The Salish Sea Hydrophone Network

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Salish Sea hydrophone network

How does it work?

- 5 cabled systems
- 0.1-10 or 100 kHz
- local processing
- global streaming

www.orcasound.net

Goals

- detect presence/absence (with sighting networks)
- monitor underwater noise levels
- compare detection efficiency of humans & computers
- raise awareness about underwater noise

Human listening network

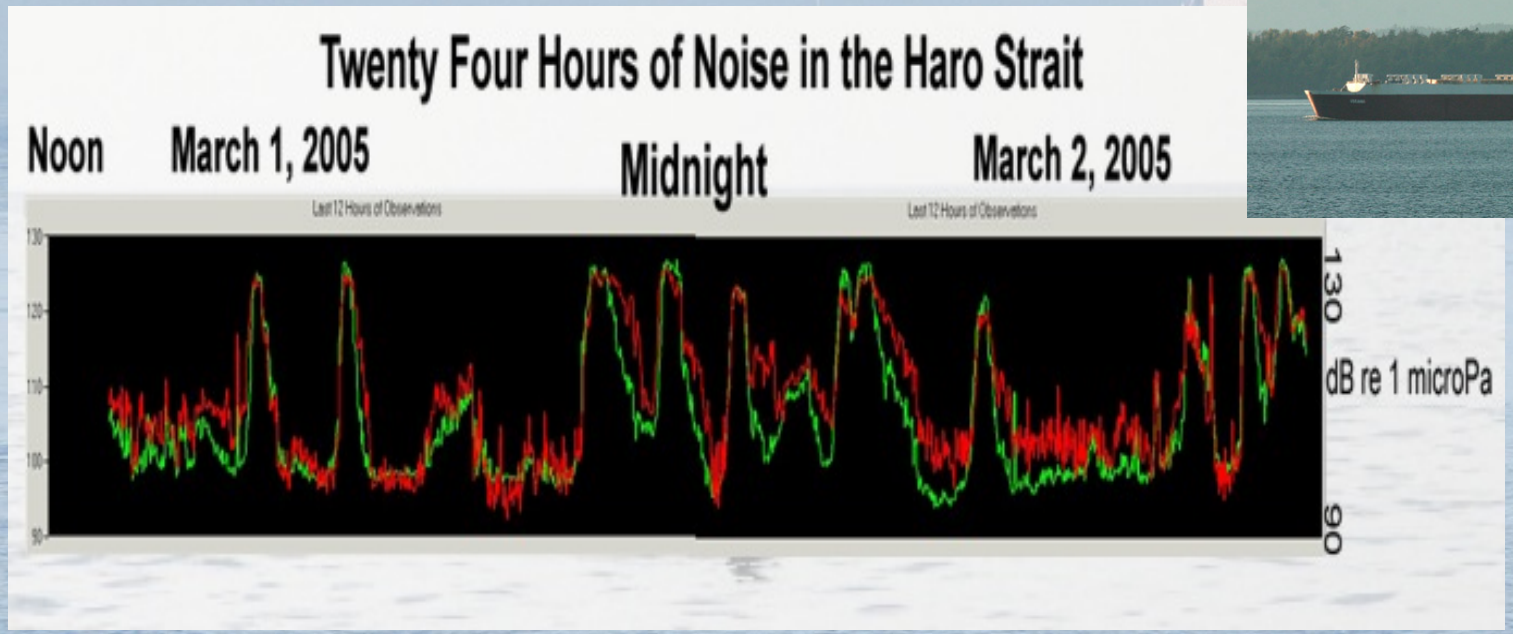
- Time zone diversity: 25% of web visits non-U.S.
- 12% of listeners non-U.S. (6% U.K., 4% Canada)
- ~10 dedicated listeners; 160 on email list &/or Twitter feed
- Classification beginning; logging via Google spreadsheet

- Max of 20-30 listeners exceeded 4 times in 2011
- Live audio now in exhibits at four sites
- Citizens scientists monitoring AIS to interpret noise
-

Automated detection and recording

Custom software (*WhoListener*, by Val Veirs):

- Computes calibrated 2-second mean receive levels
- Logs 20 minute broadband means & spectrum levels
- Triggers on unusual sounds (powerful, tonal, etc)
- Uploads recordings to database for human classification



