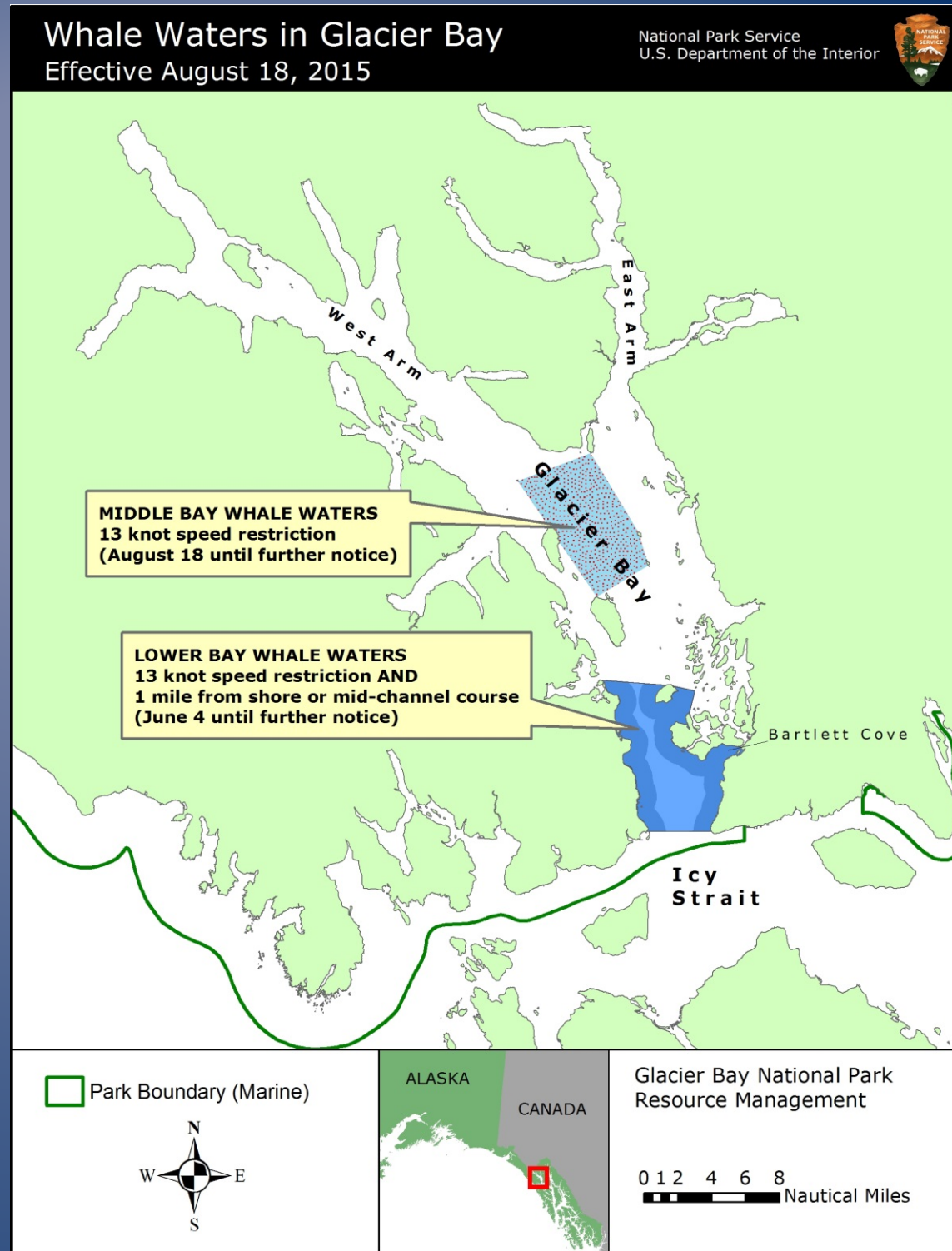
Based on whale survey data

STATIC: Lower Bay Whale Waters
Speed limit (13 kts)

Mid-channel course or one mile offshore (vessels >18 ft)

DYNAMIC: anywhere, as needed

No speed limits outside of Whale Waters



Pivotal Events That Changed the Conversation

2001 - Ship-struck whale found dead in Glacier Bay → legal proceedings result in cash settlement in 2007

2006 – Shipboard observer program

2011 – Biologists meet with pilots and cruise officials about whale avoidance

→ “Advance knowledge of whale locations would be valuable.”

2011 Early August - NPS releases first whale map to cruise ships.

2011 Mid-August - 3 Holland America cruise ships volunteer to map their whale sightings for distribution to all ships. Thanks to Captain Peter Bos.



