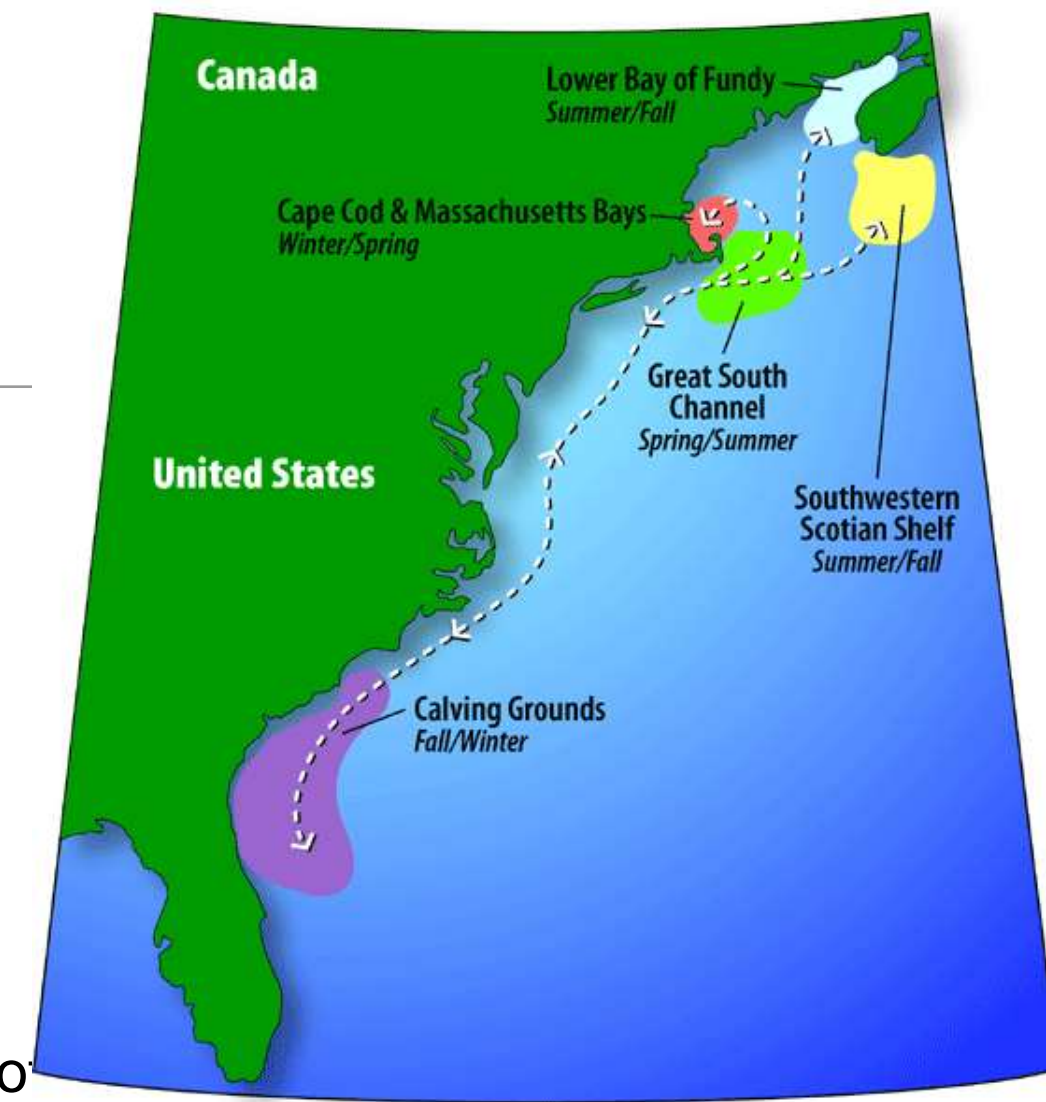


Tagging and Tracking of North Atlantic Right Whales in the SE U.S.