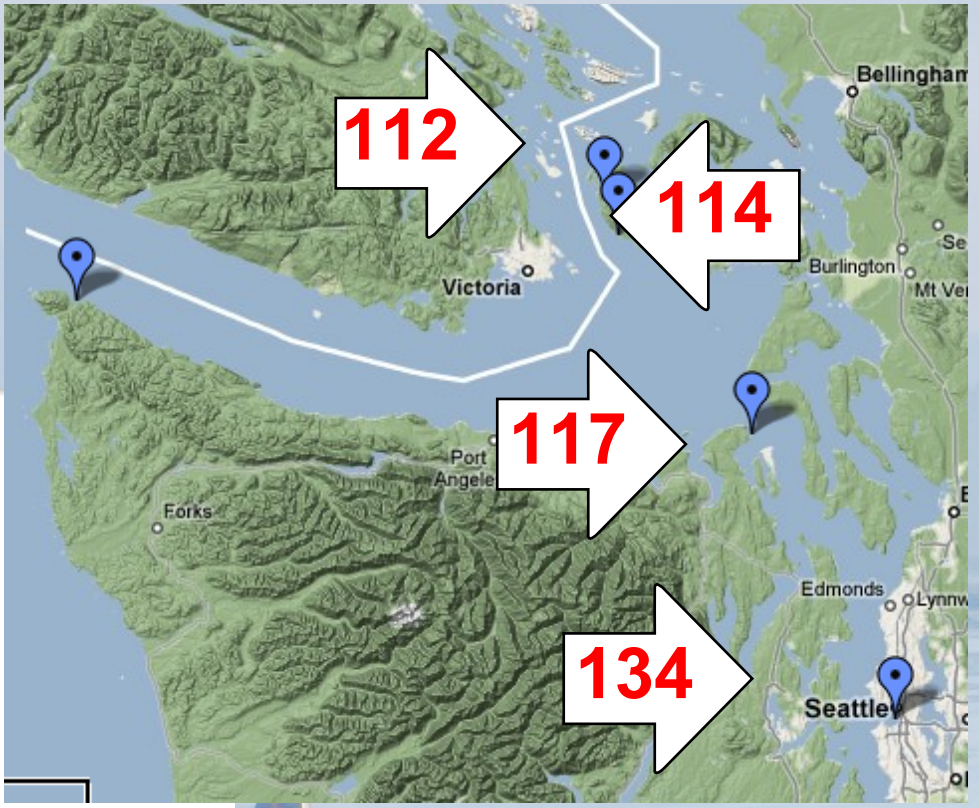
Automatic Information Service logger at Lime Kiln

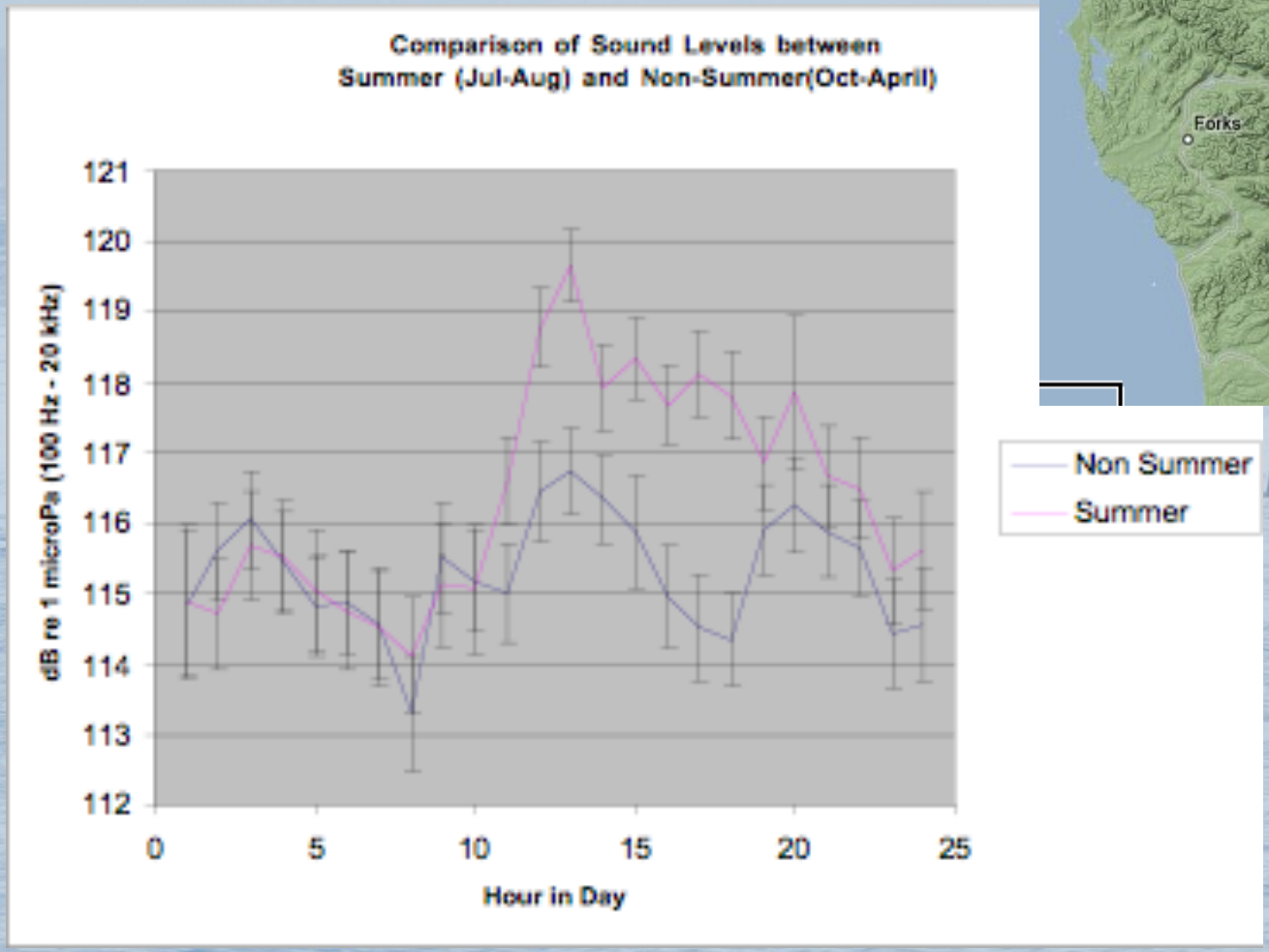
- Logs ship AIS data & mean RL (0.1-100kHz) when abeam

