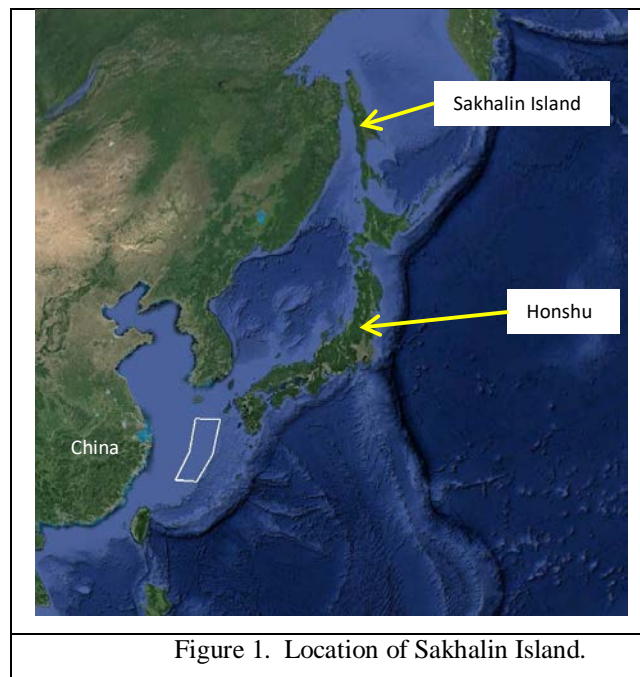


Western gray whale activity in the East China Sea from acoustic data: Memorandum for Dr. Brandon Southall¹

CHUCK GAGNON US NAVY

The Navy conducts marine mammal research in many areas and subjects. Some of this is conducted by employees of Marine Acoustics Inc. at Naval Ocean Processing Facility (NOPF) Dam Neck, VA. In early fall 2011, a unique acoustic signature was noted from USNS Effective while operating in the East China Sea. USNS Effective is a Surveillance Towed Array Sensor System vessel used to monitor acoustic data of interest to the Navy. Recordings of this signature were analyzed and the probable source was determined to be from Western Gray Whales (WGW).

As you are aware, the main feeding area for the WGW has historically been off Sakhalin Island in Russia (Figure 1), and they are regularly seen there feeding in the summer. Almost nothing is known about their winter distribution and breeding areas, although some have been historically hunted and stranded off Korea and China.



Since identifying the sound signature in 2011, the Integrated Undersea Surveillance System (IUSS) Marine Mammal Monitoring (M3) program regularly detects a 55 Hz frequency sweep from WGW in the East China Sea (ECS). These sweeps have only been detected in the shallow water of the ECS when a SURTASS vessel is in the area conducting operations in the September to March time frame. The pulses are short duration, and exhibit a pattern of multiple harmonics with the first harmonic being very weak. The second and third harmonic are usually the strongest. The sweep is approximately one second in duration and is often emitted in pairs or triplets, with an inter-sweep interval of approximately three or four seconds.

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The 55 Hz sweeps are not very strong and have a limited range of detection. Up to eleven individual WGW have been held in a two hour period. Normally they are detected singly or in small groups of two or three animals. They swim very slowly, generally moving south in the fall and northerly in the spring.

Since first identified in 2011, the pulses have only been detected when there is a SURTASS vessel operating in the polygon area of Figure 2 from September to March.

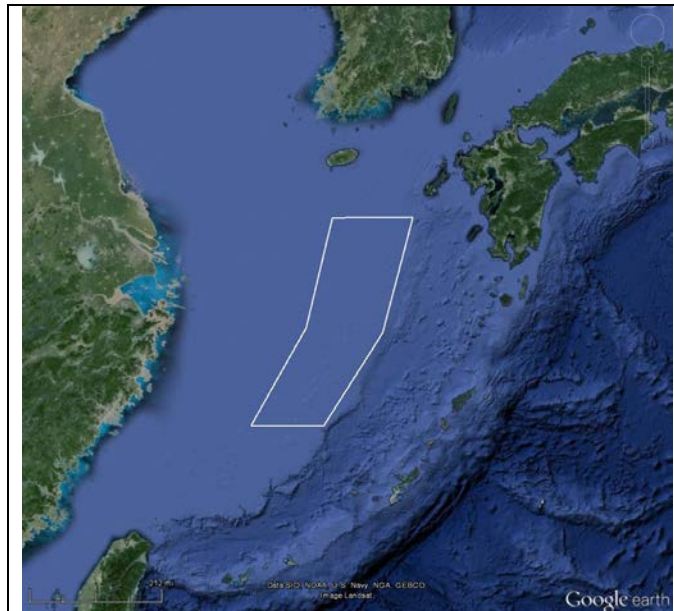


Fig. 2. western gray whale holding area.

The WGW sweeps are usually detected for periods of two to three hours. The signal being lost when the SURTASS ship moves out of the detection range.

The information contained in this memorandum is being released to you to assist with your discussions with the International Whaling Commission, U.S. Marine Mammal Commission, and International Union for Conservation of Nature (IUCN) panel regarding the status of the WGW.

Respectfully,

Chuck Gagnon