

AMERICAN FISHERIES SOCIETY  
The Western Division Announces The  
2014 Western Division Annual Meeting

# Rethinking Fisheries Sustainability

The Future of Fisheries Science

April 7-11, 2014  
El Cid Convention Center, Mazatlan, Mexico  
Hosted by the Mexico Chapter





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Mazatlán, México

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# President's Letter of Welcome

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## Welcome to Mazatlán, Welcome to México!

Welcome to beautiful Mazatlán México! Dr. Felipe Amezcua (President of the México Chapter of AFS) and I (President of the Western Division of AFS) wish to extend our sincerest welcome to you to what we hope will become a new tradition of holding AFS meetings in México.

This meeting is the result of an effort that started in 2007 when the newly formed Mexican Fisheries Society and the México Chapter of the AFS started to plan an AFS meeting in México. The goal was to strengthen the fisheries science ties between the countries in North America, as well as to help with the accomplishment of the AFS Strategic Plan, particularly in reference to the worldview of the fisheries future.

These kinds of meetings give us the chance to share with our colleagues and the society, the fisheries science that is the basis for proper management plans and regulations, as well as to exchange ideas and opinions with nontraditional partners. It's a tremendous opportunity to reach out to researchers and organizations that we typically don't encounter at a Division or AFS meeting.

Fisheries issues are of utmost importance in México and Central America and provided the basis for the meeting theme "*Rethinking Fisheries Sustainability – The Future of Fisheries Science*". Approximately 15-20% of the animal protein consumed by the world human population comes from fisheries. Particularly in Latin America fisheries are a matter of national security because these activities are a source of food and employment, as well as income. Beside this, the human population will grow in the near future, therefore incrementing the need for animal protein, particularly that coming from fisheries and aquaculture.

Currently fisheries yields are under the overwhelming stress of overfishing, pollution, habitat degradation and climate change. Looking into the future the big question that needs to be addressed now is how fisheries research can help in the development of management plans, policies and regulations that ensure fisheries sustainability, maintains biodiversity and the ecosystem function.

Our plenary session will address these issues and speakers from the conservation, research and commercial side of fishing will present their perspective. Thank you again for joining us in such an unprecedented event and be willing to help us forge a better understanding of these important fishery issues.



Sincerely, Felipe and Pam



# Planning Committee

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2014 Western Division of the American Fisheries Society

Annual Meeting Planning Committees

## General Meeting Organization

Pam Sponholtz – President, Western Division AFS

Felipe Amezcua – President, México Chapter AFS

### Program

Hilda Sexauer – Co-chair  
Felipe Amezcua – Co-chair  
Jim Bowker  
Diana Miller

### Arrangements and Accommodations

Felipe Amezcua  
Carlos Suarez  
Norman Mercado-Silva

### Advertising

Travis Neebling

### Audio/Video

Liz Mamer  
German Ramirez

### Budget and Finance

Travis Neebling

### Trade Show

Patrick Cooney

### Raffle/Auction

Mark Smith  
Hilda Sexauer  
Felipe Amezcua  
Jim Bowker

### Volunteer

Tracy Wendt  
Hilda Sexauer

### Best Paper and Poster Awards

Katrina Cook

### Fundraising

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Patrick Cooney  
Felipe Amezcua  
Lori Martin  
Greg Blair  
Dave Marvin  
Pam Sponholtz  
Jim Bowker  
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### Media Relations

Cleve Steward

### Registration

Alison Colotelo  
Carlos Suarez

### Student Representatives

Tracy Wendt  
Misha Hernandez  
Brigitte Gil-Manrique  
Alberto Rodriguez

### Social Events

Julio Recinos

### Continuing Education/Workshops

Doug Duncan  
Felipe Amezcua



# General Meeting Information

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## **Registration**

Registration will be open each day (Sunday – Thursday) in the Tapices Foyer. Please see the Schedule at a Glance for daily registration hours.

## **Presentation Drop-Off and Preview**

Presenters will download their presentations in the AV media center in the Reinos Foyer. Please preview your presentations in the Privatas Tapices Room to confirm that your animations and embedded items are working as you have designed them.

## **Poster Session**

There are over 90 contributed posters on display throughout the meeting in the El Cid Center! Poster set up opens on Monday, April 7<sup>th</sup> at 8 am. Student Colloquium Poster viewing is from 5 pm to 7 pm on Monday. Posters will be available for viewing throughout the meeting. Make sure to take a moment to attend the Poster Session Social scheduled from 6 pm to 8:30 pm on Tuesday, April 8<sup>th</sup>. Presenters will be available at this time to answer questions. Posters must be dismantled by 6 pm on Thursday, April 10<sup>th</sup>.

## **Plenary Session**

The Plenary Session begins Tuesday, April 8<sup>th</sup> at 9 am in the Los Tapices Room immediately following the opening remarks from Bob Hughes (President of the American Fisheries Society), Felipe Amezcua (President of the México Chapter AFS), and Pam Sponholtz (President of the Western Division AFS).

## **Oral Presentations**

There are over 300 session papers, including 12 organized symposia. Presentations begin on Tuesday, April 8<sup>th</sup> at 2:20 pm. Please check out the General and Symposia schedules on page 14 so you can plan where to be – there are up to 8 concurrent sessions!

## **Student Colloquium**

The 5<sup>th</sup> Annual WDAFS Student Colloquium, hosted by the new UNAM (Universidad Nacional Autónoma de México) student subunit, will be held in the Theater. The day starts at 9 am on Monday, April 7<sup>th</sup> with a welcome presentation by WDAFS president, Pam Sponholtz. The remainder of the day, students will have the option of attending presentations of research by other students or attending various workshops on career development. After lunch, there will be a presentation by Dr. Kelly F. Millenbah, followed by more presentations and workshops. From 5 pm to 7 pm, there will be a mentoring/poster session. Registration for the Colloquium is included for all students who have registered for the WDAFS annual meeting. For those not attending the WDAFS annual meeting, there is a \$40 registration fee to participate in the Student Colloquium.

## **Raffle/Auction**

Raffle and auction items will be on display in the El Cid Center the entire week leading up to the Banquet on Wednesday, April 9<sup>th</sup>. The auction includes many wonderful items including artwork, books, gift certificates, fishing gear, and fishing trips.

## **Snack breaks**

A variety of snacks, coffee, soft drinks, and fruit will be available during the morning and afternoon breaks in El Cid Center.



# General Meeting Information

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## **Socials**

*Student Colloquium Welcome Social:* This is a social for students only and is scheduled for Sunday, April 6<sup>th</sup> from 7 pm to 10 pm. This event will be off-site at Sumbawa Beach Club (about 1 mile walkable from the hotel) – a great venue to eat tacos, enjoy a few drinks, and meet new friends. It is recommended that students meet at Registration in the Tapices Foyer at 6:40 pm to walk together to this off-site social. Food and drinks provided – this will be a great way to kick off the meeting!

*Welcome Social –* A Welcome Social will be held Monday, April 7<sup>th</sup>, from 6 pm until 9:30 pm at the Beach Patio. Food and beverages will be provided.

*Tradeshow and Poster Social –* From 6:30 pm to 8:30 pm on Tuesday, April 8<sup>th</sup> in the El Cid Center. This is a great opportunity for AFS members to learn about the most advanced equipment available.

*Student Mentoring Social –* All students and professionals are invited to the Student Mentoring Social at Señor Frogs, which is right next door to the hotel, starting at 9 pm on Tuesday, April 8<sup>th</sup>. There will be food and drinks. There will also be salsa dance lessons provided by Cal-Nevada president Jim Hobbs and partner. This event is open to anyone attending the WDAFS annual meeting. Attendees are encouraged to venture outside their comfort zone, do a little dancing, and get to know some new people – this will be a great opportunity to expand your professional network!

*Banquet –* The Banquet will be held on Wednesday, April 9<sup>th</sup> at the La Concha/Beach Patio from 6:30 pm to 11:30 pm. Everyone is welcome!

*Closing Social –* All are invited to the Closing Social that will be held in Downtown Mazatlán from 6:30 pm to 9:30 pm on Thursday, April 10<sup>th</sup>. Dinner will be served. This is a great opportunity to be able to experience the Mexican culture outside of the resort scene and see a very historic section of Mazatlán.

## **Tradeshow**

Tradeshow set up starts at 1 pm on Monday. Take a few moments to visit with the vendors at the Tradeshow. They will be available Tuesday from 9 am to Thursday at 12 pm in the El Cid Center.

## **Spawning Run**

If you are registered for the Spawning Run please check-in at the registration desk in the Tapices Foyer by 6 pm on Wednesday, April 9<sup>th</sup> to receive your number. The Spawning Run will start on-time at 7 am on Thursday, April 10<sup>th</sup>. Meet in lobby of Castilla by 6:30 am to take shuttle to start. Cost is \$10.

## **Continuing Education**

Continuing Education workshops will be held on Friday, April 11<sup>th</sup>. Full and half day workshops will be available and will cover topics including freshwater fish sampling, mangrove ecology, and the national symposium for sharks and rays.



# General Meeting Information

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## **Business and Committee Meetings**

*Western Division AFS Executive Committee Meeting* – The meeting will be held from 10:30 am to 6 pm on Monday, April 7<sup>th</sup>. Transportation to the meeting site will be provided. All Executive Committee members please meet outside the Castilla Hotel at 10:30 am.

*Western Division AFS Business Luncheon* – The luncheon meeting will be held from 1 pm to 2:10 pm on Tuesday, April 8<sup>th</sup> in the La Concha Restaurant. Come support your colleagues as they receive their Western Division awards!

*México Chapter AFS Business Luncheon* – The luncheon meeting will be held from 1 pm to 2:10 pm on Wednesday, April 9<sup>th</sup> in the Cascada Restaurant.

## **Best Paper/Poster Awards Ceremony**

The best paper/poster awards ceremony will be held in the Theater room on Thursday, April 10<sup>th</sup> at 6:15 pm. This is a great opportunity to congratulate the winners for their hard work!



### **Did You Know?**

Most fisheries biologists know that the American Fisheries Society is the oldest, largest, and most influential association of fisheries professionals in the world. Did you know that the Western Division is the oldest and largest Division of the Society? It was established in 1948 and has 3,000+ members!





# Schedule at a Glance

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Time	Event	Room/Location
<b>Sunday, April 6<sup>th</sup></b>		
2:00 pm – 6:30 pm	Registration	Tapices Foyer
2:00 pm – 6:00 pm	Presentation drop-off and preview	Reinos Foyer
7:00 pm – 10:00 pm	Student Colloquium Welcome Social (students only)	Sumbawa Beach Club – meet at 6:40 pm at Registration to walk
<b>Monday, April 7<sup>th</sup></b>		
7:30 am – 6:00 pm	Registration	Tapices Foyer
8:00 am – 6:00 pm	Presentation drop-off and preview	Reinos Foyer
1:00 pm – 5:00 pm	Trade Show/Vendor Set-up	El Cid Center
8:00 am – 8:30 pm	Poster Set-up	El Cid Center
9:00 am – 7:00 pm	Student Colloquium	Theater/Other rooms
10:30 am – 6:00 pm	Western Division AFS Executive Committee Meeting	Off-site – meet at 10:30 am outside Castilla Hotel
6:00 pm – 9:30 pm	Welcoming Social	Beach Patio
<b>Tuesday, April 8<sup>th</sup></b>		
8:00 am – 6:00 pm	Registration	Tapices Foyer
8:00 am – 6:00 pm	Presentation drop-off and preview	Reinos Foyer
8:00 am – 6:00 pm	Tradeshaw/Vendor Exhibits	El Cid Center
8:00 am – 6:00 pm	Poster Set-up/Exhibit	El Cid Center
9:00 am – 12:30 pm	Plenary Session	Los Tapices
12:30 pm – 2:10 pm	Lunch, on your own	
1:00 pm – 2:10 pm	Western Division AFS Business Luncheon	La Concha Restaurant
2:20 pm – 6:00 pm	General & Symposia Presentations	See General & Symposia Schedule
4:00 pm – 4:20 pm	Break	El Cid Center
6:30 pm – 8:30 pm	Poster and Trade Show Social	El Cid Center
Evening	Student Mentoring Social	Señor Frog's
<b>Wednesday, April 9<sup>th</sup></b>		
8:00 am – 6:00 pm	Registration	Tapices Foyer
8:00 am – 6:00 pm	Presentation drop-off and preview	Reinos Foyer
8:00 am – 6:00 pm	Tradeshaw/Vendor Exhibits	El Cid Center
8:00 am – 6:00 pm	Poster Exhibit	El Cid Center
9:00 am – 1:00 pm	General & Symposia Presentations	See General & Symposia Schedule
10:40 am – 11:00 am	Break	El Cid Center
1:00 pm – 2:10 pm	México Chapter AFS Business Luncheon	La Cascada Restaurant
1:00 pm – 2:10 pm	Lunch, on your own	
2:20 pm – 6:00 pm	General & Symposia Presentations	See General & Symposia Schedule
4:00 pm – 4:20 pm	Break	El Cid Center
6:30 pm – 11:30 pm	Banquet and Raffle Social	La Concha / Beach Patio