D.P. Nowacek
S.E. Parks
A.J. Read

Introduction & Outline

- right whales - range, numbers, conservation issues
- southeast US - mother/calf pairs and juveniles in warm, shallow coastal waters
 - Ports of JAX and Brunswick
 - Naval Stations: Mayport and Kings Bay
- motivation for the study -
 - need information to inform monitoring and mitigation of potential impacts of USWTR activities
 - focus on movement patterns and vocalization rates
 - proximity to USWTR
 - rates and types of vocalizations to inform PAM



Field work

- Team
 - Duke and Syracuse
- Equipment
 - DTags, R/Vs *Stellwagen* and *Richard T Barber*
- Timing and location
 - February, based in Fernandina Beach, FL ranging north, south and east to find whales
 - Set within the EWS system as well as the USWTR program (HARP, aerial surveys)



Effort & Whales tagged

Effort

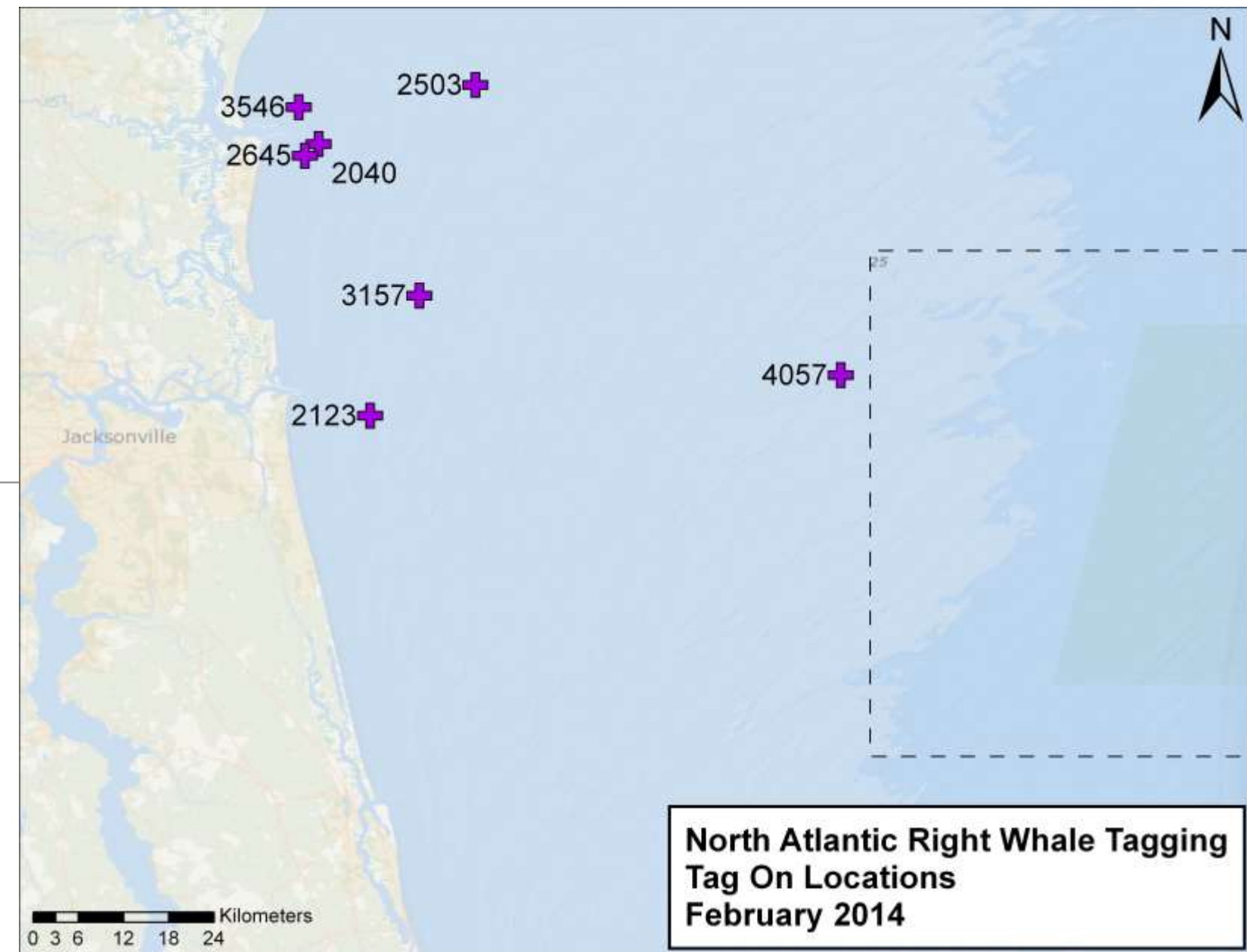
Vessel vs. aerial

'Available' whales

- 41 individual whales sighted through end of February
- 59 sightings in FL & GA in February (repeat individuals)
- 9 mother-calf pairs through February (now 10!)
- 2015: 4 attempted tags, 1 successful (see Corkeron!!)

