

BIOACOUSTICS
RESEARCH IN
LATIN AMERICA
2015



ASA Fall 2015 Meeting

Jacksonville, FL., November 2015

“Steps towards promoting
bioacoustics research in Mexico”



CENTRO DE INVESTIGACIONES
BIOLÓGICAS DEL NOROESTE, S.C.

- Eduardo Romero-Vivas
- evivas@cibnor.mx

Disclaimer

- A personal View
- Mainly on Marine Mammals Bioacoustics
- Only in Mexico



Natural Resources (Mexico and LA)

- High Biodiversity

Gulf of California “Aquarium of the world”
(Jacques Cousteau)

Home to nearly a third of the world’s
marine mammal species

- High Endemism



Tourism and Ecotourism

Tourism is one of the most important industries in Mexico

- Ecotourism: 10th place in the world for the natural resources criteria



Tourism and Ecotourism

Tourism is one of the most important industries in Mexico

- Ecotourism: 10th place in the world for the natural resources criteria ...  Conservation

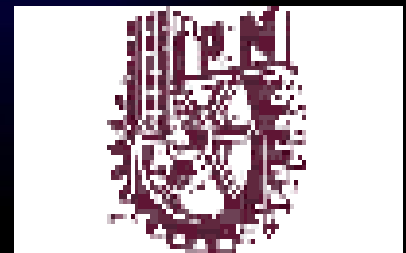


Institutions and carrers offered in related areas

76 Majors: Biology (57), Ecology (3), Environment (15), Oceanography (1)

144 Masters: Biology (67), Marine Science (14), Environment (73)

11 PhD: Biology (6), Ecology (1), Marine Sciences (4)



....Nonetheless there are few research groups incorporating Bioacoustics in their studies

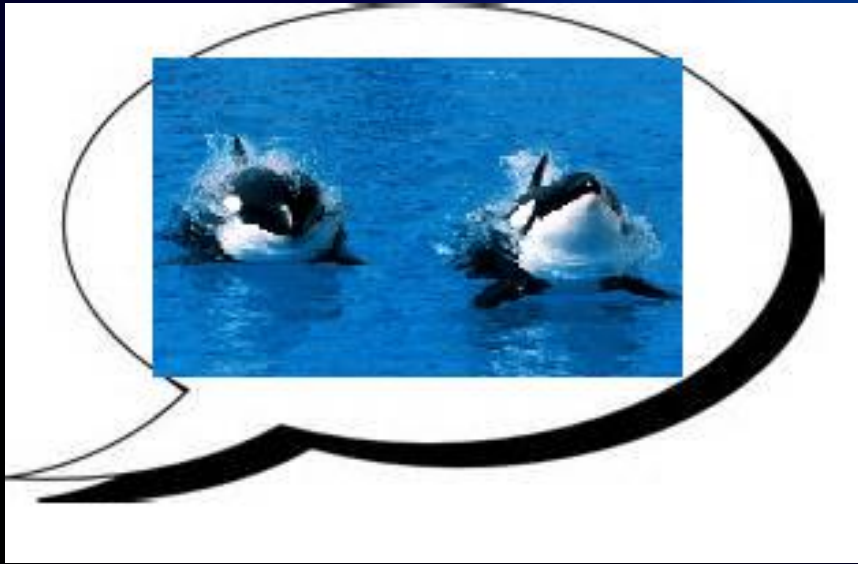
Why?

Bioacoustics is regarded as:

- A novelty
- Complicated (Scary Maths)
- Expensive
- Theoretical
- Not very reliable

