

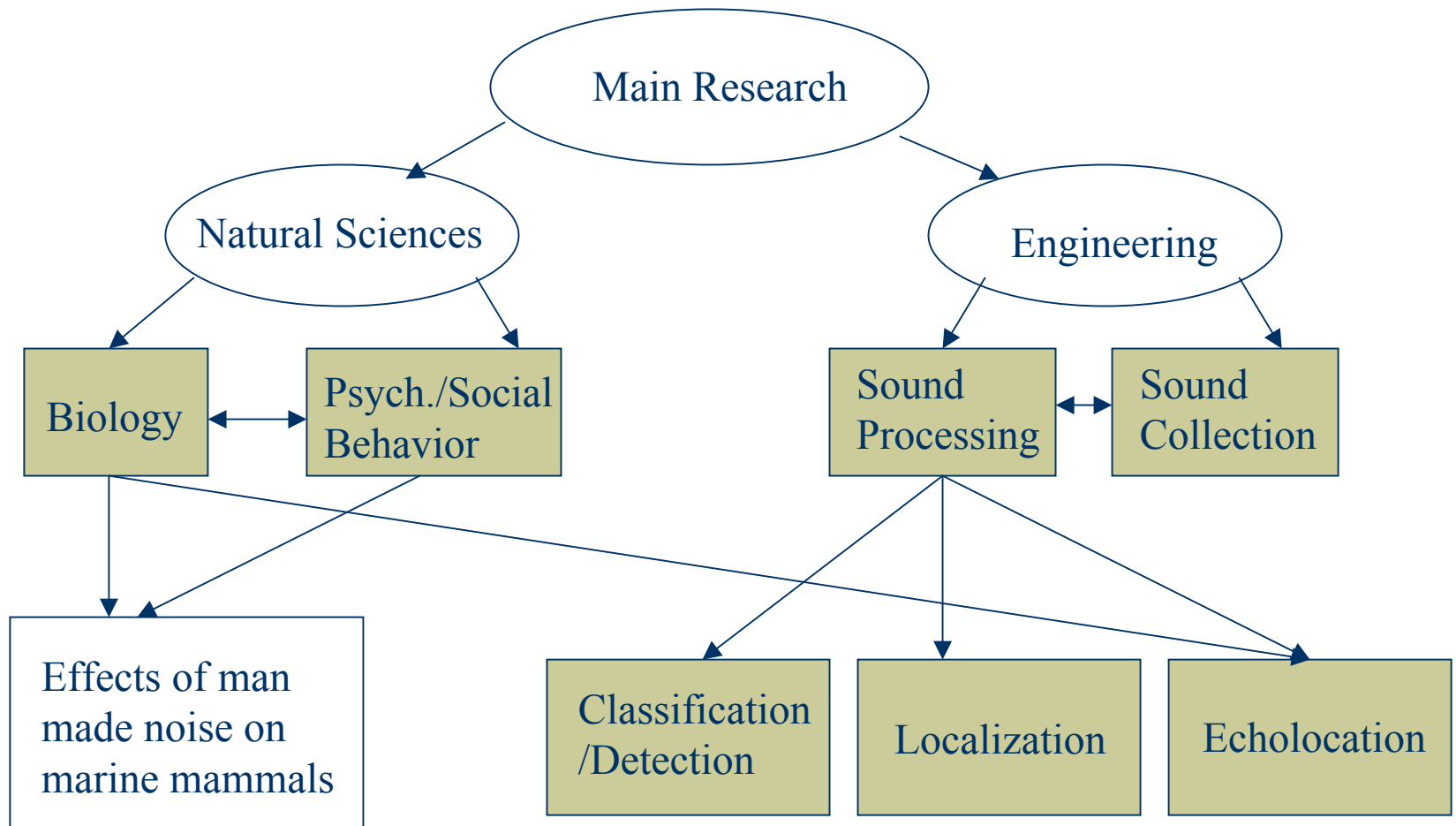


Exploring Marine Mammal Bioacoustics

Overview of ongoing research and approaches

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What's out there...