Tagged whales

One example data set, preliminary results:
mother-calf pair counter calling

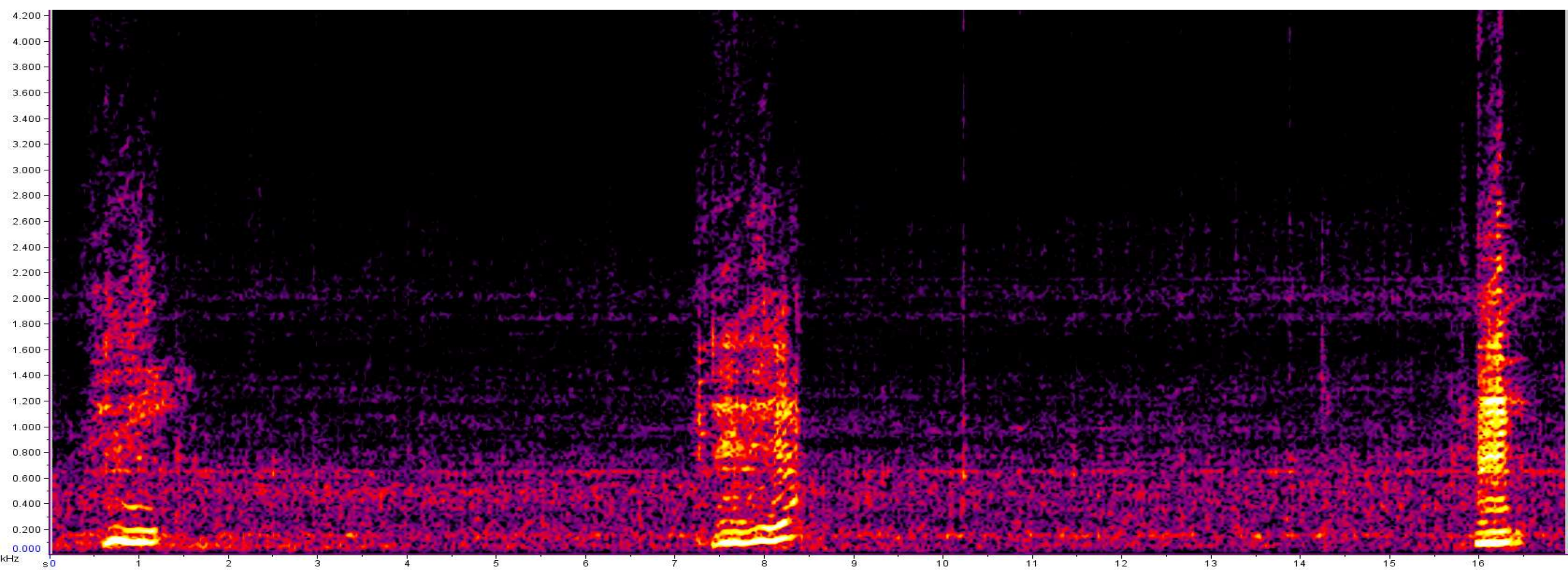


Acoustic data from tags

Date	Tag ID	Acoustic record duration	Demographic	Right whale calls detected (all SNR including calls from other whales)	Estimated calls per hour of tag recording
21-Jan-06	Eg06_021a	1:21:07	Juvenile male	51	37.8
24-Jan-06	Eg06_024a	1:54:40	Juvenile male	267	140.5
24-Jan-06	Eg06_024b	0:36:42	Unknown	18	30
24-Jan-06	Eg06_024c	0:23:36	Unknown	102	266.1
24-Jan-06	Eg06_024e	0:54:06	Juvenile female	98	108.9
28-Jan-06	Eg06_028a	18:30:00	Adult female	8	0.43
9-Feb-14	Eg14_040a	1:33:27	Nursing female	36	24
10-Feb-14	Eg14_041a	5:30:01	Nursing female	108	19.6
16-Feb-14	Eg14_047a	3:36:00	Juvenile male	0	0
18-Feb-14	Eg14_049a	11:36:27	Nursing female	7	0.6
25-Feb-14	Eg14_056a	5:34:18	Nursing female	8	1.4
21-22 Feb-15	Eg15_52a	23:20	Nursing female	?	?