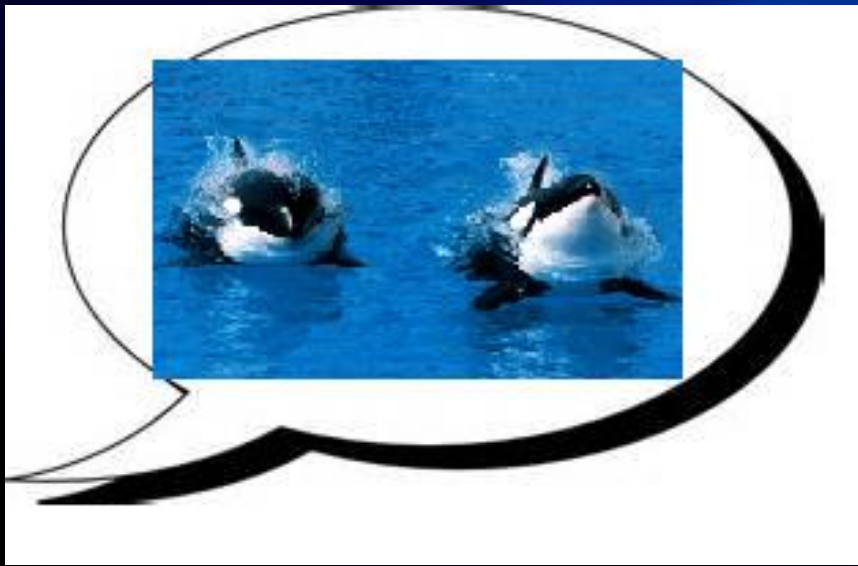
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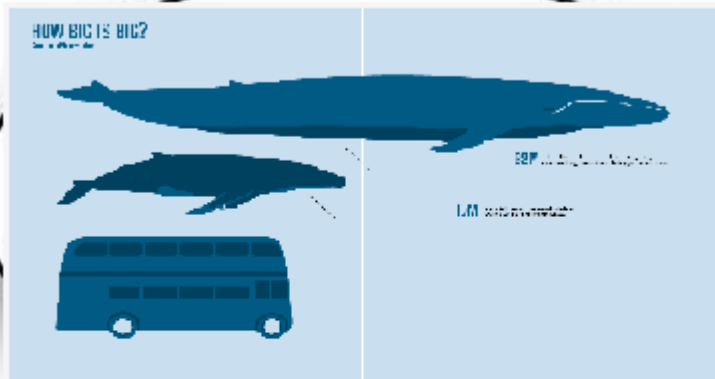
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Bioacoustics is regarded as:

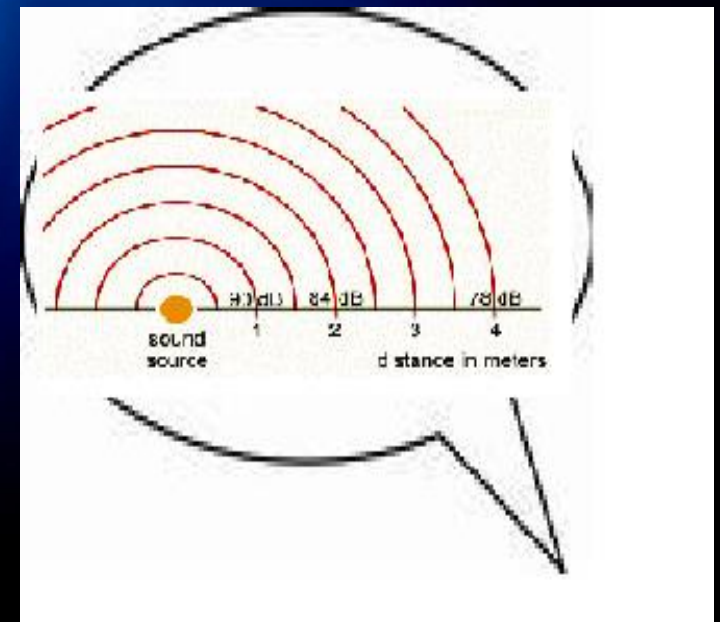
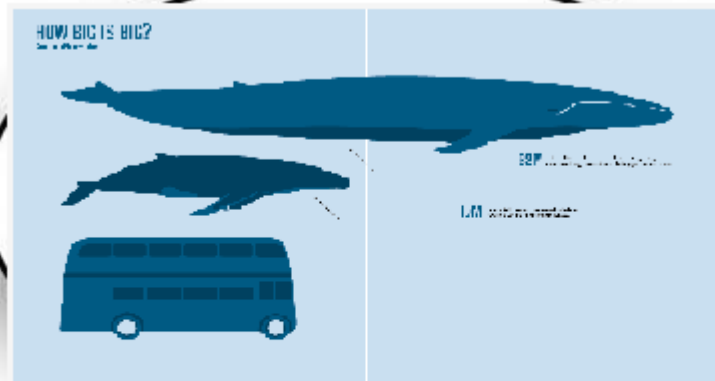
- Theoretical
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How Loud is it?

