



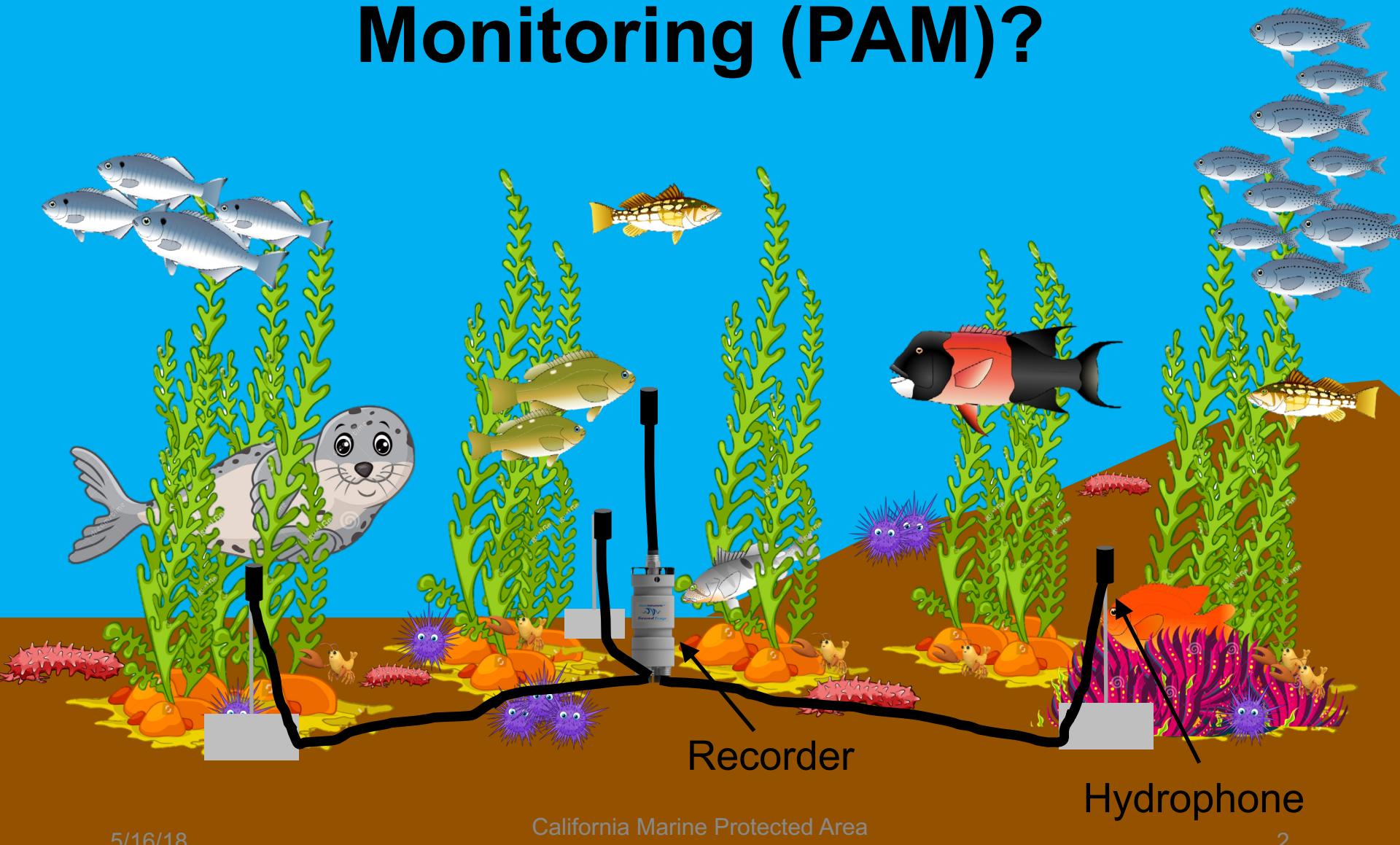
UC San Diego

Passive Acoustic Monitoring of Marine Protected Areas

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What is Passive Acoustic Monitoring (PAM)?



Passive Acoustic Monitoring vs. Traditional Methods

(e.g., scuba diving surveys, trawling, visual surveys etc.)