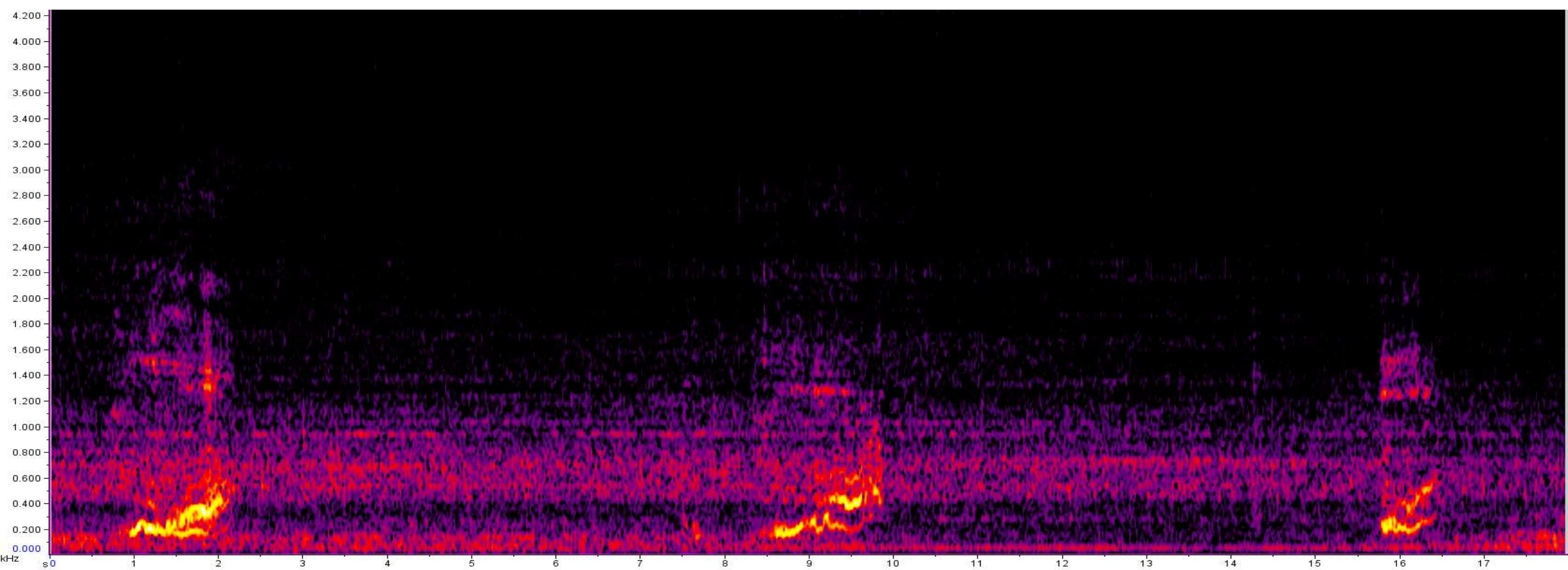
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Mom's call