Bioacoustics is regarded as:

- Theoretical
- Not very reliable



How Loud?

SL @ 1m

Bioacoustics is regarded as:

- Complicated (Scary Maths)

$$\left(\nabla^2 - \frac{1}{c^2} \frac{\partial^2}{\partial t^2} \right) \Psi(\vec{r}, t) = 0 \rightarrow \left(\frac{\partial^2}{\partial r^2} + \frac{2}{r} \frac{\partial}{\partial r} - \frac{1}{c^2} \frac{\partial^2}{\partial t^2} \right) u(r, t) = 0$$

Bioacoustics is regarded as:

- Complicated (Scary Maths)

$$\left(\nabla^2 - \frac{1}{c^2} \frac{\partial^2}{\partial t^2} \right) \Psi(\vec{r}, t) = 0 \rightarrow \left(\frac{\partial^2}{\partial r^2} + \frac{2}{r} \frac{\partial}{\partial r} - \frac{1}{c^2} \frac{\partial^2}{\partial t^2} \right) u(r, t) = 0$$

$$\frac{1}{n} \sin x = ?$$

$$\cancel{\frac{1}{n} \sin x} =$$

$$six = 6$$

Change of perception

- A novelty
- Not very reliable

Change of perception

- A novelty Education
- Not very reliable students,colleagues,society

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Change of perception

- A novelty Education
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- Complicated Collaboration
- Theoretical Institutions & Societies

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- Expensive

- A novelty Education
- Not very reliable students,colleagues,society
- Complicated Collaboration
- Theoretical Institutions & Societies
- Expensive Design Low Cost Equipment

COLLABORATION

- Lots of institution doing research in Biology ...
... Very few doing bioacoustics
- Few specialist in Acoustics...
... and fewer working in Bioacoustics

Collaboration

- Proyects:

CICIMAR - IPN - CIBNOR –UABCS - U Colima

Collaboration

- Projects:

CICIMAR - IPN - CIBNOR –UABCS - U Colima

- Current Research:

- Andrea

- Omar

- Cassandra

Collaboration

- Projects:

CICIMAR - IPN - CIBNOR –UABCS - U Colima

- Education

- Workshops

- postgrad exchange:

UNAM – UABCS – CIBNOR - CICIMAR

EDUCATION

- Many programs in Biology

BIO – ACOUSTICS

- Only one program in Electronics with specialization in Acoustics (IPN)
- Programs in physics but not Acoustics
- No postgrad studies in Acoustics

Postgrad Courses

UNIVERSIDAD AUTÓNOMA DE BAJA CALIFORNIA SUR
AREA DE CONOCIMIENTO DE CIENCIAS DEL MAR
DEPARTAMENTO ACADÉMICO DE BIOLOGÍA MARINA



PROGRAMA DE LA ASIGNATURA:

BIOACÚSTICA

MATERIA OPTATIVA DEL PLAN DE ESTUDIOS 2003-II

Impartida para alumnos que hayan acreditado los cursos de Física y Cordados Marinos

5 hrs/sem (3 hrs teoría, 2 hrs laboratorio): 8 créditos

ELABORADO: Dr. Eduardo Romero Vivas

Bioacoustics Syllabus

- Fundamentals of Acoustics
- Audiology and Phonation
- Underwater Acoustics
- Electroacoustics
- Recording
- Signal Processing

UNAM – UABCS – CIBNOR - CICIMAR

Collaboration

- Projects:

CICIMAR - IPN - CIBNOR –UABCS - U Colima

- postgrad exchange:

UNAM – UABCS – CIBNOR - CICIMAR

- Scientific Societies

SOMEMMA, Marine Maztozoology Mexican Society

IMA, Mexican Institute of Acoustics

Scientific Societies



[Home](#) [About us](#) [Membership benefits](#) [Membership cost](#)

About us

SOMEMMA was formed in [La Paz](#) in 1979 thanks to the forefront vision of various Mexican researchers, such as Bernardo Villa, Anelio Aguayo, Félix Córdoba, Carlos de Alva and Lloyd Findley, who since 1976 gathered every year to hold meetings on Marine Mammalogy. Since then, SOMEMMA, the first learned society for marine mammalogy in the world, has grown and diversified thanks to new generations of students and scientists who have joined our society.