# Schedule at a Glance

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<b>Time</b>	<b>Event</b>	<b>Room/Location</b>
<b>Thursday, April 10<sup>th</sup></b>		
7:00 am	Spawning Run	Malecón
8:00 am – 12:00 pm	Registration	Tapices Foyer
8:00 am – 6:00 pm	Tradeshow/Vendor Exhibits/Take down	El Cid Center
8:00 am – 6:00 pm	Poster Exhibits/Take Down	El Cid Center
9:00 am – 1:00 pm	General & Symposia Presentations	See General & Symposia Schedule
10:40 am – 11:00 am	Break	El Cid Center
1:00 pm – 2:10 pm	Lunch, on your own	
2:20 pm – 6:00 pm	General & Symposia Presentations	See General & Symposia Schedule
4:00 pm – 4:20 pm	Break	El Cid Center
6:15 pm	Best Paper/Poster Awards	Theater
6:30 pm – 9:30 pm	Closing Social	Downtown Mazatlán
<b>Friday, April 11<sup>th</sup></b>		
Continuing Education		
9:00 am – 12:00 pm	AFS Standard methods for freshwater fish sampling and comparing your data with North American standards	Reino de Castilla
All Day	Mangrove ecology, management, conservation, and restoration	Off Site – meet in lobby of Castilla Hotel at 9:00 am
All Day	National symposium for sharks and rays workshop: Evaluation methods in elasmobranch populations, with emphasis on methods for fisheries with limited data	Off Site
5:00 pm – 7:00 pm	Western Division Executive Committee Wrap-up	Beach Patio



# Plenary Session Schedule

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## Tuesday, April 8<sup>th</sup>

- 9:00 am – 9:30 am Welcome Address: Dr. Bob Hughes, President of the American Fisheries Society  
Dr. Felipe Amezcua, President of the México Chapter AFS  
Pam Sponholtz, President of the Western Division AFS
- 9:30 am – 10:15 am The Honorable Kenred Dorsett, Minister of the Environment and Housing, Government of The Bahamas  
“The Challenges Facing Conservation When Society Demands Economic Development”
- 10:15 am – 11:00 am Dr. Elva Escobar Briones, Director of the Macroecology and Biodiversity Laboratory, Instituto de Ciencias del Mar y Limnología of the National University (UNAM)  
“Assessment of Mangroves as Fish Habitats in the Region”
- 11:00 am – 11:45 am Dr. Manuel Martínez Nevárez Otilio, Deputy Director General for Research, Fisheries in the Pacific National Fisheries Institute (INAPESCA)  
“Fisheries Research Platforms: Opportunity for Development of Fisheries in México”
- 11:45 am – 12:30 pm Raul Villaseñor Talavera, Deputy General Director, Mexico's National Aquaculture and Fishing Commission (CONAPESCA)  
“New Challenges in Fisheries Management”



### **DID YOU KNOW?**

The Western Division is comprised of 10 Chapters: Alaska, Arizona-New Mexico, California-Nevada, Colorado-Wyoming, Idaho, México, Montana, Oregon, Utah, and Washington-British Columbia. There has been talk of an 11<sup>th</sup> Chapter. How about Hawaii?



## Plenary Session Speakers

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### **KENRED DORSETT**

Minister of the Environment and Housing  
The Bahamas

The Honorable Kenred Michael Ansara Dorsett received his early education at St. John's College Primary and Secondary, completing his tertiary education at Keele University, Staffordshire, England in 1994; BPP Law School, London England. He has also obtained Professional Certificates of Calls to both the English and Bahamas Bars.



Mr. Dorsett was the managing partner at Chancellors Chambers in Nassau. He has worked at Graham, Thompson & Company, NSB Education Group & K.M.A.D. & Associates, Lennox Patton and Halsbury Chambers. He has also served as a Board Member of the Education Loan Authority; Deputy Chairman of Clifton Heritage Authority; Chairman, Housing Commission; Deputy Chairman of Progressive Liberal Party; Director of Consolidated Water (Bahamas) Ltd.; and Member of the Membership Committee for Meritas Law Firms Worldwide. He currently serves as Minister of the Environment and Housing in the Cabinet of the Commonwealth of The Bahamas. He also serves as the Member of Parliament for Southern Shores. Mr. Dorsett is married to Tami and is the proud father of four children.



# Plenary Session Speakers

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## **ELVA ESCOBAR BRIONES**

Instituto de Ciencias del Mar y Limnología  
México City, México

Assessment of Mangroves as Fish Habitats in the Region  
Un análisis de los manglares como habitat para peces en la región

Investigadora Titular del Instituto de Ciencias del Mar y Limnología de la UNAM en Ciudad Universitaria. Miembro de la Unidad Académica Ecología y Biodiversidad Acuática donde es responsable del Laboratorio de Biodiversidad y Macroecología. Su línea de Investigación es la Oceanografía Biológica donde estudia la estructura y funcionamiento de ecosistemas asociados a los fondos marinos. Imparte clases y dirige tesis a estudiantes de licenciatura y posgrado. Ha dirigido diversos proyectos de investigación y campañas oceanográficas.



Entre los reconocimientos por pares a su labor se citan 4 especies nuevas nombradas, premios y distinciones como miembro del Sistema Nacional de Investigadores nivel 3 y en la Universidad PRIDE D. Es científico experto de México ante Naciones Unidas en investigación científica marina y miembro del Comité Técnico y Legal de la Autoridad Internacional de los

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Dr. Escobar Briones is a leading researcher at the Instituto de Ciencias del Mar y Limnología of the National University (UNAM) in México City. She is a member of the Ecology and Aquatic Biodiversity Academic Unit, where she leads the Macroecology and Biodiversity Laboratory. Her research focuses on Biological Oceanography. She investigates benthic marine ecosystem structure and function. She teaches and advises undergraduate and graduate students. She has led numerous projects and oceanographic investigations.

Dr. Escobar has received numerous recognitions from her peers. Four species have been named after her. She is a level-3 member of the National System of Researchers in México and a PRIDE D level professor at UNAM. She is an expert marine Mexican scientist for the United Nations, and a member of the Technical and Legal advising committee for the U.N. International Seabed Authority. She is also a member of deep sea programs at the Census of Marine Life and the Convention on Biological Diversity. She is currently the director of the Instituto de Ciencias del Mar y Limnología, at UNAM.



# Plenary Session Speakers

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## **Dr. Manuel O. Nevárez-Martínez**

General Director of Fisheries Research in the Mexican Pacific  
National Fisheries Institute

Fisheries Research Platforms: Opportunity for development of fisheries in México  
Pesca plataformas de investigación: Oportunidad para el desarrollo de la pesca en México

El Dr. Manuel O. Nevárez Martínez, es Licenciado Biólogo Pesquero (Universidad Autónoma de Sinaloa, 1985), con Maestría en Ecología (CICESE, 1990) y Doctorado en Ciencias Marinas (CICIMAR-IPN, 2000). Es Investigador Nivel 1 del Sistema Nacional de Investigadores, e Investigador Titular "C" del INAPESCA adscrito al Centro Regional de Investigaciones Pesqueras de Guaymas. Sus áreas de especialidad son la dinámica de poblaciones y la evaluación y manejo de recursos marinos pesqueros; ha realizado investigaciones sobre peces pelágicos menores (sardinas, anchovetas, macarela), calamar gigante, merluza, medusa bola de cañón, entre otros, y ha coordinado simultáneamente los Programas de Pelágicos Menores y de Calamar Gigante en el Pacífico Norte. El Dr. Nevárez ha liderado grupos de investigación y ha recibido varios apoyos de los fondos sectoriales CONACYT para proyectos de investigación y desarrollo aplicados a la evaluación y manejo de pesquerías en estrecha colaboración con los productores pesqueros. Asimismo, se ha desempeñado activamente en el ámbito académico donde ha dirigido tesis de licenciatura (5), maestría (5) y doctorado (3), y ha sido profesor del programa de posgrado de la Universidad Autónoma de Nayarit, del Centro de Investigaciones Biológicas del Noroeste, del Centro de Investigación en Alimentación y Desarrollo y de otras instituciones de educación. El Dr. Nevárez cuenta con una importante producción científica: más de 40 artículos en revistas arbitradas e indizadas, más de 16 capítulos de libros y más de 100 presentaciones en eventos científicos. Las sólidas bases científicas consolidadas bajo el liderazgo del Dr. Nevárez en la pesquería de sardina del Golfo de California y el trabajo continuo con los industriales de esta pesquería resultaron en la reciente certificación de esa como una pesquería sustentable por parte del Marine Stewardship Council. Actualmente el Dr. Nevárez funge como Director General Adjunto de Investigación Pesquera en el Pacífico del Instituto Nacional de Pesca.



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Dr. Manuel O. Nevárez-Martínez did his undergraduate degree on fisheries biology at the Sinaloa State University (1985), his MSc on Ecology at CICESE (1990) and his PhD on Marine Sciences at CICIMAR-IPN (2000). His areas of expertise are the population dynamics and the assessment and management of exploited marine resources; he has developed research on anchovies, sardines, mackerel, giant squid, hake, jellyfish among other species, and has coordinated the research programs on pelagic fish species and giant squid for INAPESCA (National Fisheries Institute) in the Mexican Pacific. He has also been the chair of research groups and has received research grants from the National Science Council (CONACYT) to develop projects for management and assessment of fisheries in conjunction with the fishers. Dr. Nevárez-Martínez is an avid teacher and mentor too, he has been the main tutor of undergraduate and graduate students, and has been teacher of the Nayarit State University, the Northwest Center for Biological Research (CIBNOR), among others. He has over 40 published papers in international journals, as well as chapters in books (over 15) and has delivered more than 100 talks in scientific and academic events. Recently the Marine Stewardship Council certified the sardine fishery of the Gulf of California thanks to the strong scientific background developed under the supervision of Dr. Nevárez-Martínez, together with the fishers of this important fishery in México. He is now ascribed at the National Fisheries Institute where he is the General Director of Fisheries Research in the Mexican Pacific.



# Plenary Session Speakers

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## **Raúl Villaseñor Talavera**

Director, La Unidad de Pesca Deportiva  
La Comisión Nacional de Acuacultura y Pesca  
Subcomité Nacional de Pesca Responsable

New Challenges in Fisheries Management  
Nuevos Retos en la Gestión de la Pesca

Engineer Raúl Villaseñor Talavera is director of La Unidad de Pesca Deportiva en la Comisión Nacional de Acuacultura y Pesca and is involved with the Subcomité Nacional de Pesca Responsable. He specializes in fisheries regulations, evaluation of fisheries resources and aquaculture, and the investigation and development of commercial fishing technologies. Raúl Talavera has had a large role in the development of México's first official commercial fishing regulations.