Acoustic characterization of KW habitat

2008 mean RLs (dB)

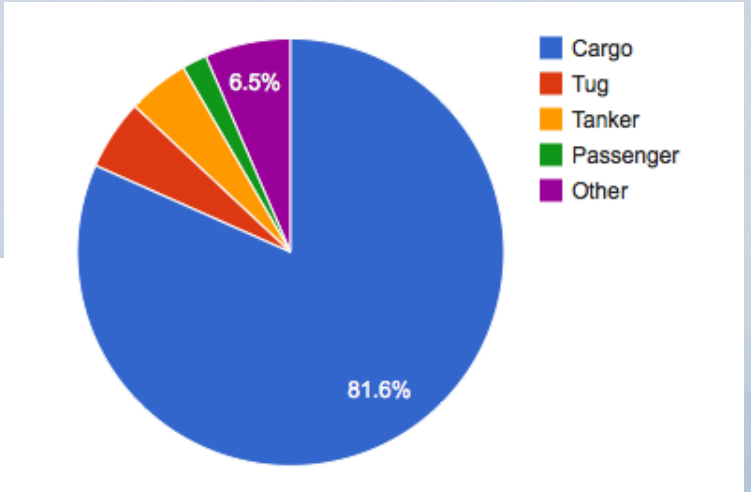
- +20 dB from ships
- + 3 dB from boats

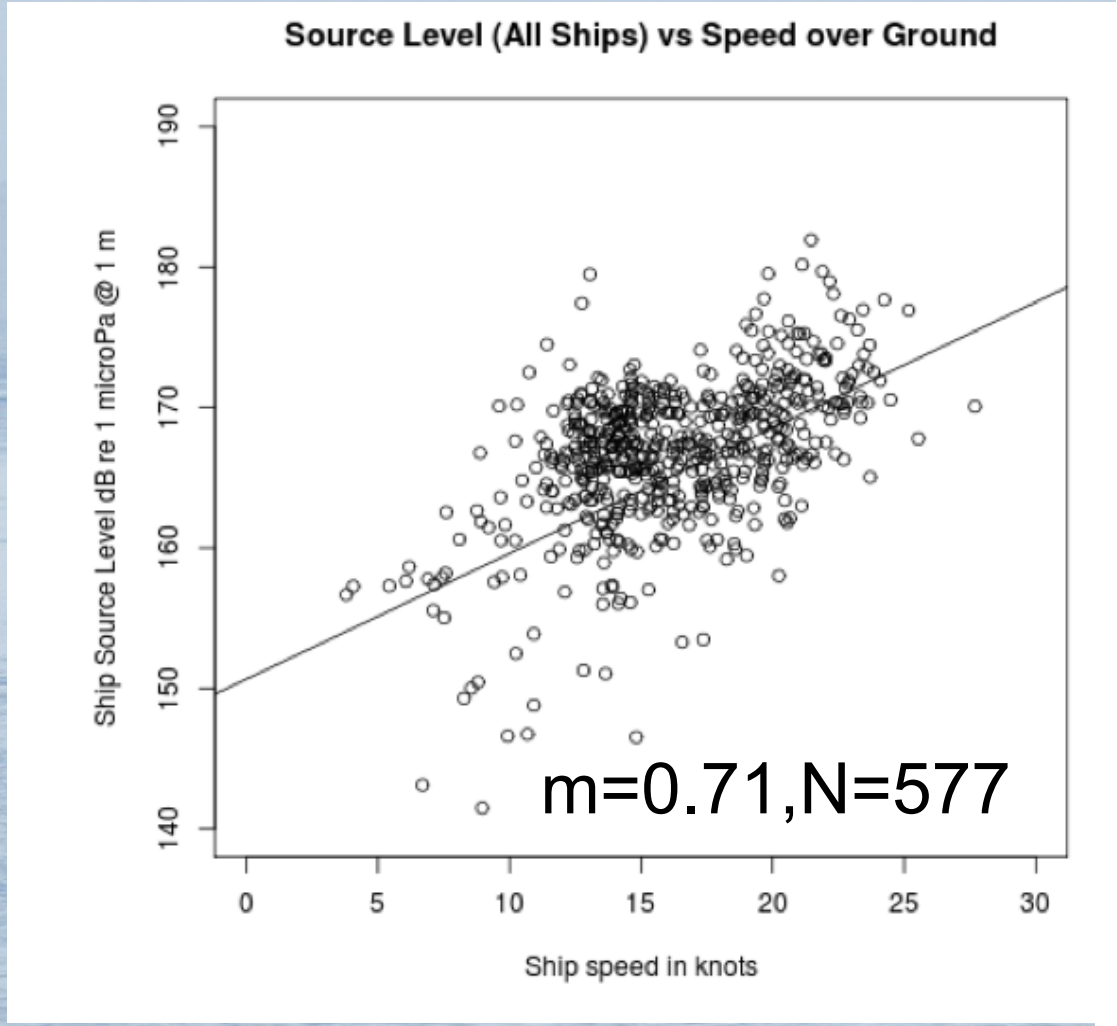


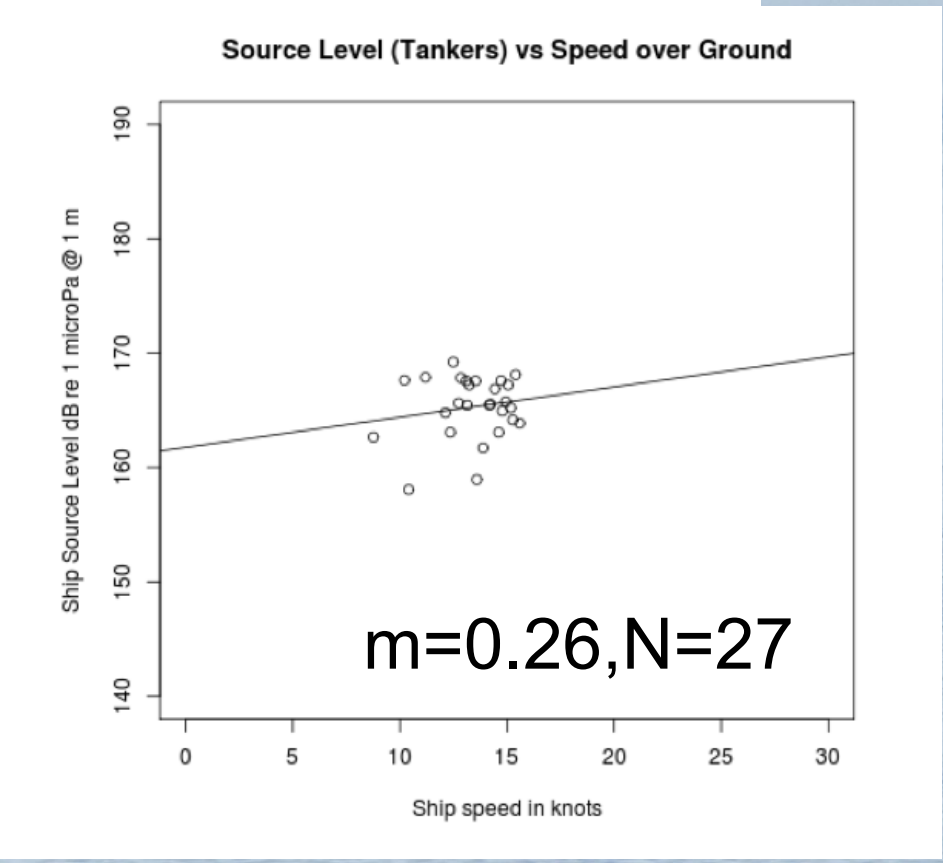


Shipping noise in Haro Strait