Our society is currently formed by over 200 active members, most of them Mexican nationals, and we have a growing number of international members, particularly from other Latin-American countries, from the US and from Europe.

Workshops

- 2014



Sociedad Mexicana de Mastozoología Marina, A.C.

WORKSHOPS

Bioacústica de mamíferos marinos (Marine mammal bioacoustics)

COURSE LANGUAGE: SPANISH

Sábado 10 y Domingo 11 de mayo, 9am - 5pm

Instructores: Dr. Eduardo Romero Vivas y M. en C. Lorena Viloría Gómora, (CIBNOR evivas@cibnor.mx).

XXXV SOMEMMA Meeting

"The Acoustics in the Study of Marine Mammals"

1st to 5th of May, 2016 Baja California Sur, La Paz, B.C.S., MÉXICO



SOMEMMA
XXXV
REUNIÓN INTERNACIONAL PARA EL
ESTUDIO DE LOS MAMÍFEROS MARINOS



SONIDOS EN
EL ESTUDIO
DE MAMÍFEROS
MARINOS

**1 AL 5 de
MAYO** 2016

Universidad Autónoma
De Baja California Sur
La Paz, B.C.S.

Estimados miembros de la Sociedad Mexicana de Mastozoología Marina

En la reunión de la SOMEMMA en Queretaro, acordamos que la XXXV Reunión Internacional para el Estudio de los Mamíferos Marinos se realizará en

**La Paz, B.C.S., del 1 al 5 de mayo de 2016
en la Universidad Autónoma de Baja California Sur**

Tema de la XXXV Reunión de la SOMEMMA

El Sonido en el Estudio de los Mamíferos Marinos

Comité Organizador

- Jorge Urbán R. • Presidente
- Alejandro Gómez Gallardo U. • Secretario
- Lorena Vilaría G. • Secretaria Ejecutiva
- Fernando Elorriaga V. • Vocal
- Armando Jaramillo L. • Programa Académico
- Aurora Paniagua M. • Estudiantes

Fechas importantes

- Inicio: domingo 1 de mayo (Registro y Ramprehetas)
- Sesiones: lunes 2 a jueves 5 de mayo
- Cena Clausura: jueves 5 de mayo
- Recepción de resúmenes: hasta el 15 de enero de 2016

La gestión de resúmenes será a través del sistema OpenConference

El Comité Organizador se congratula de realizar esta reunión nuevamente en La Paz, sede icónica para el estudio de mamíferos marinos y puerto que vio nacer a nuestra Sociedad. Esperamos ofrecerles un evento digno de nuestra comunidad.

Reciban un cordial saludo

Jorge Urbán R.
Presidente del Comité Organizador

Abstracts:
15th of
January 2016



Jorge Urban



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Scientific Societies



EL INSTITUTO MEXICANO DE ACÚSTICA

21° CONGRESO INTERNACIONAL MEXICANO DE ACÚSTICA
21st INTERNATIONAL MEETING ON ACOUSTICS

LEÓN, GTO., MÉXICO
22 – 25 SEPTIEMBRE, 2015

ASA 180th Meeting, Cancun, Mexico, Fall 2020

James West
(ASA)



Samir Gerges
(FIA)

Sergio Beristain
(IMA)

Acoustical Society of America Past Meetings in Mexico

2--6 December 2002

15--19 November 2010

Collaboration

- Projects:

CICIMAR - IPN - CIBNOR –UABCS - U Colima

- Education

- Workshops

- postgrad exchange:

UNAM – UABCS – CIBNOR - CICIMAR

- Equipment

EQUIPMENT

- Need for Special equipment
- Usually Expensive Equipment
- Not locally available
- Importation Regulation
- Importation Cost

Develop Low-Cost Open-Source Equipment

2nd PAN-AMERICAN/IBERIAN MEETING ON ACOUSTICS

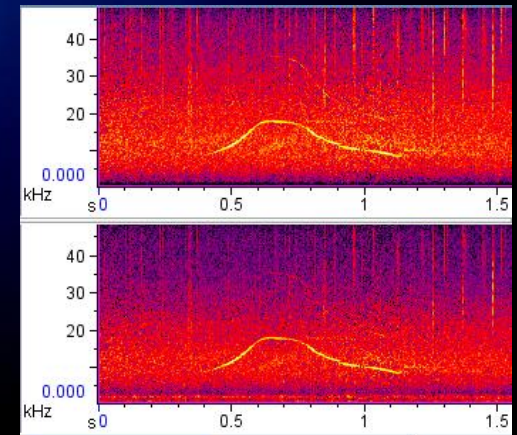
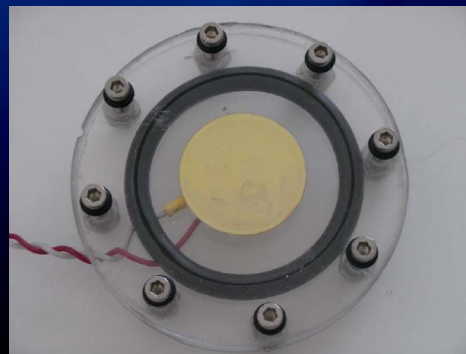
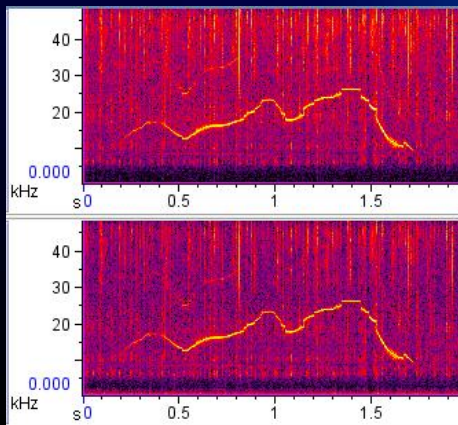
Cancun, Mexico

18 November 2010

ASA

CONSTRUCTION, CALIBRATION AND FIELD TEST OF A HOME-MADE LOW COST HYDROPHONE SYSTEM FOR CETACEAN

RESEARCH

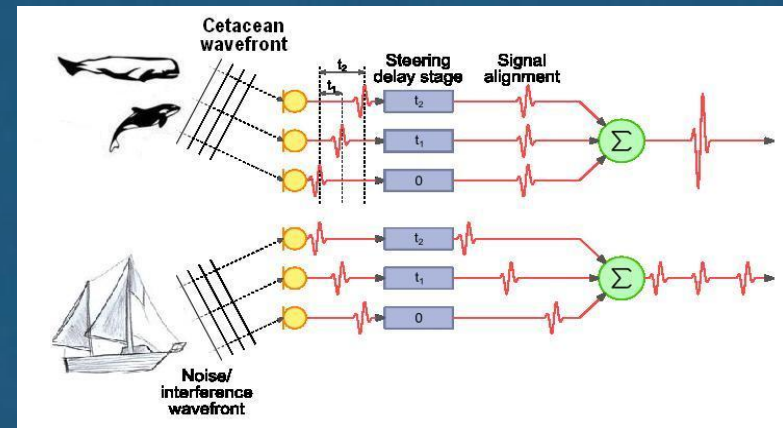


Eduardo Romero Vivas
Braulio León López





“Design and field test of a low-cost portable line array for marine mammal localization”



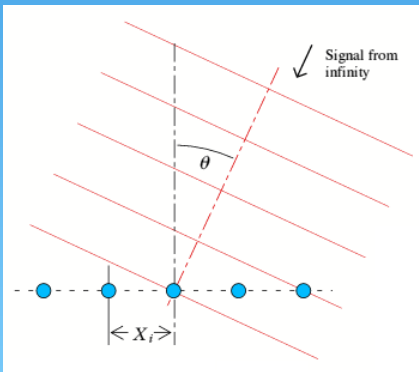
Omar Alejandro Bustamante
Eduardo Romero Vivas
Sergio Beristain



CENTRO DE INVESTIGACIONES
BIOLOGICAS DEL NOROESTE, S.C.