# Symposia Sessions

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The 2014 Annual Meeting will feature the following Symposia Sessions:

- 2<sup>nd</sup> International Symposium on Mangroves as Fish Habitat
- Native Trout of Western North America: Where are we 20 years later?
- Challenges of Invasive Northern Pike in the West: Threats and Management Options
- Emerging Interactions of Energy Production on Fisheries in the Americas: Technologies and Methodologies to Promote Sustainability
- Globalized Fisheries
- Fish Barriers for Conservation: From Design to Monitoring and Lessons Learned
- The State of Rocky Reefs in the Gulf of California: How much have we fished them and how can we recover their productivity?
- Emerging Opportunities for Culture of Marine Fishes in México
- Fate of Fish Released from Fisheries: Issues and Solutions
- Fisheries Management in Estuarine Systems of México and Central America: An Integrative View
- 6<sup>th</sup> National Symposium of Sharks and Rays
- 5<sup>th</sup> Annual WDAFS Student Colloquium







# General & Symposia Schedules

TUESDAY AFTERNOON Δ APRIL 8<sup>th</sup>

Session Name	2 <sup>nd</sup> International Symposium on Mangroves as Fish Habitat: Role of Mangroves in Recreational Fisheries	Globalized Fisheries	Vacant	The state of rocky reefs in the Gulf of California: how much have we fished them and how can we recover their productivity?
Moderator	David Philipp	Gloria Ciria Valdéz Gardea		Octavio Aburto-Oropeza
Room Name	Theater	Tapices 1	Dona Sol	Reino de Castilla
2:20	Keynote Speaker Mangroves in National Parks: Protecting fish habitat and securing fisheries for the future  Eric Carey	"Pesquerías Globalizadas".		A decadal comparative study of food webs and fishing landings of rocky reefs Alexandra Sánchez-Rodríguez
2:40				Distribution and species composition of <i>Epinephelidae</i> spp and <i>Serranidae</i> spp (pisces) with commercial importance on the coasts of Baja California Sur. Patricia Fuentes Mata
3:00	Recreational fisheries as conservation tools for mangrove habitats  Aaron Adams	Analysis of the fishery situation in the upper Gulf of California  E. Alberto Aragon-Noriega		Seasonal, annual, and long-term trends in commercial fisheries for aggregating reef fishes in the Gulf of California Brad Erisman
3:20	Caribbean-wide patterns of reef fish occurrence and abundance in relation to mangrove forest area  Joseph E Serafy	Framework for a bioeconomic analysis based on ecosystem approach: the case of fisheries in Sinaloa, Mexico  Juan Carlos Hernández Padilla (s)		Linking fish biomass, geomorphology, and community assemblages to assess the health of reefs in the Gulf of California Octavio Aburto-Oropeza
3:40	Small-scale fishery within a lagoon system in the Gulf of California.  Mauricio Carrasquilla (s)	Endangers species Vaquita Marina and Totoaba in the Upper Gulf of California  Salvador Galindo-Bect		Designing a network of fully-protected marine reserves for the coastal rocky-reefs of the Midriff Islands Region, Gulf of California: combining science, local knowledge and government priorities Jorge Torre
4:00	<b>BREAK</b>			
Session Name	2 <sup>nd</sup> International Symposium on Mangroves as Fish Habitat: Role of Mangroves in Recreational Fisheries	Globalized Fisheries	Emerging interactions of energy production on fisheries in the Americas: technologies and methodologies to promote sustainability	The state of rocky reefs in the Gulf of California: how much have we fished them and how can we recover their productivity?
Moderator	David Philipp	Gloria Ciria Valdéz Gardea	Brian Bellgraph	Octavio Aburto-Oropeza
Room Name	Theater	Tapices 1	Dona Sol	Reino de Castilla
4:20	Habitat zonation and fish assemblages between and within three adjacent coastal tidal creeks on Cape Eleuthera, The Bahamas: Implications for monitoring and conservation  Karen Murchie	Strengthening capacity and compliance of small-scale fishermen for reducing impacts in the Upper Gulf of California Biosphere Reserve through an education program.  Efrain Wong-López Cuellar	Introduction  Brian Bellgraph	The effects of social capital on local stakeholders' cooperation in Marine Conservation Governance  Mateja Nenadovic (s)
4:40	The conservation implications of spatial and temporal variability in the use of Caribbean tidal mangrove creeks by transient predatory fishes  Brendan Talwar	Characterization of the Fisheries Catch from the Puerto Peñasco, Sonora Marine Corridor in the Northern Gulf of California  Caroline Downton-Hoffmann	The future of energy development and fisheries sustainability in the Americas  Brian Bellgraph	DataMARES: Marine access repository for the Gulf of California, Mexico  Marcia Moreno-Báez
5:00	Assessing mangrove habitat complexity and its implications for fisheries  Shing Yip Lee	Species composition of the shrimp fishery bycatch in a coastal lagoon in the Gulf of California during the season 2001-2002  Jorge Payán-Alejo	Large versus small hydro development in British Columbia. Is smaller really better?  Dana Schmidt and Elyse MacDonald	Wanted dead, or alive! Economic benefits from marine ecotourism  Andrés M. Cisneros-Montemayor (s)
5:20	Coastal and Mangrove Eco-Tourism in Catanduanes island (Philippines): A menace or a bonus?  Minerva Morales	Production chain of the giant squid ( <i>Dosidicus gigas</i> ) in the Gulf of California  Astrid Moncaleano Rubio (s)	Effects of seismic surveys on pallid sturgeon and paddlefish in Lake Sakakawea, North Dakota  Laura Leslie Burckhardt	We need stories in order to live  Eliana Alvarez
5:40	Discussion	Socioeconomic Diagnosis and Evaluation of a conservation strategy in the Gulf of Santa Clara, Sonora  Dulce María Ruiz López (s)	Produced waters associated with hydraulic fracturing and oil and gas extraction  David Harper	Discussion
6:30	<b>SOCIAL</b>			



# General & Symposia Schedules

TUESDAY AFTERNOON Δ APRIL 8<sup>th</sup>

Session Name	Fish barriers for conservation: from design to monitoring and lessons learned	VI National Symposium of Sharks and Rays	Vacant	Vacant
Moderator	Jim DeRito	M. en C. Carlos Hernández Calzada		
Room Name	Reino de Granada	Reino de Aragon	Tapices 2	Tapices 3
2:20	The history of fish barriers in Wyoming Hilda Sexauer	Artisanal fishery of elasmobranchs within two marine protected areas in the Upper Gulf of California E. Alberto Aragón-Noriega		
2:40	Fish barrier management in east-central Arizona streams for Apache Trout recovery Lisa Ozborn	Evaluación de riesgo ecológico por efectos de la pesca del tiburón martillo <i>Sphyrna lewini</i> (Griffith & Smith, 1834) en el sur del Golfo de México Adriana Mendoza Treviño (s)		
3:00	Evaluating the influence of barriers to movement and stocking history on the spatial extent of hybridization between westslope cutthroat trout and rainbow trout Janet Loxterman	Estimación de la vulnerabilidad del cazón de ley, <i>Rhizoprionodon terraenovae</i> , en las pesquerías del Banco de Campeche, México Fátima Guadalupe Bravo Zavala (s)		
3:20	Using fish barriers to conserve native trout: A riverscape perspective incorporating source-sink dynamics and use of barriers in Montana Brad Shepard	Morfología del condrocáneo de tiburón azul, <i>Prionace glauca</i> (Carcharhiniformes: Carcharhinidae). Oscar Uriel Mendoza Vargas (s)		
3:40	A fine-scale assessment of using barriers to conserve native stream salmonids: A case study in Akokala Creek, Glacier National Park Vin D'Angelo	Caracterización de la pesquería del tiburón en la Bahía de Paredón, Chiapas Cristina Celaya Castillo (s)		
4:00	BREAK			
Session Name	Fish barriers for conservation: from design to monitoring and lessons learned	VI National Symposium of Sharks and Rays	Vacant	Vacant
Moderator	Jim DeRito	M. en C. Carlos Hernández Calzada		
Room Name	Reino de Granada	Reino de Aragon	Tapices 2	Tapices 3
4:20	Engineering cutthroat trout conservation: an evolution in fish barrier design Carter Kruse	Estimación de la longitud total de <i>C. falciiformis</i> y <i>S. lewini</i> capturados en el este del Pacífico Tropical a partir de la longitud del tronco e interdorsal como una herramienta para el manejo pesquero. Carlos Polo		
4:40	Risk based design for fish barriers in Muddy Creek, Wyoming Michael Geenen	Monitoreo de las capturas incidentales de elasmobranchios en las pesquerías artesanales en el extremo sur de Brasil. Rayd Ivanoff (s)		
5:00	Hydraulic analysis and risk assessment of a proposed fish barrier for Johnson Creek, Utah. Steve Hunter	Pesquería de rayas en la zona centro del estado de Campeche, México Luis Enrique Martínez Cruz		
5:20	The graduated-field fish barrier: Lessons learned from the use of an innovative technology for blocking upstream movements of invasive and undesirable species. Carl Burger	Evaluación preliminar de métodos de muestreo para investigar la ecología de neonatos y juveniles de <i>Sphyrna lewini</i> en zonas costeras. Antonio Corgos López-Prado		
5:40	Reliability demonstration testing of electric field parameters for electric field-based aquatic nuisance species dispersal barriers on the Chicago Sanitary Ship Canal F Michael Holliman			
6:30	SOCIAL			



# General & Symposia Schedules

WEDNESDAY MORNING  $\Delta$  APRIL 9<sup>th</sup>

Session Name	2 <sup>nd</sup> International Symposium on Mangroves as Fish Habitat: Ecology and Ecological Services	Globalized Fisheries	Emerging interactions of energy production on fisheries in the Americas: technologies and methodologies to promote sustainability	Fate of fish released from fisheries: issues and solutions
Moderator	Eric Knudsen	Dr. Manuel Salvador Galindo Bect and Eugenio Alberto Aragón.	Brian Bellgraph	Katrina Cook
Room Name	Theater	Tapices 1	Dona Sol	Reino de Castilla
9:00	Keynote Speaker: Conservation of mangrove ecosystems in Mexico: challenges and perspectives  Omar Vidal	Small pelagic fishery from the south of the Gulf of California  Mercedes L. Jacob-Cervantes	Issues related to coal production – case studies from Colorado and West Virginia  Jason Mullen	Out of sight, out of mind? Bycatch and discarding issues in global and Mexican fisheries  Andrés M. Cisneros-Montemayor (s)
9:20		On board observation program of small pelagic fishery from the south of the Gulf of California  Mercedes L. Jacob-Cervantes	Small native non-sport related fish species: are they affected by hydroelectric development? The case of Chile  Evelyn Habit	High temperature and fisheries capture and release: decreased survival and resiliency of adult coho salmon against microparasite infections  Amy Teffer (s)
9:40	A comparison of the trophic structure of Terminos lagoon and continental shelf for three seasons  Javier A. Romo-Ríos (s)	Vulnerability analysis of fishing cooperative societies: The case of "Bahía Magdalena"  Carlos Ignacio Cárdenas Carpio (s)	Determining the Minimum Size Threshold for Implantation of the JSATS Injectable Tag in Juvenile Salmonids  Katherine Deters	Capture-stress and post-release survival in coastal and pelagic sharks caught by commercial longline and purse seine  Diego Bernal
10:00	Site fidelity and homing behavior in the four-eyed fish <i>Anableps anableps</i> (Anablepidae): A study in a Brazilian mangrove revealed by radio-frequency identification and visual census  Marianna Audfried Calderon (s)	Provisioning ecosystemic services and multidimensional poverty reduction of coastal fishermen at La Paz Bay- La Ventana corridor, Baja California Sur Mexico  Elvia Aida Marin Monroy	Energy production in Canada and it's interactions with fish  Jenni McDermid	Estimating and reducing release mortality in red snapper fisheries  Sandra Diamond
10:20	Processes affecting movement and survival of a juvenile fish in mangrove creeks  Andrew Barbour		Unconventional impacts from unconventional hydropower: The environmental effects of noise, electromagnetic fields, and blade strike from hydrokinetic devices on fish  Mark Bevelhimer	Influence of water temperature and net tending frequency on the condition of fish bycatch in a small-scale inland commercial fyke net fishery  Alison Colotelo
10:40	<b>BREAK</b>			
Session Name	2 <sup>nd</sup> International Symposium on Mangroves as Fish Habitat: Ecology and Ecological Services	Fisheries management in estuarine systems of Mexico and Central America: an integrative view	Emerging interactions of energy production on fisheries in the Americas: technologies and methodologies to promote sustainability	Fate of fish released from fisheries: issues and solutions
Moderator	Eric Knudsen	Felipe Amezcua	Amber Steed	Katrina Cook
Room Name	Theater	Tapices 1	Dona Sol	Reino de Castilla
11:00	Highlights on El Conchalito, La Paz, B.C.S. taxonomic diversity indices, a five years case of study  J. A. Payan-Alcacio (s)	Water quality effects on fish larvae in a tropical coastal lagoon of the Gulf of Mexico  Guadalupe de la Lanza-Espino	Evaluating and mitigating for the impacts of hydropower in the Flathead River system  Amber Steed	Delayed mortality of adult coho salmon bycatch in commercial seine fisheries in coastal waters of British Columbia  Katrina Cook (s)
11:20	Assessing seasonal hyperspectral estimation of leaf pigments for dominant mangrove species of the Pacific coast of Mexico  Francisco Flores de Santiago	Mercury in biota from estuarine areas under varying human pressure  Jorge Ruelas-Inzunza	Evaluation of barotrauma injuries in Brazilian freshwater fishes using turbine passage simulation and field observations  Bernardo Beirao (s)	The degree and result of gillnet fishery interactions with juvenile white sharks in southern California assessed by fishery-independent and -dependent methods  Kady Lyons (s)
11:40	Colonization of Robinson Preserve: An evaluation of restoration efforts in an estuary in Tampa Bay, Florida  Amanda Croteau (s)	Trophic relationships within a subtropical estuarine food web from Southeast Gulf of California through analysis of stable isotopes of carbon and nitrogen  Martin E. Jara-Marini	Impacts of hydroelectric dams on survival and behavior of downstream migrating juvenile Pacific lamprey  Bob Mueller	Post-release mortality of juvenile Atlantic bluefin tuna ( <i>Thunnus thynnus</i> ) caught in the U.S. recreational troll fishery  Benjamin Marcek (s)
12:00	Spatial and temporal variation of fish assemblage associated with mangroves in a coastal lagoon of Cayo Coco, Cuba  Héctor Miguel Salvat-Torres	Establishing management strategies for coastal lagoons using nutrient carrying capacity  Omar Calvario-Martínez	Power to detect change in fisheries-power plant interactions - a case study from a Florida nuclear plant  Tara Dolan	Evaluating physiological stress of White Marlin <i>Kajikia albigata</i> caught in the U.S. recreational fishery  Lela Schlenker (s)
12:20	Primary producers and their relationship to sedimentary organic matter in Terminos lagoon and continental shelf  Javier A. Romo-Ríos (s)	Changes in the hydrological regime of coastal lagoons affect mangroves and small scale fisheries: the case of the mangrove-estuarine complex of Marismas Nacionales (Pacific Coast of Mexico)  Felipe Amezcua	Passage distribution and federal Columbia River power system survival for steelhead kelts tagged above and at Lower Granite Dam, Washington  Alison Colotelo	Spatial variation of the bycatch: shrimp ratio and the fish length structure in the shrimp trawl fishery in the Gulf of Tehuantepec (Mexican Pacific)  Marco A. Martínez-Muñoz
12:40	Intertidal fish community structure in mangrove-lined and unvegetated creeks of Qeshm Island, Persian Gulf  Maryam Shahraki (s)	Fisheries biology of the freshwater prawn <i>Macrobrachium acanthurus</i> in the Palizada river, Campeche (Southern Gulf of Mexico)  José Luis Cruz-Sánchez (s)	Potential for downstream electric guidance technology to reduce fisheries impacts at energy production projects in the Americas and beyond.  Carl Burger	Is the sardine of the Gulf of California a sustainable fishery?  Ernesto A Chavez
1:00	<b>LUNCH: MEXICO CHAPTER AFS BUSINESS LUNCHEON</b>			