For 577 ships, SL increases with speed at rate of ~0.3 to 1 dB/knot

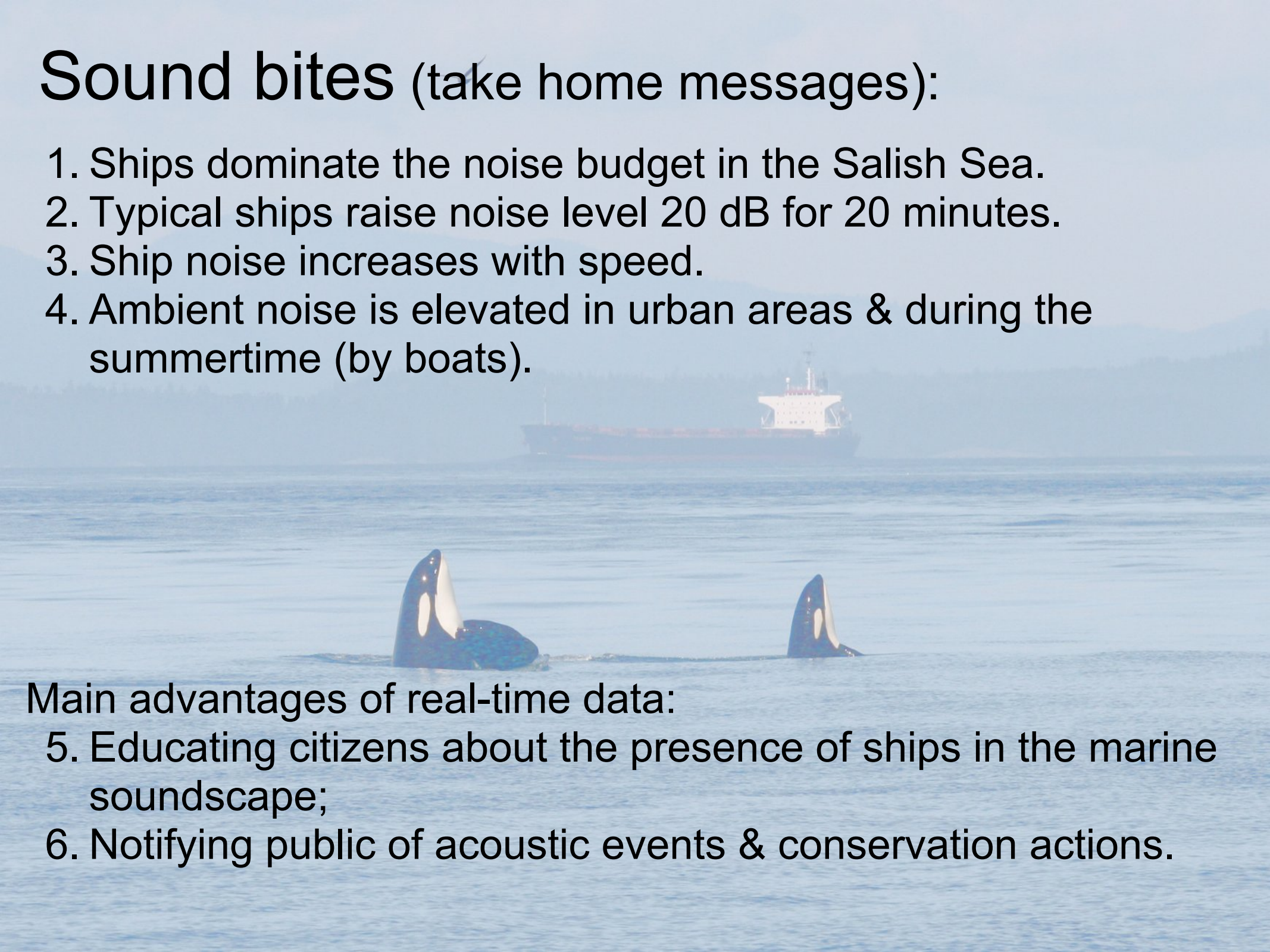






Sound bites (take home messages):

1. Ships dominate the noise budget in the Salish Sea.
2. Typical ships raise noise level 20 dB for 20 minutes.
3. Ship noise increases with speed.
4. Ambient noise is elevated in urban areas & during the summertime (by boats).



Main advantages of real-time data:

5. Educating citizens about the presence of ships in the marine soundscape;
6. Notifying public of acoustic events & conservation actions.