Glacier Bay Shipboard Observer Research Program: 2006 - present



Project Lead: Scott Gende

Goal is to understand whale-ship interactions
“How close, how often?”

Voluntary participation by cruise lines

Observers on 3 to 4 ships per week

Observer communicates critical information
with bridge on VHF as needed.



Goal:

To facilitate large ship whale avoidance without creating a whale attractant for small boats.

Challenge:

Mobile devices and WiFi not always available on bridge.

Solution:

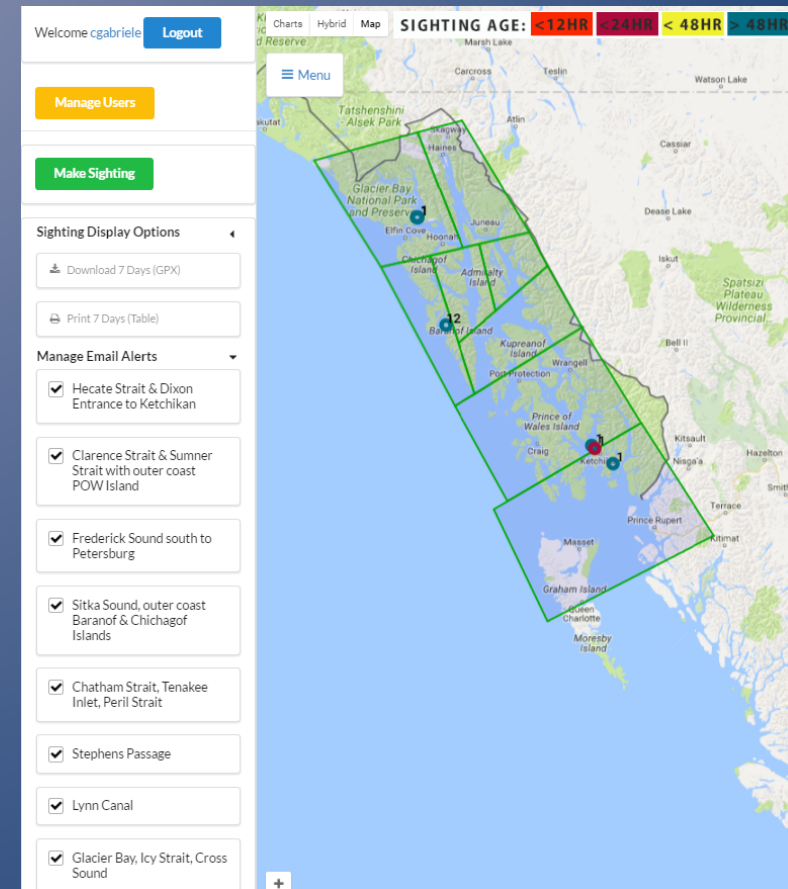
Adapted Whale Alert mobile app to allow us to reach large ship audience.

Access:

Approved users log in any time for recent sightings

Pilot navigation software can display Whale Alert sightings on their Electronic Chart.

Not yet possible for cruise ship electronic charts.





Weekly Whale Map Email


Distributed to all ships, state ferries, and SEAPA pilots by Cruise Line Agencies of Alaska

Hopefully, starts a conversation on the bridge about whales.

Email provides opportunity for communication between biologists, ships and pilots.

Alaska Marine Highway Ferries iPad on the bridge for W.A.

Cruise ships are required to consult Whale Alert prior to entering Glacier Bay (in 2021 contracts).