# General & Symposia Schedules

WEDNESDAY MORNING Δ APRIL 9<sup>th</sup>

Session Name	Fish barriers for conservation: from design to monitoring and lessons learned	Vacant	Oceanography: Marine organisms, ecosystem dynamics, ocean currents and geology of the sea floor	Exploited Fisheries: Crustaceans, Molluscs, Cephalopods and beyond
Moderator	Jim DeRito		David Ward	Mauricio Ramirez
Room Name	Reino de Granada	Reino de Aragon	Tapices 2	Tapices 3
9:00	A decade of weirs: lessons learned from the South Fork Snake River, Idaho Brett High		Using underwater observatories to understand marine soundscapes: an exploration of passive acoustic data from NEPTUNE Canada on Vancouver Island Francis Juanes	Gulf of Mexico shrimp fishery compromised Adolfo Gracia
9:20	Blocking sea lamprey spawning runs into Great Lakes tributaries: use of, research on, and unintended consequences of existing and purpose-built physical barriers Dale Burkett		Recent extinction rates in the sea Pablo Del Monte-Luna	Catchability coefficients trend from catch and effort data in shrimp fishery of the southeastern Gulf of California Ricardo Meraz-Sánchez (s)
9:40	Deter and conquer: The quest for an effective non-physical migration barrier for invasive sea lamprey Nicholas Johnson		Fishes of the continental slope (300-2125m) off the west coast of the peninsula of Baja California: Research cruise "TALUD XV" Edgar Cruz Acevedo (s)	Economic performance of offshore shrimp boats along the Pacific coast of Mexico Luis Cesar Almendarez Hernández
10:00	Developing sea lamprey control tactics alternative to barriers Michael Siefkes		The northerly winds and the closure of the ports of Tabasco and Campeche between 2000 and 2011. Could it impact seabob shrimp fishery? Maria del Carme Jiménez-Quiroz	The rise, fall and future of the jumbo squid ( <i>Dosidicus gigas</i> ) in the Gulf of California Carlos Robinson
10:20	Non-physical barriers and perspectives for use to avoid fish entrance into hydropower turbines exit tube in Brazil Luiz Silva		Hydroclimatic bulletin of the Mexican seas in support of the knowledge of the fishery resources and aquatic biodiversity Erik Márquez-García	Distribution and abundance variations of shrimp postlarvae <i>Litopenaeus</i> spp and <i>Farfantepenaeus</i> spp in the Bay of Ceuta, Sinaloa, Mexico Darío Chavez-Herrera
10:40	<b>BREAK</b>			
Session Name	Barriers and Passages	VI National Symposium of Sharks and Rays	Native Trout of Western North America: where are we 20 years later? Historic Perspectives	Exploited Fisheries: Crustaceans, Molluscs, Cephalopods and beyond
Moderator	Jeanette Haegele	M. en C. Carlos Hernández Calzada	Jason Dunham	Hans Hartman
Room Name	Reino de Granada	Reino de Aragon	Tapices 2	Tapices 3
11:00	An evaluation of fish passage through small urban streams in central Washington Kelsey Martin-Harbick (s)		Native trout in Western North America: Yesterday, today, and tomorrow Robert Gresswell	Density and spatial distribution variations of shrimp postlarvae <i>Litopenaeus</i> spp and <i>Farfantepenaeus</i> spp in the offshore of Sinaloa and Nayarit states, Mexico. Horacio Alberto Muñoz-Rubí
11:20	Stream simulation design for unimpeded aquatic organism passage and flood resiliency at road-stream crossings Steve Hunter		The Bear River watershed and cutthroat trout since publication of Native Trout James DeRito	Variation of structure and population dynamics of the spiny lobster <i>Panulirus gracilis</i> on the South of Sinaloa Karem Francely Castro-Gutiérrez
11:40	Southeast aquatic connectivity assessment project John Kauffman		Phenotype predicts genotype for lineages of native cutthroat trout in the southern Rocky Mountains Kevin Bestgen	Size structure and modal groups in juvenile lobster <i>Panulirus inflatus</i> in the Bay of Mazatlan, Sinaloa, Mexico Jesús Rafael García-Paredes
12:00	Evolution and symbiosis in the development of multiple methodologies to surveil the behavior and small- and large-scale movements of migratory fish Dave Marvin	Magisterial Conference: Nuevos pasos para fortalecer la conservación de tiburón blanco en el noroeste de México.	The Cherry Creek, Montana, Westslope cutthroat trout introduction project: the impetus for a paradigm shift within 20 years Patrick Clancey	Analysis spatio-temporal of the population structure of <i>Farfantepenaeus notialis</i> (Pérez-Farfante, 1967) in the Caribbean Sea in Colombia Jose Yacomelo (s)
12:20	New fish protection and passage facilities at the North Umpqua Hydro project Richard Grost		The Hoback River: A tale of fisheries management Diana Miller	The use of multi frequencies to study the Jumbo squid ( <i>Dosidicus gigas</i> ) in the Gulf of California Carlos Robinson
12:40		Dr. Oscar Sosa Nishizaky		Size structure of the blue crab ( <i>Callinectes arcuatus</i> ) populations, in marine, estuarine and lagoon environments of the south of the Gulf of California, Mexico. Juan Madrid-Vera
1:00	<b>LUNCH: MEXICO CHAPTER AFS BUSINESS LUNCHEON</b>			



# General & Symposia Schedules

WEDNESDAY AFTERNOON Δ APRIL 9<sup>th</sup>

Session Name	2 <sup>nd</sup> International Symposium on Mangroves as Fish Habitat: Potential Impacts from Global Climate Change	Fisheries management in estuarine systems of Mexico and Central America: an integrative view	Emerging interactions of energy production on fisheries in the Americas: technologies and methodologies to promote sustainability	Fate of fish released from fisheries: issues and solutions
Moderator	Cleve Steward	Felipe Amezcua	Amber Steed	Katrina Cook
Room Name	Theater	Tapices 1	Dona Sol	Reino de Castilla
2:20	Keynote Speaker: Mangroves and the Deep Blue C: Exceptionally valuable ecosystems in exceptionally vulnerable times	Exploitation of the armored catfish ( <i>Pterygoplichthys spp</i> ) as a strategy for the control of this invasive species on Natural Protected Areas, a case study from the Terminos Lagoon in Campeche  Luis Amado Ayala-Pérez	Concentration of hydrocarbon and heavy metals in sediments and water in the Tehuantepec basin, Mexico, and possible impacts on the coastal and marine systems  María del Carmen González Macia	Size structure and some reproductive aspect of <i>Haemulopsis leuciscus</i> in the southeastern Gulf of California  José Alberto Rodríguez-Preciado (s)
2:40	Boone Kaufman	Exploring fishing effects on cortés geoduck ( <i>Panopea globosa</i> ) populations from the upper Gulf of California. Marlene Anaid Luquin-Covarrubias (s)	Can hydroelectric dam development in South America support sustainable fisheries? A perspective for 21st century  Claudio Baigun	Too many fishermen in the sea, is there a risk for endangered species?  Gerardo Rodríguez-Quiroz
3:00	Responses of mangrove fish to climate change  Aaron Shultz (s)	Interactions between shrimp and catarina scallop fisheries in Magdalena Bay, Baja California Sur, Mexico. Miguel Ángel Ojeda Ruiz	Oil platforms off California are the most productive marine fish habitats globally  Daniel Pondella	Catch efficiency of prototype trawl nets for blue shrimp commercial fishing in the upper Gulf of California Luis Vicente González-Ania
3:20	Climate extremes create legacies on tropical floodplain fish subsidies in a mangrove coastal river  Ross Boucek (s)	Common names and Keys for fish species of interest in the Mexican Pacific Fisheries Mauricio Ramírez-Rodríguez	Juvenile Salmonid Performance Standards Assessments in the Federal Columbia River Power System Geoffrey McMichael	
3:40	Sealevel rise impacts and its implication on mitigation & adaptation of mangrove ecosystem in Indaramayu, West Java  Agustinus Mangaratua Samosir	Finfish species catalogue from Tamaulipas (Northern gulf of Mexico)  Ma. Guadalupe Gómez Ortiz	Innovative methodologies to assess effects of hydropower on highly migratory fishes: Technology transfer and knowledge sharing for the Mekong River  Doug Demko	
4:00	<b>BREAK</b>			
Session Name	2 <sup>nd</sup> International Symposium on Mangroves as Fish Habitat: Potential Impacts from Global Climate Change	Fisheries management in estuarine systems of Mexico and Central America: an integrative view	Emerging interactions of energy production on fisheries in the Americas: technologies and methodologies to promote sustainability	Anthropogenic impacts to fisheries
Moderator	Cleve Steward	Felipe Amezcua	Norman Mercado-Silva	Hector Salvat
Room Name	Theater	Tapices 1	Dona Sol	Reino de Castilla
4:20	Biogeography of mangrove fish assemblages in the Neotropics  Gustavo Adolfo Castellanos-Galindo (s)	Mapping from coastal fishing fleet operating results and local knowledge  Miguel Ángel Ojeda Ruiz	The effects of dams on freshwater fish communities of central Mexico  Norman Mercado-Silva	Analysis of site fidelity, home range, and migratory behavior of barred sand bass, <i>Paralabrax nebulifer</i> , within the Palos Verdes shelf superfund site Gary Teesdale (s)
4:40	A meta-analysis approach to mangrove-fishery linkage  Mauricio Carrasquilla (s)	Ecosystem-based Fisheries Management of a Biological Corridor along the Northern Sonora Coastline (NE Gulf of California). Peggy J. Turk-Boyer	Interactions and consequences between ocean industries and commercial fisheries: two case studies from the Northeast Pacific. Donna M. Schroeder	Spatiotemporal differences in food web structure and resulting mercury contamination in sport fish  Jesse Lepak
5:00	Puffed and bothered: the effects of stress on the behaviour of a mangrove-associated fish, the checkered puffer ( <i>Sphoeroides testudineus</i> ) Naomi Pleizier (s)	Fisheries in the Santa Rosalia region, Gulf of California, Mexico  Mauricio Ramírez-Rodríguez	Genetics as a tool for examining impacts of hydro-development on long lived fish species  Jenni McDermid	Health risks associated with pesticide residues in water, sediments and the muscle tissues of <i>Calla calla</i> at Head Balloki on the River Ravi, Pakistan. Shahid Mahboob Rana
5:20	Role and quality of refuge habitats for Everglades fishes: coastal natural vs. wetland artificial?  Jennifer Rehage	Managing artisanal fisheries in estuarine systems through the use of fishing zones in the SE Gulf of California  Mauricio Ramírez-Rodríguez	Application of fisheries mitigation actions to benefit migratory bull trout in a system fragmented by hydropower dams along the lower Clark Fork River in Idaho and Montana  Sean Moran	Comparison the level of cadmium in muscle and liver tissue of demersal fish in three estuarine systems of the southern of Sinaloa  Omar Nateras Ramirez (s)
5:40	Status of mangrove biodiversity and conservation in the typhoon-prone island of Catanduanes, Luzon, Philippines  Jimmy T. Masagca	Use of an environmental impact study for increasing compliance in Mexico's marine protected areas: A bottom-up social process in the Upper Gulf of California Biosphere Reserve Sergio Alejandro Perez-Valencia	The Dry Piney Study: Energy development effects to native fish communities along the Wyoming Range  Carlin Girard (s)	Nitrogen input: Effect of broiler droppings on the primary productivity and yield of major carps  Shahid Mahboob Rana
6:30	<b>SOCIAL – BANQUET – LA CONCHA AND BEACH PATIO</b>			