“Prototype of a linear array on an Autonomous Surface Vehicle for the register of dolphin displacement patterns within a shallow bay”



Romero-Vivas E. ¹, Von Borstel F.D. ¹, **Bustamante O.** ², Beristaín S. ²,
Porta- Gándara M.A. ¹, Villa-Medina J.F. ¹, Gutiérrez-Jagüey J. ¹



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2015



**“An underwater acoustic camera for
marine mammal vocalization interaction
studies”**

OMAR BUSTAMANTE

EDUARDO ROMERO VIVAS

SERGIO GARCÍA BERISTAIN



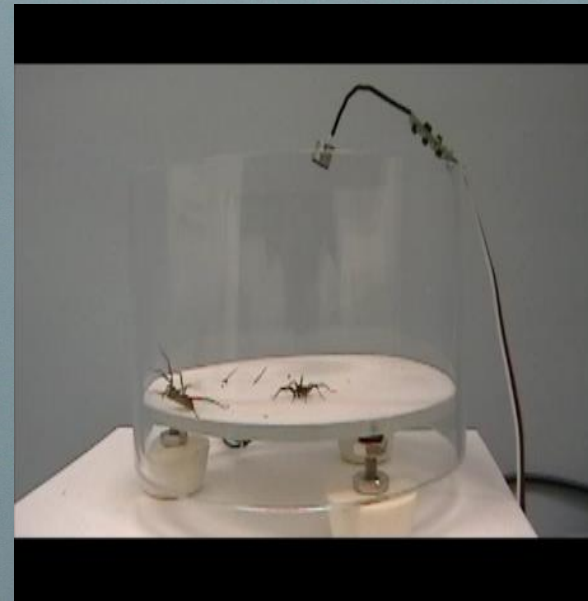
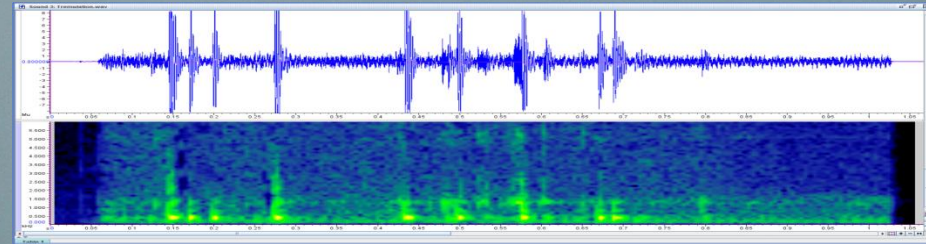
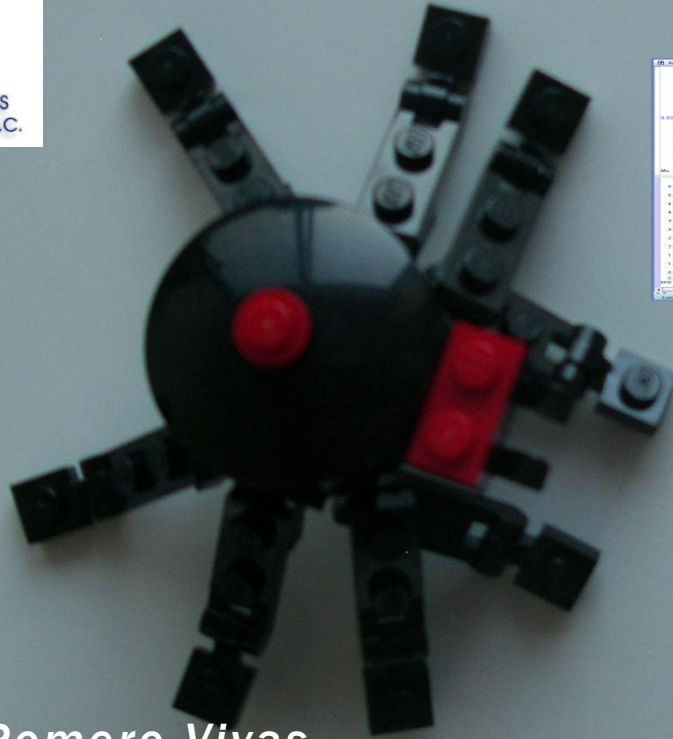