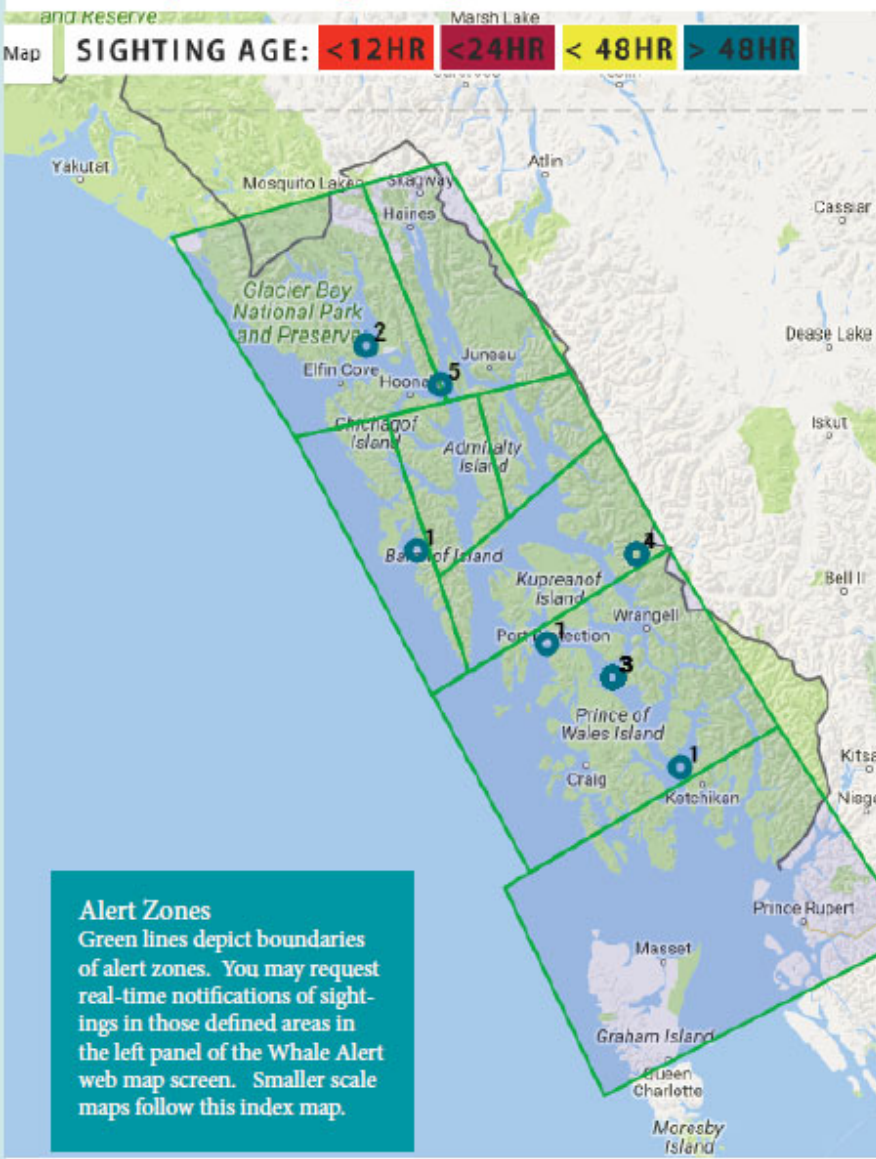


Whale Alert Alaska


Whale Alert Weekly Newsletter

Humpback Sightings 090516 - 091116


SIGHTING AGE: <12HR <24HR < 48HR > 48HR



Alert Zones
Green lines depict boundaries of alert zones. You may request real-time notifications of sightings in those defined areas in the left panel of the Whale Alert web map screen. Smaller scale maps follow this index map.



NOAA
FISHERIES
Protected Resources



NATIONAL PARK SERVICE

Whale Alert Alaska

These maps are part of a project to help ships prevent whale - vessel collisions and disturbance. A smart-phone app and interactive web map are also available.

Reported Sightings

Humpback whale sightings recorded between September 5th and 9th by bridge teams on several cruise ships, National Park Service surveys, and the public are displayed on these maps. A lack of whale sightings does not necessarily indicate the absence of whales. Some areas were transited in darkness or poor visibility. Areas of multiple sightings may represent congregations of many whales or fewer whales seen consistently by multiple vessels.

U.S.DepartmentofCommerce | NationalOceanicandAtmosphericAdministration | NationalMarineFisheriesService

Alaska Whale Strike Avoidance Flyer

BEHAVIORAL CUES YOU CAN USE to avoid whale strikes

Nobody wants to hit a whale. More whales and more vessels in Alaska waters are creating a safety risk for whales and people. Professional mariners play an important role in avoiding whale strikes.

BLOWS Usually at the surface for less than a minute, the whale's first and final blows are often the strongest and most visible. On the final blow, the whale raises its head higher out of the water before diving.

Strong blow! ... Faint blow! ... Faint blow! ... Strong blow! ... Dive!

DIVES Whales tend to dive for the same amount of time for several dives in a row. Mother and calf pairs tend to dive for less than 6 minutes and are harder to see because the calf has faint blows. Along the shoreline, a whale's heading when it dives is a good predictor of the direction where it will come up next. In open water, the dive heading is not a reliable indicator of the location of the whale's next surfacing.

SPEED and other factors Humpback whales in Alaska travel slowly and change directions frequently. They may or may not lift their flukes to dive. They may also sleep motionless at the surface for an hour at a time. In areas where whales take advantage of headlands and tidal currents, they tend to be more abundant on the leeward side of the headland at peak current. The Chatham Strait lunge-feeding group tends to feed near shore during the day and disperse offshore at night and early morning.

