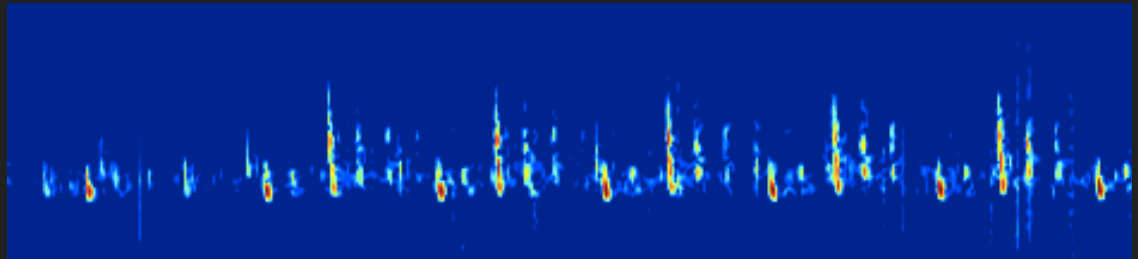


# Variation in fin whale songs recorded near Hawaii

Laura McCourt

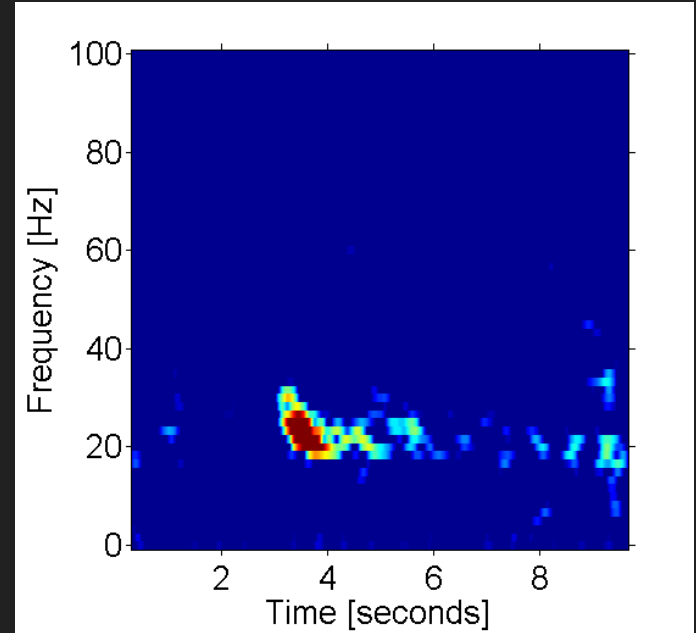
Chris Lundeberg and Selene Fregosi

Integrated Biology Department



# Introduction

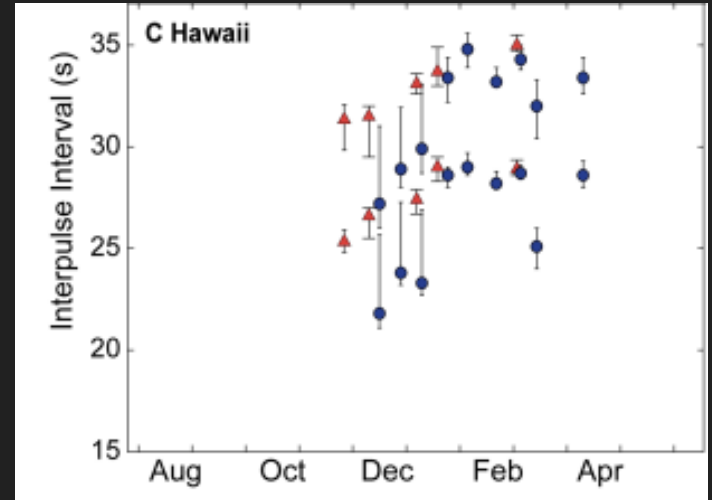
- Marine mammals use acoustics as a main form of communication
- Male fin whales (*Balaenoptera physalus*) produce a call around 20 Hz that has a characteristic down-swept shape
- The 20 Hz call is thought to be associated with breeding



(Castellote et al. 2012; Hatch and Clark 2004; Oleson et al. 2014)