Advantages

- minimally invasive
- large spatial and temporal coverage
- cost-effective
- location of animal
- applicable to a wide variety of species

Disadvantages

- limited to sound-producing species
- ascribing calls to species can be difficult
- initial start-up cost

PAM Platforms

Stationary Platforms



SoundTrap

Moving Platforms



Wildlife
Acoustics

PAM Platforms

Stationary Platforms

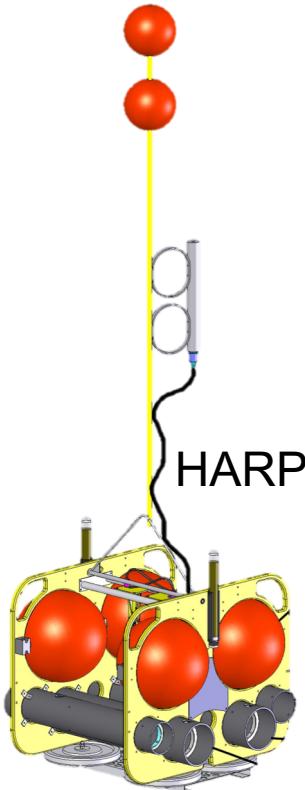


SoundTrap



Wildlife
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Moving Platforms



PAM Platforms

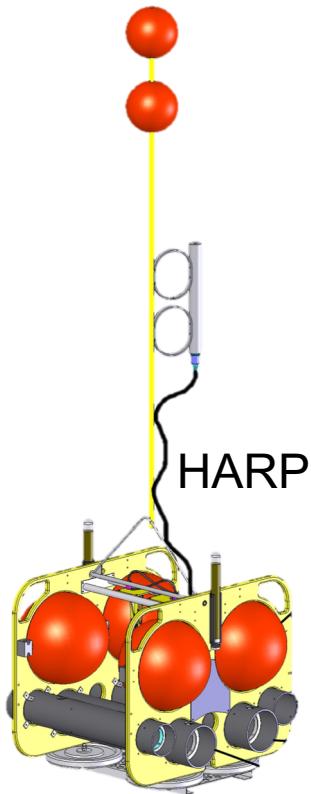
Stationary Platforms



SoundTrap

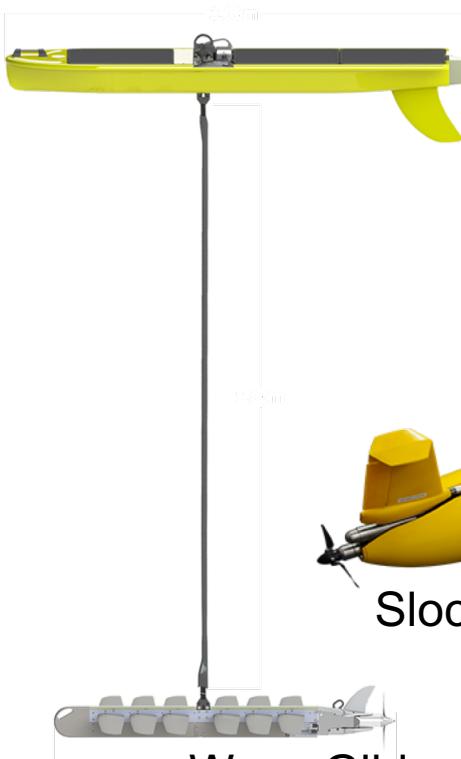


Wildlife
Acoustics



HARP

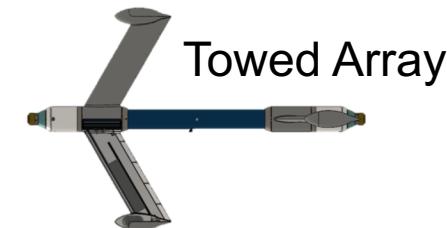
Moving Platforms



Wave Glider

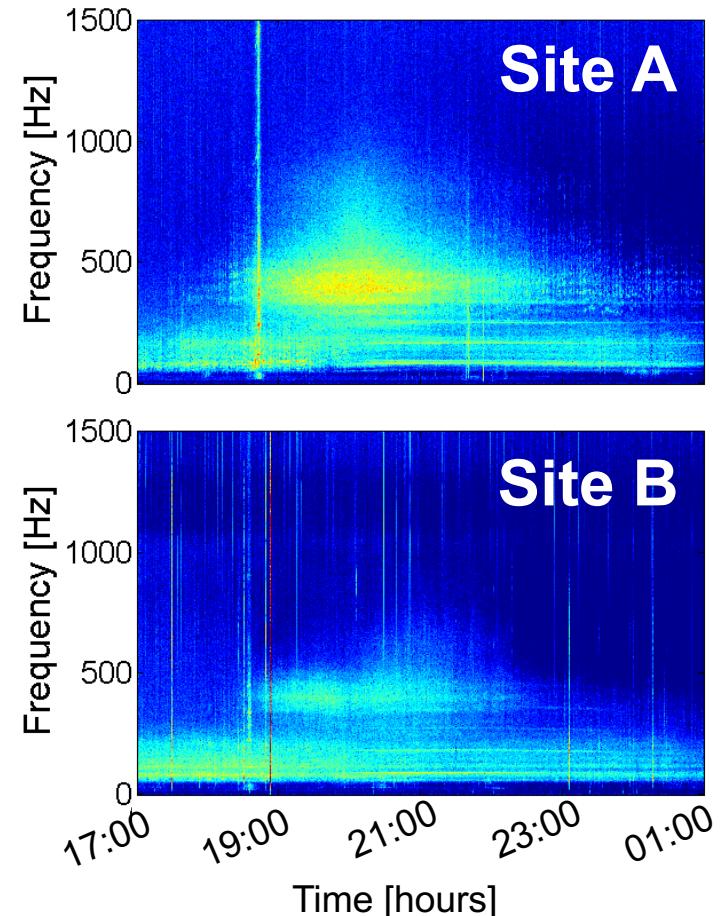
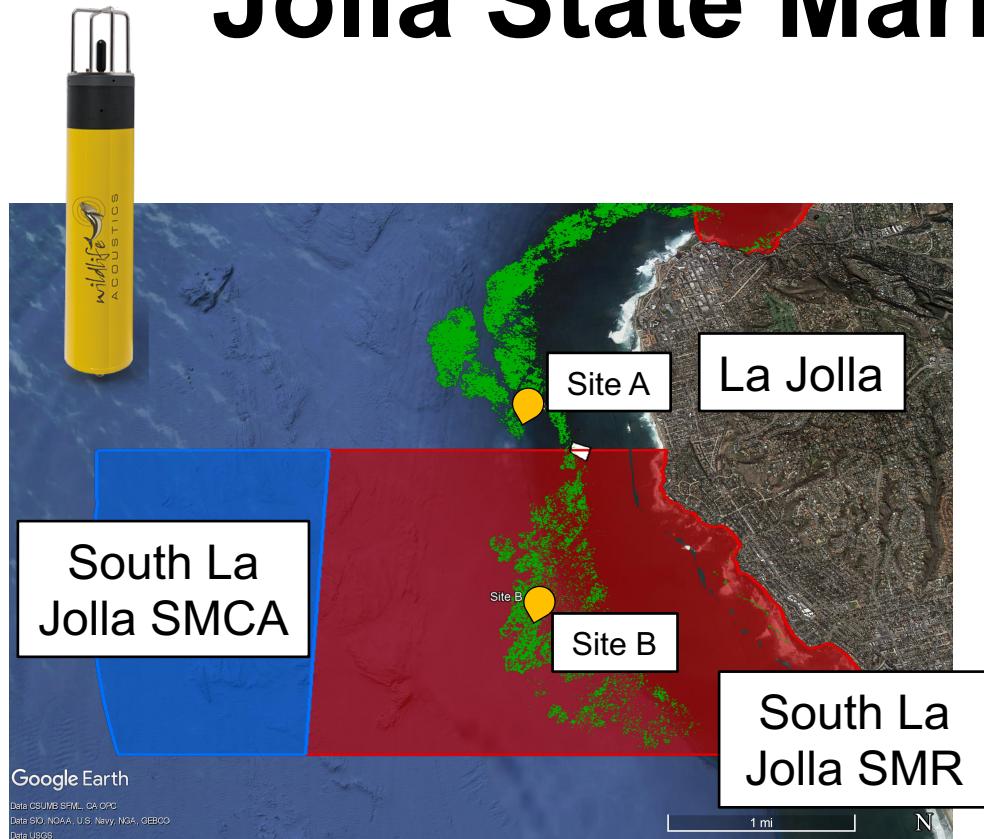