Calf's call



Mom-calf counter calling

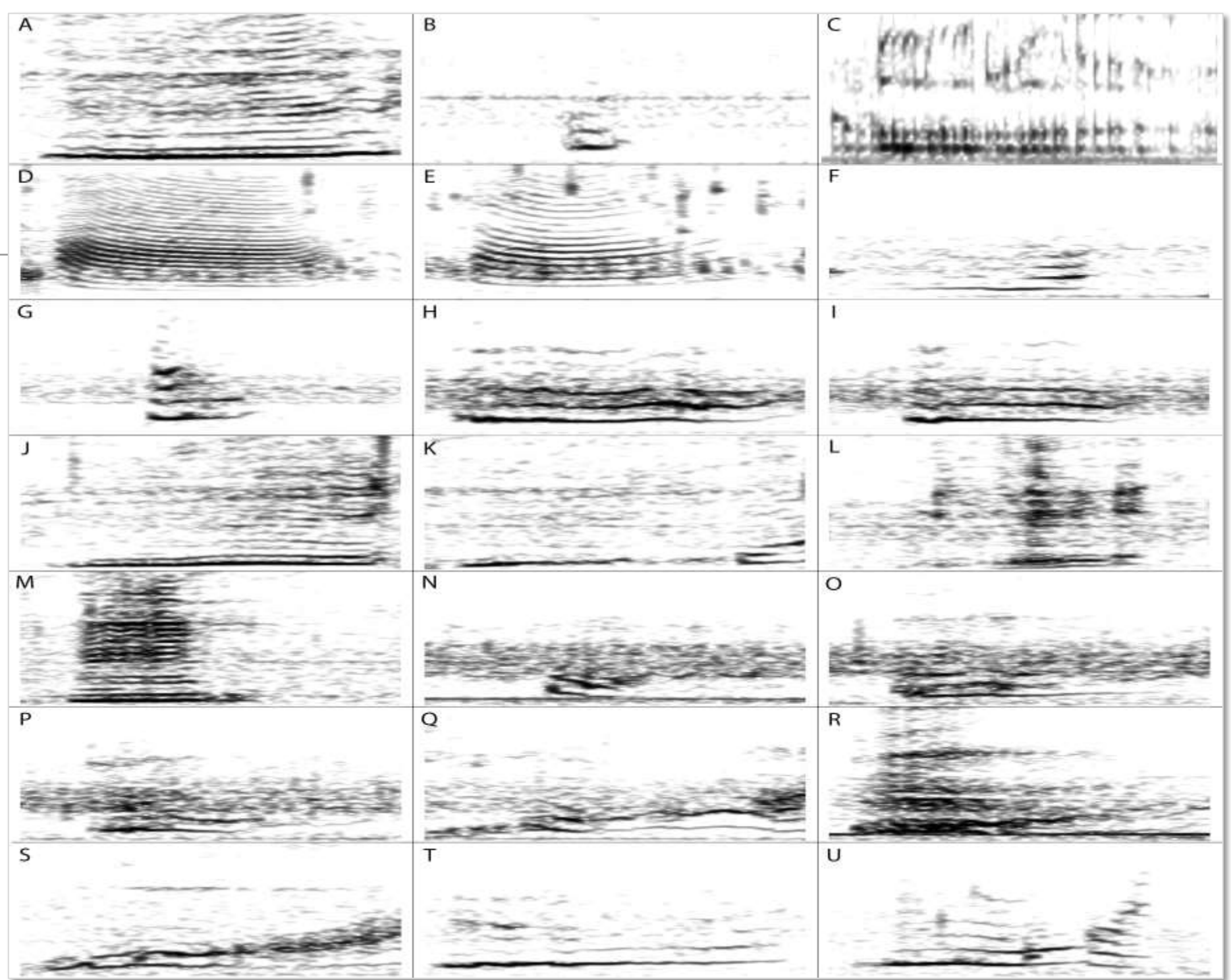
- Neonates maintain close proximity to mother
- Within weeks to months, calves begin to separate
 - Maintenance of vocal contact is critical

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Spectrograms of high SNR calls showing the call types found in the acoustic tag records. (A) upcall, (B) grunt, (C) growl, (D-M) variable tonal calls, (N-U) variable tonal calls presumed to be from a calf.