# Introduction Cont.

- The inter-pulse interval (IPI) can vary based on the individual, geographic region, and season
- In the winter, mating is occurring near Hawaii and the calls are more frequent and loud



(Oleson et al. 2014)

2000-2001

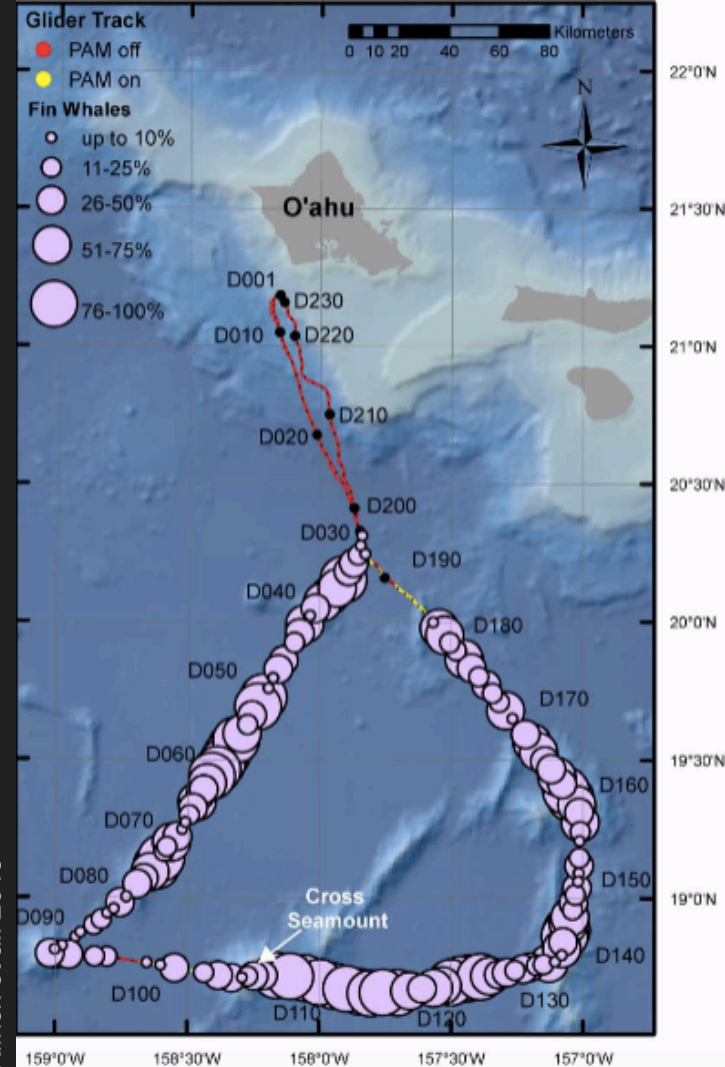
2005-2006

# Dataset used

- Glider deployed: December 2014 – January 2015
- Records passive acoustics of marine life
- 164 dives
- 712 hours of data
- Continued analysis of Klinck et al. 2015 report