Slocum Glider

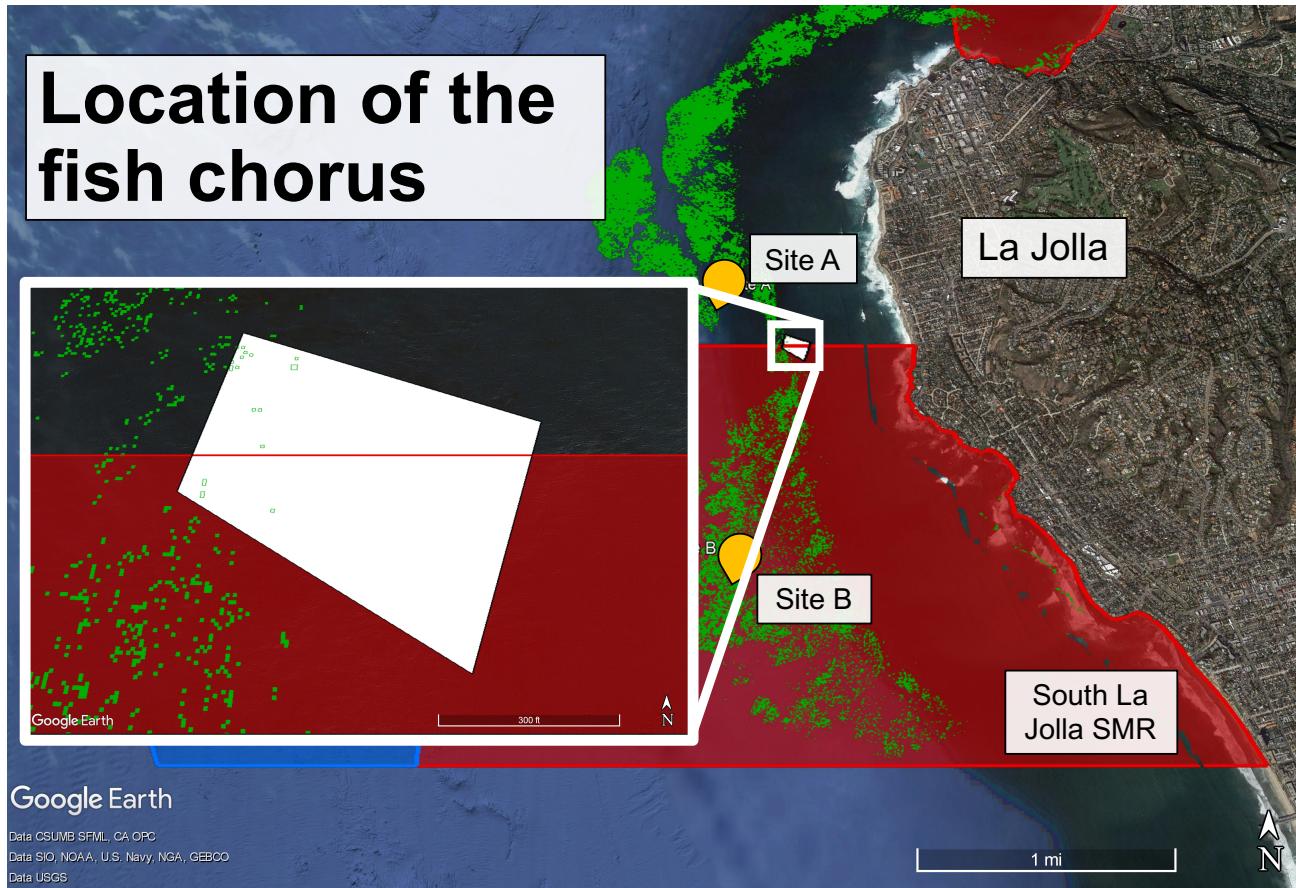


Towed Array

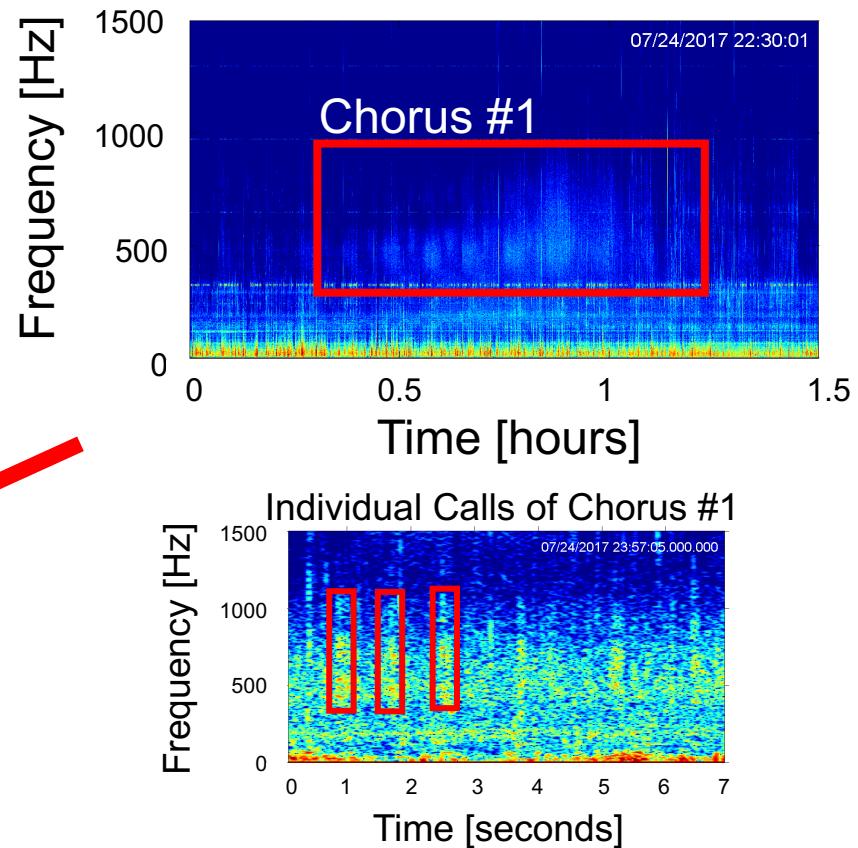