# General & Symposia Schedules

WEDNESDAY AFTERNOON Δ APRIL 9<sup>th</sup>

Session Name	Salmon, Steelhead, and Trout From Life History to Management	VI National Symposium of Sharks and Rays	Native Trout of Western North America: where are we 20 years later? Systematics	Exploited Fisheries: Crustaceans, Molluscs, Cephalopods and beyond
<b>Moderator</b>	Ryan Fitzpatrick	M. en C. Carlos Hernández Calzada	Jason Dunham	Agustin Hernandez
<b>Room Name</b>	Reino de Granada	Reino de Aragon	Tapices 2	Tapices 3
2:20	Principles of trout management in Arizona  Kelly Meyer	Stomach content of three <i>Sphyrna lewini</i> shark captured in a reef system at the western Gulf of Mexico  Otilio Avendaño-Alvarez	Intraspecific morphological and genetic diversification of cutthroat trout from western North America  Ernest Keeley	Interstitial invertebrates assemblage in exploited beds of cortés geoduck ( <i>Panopea globosa</i> ) from the upper Gulf of California.  Rene David Laoiza Villanueva (s)
2:40	Competition between non-native brook trout and coho salmon in the Elwha River, WA: Implications for coho salmon recolonization  Emily Thornton (s)	Traslado trófico del Tiburón azul ( <i>Prionace glauca</i> ) y Tiburón mako ( <i>Isurus oxyrinchus</i> ) capturados en la costa occidental de Baja California Sur  Claudia Ivette Maya Meneses (s)	Contributions of Robert J. Behnke to salmonid biology and conservation  Kevin Bestgen	Detritus as the most important component in the assimilated diet of wild abalone on the Baja California Peninsula  Pablo David Vega (s)
3:00	Coldwater fisheries responses to hypolimnetic oxygenation lake restoration  Benjamin Cross (s)	Diet variation of the Pacific sharpnose shark, <i>Rhizoprionodon longurio</i> and its relationship to the presence of climatic event in the south-eastern Gulf of California.  Yassir Eden Torres Rojas	Defining evolutionary lineages in the native Mexican trout (Salmonidae) of the Sierra Madre Occidental: An assessment utilizing microsatellite data  Francisco García-De-León	Florida angler perspectives on resuming harvest of the protected, mangrove-dependent goliath grouper  Geoffrey Shideler (s)
3:20	Partners for fisheries monitoring program in Bristol Bay, Alaska  Danielle Stickman	Nivel trófico de <i>Squatina californica</i> (Ayres, 1859) mediante el uso de isótopos estables de nitrógeno ( $\delta^{15}N$ ) y carbono ( $\delta^{13}C$ ) en Baja California Sur  Mildred A. Valdivia-Mesinas (s)	Genetic investigation and phylogeography of the Mexican trout complex and the risk of introgression from exotic rainbow trout  Alicia Abadía-Cardoso (s)	Declining abundance and recruitment of American eels at the extremities of the range: Are eels declining in the southern part of the range?  John M. Casselman
3:40	Strategies for salmon reintroduction  David Fast	Hábitos alimentarios y relación trófica de tres especies de rayas bentónicas (Batoidea: Urolophidae y Narcinidae) en el Golfo de Tehuantepec  Pedro Luis Díaz Carballido (s)		
4:00	<b>BREAK</b>			
Session Name	Salmon, Steelhead, and Trout From Life History to Management	VI National Symposium of Sharks and Rays	Native Trout of Western North America: where are we 20 years later? Threats	Life History – not just in the salt
<b>Moderator</b>	Ryan Fitzpatrick	M. en C. Carlos Hernández Calzada	Jason Dunham	Agustin Hernandez
<b>Room Name</b>	Reino de Granada	Reino de Aragon	Tapices 2	Tapices 3
4:20	Yakama Nation: Lake Cle Elum sockeye adult reintroduction project  Brian Saluskin	Relaciones tróficas del tiburón blanco <i>Carcharodon carcharias</i> en las inmediaciones de Isla Guadalupe, México, inferidas mediante el análisis de isótopos estables de carbono y nitrógeno  Mario Jaime	Invasive hybridization is accelerated by climate change in a threatened species  Clint Muhlfeld	Structural comparison of the status of the food web in Terminos Lagoon, Campeche, Mexico during 1980, 1998 and 2011  Isaura Michelle Abascal-Monroy (s)
4:40	Isotopic differences in otoliths of hatchery-reared steelhead  Yongwen Gao	Nutritional and contaminant analyses of skates in the Gulf of Alaska: shaping future skate demand and fisheries sustainability  Thomas Farrugía (s)	Genetic introgression of cultured rainbow trout in Mexican native trout complex  Marco Alejandro Escalante (s)	Diet of the demersal fishes in Laguna de Términos, Campeche, México, evaluated by two different methodologies  Arturo Tripp Valdez
5:00	Winter concealment behavior of <i>Oncorhynchus mykiss</i>  Reid Camp (s)	Ecología trófica de ocho especies del Orden Rajiformes en la costa sur del estado de Jalisco, México.  Juan Ramón Flores-Ortega	The role of beaver in shaping the environment for salmonids in the western United States  Nicolaas Bouwes	Trophic ecology of red snapper <i>Lutjanus peru</i> of the southern region of the Gulf of California Mexico.  Lutjanus  Gisela Trujillo (s)
5:20	Evaluation of new software for rapid, automated processing of hydroacoustic data for fisheries related applications  Eric Munday	Multimodel selection applied to growth of the stingray <i>Urotrygon chilensis</i> (Günther, 1872) in the Southeast Mexican Pacific.  Ana Bricia Guzmán Castellanos (s)	Eco-evolutionary and environmental mechanisms influencing introgression of invasive genes into Westslope cutthroat trout  Ryan Kovach	Evaluation of the population structure of white seabass, <i>Atractoscion nobilis</i> , along the Pacific coast of North America based on the isotopic composition ( $\delta^{13}C$ y $\delta^{18}O$ ) of otolith cores  Alfonsina E. Romo Curiel (s)
5:40		Estructura genética poblacional del tiburón blanco ( <i>Carcharodon carcharias</i> ) en el Pacífico Nororiental frente a las costas de Isla Guadalupe  Xóchitl Sánchez-Hernández (s)	California golden trout and climate warming: How hot is too hot?  Kathleen Matthews	Body morphology of species of Gerreidae and its utility in species discrimination and phylogeny  Jorge Guillermo Chollet Villalpando (s)
6:00		Estructura genética del tiburón toro ( <i>Carcharhinus leucas</i> ) en el Golfo y Caribe de México  Nadia S. Lurrabaquio Alvarado (s)		Reproductive dynamic of the dorado ( <i>Coryphaena hippurus</i> ) from Southern Gulf of California, Mexico.  J Fernando Marquez-Farias
6:20		Historia demográfica de <i>Sphyrna zygaena</i> en las costas del Océano Pacífico Oriental  Nataly Bolaño (s)		
6:30	<b>SOCIAL – BANQUET – LA CONCHA AND BEACH PATIO</b>			



# General & Symposia Schedules

THURSDAY MORNING Δ APRIL 10<sup>th</sup>

Session Name	2 <sup>nd</sup> International Symposium on Mangroves as Fish Habitat: Strategies for Conservation and Restoration	Fisheries management in estuarine systems of Mexico and Central America: an integrative view	Emerging interactions of energy production on fisheries in the Americas: technologies and methodologies to promote sustainability	Challenges of invasive Northern Pike in the West: threats and management options
<b>Moderator</b>	<b>Julie Claussen</b>	<b>Mauricio Ramirez</b>	<b>Phillip Groves</b>	<b>Marc Divens</b>
<b>Room Name</b>	<b>Theater</b>	<b>Tapices 1</b>	<b>Dona Sol</b>	<b>Reino de Castilla</b>
9:00	Keynote Speaker: Environmental considerations for the conservation and restoration of mangrove forests  Francisco Verdugo	An interdisciplinary approach to study Small-scale fisheries in lagoon estuarine complexes in the Gulf of California  Nadia T. Rubio-Cisneros (s)	Fall Chinook salmon redd counts in the Snake River: moving toward a new methodology  Phillip Groves	Introduction  Marcus Divens
9:20		Analysis of catch per unit effort data from fishing cooperative in La Encrucijada Biosphere Reserve, Chiapas, Mexico.  Alejandro Arrivillaga	Emerging interactions of fisheries and energy production in the Americas: the role of free flowing rivers  Paulo Pompeu	Monitoring the northern pike population in Box Canyon Reservoir, Pend Oreille River, Washington  Jason Connor
9:40	Concepts of vulnerability as drivers of conservation priorities: an applied study of fish communities in the Galapagos Marine Reserve  Katherine Kaplan (s)	Fisheries governance examples from Northwestern Mexico: New stakeholders with new roles  José Alberto Zepeda-Domínguez (s)	Peixe Vivo Program: developing a partnership matrix for fish conservations in Brazilian dammed rivers  Raquel Loures	Mechanical suppression of northern pike in Box Canyon Reservoir, Pend Oreille River, WA  Nick Bean
10:00	Fish and mangroves, functional restoration in the Yucatan Peninsula  Daniel Arceo-Carranza	Marine Area of Responsible Fishing, a path toward small scale fisheries co-management in Costa Rica? Perspectives from Golfo Dulce  Hans J. Hartmann	Problems related to fish concentration downstream from the dam in Brazil and subsidies to minimize it  Fabio Suzuki	Control and management of northern pike: experiences from Colorado, USA  Harry Crockett
10:20	Review of the decline of artisanal fisheries along the Arabian Sea coast, Pakistan  Muhammad Naeem Khan	Wetland conservation in Northern Sonora, Mexico: Legal tools and active communities  Peggy J. Turk-Boyer	Effects of the Ixtoc I oil spill on fish assemblages in the Southern Gulf of Mexico  Brigitte Gil-Manrique (s)	Population abundance and dynamics of introduced northern pike, Yampa River, Colorado  Koreen Zelasko
10:40	<b>BREAK</b>			
Session Name	2 <sup>nd</sup> International Symposium on Mangroves as Fish Habitat: Strategies for Conservation and Restoration	Fisheries management in estuarine systems of Mexico and Central America: an integrative view	Emerging interactions of energy production on fisheries in the Americas: technologies and methodologies to promote sustainability	Challenges of invasive Northern Pike in the West: threats and management options
<b>Moderator</b>	<b>Julie Claussen</b>	<b>Felipe Amezcua</b>	<b>Phillip Groves</b>	<b>Marc Divens</b>
<b>Room Name</b>	<b>Theater</b>	<b>Tapices 1</b>	<b>Dona Sol</b>	<b>Reino de Castilla</b>
11:00	Characterization of small-scale fisheries in mangrove habitats of Puerto Pedregal, Chiriquí Gulf, Panama  Hans J. Hartmann	Assessing the effects of fishing mortality on the Pacific sierra population ( <i>Scomberomorus sierra</i> ) from the Southern Gulf of California, Mexico  Oscar G Zamora-García (s)	Hydroturbine passage related barotrauma research: How far have we come?  Ricardo Walker (s)	Northern pike expansion into Wyoming portions of the Yampa River drainage, south central Wyoming  Anna Senecal
11:20	Selecting potential restoration sites based on carbon sequestration estimates of red mangrove flats in the Bahamas  Pedram P Daneshgar	Building a responsible fishery: The ongoing story of Barra's fishermen  Sandra Pompa Mansilla (s)	The basin scale opportunity assessment: Finding the win/win scenarios in improving the environment while increasing hydropower energy  Ryan McManamay	Maintaining trout fishing opportunity in the face of northern pike predation  Kevin Rogers
11:40	Building a global model of mangrove fisheries value  James Hutchison	From no management to ecosystem-based management  María Jose Espinosa Romero	Tabbing Out: Advanced techniques in field data collection and processing  Jason Klaine	Managing pike-invaded lakes for trout angling in Arizona  Antonio Lopez
12:00	Mangrove restoration in Sinaloa: ecological dynamics to assist in maintaining fisheries  Daniel Benitez-Pardo	Extent and implications of IUU catch in Mexico's marine fisheries  Andrés M. Cisneros-Montemayor (s)	Small hydropower plants development and impacts over the fish fauna: a case study at Minas Gerais State, Southeastern Brazil  Luiz Silva	Northern pike management Idaho's perspective  Rob Ryan
12:20	Mangrove protection in the Bahamas and United States: A comparative analysis  Joseph Patten	Discussion	Discussion	Population structure, seasonal habitat use and assessment of monitoring data of the northern pike population of Cabinet Gorge Reservoir, Montana  Sean Moran
12:40	Science-based mangrove restoration techniques for long-term benefits  Eric Knudsen			
1:00	<b>LUNCH</b>			