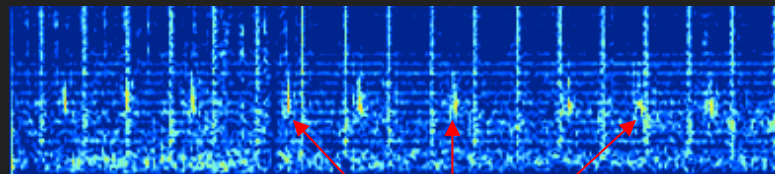


Klinck et al. 2015

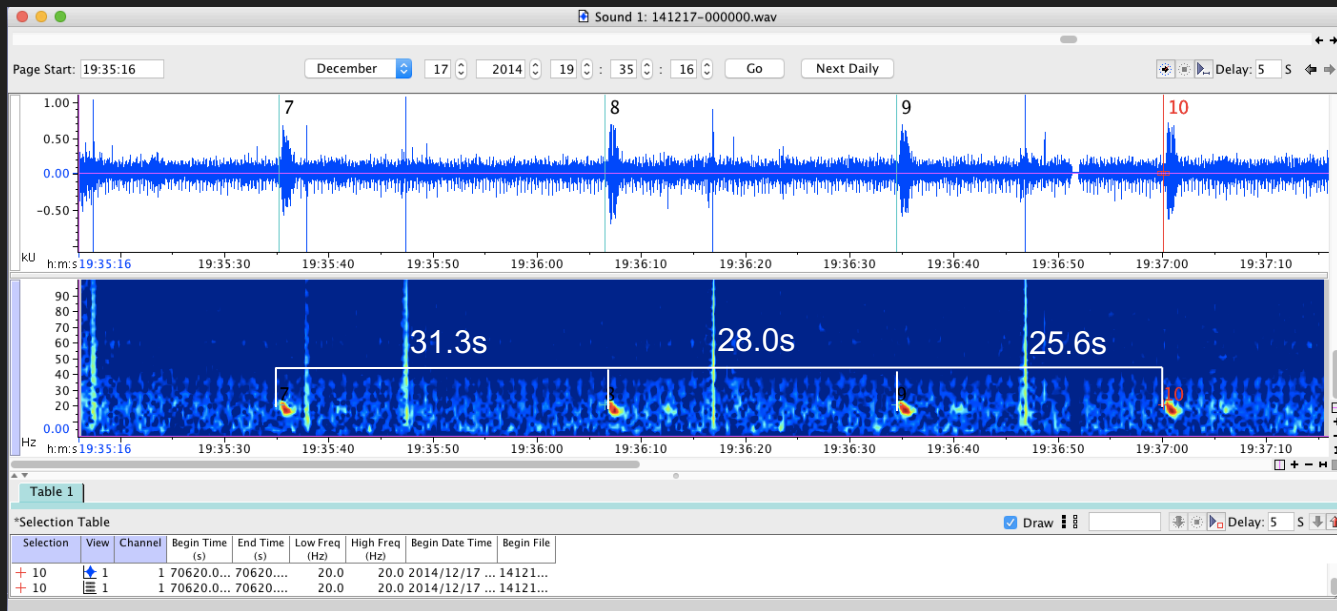
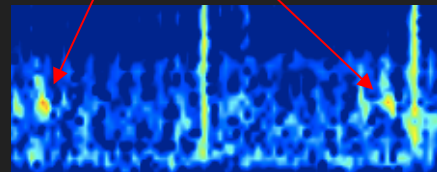


# Methods

- 33 days with fin whales detected
- 22 days had songs of measurable quality
- Selected 7 song bouts for inter-pulse-interval measurements