ACOUSTICS 2012
HONG KONG

“Design of a Home-made, Low-cost System for Studies Of Vibratory Courtship Signals on Pardosa Sierra (Areneae: Lycosidae) Spiders”



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BIOLOGICAS DEL NOROESTE, S.C.



Eduardo Romero-Vivas

Emiliano Méndez Salinas

María Luisa Jiménez Jiménez

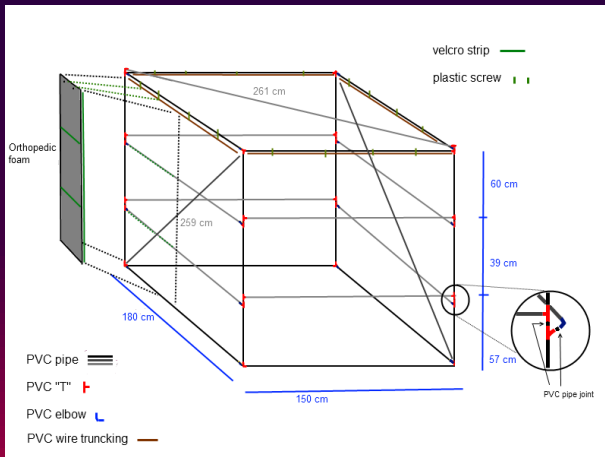
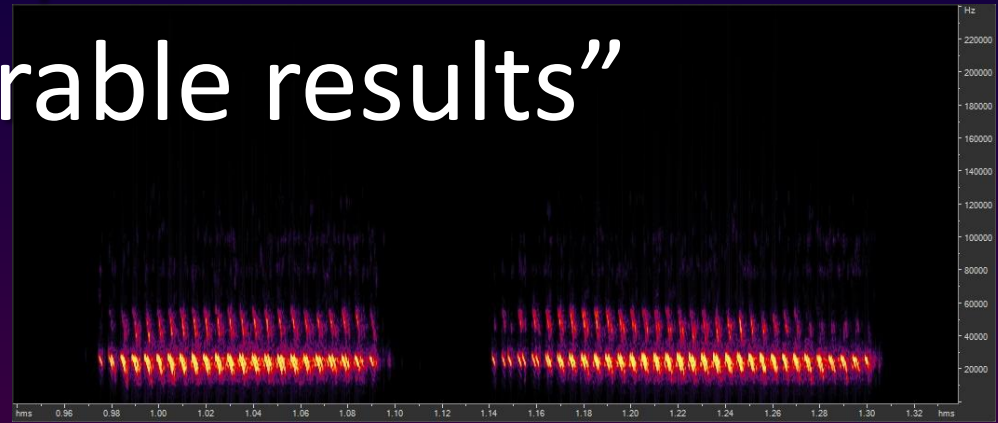
Francisco Javier García De León

Diego Francisco Ledezma Rodríguez



CENTRO DE INVESTIGACIONES
BIOLÓGICAS DEL NOROESTE, S.C.

“Bat recording under controlled conditions: a replicable chamber for comparable results”



Eduardo Romero-Vivas
Patricia Cortes-Calva
Braulio León-López



ASA San Diego 2011

Conclusion

Collaborate

Participate

Design Equipment

Share our Experience

Learn from other experiences

.... Enjoy it

Jorge Urbán

UABCS



Diane Gendrón

CICIMAR



Christian Ortega

U Colima



Sergio Beristáin

IPN



Carmen Bazúa

UNAM



Patricia Cortes

CIBNOR



Rocio Marín

AICMMARH



Gracias!

Marie Trone
Juliana Morone

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