0-2 KHZ



1.2 sec

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Eg4057

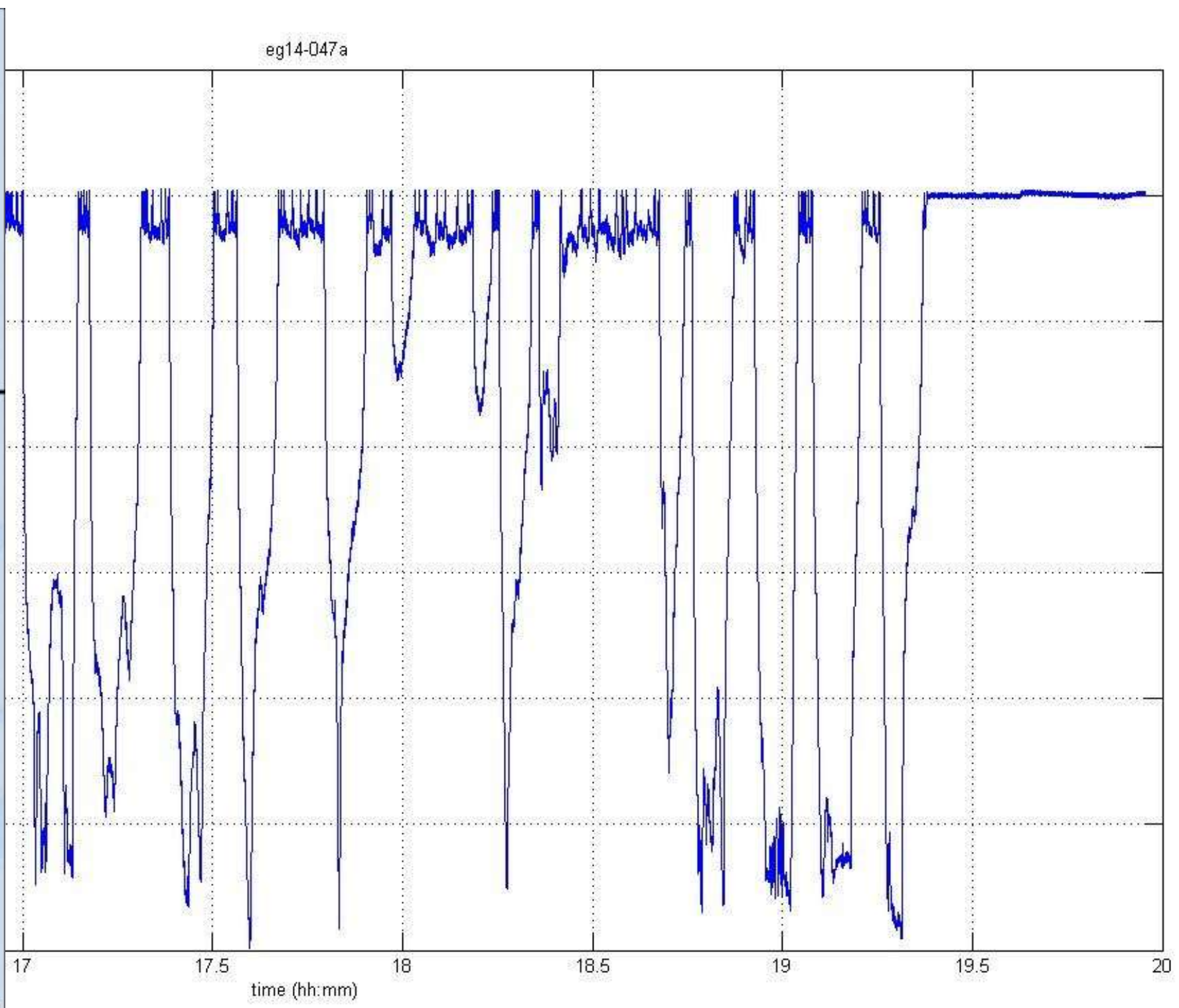


Permit #16473



Bioenergetics from Dtag data on entangled whales –
with M Moore and J Van der Hoop
Calculation of drag and locomotion costs – with L Howle

Eg4057



Eg4057

track and dive profile

Acknowledgements

- Field team: **Swaim, Foley**, J. McCord, E. Cummings, G. Phillips, K. Jackson
- SEUS colleagues: L. Conger, K. Jackson, T. Pitchford, T. Neisig, C. George, DA Pabst, McLellan
- Permit - NMFS #14791 to DPN
- Funding NAVFAC Atlantic, J. Bell

Wrap-up and processing 2014 and plans for 2015

• **Analyses**

- Acoustic data
 - vocalization types and rates
 - depth during vocal production
- Movement data incl. proximity to USWTR range
 - kinematics of 4057

• **Other activities**

- HARP swap
- AFTT surveys and biopsy samples

• **Plans for 2015**

- target non-mom/calf pairs
- target offshore animals, e.g., juveniles, animals closer to the USWTR range