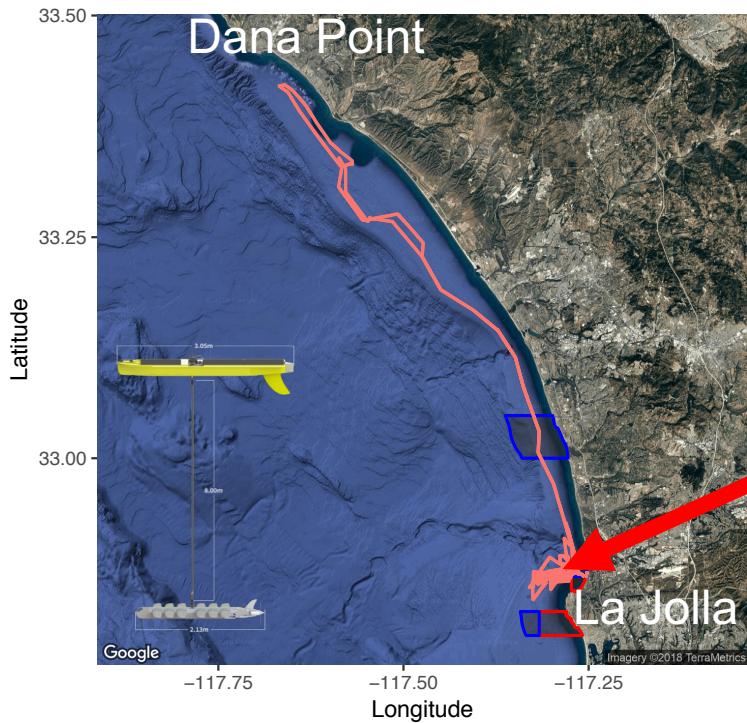
Fish Chorus near the South La Jolla State Marine Reserve



