Herring movements in PWS are not well understood
Humpback whales prey heavily on herring in PWS
Whale observations were used to track herring movement
Humpbacks are good indicators of subsurface productivity

Significant energy transfer takes place during fall and winter between trophic levels
Herring displayed some spatial and temporal shifts in their movements

Methods:
- whale locations mapped during 22 (5 - 7 day) seasonal surveys (2006 - 2014)
- collected prey items near feeding whales (2006 - 2014)
- hydroacoustics used to estimate prey density (July & Sept 2014)

Seasonal Changes in Humpback Whale Distribution 2006 - 2014

April ● and July ● whale locations

Fall ● whale locations

Dec. whale locations 2006-08 ● 2011-14 ●

During the spring whales target shoals of spawning herring in the eastern Sound. Both whale and adult herring numbers drop during the summer herring presumably leave PWS.

During the fall, adult herring return to PWS via Montague Strait and head to overwintering grounds. Whales intercept returning herring.

While generally stable in timing and location, in 2011-2014 herring overwintering schools were more dispersed than in 2006-08, possibly due to predation pressure or oceanographic changes.

Hydroacoustic methods and results:
- Towed SIMRAD EK60 38-120 kHz
- Transects conducted near feeding whales in Montague Strait (Sept. 2014)
- Passive noise removal, -70 dB threshold
- Backscatter due to fish below 90 m:
  - dB120-38 = -16 to 8
- Backscatter due to krill (not shown):
  - dB120-38 = 8 to 30