HUMPBACK WHALES ARE THE SPECIES MOST COMMONLY STRUCK IN ALASKA.

WHALE BEHAVIOR	AVERAGE	TYPICAL	EXCEPTIONAL
SWIM SPEED	2.4 KNOTS	2 - 8	14
DIVE TIME	5.6 MINUTES	3.5 - 12	30+
# BREATHS	2 - 4	1 - 7	
TIME AT SURFACE	42 SECONDS	2 - 60	CONTINUOUS

WHY DON'T WHALES ALWAYS AVOID SHIPS?

- Baleen whales have good hearing but no echolocation. Frequently they do avoid vessels, except silent ones.
- The ocean is a noisy place. Whales seem to 'tune out' repetitive background noise like the drone of an approaching vessel.
- Whales sometimes seem to have difficulty locating an approaching ship. They react to changes in sound, possibly as it allows them to better locate the source.
- At close range, whales rely on last-second avoidance. **If a ship is going faster than a whale's top speed of about 14 knots, they are often unable to get out of the way.**
- Whales make mistakes. Even healthy adult whales get hit.

Report collisions to NOAA 1-877-925-7773 or to the U.S. Coast Guard on VHF Channel 16.

Your report will help advance understanding of circumstances that contribute to whale strikes.

NATIONAL PARK SERVICE
NATIONAL MARINE FISHERIES SERVICE
ALASKA WHALE FOUNDATION
UNIVERSITY OF ALASKA SOUTHEAST, SITKA
NATIONAL MARINE SANCTUARIES PROGRAM

Learn more at www.alaskahumpbacks.org

THANKS TO CONTRIBUTORS

5 things you can do TO REDUCE THE RISK OF A WHALE STRIKE



1 KNOW BEFORE YOU GO

Anticipate likely whale sightings by communicating with other mariners and subscribing to Whale Alert or other services. Find out about the seasonal movements and behavior of whales.



2 PLAN YOUR PASSAGE

With advance planning, vessels may avoid whale concentrations with a minimal increase to passage time. If travel through whale aggregations cannot be avoided, plan to reduce speed in areas where whales are likely, especially if sighting conditions are poor.



3 DISCUSS WHALE AVOIDANCE

Bridge teams that discuss in advance what actions to take when whales are sighted near the ship's path can save valuable time when these events occur. Conducting avoidance drills can also be helpful.



4 KEEP A DEDICATED WATCH

Keep a consistent lookout, focusing on whales near the path of the ship. If you see one whale, keep looking, as there are likely more nearby! Specify the information needed (bearing, estimated distance, and direction of travel). Keeping critical distances in mind may help you avoid surprises at close range. For example, if ship speed is 18 knots, the whale with the highest chance of surfacing off your bow was 1.7 miles ahead on its previous surfacing (or 1.4 miles at 15 knots, both assuming a 5 to 6 minute dive time). Detecting whales at a greater distance opens up more options for avoiding a strike.



5 MAKE MODEST ADJUSTMENTS

When a whale comes up in the path of the ship, determine its direction of travel and identify the best course of action. Steering behind the whale is often most effective. A small decrease in speed when you first see the whale can make the difference between a strike and a near miss.

Released in 2017
Thanks to Rich Preston (SEAPA) for the concept and input.
Available online

Spending Time with Pilots at AVTEC Bridge Simulator



2015 AVTEC Crew: Mike Angove (AVTEC), Barry Olver, Larry Vose, Rich Preston (SEAPA), Noble Hendrix, Scott Gende, and Chris Gabriele (NPS)