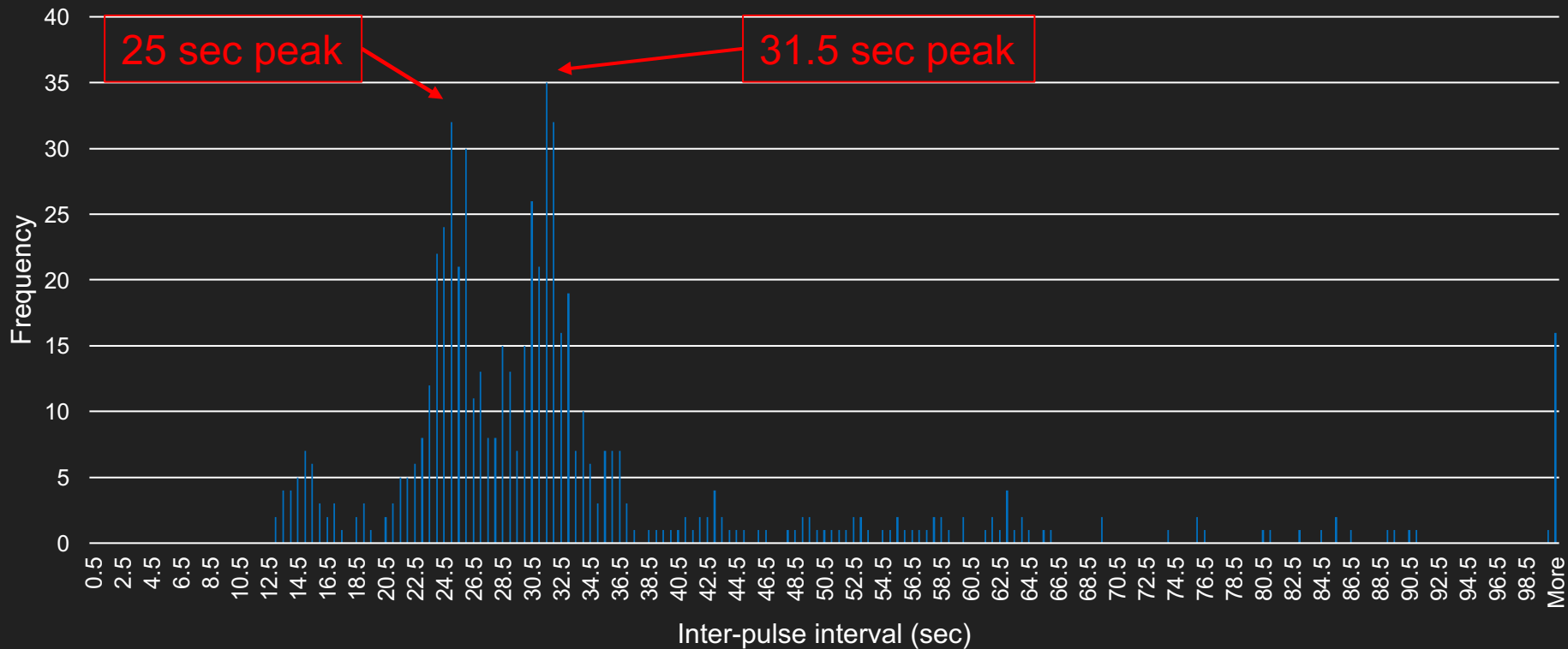
Visible calls but  
difficult to mark



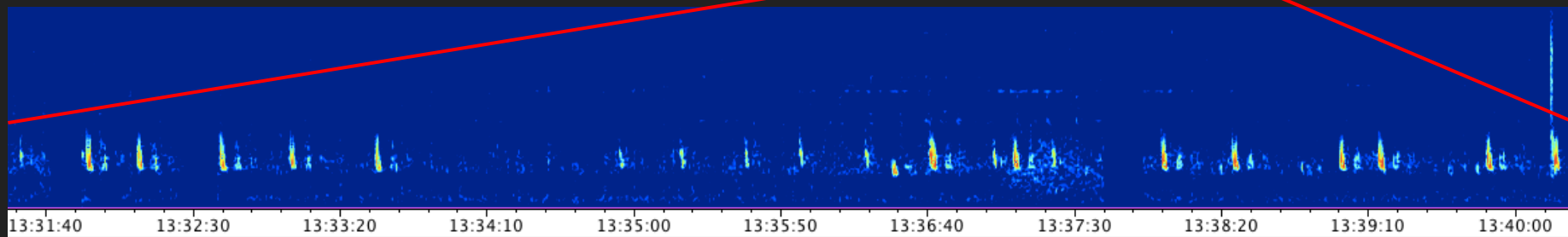
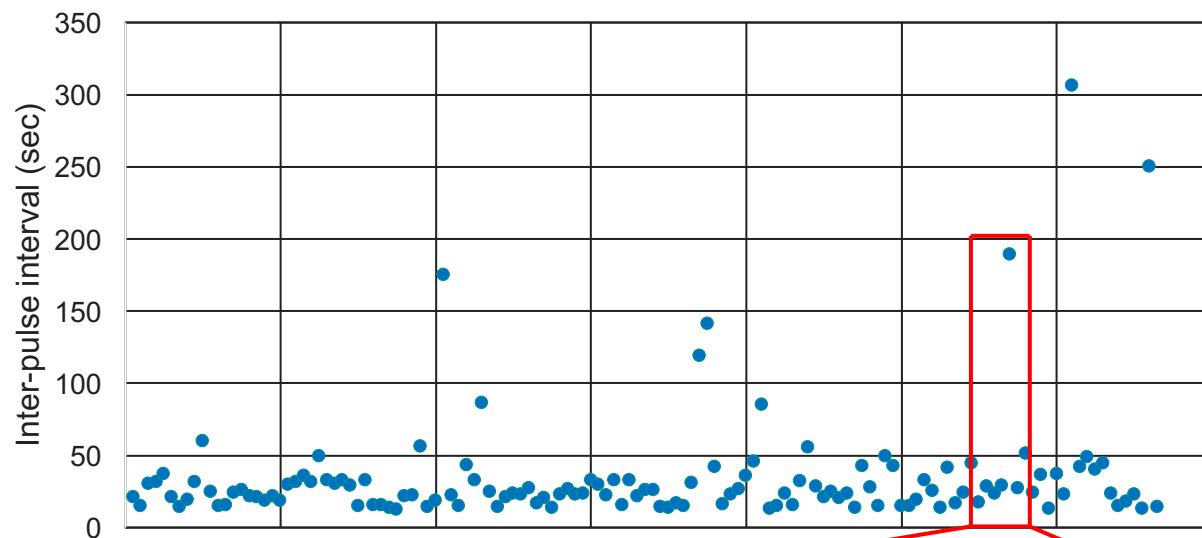
*Selection Table							
Selection	View	Channel	Begin Time (s)	End Time (s)	Low Freq (Hz)	High Freq (Hz)	Begin Date Time
+ 10	1	1	70620.0...	70620.0...	20.0	20.0	2014/12/17 ... 14121...
+ 10	1	1	70620.0...	70620.0...	20.0	20.0	2014/12/17 ... 14121...