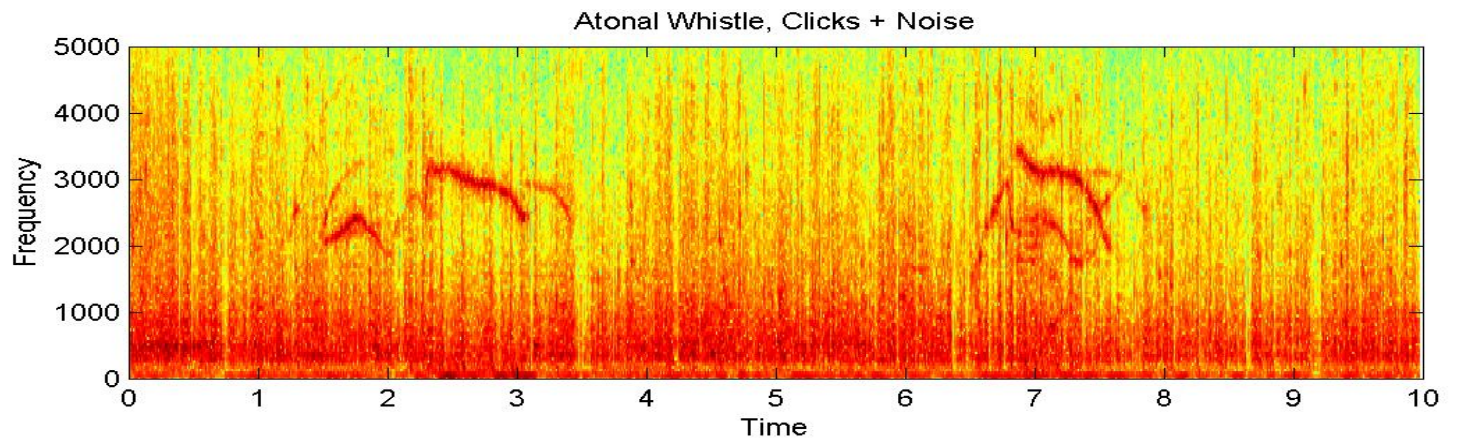
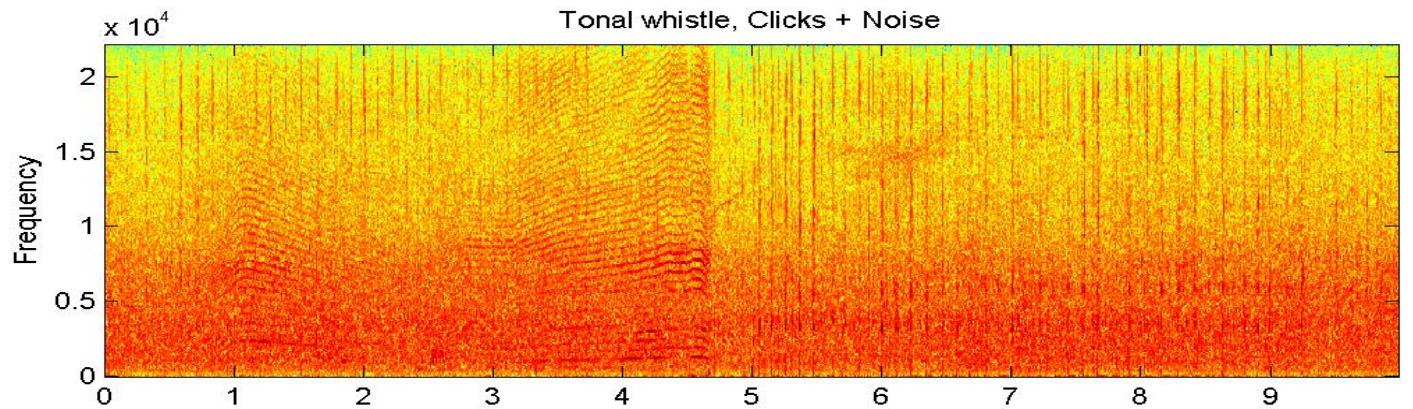


The Data

- ◆ Data obtained from Macaulay Library @ Cornell Lab of Ornithology (<http://birds.cornell.edu/macaulaylibrary>).
- ◆ Approximately 27 hours of recordings accompanied by field notes (eg. time/duration, location, type of call, coordinates, species, recording medium information).

	A	B	C	D	E	F	G	H
1	Disc	Cut	Catalog#	Genus	Species	S	Recordist 1	Rec
2	1	1	120737	Delphinus	delphis		Barlow, Jay	
3	1	2	120738	Delphinus	delphis		Barlow, Jay	
4	1	3	120757	Delphinus	delphis		Barlow, Jay	
5	1	4	120766	Delphinus	delphis		Barlow, Jay	
6	1	5	120782	Delphinus	delphis		Barlow, Jay	
7	1	6	120783	Delphinus	delphis		Barlow, Jay	

More on the data...



Approaches

- ◆ Classification/Detection

See David Mellinger (<http://cetus.pmel.noaa.gov/mellinger.html>)

Identifying different vocalizations within a clip (eg. whistles, clips). Classifying different species.

Approaches include contour similarity (CS)

techniques(spectrum cross-correlations, kernel correlations).

Also K-means on CS features for clustering types of calls.

- ◆ Language

See Brenda McCowan (<http://faculty.vetmed.ucdavis.edu/faculty/bjmccowan>)

Exploring possible language model with the use of information theory



The Next Steps



1. Copying/ripping 22 GB of data from CDs
2. Signal Denoising
3. Computing simple features (FFT, MFCC, pitch)
4. Replicating algorithms (contour similarity techniques)
5. Applying speech tools towards classification
6. Information theory: Language and behavior models

References

- ◆ Dave Mellinger: <http://cetus.pmel.noaa.gov/mellinger.html>
- ◆ Chris Clark:
<http://www.birds.cornell.edu/brp/WhaleCommPublications.html>
- ◆ Brenda McCowan:
<http://faculty.vetmed.ucdavis.edu/faculty/bjmccowan/>
- ◆ All of these links can be found here:
<http://www.ee.columbia.edu/~xanadu/research.html>