# General & Symposia Schedules

THURSDAY MORNING Δ APRIL 10<sup>th</sup>

Session Name	Native nongame fish conservation	VI National Symposium of Sharks and Rays	Native Trout of Western North America: where are we 20 years later? Threats	Life History – not just in the salt
<b>Moderator</b>	<b>Gary Thiede</b>	<b>M. en C. Carlos Hernández Calzada</b>	<b>Robert Gresswell</b>	<b>Luke Schultz</b>
<b>Room Name</b>	<b>Reino de Granada</b>	<b>Reino de Aragon</b>	<b>Tapices 2</b>	<b>Tapices 3</b>
9:00	The clock is ticking for desert fishes of the SW USA; an occupancy-based assessment of regional vulnerability.  Mary Conner	Geostatistical modeling of blacktip shark hotspots and essential habitat in the Gulf of Mexico  Tiffany Hedrick-Hopper	Developing aquaculture strategies for the conservation of native trout: the case of <i>Oncorhynchus chrysogaster</i> (Needham & Gard, 1964) (Salmoniformes: Salmonidae).  Irene Barriga-Sosa	Age and growth of marine catfish <i>Occidentarius platypogon</i> (Günther, 1864) and <i>Bagre panamensis</i> (Gill, 1863) (Pisces: Ariidae) in the southeast Gulf of California.  Victor Manuel Muro Torres (s)
9:20	All as one or one for all? Assessing the likely effectiveness of multi-species management  Brian Laub	Economic rationale for shark conservation  Andrés M. Cisneros-Montemayor (s)	Evaluation of growth performance of the golden trout ( <i>Oncorhynchus chrysogaster</i> ) in the Guachochil Hatchery at Chihuahua state, México.  Genoveva Ingle de la Mora	Taxonomic revision of the Ariidae family in the Mexican Pacific by molecular markers.  Misha Hernández Lozano (s)
9:40	Frequent tributary usage by the endangered and large-river fishes of the Upper Colorado River basin  Gary Thiede	Distribución espacio-temporal del tiburón ballena ( <i>Rhincodon typus</i> ) en la Reserva de la Biosfera del Tiburón Ballena en Cancún Quintana Roo  Erick Alejandro Becerra Vega (s)	Evaluating the effect of population density on cutthroat trout and brook trout competitive behavior and energy expenditure  Ethan Green (s)	Diverse life history strategies in an migratory Amazonian catfish: implications for conservation and fisheries  Jens Hegg (s)
10:00	Looking beyond the mainstream for the conservation and restoration of endangered Colorado River fishes  William Macfarlane	Distribución espacial de rayas Urotrygonidae y Narcinidae con relación a variables ambientales en la costa sur de Jalisco y Colima: Implementación de SIG  Sergio A. Briones-Hernández (s)	Spawning behavior of mountain whitefish and co-occurrence of <i>Myxobolus cerebrialis</i> in the Blackfoot River Basin, Montana  Ron Pierce	Changes in the functional attributes of the nekton as a response to processes related to ecosystem functioning  Fabián Escobar-Toledo (s)
10:20	An adaptive framework for managing least chub in aridland wetlands  Jessica Sáenz (s)	Influencia de factores ambientales sobre la distribución de la manta gigante ( <i>Manta birostris</i> ) en el Caribe mexicano  Daniel Alejandro Martínez (s)	Ecological evaluation of coho salmon reintroduction in a Central Washington watershed  Gabriel Temple	Age structure and individual growth of the Mexican Central Pacific sailfin <i>Istiophorus platypterus</i>  Mauricio Salas-Maldonado
10:40	<b>BREAK</b>			
Session Name	Native nongame fish conservation	VI National Symposium of Sharks and Rays	Native Trout of Western North America: where are we 20 years later? Watershed	Emerging Opportunities for Culture of Marine Fishes in Mexico
<b>Moderator</b>	<b>Gary Thiede</b>	<b>M. en C. Carlos Hernández Calzada</b>	<b>Robert Gresswell</b>	<b>Jim Bowker</b>
<b>Room Name</b>	<b>Reino de Granada</b>	<b>Reino de Aragon</b>	<b>Tapices 2</b>	<b>Tapices 3</b>
11:00	Reproduction and recruitment dynamics of flathead chub <i>Platygobio gracilis</i> relative to flow regimes in Fountain Creek, Colorado.  Matt Haworth (s)	Distribución y abundancia de juveniles de tiburones en la costa sur de Campeche y Tabasco.  Armando Wakida-Kusunoki	Piecing together our view of habitat fragmentation and stream-living salmonids  Jason Dunham	Strategies for sustainable fisheries and aquaculture in Mexico  Antonio Garza de Yta
11:20	Preliminary results of a flathead chub ( <i>Platygobio gracilis</i> ) movement study in the Arkansas River basin, Colorado.  Ryan Fitzpatrick	Influencia de la fase lunar y el ciclo mareal en la capturabilidad de neonatos y juveniles de <i>Sphyrna lewini</i> en zonas costeras.  Antonio Corgos López-Prado	Understanding fish distributions across multiple scales using high resolution data in conjunction with rapid assessments  Monica Blanchard (s)	Global aquaculture  Michael Schwarz
11:40	Matrix population model of June sucker in Utah Lake with stochastic environmental variation  Mark Belk	Composición isotópica ( $\delta^{15}N$ y $\delta^{13}C$ ) durante el desarrollo ontogénico del tiburón piloto <i>Carcharhinus falciformis</i> (Müller & Henle, 1839) en la zona oceánica del Pacífico Oriental Tropical  María Antonieta Galindo Rosado (s)	Role of acoustic telemetry in the suppression of lake trout in Yellowstone Lake  Bob Gresswell	Marine fish culture in Mexico: current status and future trends  Juan Pablo Lazo
12:00	Methods for transporting and holding bluehead sucker, flannelmouth sucker, and roundtail chub during restoration and repatriation efforts in Wyoming  Robert Compton	Magisterial Conference: Ciclos reproductivos de tiburones y su vulnerabilidad a las pesquerías	Exploring new routes to know and to preserve native trout in Sierra Madre Occidental  Arturo Ruiz Luna	Offshore aquaculture in Mexico: from potential to reality  Lorenzo Juarez
12:20	Gila River basin native fishes conservation program  Doug Duncan		Predicting fish distributions throughout a mountainous watershed using primary production, water temperature, and geomorphic properties  W. Carl Saunders	Modeling intraspecific interactions for management of aquaculture programs  Greg Blair
12:40	Implementation of the Safe Harbor Agreement for topminnow and pupfish in Arizona  Ross Timmons		Prioritizing conservation of Yellowstone cutthroat trout across their range  Bradley Shepard	Aquaculture could bring back Totoaba to the Sea of Cortes, state of development.  Conal True
1:00	<b>LUNCH</b>			





# General & Symposia Schedules

THURSDAY AFTERNOON Δ APRIL 10<sup>th</sup>

Session Name	2 <sup>nd</sup> International Symposium on Mangroves as Fish Habitat: Effects of Habitat Alteration	Vacant	Vacant	Challenges of invasive Northern Pike in the West: threats and management options
Moderator	John Tiedemann			Marc Divens
Room Name	Theater	Tapices 1	Dona Sol	Reino de Castilla
2:20	Keynote Speaker: How our conservation efforts for mangroves will shape the economic and environmental future of the Bahamas  Ken Dorsett			Management of invasive northern pike in Southcentral Alaska Robert Massengill
2:40				Invasive northern pike control and research on the Alaska Kenai Peninsula Robert Massengill
3:00	Toning up critical mass for mangroves nurseries for fisheries in Sundarban Tushar Kanti Saha			Discussion
3:20	Loss of coastal mangroves on the island of new providence, the Bahamas Lindy Knowles			
3:40	Coastal wetlands as fish habitat in Marismas Nacionales, West Mexico Manuel Blanco y Correa (s)			
4:00	BREAK			
Session Name	2 <sup>nd</sup> International Symposium on Mangroves as Fish Habitat: Effects of Habitat Alteration	Vacant	Vacant	Vacant
Moderator	John Tiedemann			
Room Name	Theater	Tapices 1	Dona Sol	Reino de Castilla
4:20	Factors impacting regeneration of and coastal protection by <i>Rhizophora mangle</i> Elise Granek			
4:40	ARAMCO-Saudi Arabia: Mangrove restoration in the Gulf Ronald Laughland			
5:00	Predicting the effect of MPAs on nearby ecosystems: Habitat connectivity of seagrass bed and the protected mangroves as shown in the intertidal molluscan diversity and fish assemblage in Catanduanes, Philippines Rosel T. Ibardaloza (s)			
5:20	Discussion			
5:40				
6:30	SOCIAL			



# General & Symposia Schedules

THURSDAY AFTERNOON Δ APRIL 10<sup>th</sup>

Session Name	Native nongame fish conservation	VI National Symposium of Sharks and Rays	Native Trout of Western North America: where are we 20 years later? Watershed/Climate	Emerging Opportunities for Culture of Marine Fishes in Mexico
<b>Moderator</b>	<b>Gary Thiede</b>	<b>M. en C. Carlos Hernández Calzada</b>	<b>Brooke Penaluna</b>	<b>Mike Schwarz</b>
<b>Room Name</b>	<b>Reino de Granada</b>	<b>Reino de Aragon</b>	<b>Tapices 2</b>	<b>Tapices 3</b>
2:20	The Goodeid Working Group: an international captive breeding and maintenance network to conserve Goodeid fishes  John Lyons	An adapted technique to detect sharks in moody waters  Ibiza Martínez-Serrano	Investigating Bonneville cutthroat trout spawning movement within the Logan River watershed with consideration of potential metapopulation structure and management  Harrison Mohn (s)	Aquatic fauna exclusion device in shrimp farms of Sinaloa State, Mexico: a sustainability proposal  Aguirre Hugo
2:40	Diversity patterns and associations of Brazilian lotic fish species  Robert Hughes	Aspectos reproductivos de la raya eléctrica <i>Narcine vermiculatus</i> (Breder, 1928), de la costa sur Sinaloa, México  Osvaldo Resendiz Berumen	The effects of anthropogenic barriers on movement patterns of Yellowstone cutthroat trout in the Greybull River drainage  Jason Burckhardt	Fish health challenges, proactive ways to prevent major disease problems  Ken Cain
3:00	Monitoring strategies for Pacific lamprey: Lessons learned from three years of spawning and larval surveys in the Willamette River Basin  Luke Schultz	Distribución y biología reproductiva de la raya guitarra <i>Rhinobatos leucorhynchus</i> Güther, 1867 en el Golfo de Tehuantepec  Perla Elizabeth Carrasco Bautista (s)	Local variability explains vulnerability of trout populations to land use and climate change  Brooke Penaluna	Fish drug approvals and use in the United States – Sharing what we know with our counter-parts in Mexico  Jim Bowker
3:20	Conservation of native fishes of the Rio Sonoyta, Sonora Mexico  Doug Duncan	Reproductive dynamic of the speckled guitarfish ( <i>Rhinobatos glaucostigma</i> ) from Southeastern Gulf of California, Mexico  Raul Lara	Adaptive capacity in a changing climate: lessons from native trout  Kevin Rogers	Advances in lipid nutrition of cool- and warmwater finfishes relevant to mariculture in the Americas  Jesse Trushenski
3:40		Diferenciación morfométrica de rayas espinosas del género <i>Urotrygon spp.</i> en el Pacífico colombiano  Katherine Torres Palacios (s)	Riverscape genetics guide to conservation management: A case example of supplementation strategies for westslope cutthroat trout in the Sullivan watershed, Washington, USA  Erin Landguth	A review of water re-use and conservation technologies for hatchery and fish culture applications in the Americas  Sean Janson
4:00	<b>BREAK</b>			
Session Name	Vacant	VI National Symposium of Sharks and Rays	Native Trout of Western North America: where are we 20 years later? Climate	Emerging Opportunities for Culture of Marine Fishes in Mexico
<b>Moderator</b>		<b>M. en C. Carlos Hernández Calzada</b>	<b>Brooke Penaluna</b>	<b>Mike Schwarz</b>
<b>Room Name</b>	<b>Reino de Granada</b>	<b>Reino de Aragon</b>	<b>Tapices 2</b>	<b>Tapices 3</b>
4:20		Análisis de las capturas incidentales de tiburón blanco ( <i>Carcharodon carcharias</i> ) como una herramienta complementaria en la determinación de áreas de crianza  Erick Cristóbal Oriate-González	Developing a mechanistic understanding of the effects of climate change on native and non-native salmonids in the Greater Yellowstone  Robert Al-Chokhachy	Discussion
4:40		La contribución de la SOMEPEC a la difusión de las investigaciones sobre elasmobranquios en México  Juan Carlos Pérez	In hot(ter) water? predictions of arctic char growth and consumption under climate change scenarios on the Alaska North Slope  Stephen Klobucar (s)	
5:00		Diseño de un Sistema de Información Geográfica de elasmobranquios con valor comercial para Baja California Sur, México.  Hiram Castro Garibay (s)	Discussion	
5:20		Tiburones en la CITES  Hesiquio Benitez Diaz		
5:40		Distribución de <i>Urotrygon chilensis</i> (Günther, 1872) (Myliobatiformes: Urolophidae) en la plataforma continental del Golfo de Tehuantepec, México.  Gabriela Alejandra Cuevas Gómez (s)		
6:30	<b>SOCIAL</b>			