# Results

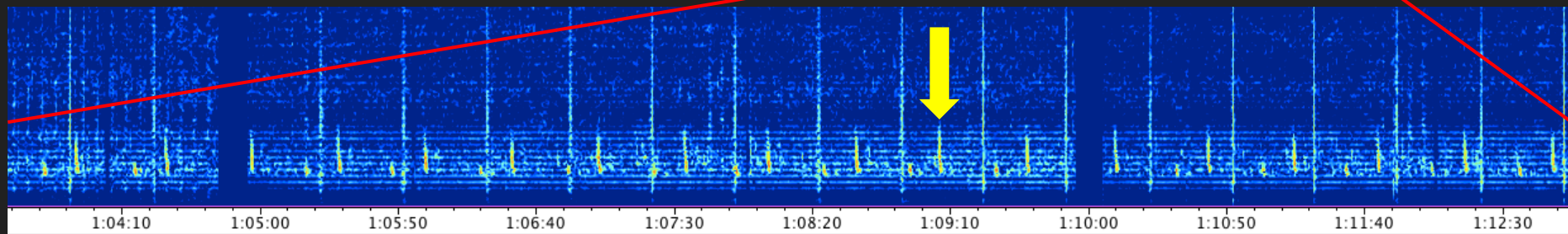
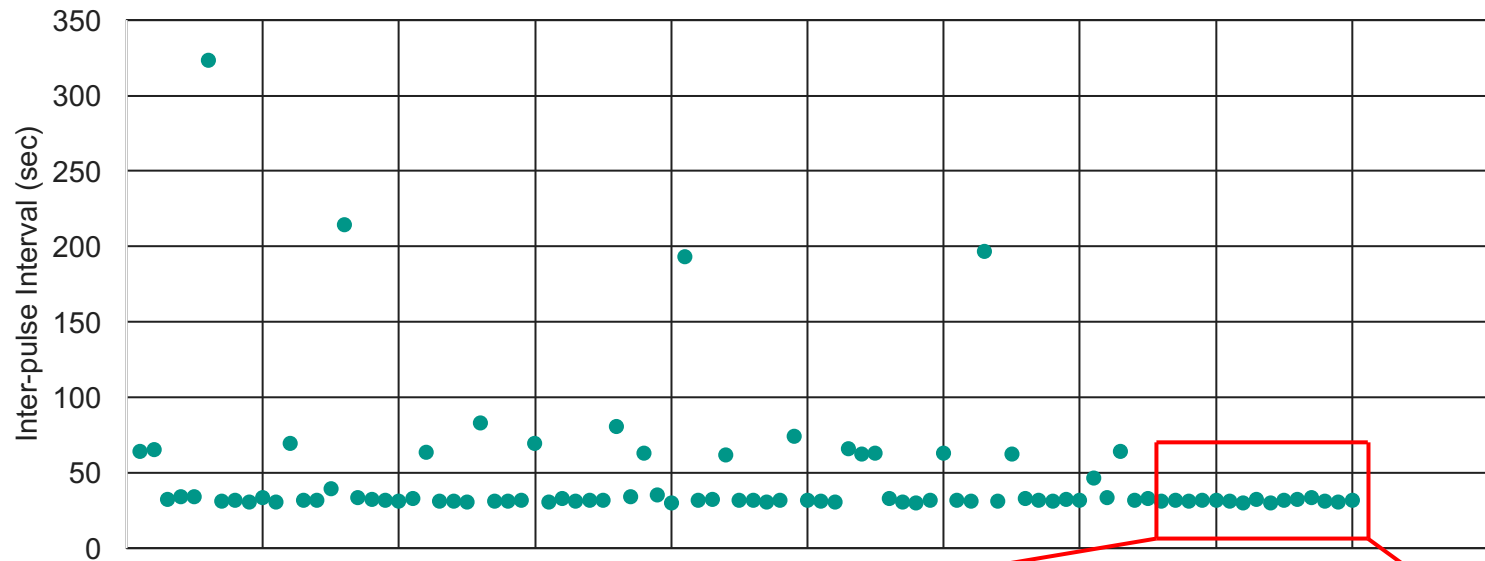
Inter-pulse interval of fin whale calls