Develop Whale Avoidance Training Modules Available to All Mariners

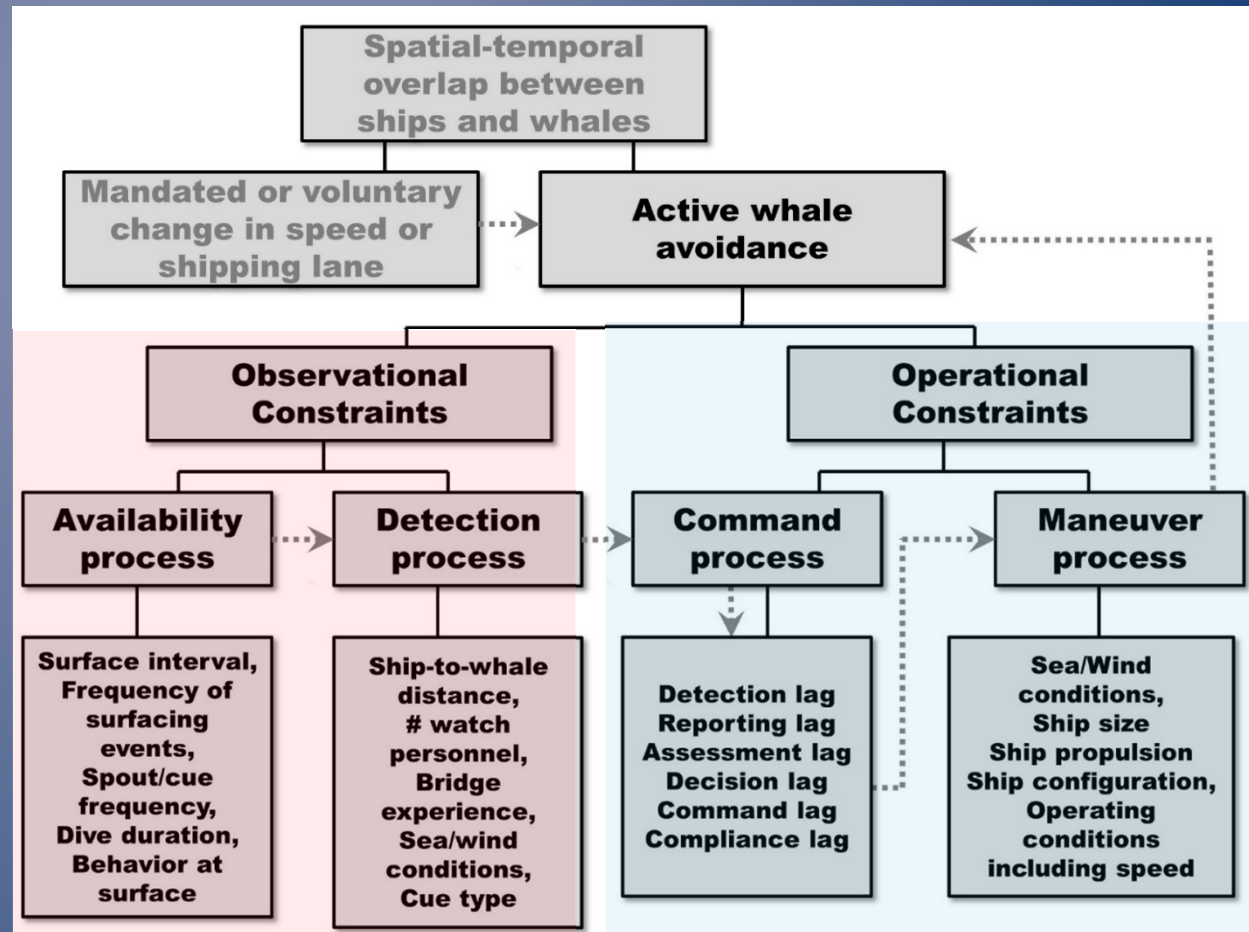


Breaking Down Active Whale Avoidance Into Components

Active Whale Avoidance: defined as a mariner making operational decisions to reduce the chance of a collision with a sighted whale.

Each Operational Constraint has a lag time

Not prescribing how to avoid whales, just breaking down the process to acknowledge lag times and find ways to improve response time.



Gende SM, Vose L, Baken J, Gabriele CM, Preston R and Hendrix AN (2019) Active Whale Avoidance by Large Ships: Components and Constraints of a Complementary Approach to Reducing Ship Strike Risk. Front. Mar. Sci. 6:592. doi: 10.3389/fmars.2019.00592

Take Home Messages



“Nobody wants to hit a whale.” We managers share a common goal with industry and marine pilots – to reduce the risk of whale strikes – for lots of reasons.

Whale Alert and other technology are helpful but there are still hurdles in getting the sightings to the bridge for whale avoidance in real time.

Managers should seek to understand “the view from the bridge”

Need to develop whale avoidance training modules for bridge simulators

Thanks To Contributors

NATIONAL MARINE
SANCTUARIES
GERRY E. STUDDS
STELLWAGEN BANK



Conserve.**IO**
Apps for a Better Planet

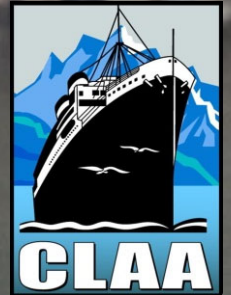


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Whale photos in this presentation were taken under NOAA Fisheries research permits issued to the NPS