# Symposia Details

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## **2<sup>nd</sup> International Symposium on Mangroves as Fish Habitat**

Organizers: Dave Phillips, Fisheries Conservation Foundation  
Eric Knudsen, Ecologists Without Borders  
John Tiedemann, Fisheries Conservation Foundation

The complex root systems of mangroves provide habitat for a diversity of terrestrial and aquatic species. Some marine organisms, such as small crabs and gastropods, spend their entire life cycle within the mangrove forest. Others, such as lobsters, groupers, and snappers, use mangrove forests as nursery areas during their early life stages. Still others, such as juvenile sharks and adult bonefish, use mangroves as foraging grounds. As a result, for much of the temperate and tropical coastal areas around the world, the mangrove ecosystem serves as the physical lattice that houses much of the food web systems for many biologically and economically important marine species. This symposium, which is the second in a series, will bring together scientists from around the globe to share knowledge on the links between fisheries, ocean health, and the growing need for protecting the mangrove ecosystem. We propose that this symposium may have enough participants to last for the length of the WDAFS meeting, including a workshop after the last day of presentations.

## **Native Trout of Western North America: Where are we 20 years later?**

Organizers: Francisco García\_De\_León, Centro de Investigaciones Biológicas del Noroeste Instituto Politecnico Nacional  
Gorgonio Ruiz Campos, Universidad de Baja California  
Jason Dunham, U.S. Geological Survey; Robert Gresswell, U.S. Geological Survey  
Dean Hendrickson, University of Texas, Austin

The title of this symposium is based the 1992 American Fisheries Society Monograph authored by the late Robert J. Behnke, in honor of his contributions to our awareness of native trout in western North America. Dr. Behnke recently passed away, marking 20 years since his seminal publication. In that time our understanding of native western trout and their conservation has advanced considerably, yet many challenges remain. This symposium seeks to assemble some of the most influential scientists, managers, and policymakers working on native trout in the west, ranging from northern Alaska and Canada to the highlands of central México. Our objective is to share and discuss current research findings and progress toward conservation of these iconic species. Relevant topics will include, but not be limited to the following: history of our understanding of native trout, evolutionary histories and systematic relationships among species, life-history evolution and conservation, community and autecology, assessments of threats, population status (distribution, demography, and genetics) and related uncertainties, methods for monitoring and evaluation, lessons learned from ongoing conservation efforts, policy developments relevant to native trout conservation, international collaboration and coordination, climate effects, and climate adaptation. Based on the nature of abstracts received, a series of topical and location-based themes (e.g., evolution, ecology, and conservation of Mexican trouts) will be identified and used to organize groups of related presentations within the symposium.



# Symposia Details

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## **Challenges of invasive Northern Pike in the West: threats and management options**

Organizers: Marcus Divens, Washington Department of Fish and Wildlife  
Anna Senecal, Wyoming Game and Fish Department

Northern Pike *Esox lucius* pose a substantial threat to aquatic ecosystems throughout the western United States and British Columbia where they have been illegally introduced. Many states are currently conducting Northern Pike control or eradication campaigns in locations where they pose a significant threat to native fish stocks and economically important fisheries, from Alaska's Northern Cook Inlet and Washington's Pend Oreille River, to Arizona's Rainbow Lake. In this symposium we will review some of the case histories of illegal introductions and their consequences. This symposium will also provide an opportunity for researchers and managers within the Western Division to share the latest information on controlling Northern Pike infestations and preventing further illegal introductions.

## **Emerging interactions of energy production on fisheries in the Americas: technologies and methodologies to promote sustainability**

Organizers: Brian Bellgraph, Pacific Northwest National Laboratory  
Phil Groves, Idaho Power Company  
Amber Steed, Montana Fish, Wildlife & Parks  
Norman Mercado-Silva, Centro Universitario de la Costa Sur (Universidad de Guadalajara),  
University of New México, University of Arizona

Human demand for power generation throughout the world – and especially the Americas – grows annually and subsequently increases the potential impacts to fisheries sustainability. From 2010–2040, the U.S. Energy Information Administration projects a 56% increase in world energy consumption from 524 to 820 quadrillion BTUs. In the Americas alone, a 28% increase in energy consumption is expected by 2040 and will be primarily due to increased demand from Central and South America. Renewable energy sources (e.g., hydropower, solar, and wind) will be the fastest growing sources of electricity generation with projections of 2.8% growth per year; production from natural gas (2.5%), nuclear (2.5%), and coal (1.8%) power will also grow. Nearly all energy development directly or indirectly affects our fresh and saltwater resources. Some examples include the construction of hydroelectric dams, marine hydrokinetic development (e.g., tidal- and wave-power generation), nuclear generation, underwater turbines, terrestrial and marine-derived wind power, coal strip mining, shale fracking, and continued traditional means of oil extraction from terrestrial and marine sources. Examples of potential impacts to fisheries include blocking migration routes, water quality changes (e.g., thermal and pollutant effects), increased anthropogenic noise, barotrauma, physical habitat alterations, and direct trauma from underwater mechanical devices. This symposium will explore some of the current and emerging effects of energy development on fisheries throughout the Americas as well as technological advances to quantify impacts. Just as energy developers use the most efficient technologies to maximize the cost-effectiveness of energy production, so fisheries scientists will need to employ both conventional and cutting-edge technologies to keep pace with these quickly developing impacts to our aquatic resources.



# Symposia Details

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## **Globalized Fisheries (Translated by Google)**

Organizer: Gloria Ciria Valdéz Gardea, El Colegio de Sonora

(Translated by Google)....."Economic globalization, institutional reforms neoliberal, and the change of focus from one productionist to another conservation have changed fishing communities and the coast in México. The process of dismantling the fishery began in the early 80's with the policies structural adjustment led to the subordination of the cooperative sector to private industry, the transfer of production and distribution aspects of the product and reducing private investors direct government financing production and fishing. In the 90's the dismantling process continued with the changes in Article 27, which encouraged the privatization of Mexican industry, the statement of the Reserve of the Upper Gulf of California and Colorado River Delta to provide protective measures for endangered species species and fishing limits, and the government called for investment in tourism in the area. In 2005, in addition to the core area of the reserve, a polygon was created as a refuge for the protection of the vaquita where fishing is prohibited. In 2007 we implemented the Programme of Action for the Conservation of Species: Vaquita (*Phocoena sinus*), (PACE-Vaquita), which is part Productive Restructuring Program and the sale of Ocean Garden, originally subsidized Pemex to fisheries. All this is perceived by resource users and residents of the community as a process of downsizing of the fishing activity in the material, social and symbolic. Globalized Fisheries presents works that address a multidisciplinary approach, from the social and natural sciences, related to an overview of the social and ecological changes in fishing communities in the Upper Gulf of California."

## **Fish barriers for conservation: from design to monitoring and lessons learned**

Organizers: Jim DeRito, Trout Unlimited  
Michael Geenen, Stantec Consulting

Barriers to upstream fish passage are commonly used to support the conservation of fishes across Western North America. And barrier use is likely going to increase as a way to counter the expansion and deleterious effects of non-native fishes and diseases. These challenges are increasingly leading to fish barriers being considered for complex situations, such as low gradient streams or in conjunction with existing infrastructure. However, there are few resources, research data, or standard guidelines to consult when faced with the challenge of designing and constructing fish barriers. The simple question of what type of barrier to use for a given situation can be difficult to answer. Furthermore, there have been relatively few monitoring studies of the efficacy of existing fish barriers to prevent upstream movement of fishes. We seek to address these problems by bringing together engineers, biologists, hydrologists and other practitioners involved with the design, construction, maintenance, and monitoring of fish barriers. We want to know what works, what hasn't worked, and what is being considered. We're especially interested in novel approaches, innovative designs, modeling strategies, monitoring results, and lessons learned.



# Symposia Details

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## **The state of rocky reefs in the Gulf of California: how much have we fished them and how can we recover their productivity?**

Organizer: Octavio Aburto-Oropeza, Scripps Institution of Oceanography  
Carlos Sánchez-Ortiz, Universidad Autónoma de Baja California Sur

Humans have impacted ecosystems to such an extent that few places on Earth have escaped anthropogenic influence. Just considering marine ecosystems alone, most oceans are trawled and fished repeatedly, new areas are impacted through ever-expanding fisheries, marine species abundance is being driven to unprecedented low levels through overfishing, and community assemblages are altered in diverse and sometimes unexpected ways. Recovery of historic community assemblages on reefs is a primary objective for the management of marine ecosystems worldwide; both for the health of marine resources, and for the heightened economic benefits and food security for coastal communities that depend on them. Even in regions such as the Gulf of California that have relative low human population densities, fishing patterns and intensity are by far some of the most important drivers of changing in marine communities. In the Gulf of California, six species of marine fishes (Serranidae and Sciaenidae) are threatened or at risk of extinction, and numerous studies have demonstrated that fisheries catches have gradually shifted from long-lived, high-trophic level species to short-lived, low-trophic level species in what has been called “fishing down marine food webs”. With this symposium we want to address two main questions about the rocky reefs in the region: what is the extent of these overfishing patterns along the region, and what fisheries management strategies will need in order to create opportunities for the recovery of reefs’ productivity? We want to combine a series of presentation that cover a wide range of topics from a historical ecology perspective of the exploitation of these reefs, estimations of fisheries production and changes in food web structures, methods to evaluate reef productivity and integrity, frameworks to expedite fisheries statistics and reef attributes databases, and management strategies and policy around artisanal fisheries in the region. This symposium will have presentations from researchers at Universidad Autónoma de México, Centro para la Biodiversidad Marina y la Conservación, Scripps Institution of Oceanography, Universidad Autónoma de Baja California Sur, Duke University, Brown University, Comunidad y Biodiversidad A.C., and University of British Columbia.

## **Emerging Opportunities for Culture of Marine Fishes in México**

Organizers: Jim Bowker, U.S. Fish and Wildlife Service, Aquatic Animal Drug Approval Partnership Program  
Felipe Amezcua, Instituto de Ciencias del mar y Limnología, Universidad Nacional Autónoma de México  
Michael Schwarz, Virginia Tech, Department of Fish and Wildlife Conservation  
Lorenzo M. Juarez, Baja Aquaculture, Inc.

Aquaculture plays a substantial role in México from an economic and human consumption standpoint. Marine species such as tuna and shrimp are the greatest contributors to the total production. Freshwater species contribute, but to a much lesser degree. A considerable amount of the fresh fish products are consumed locally, with the exception of tuna which is sold primarily in Japan, but for various reasons, domestic demand exceeds production (e.g., the majority of tilapia production programs are small scale putting them at a disadvantage to compete with imports). Additionally, the potential economic impact of fish culture in México is relatively vast due to the proximity to the U.S., a relatively large consumer of imported fish. Commercial aquaculture in México has grown steadily in recent years, and production focus appears to be shifting to culture of marine species. Considerable technical and biological advances have been made in marine culture across the board, including improvements in broodstock management, larval culture, and grow out. However



# Symposia Details

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the industry is not growing at a pace that might be reflective of these advances. Some reasons for this include a need for development and reasonable access of quality feeds developed specifically for target species, better understanding of emerging fish health issues and practical disease treatments, a greater appreciation for marketing to enhance the economic viability of marine fish culture, and development of methods to more effectively and efficiently promote education/outreach efforts. Other issues have been identified that, if adequately addressed, could have a significant positive impact on marine culture in México and around the world. The goal of this symposium is to bring together those involved in marine and inland fish culture from México, the U.S., and around the world to share technologies, ideas, and techniques that are based on sound science and sage strategies and have the potential to enhance aquaculture in México by maximizing the use of limited resources while minimizing negative impacts on the environment, including wild origin fish species. Although the focus will primarily be on fish species cultured in México, those involved with developing advancements with other fish groups (e.g., salmonids) will be encouraged to contribute where applicable. A round-table discussion will be scheduled after the last technical presentation.