January 02, 2015

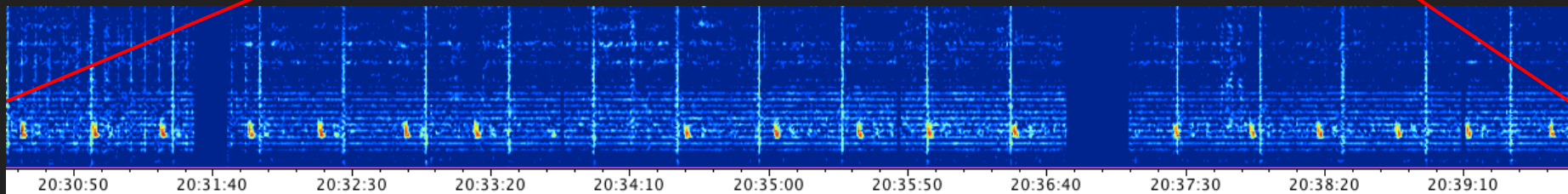
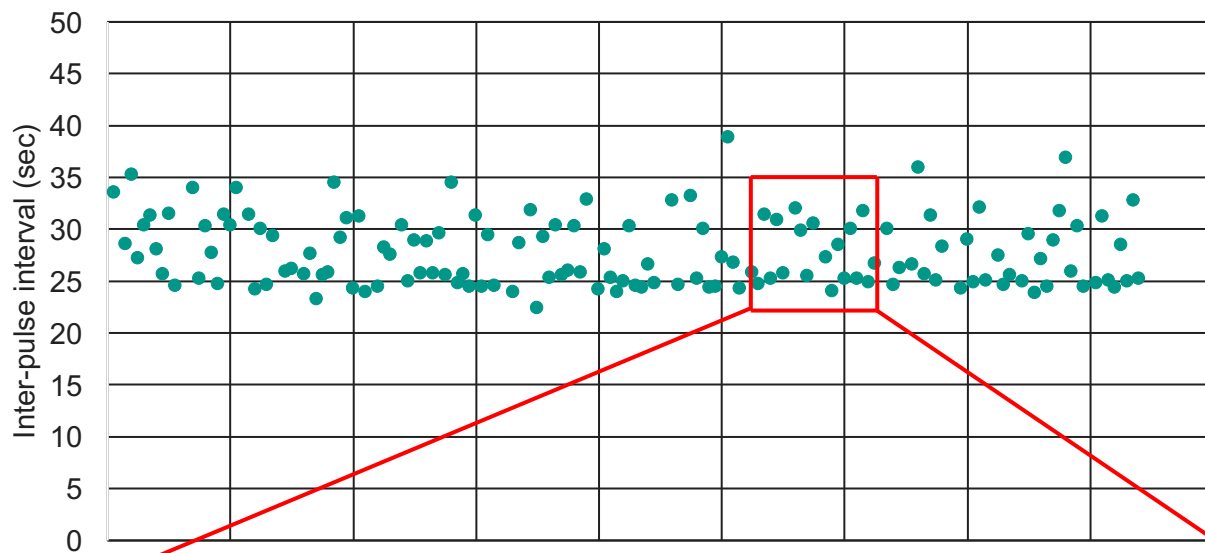