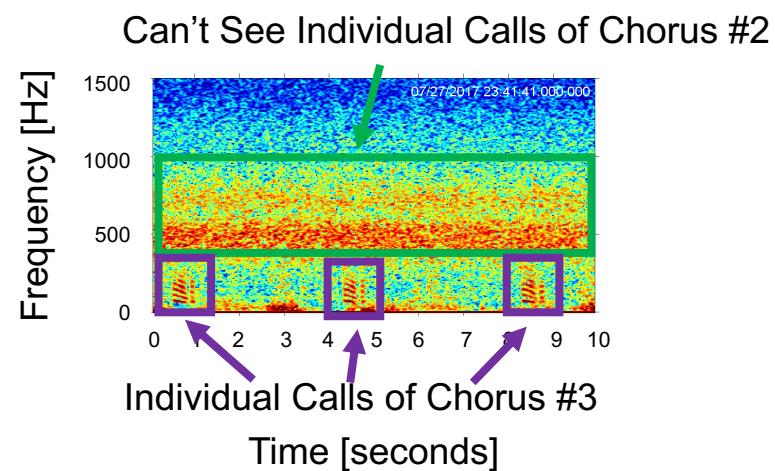
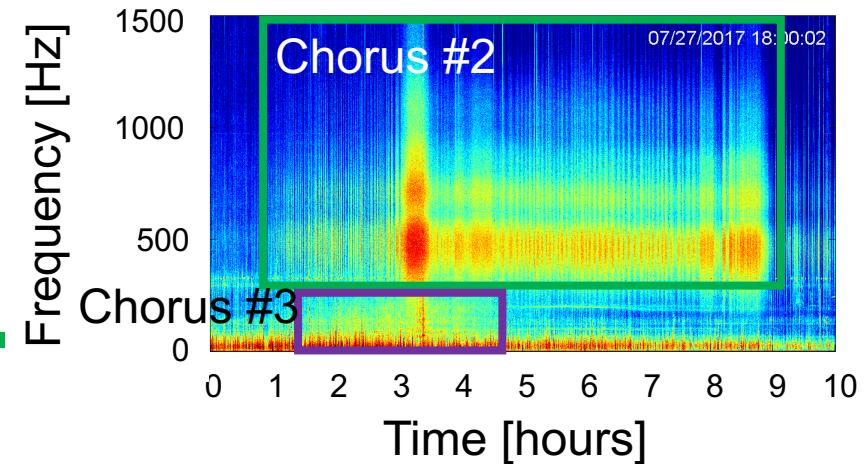
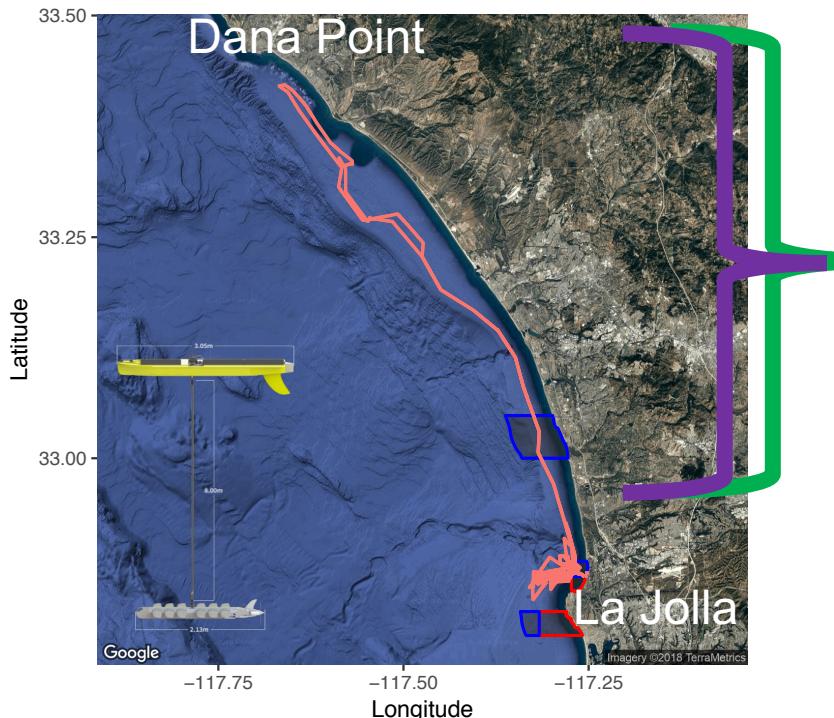
Fish Chorus near the South La Jolla State Marine Reserve