December 22, 2014



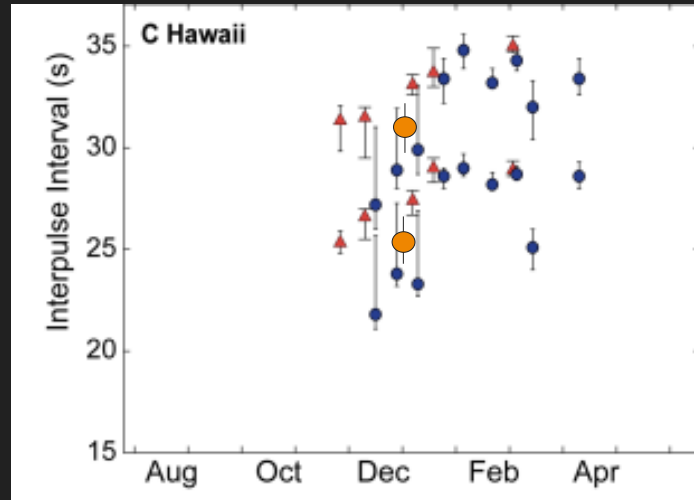


December 17th, 2014



# Conclusions

- Both singlet and doublet song types present in glider data
- IPIs measured match previous recordings from December 2000 and 2005  
(Oleson et al. 2014)

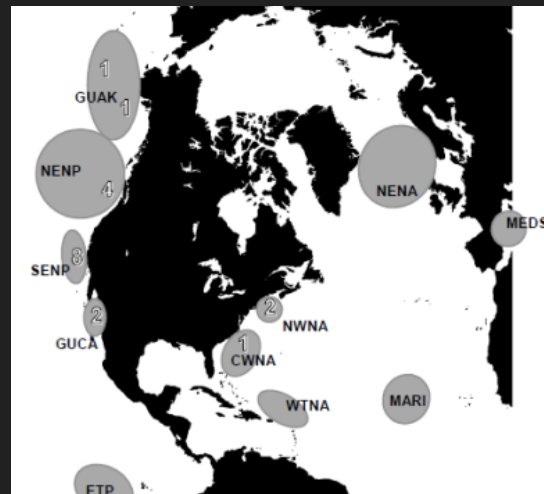


(Oleson et al. 2014)

**2000-2001**  
**2005-2006**  
**2014**

# Conclusions

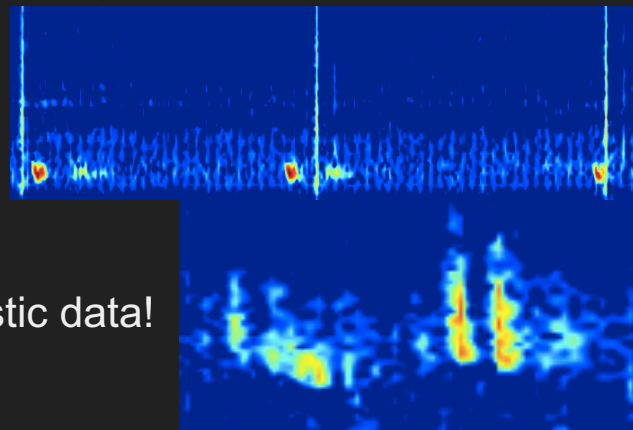
- Both singlet and doublet song types present in glider data
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(Oleson et al. 2014)
- Acoustics helps us learn more about the spatial distribution of species
- Differences in acoustics with geography may help us identify population structure



(Hatch and Clark 2004)

# Conclusions

- Both singlet and doublet song types present in glider data
- IPIs measured match previous recordings from December 2000 and 2005  
(Oleson et al. 2014)
- Acoustics helps us learn more about the spatial distribution of species
- Differences in acoustics with geography may help us identify population structure
- Gained experience working with marine mammal acoustic data!



# Questions?