Fish Choruses Along the Southern California Coast

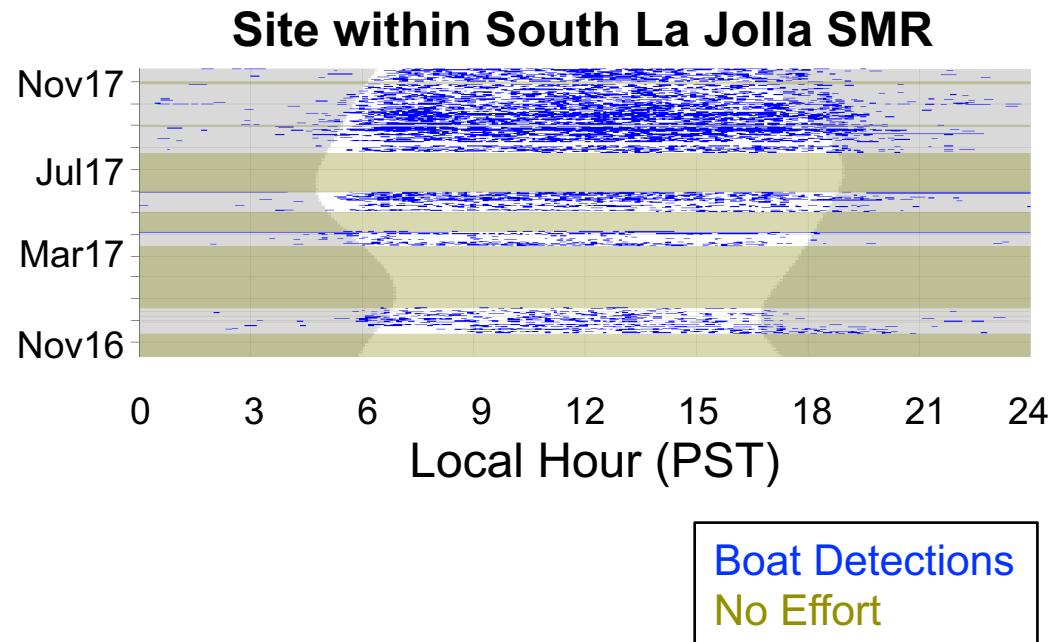


Fish Choruses Along the Southern California Coast



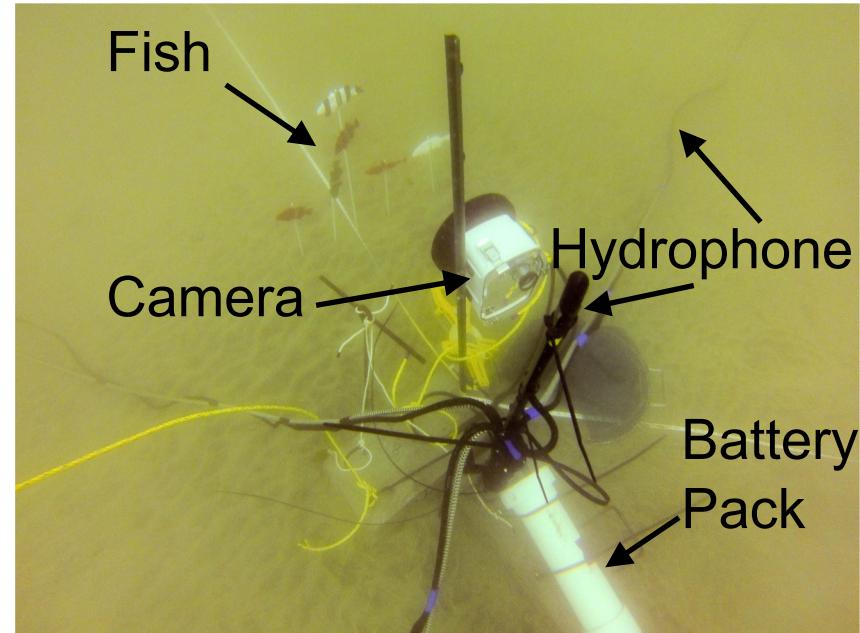
Application to MPA Implementation and Resource Management

- biological & anthropogenic monitoring
- location & time of events



What's next for PAM?

- species identification
- diversity estimation via soundscape analysis
- abundance estimation
- ecosystem monitoring
- artificial intelligence



Collaborators

- Ana Širović
- Jules Jaffe
- Ed Parnell
- Jack Butler
- Megan Cimino
- Eric Terrill
- Gerald D'Spain
- John Hildebrand

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Thank you!