## **Fate of fish released from fisheries: issues and solutions**

Organizer: Katrina Cook, University of British Columbia, Department of Forest Sciences

The occurrence of incidentally caught non-target species, known as bycatch, is prevalent in both freshwater and marine environments in all fisheries (e.g., commercial, recreational and artisanal). Generally, bycatch is discarded following capture, regardless of condition or likelihood of survival. Failure to survive the capture event means that populations of incidentally caught non-target species could be severely compromised. Therefore, understanding both the short and long term consequences of release from fisheries is essential to ensuring sustainable fisheries for the future, especially where bycatch may be inevitable. Subsequently there has been a recent and novel shift in fisheries management research to assess the consequences of releasing bycatch including, for example, examinations of behavior, fate, or physiology. This symposium will move beyond characterizing bycatch to elaborate on initiatives where the fate or condition of released fish has been assessed, thereby providing a comparison among Western areas of North America of bycatch issues. Topics also extend to include techniques for assessing bycatch post-release, as well as proposals for improving their survival and facilitating recovery.

## **Fisheries management in estuarine systems of México and Central America: an integrative view**

Organizer: Felipe Amezcua, Instituto de Ciencias del mar y Limnología, Universidad Nacional Autónoma de México

It is generally recognized that tropical wetlands and estuarine systems have received much less scientific attention than estuarine systems from temperate zones, or rainforests and other upland forests in tropical areas. In México and Central America, wetland and estuarine ecosystems cover large areas of the region's coastline. México has some of the largest mangrove and wetland areas in the world; there are 137 estuarine systems that cover an area of 1,567,000 ha. In Central America, wetlands have received a paucity of attention from the scientific and management communities and consequently, the exact total areal extent of wetlands in Central America still remains unknown. Ecological studies in this region have centered primarily on rain forests. However, it is estimated that estuarine forested wetlands account for at least 6,500 km<sup>2</sup> and possibly as much as 12,000 km<sup>2</sup>, or 2.2% of the total land area of Central America. Estuarine and coastal lagoon systems in México and Central America are important fishing grounds for a large number of small-scale fishers



## Symposia Details

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in the region. As it happens in other regions of the world, small-scale fishing communities in this part of the world have a complex interrelationship with estuarine environments. Small-scale fisheries in México and Central America are also considered to be one of the most valuable natural resources in terms of ecosystem services per hectare. Considering the large extent of these systems in the region and the large number of small-scale fishers operating in these systems, fisheries landings are high. In fact, with the exception of Panama, artisanal landings are more important in all Central American countries than industrial landings; in México, artisanal landings represent 20% of the total landings. Thus, the socioeconomic importance of these systems and the fisheries resources is enormous. Management of fisheries and the associated estuarine habitat is very difficult to implement because it is a complex activity that involves not only the biology of the exploited resources, but also environmental and anthropogenic factors. Local authorities in the region are increasingly recognizing the importance and benefits of healthy mangrove forests, wetlands and estuarine systems due to their aesthetic, ecological and economic (e.g., tourism and fisheries) value. However, adequate legislation for the protection and conservation of mangroves and estuarine areas is not a common practice in the region, and only very few countries have specific laws for the conservation of these ecosystems. In some countries these ecosystems are included on the Ramsar List of Wetlands of International Importance and therefore designated as Protected Areas. Even with the presence of laws and regulations, poaching and limited knowledge of the fishing laws are two common problems among fishers and other inhabitants of the region. In general, there is a lack of proper management programs for these ecosystems in México and Central America. Several areas of mangroves and coastal lagoons have been modified or destroyed for aquaculture, agriculture, urbanization and tourism development in México. In Honduras, El Salvador and Panama, the shrimp and salt production industries have been the main cause of the loss of more than 160,000 ha of mangrove forests. Agricultural encroachment and use of land for livestock grazing are additional causes of the loss of these ecosystems. The lack of management has also indirectly resulted in high poaching activity in the region; it is estimated that 60% of fisheries landings in México come from poaching, mainly from estuarine areas. It is likely that a similar scenario is happening in Central America, although information on this subject is not available. There are many issues that affect estuarine systems in México and Central America including population growth and poverty, limited technical and management capacity, limited possibility of sustainable development of the fishing industry, poor infrastructure, low income and/or ignorance of the fishermen and associated problems, limited possibilities to obtain assistance and training in new technologies, poor governance and corruption, lack of institutional collaboration, weak governmental institutions, a focus on solving single issues, lack of stakeholder participation, mismatch between the issue and the geographic scale of management, lack of an ecosystem perspective, ineffective governance and management, lack of awareness of the consequences of human activities and a lack of information for decision making. In particular, this symposium addresses the last issue—that a lack of information on the dynamics and functioning of these systems is available for decision making in this region. Developing adequate management measures for an activity as complex as artisanal fisheries in estuarine areas requires information on the biology and ecology of the exploited resources, as well as on the environmental, social, economic and other anthropogenic factors. Studies that consider all aspects of fishing activity in estuarine areas are needed. These sort of interdisciplinary studies have seldom been undertaken in this region, or they have only been published as memos or reports that are not widely available to managers, academic and scientific staff. Thus, this symposium aims to compile a series of studies with information that will be useful for proper estuarine management in the area.





# Symposia Details

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## **6<sup>th</sup> National Symposium of Sharks and Rays**

Organizers: Wendolyne Diaz, The Mexican Society of Sharks and Rays, A. C. (SOMEPEC)  
Claudia Gabriela Aguilar, The Mexican Society of Sharks and Rays, A. C. (SOMEPEC)  
Carlos Hernandez, The Mexican Society of Sharks and Rays, A. C. (SOMEPEC)

The Mexican Society of Sharks and Rays, A. C. (SOMEPEC), established in 2007, has among its objectives to create space for the exchange of experiences and developments in the different lines of research on cartilaginous fish made biennially for nearly 12 years, the National Symposium of Sharks and Rays. The Symposium has become a valuable communication tool, is the only national forum where it touches the problems and status of these species, are important works that shed fisheries research data at both national and international, are also conducted panel discussions, analysis, lectures, workshops and exhibitions. The fragility of these species and the limited information available on its biology makes forums like this are of great importance as they are the primary source of information to enhance their management and conservation.

## **5<sup>th</sup> Annual WDAFS Student Colloquium**

Organizers: Tracy Wendt, Western Division American Fisheries Society Student Representative  
Misha Hernandez, President of the México Student Subunit

Each year, WDAFS supports a Student Colloquium, organized and sponsored by a WDAFS student sub-unit. This year, the colloquium will be held in conjunction with the WDAFS Annual Meeting, organized and sponsored by the newly recognized Universidad Nacional Autónoma de México Subunit of the México Chapter of the American Fisheries Society (UNAM-MFS). The colloquium is an opportunity for students to present research to an audience of their peers. At the end of each presentation, the audience is able to ask questions about the research, as well as to provide feedback on the presentation itself. The Colloquium will be held on Monday, April 7, so student attendees will also be able to present and attend presentations at the main portion of the annual meeting without conflict. Monday will open with keynote speaker, WDAFS President Pam Sponholtz, followed by presentations and a Career Development workshop. In addition, the colloquium will include a welcome social, to be held Sunday evening. Whether you are a student who has never presented research before or a seasoned student presenter, the Colloquium provides an excellent opportunity for practice and to hone your presentation skills.



# Student Colloquium Schedule

Time	Event	Room/Location
<b>Sunday, April 6<sup>th</sup></b>		
2:00 pm – 6:30 pm	Registration	Tapices Foyer
2:00 pm – 6:00 pm	Presentation drop-of and preview	Reinos Foyer
7:00 pm – 10:00 pm	Welcome Social for Students Only (includes food and drinks)	Sumbawa Beach Club – meet at 6:40 pm at Registration
<b>Monday, April 7<sup>th</sup></b>		
7:30 am – 9:00 am	Registration	Tapices Foyer
9:00 am – 9:50 am	Keynote Speaker: Dr. Pam Sponholtz, WDAFS President	Theater
9:50 am – 10:00 am	Break	
10:00 am – 12:00 pm	Oral Presentations	Reino de Granada/Castilla
10:00 am – 12:00 pm	Workshop – Dr. Hector Reyes Bonilla	Reino de Aragon
12:00 pm – 1:00 pm	Lunch	
1:00 pm – 1:50 pm	Guest Speaker: Dr. Kelly F. Millenbah, Michigan State University	Theater
1:50 – 2:00 pm	Break	
2:00 pm – 5:00 pm	Oral Presentations	Reino de Granada/Castilla
2:25 pm – 4:30 pm	Workshop – Silvia Rivera Valle, MBA	Reino de Aragon
4:30 – 5:00 pm	Break	
5:00 pm – 7:00 pm	Poster Session / Networking and Mentoring	El Cid Center
<b>Tuesday, April 8<sup>th</sup></b>		
9:00 pm – 11:00 pm	Fiesta at Señor Frog's (student/professional mixer)	

Hora	Actividad	Habitación
<b>Domingo, Abril 6<sup>th</sup></b>		
2:00 pm – 6:30 pm	Registration	Tapices Foyer
2:00 pm – 6:00 pm	Presentation drop-of and preview	Reinos Foyer
7:00 pm – 10:00 pm	Bienvenida Social for Students Only (includes food and drinks)	Sumbawa Beach Club – meet at 6:40 pm at Registration
<b>Lunes, Abril 7<sup>th</sup></b>		
7:30 am – 9:00 am	Registration	Tapices Foyer
9:00 am – 9:50 am	Charla Magistral: Dr. Pam Sponholtz, WDAFS President	Theater
9:50 am – 10:00 am	Break	
10:00 am – 12:00 pm	Presentaciones Orales	Reino de Granada/Castilla
10:00 am – 12:00 pm	Taller – Dr. Hector Reyes Bonilla	Reino de Aragon
12:00 pm – 1:00 pm	Hora Comida	
1:00 pm – 1:50 pm	Charla Magistral: Dr. Kelly F. Millenbah, Michigan State University	Theater
1:50 – 2:00 pm	Break	
2:00 pm – 5:00 pm	Presentaciones Orales	Reino de Granada/Castilla
2:25 pm – 4:30 pm	Taller – Silvia Rivera Valle, MBA	Reino de Aragon
4:30 – 5:00 pm	Break	
5:00 pm – 7:00 pm	Poster Session / Networking and Mentoring	El Cid Center
<b>Martes, Abril 8<sup>th</sup></b>		
9:00 pm – 11:00 pm	Fiesta al Señor Frog's (junto a integrantes reunion WDAFS)	



# Student Colloquium Details

## Monday April 7<sup>th</sup>

7:30 am – 9:00 am	Registration	
9:00 am – 9:50 am	Welcome and Keynote Speakers	
9:50 am – 10:00 am	Break	
10:00 am – 10:25 am	<b>David Dockery</b> (An experimental assessment of the swimming capabilities of Longnose Dace for barrier assessment and culvert design)	<b>Victor Muro</b> (Abundance, diversity and spatio-temporal variation of fish in estuarine lagoon systems with and without mangrove)
10:25 am – 10:50 am	<b>Jack Ruggirellogg</b> (Endangered Moapa Dace in Captivity and Spawning Ecology)	<b>Edgar Cruz</b> (Geographic and bathymetric distribution of the genus <i>Bathypterois</i> Günther, 1868 along the Mexican Pacific coast)
10:50 am – 11:15 am	<b>Morgan Brizendine</b> (Use of ultrasonic imaging and Ovaprim® to evaluate egg maturation of humpback chub <i>Gila cypha</i> )	<b>Omar Nateras</b> (Comparison the level of cadmium in muscle and liver tissue of demersal fish in three estuarine systems of the Southern of Sinaloa)
11:15 am – 11:40 am	<b>Jens Hegg</b> (Diverse Life History Strategies in a Migratory Amazonian Catfish: Implications for Conservation and Fisheries)	<b>Francisco Vasquez Melchor</b> (Distribution and abundance of four species of marine catfish in the southern Sinaloa, México)
11:40 am – 12:05 pm	<b>Tancy Moore</b> (Overwinter survival and growth of juvenile Coho salmon in Prairie Creek, California)	<b>Misha Hernandez</b> (Taxonomic revision of the Ariidae family in the Mexican Pacific by moleculares markers)
12:00 pm – 1:00 pm	Lunch	
1:00 pm – 1:50 pm	Speaker, Dr. Kelly F. Millenbah, Michigan State University	
1:50 pm – 2:00 pm	Break	
2:00 pm – 2:25 pm	<b>Maria Salcedo</b> (Aspects of the population dynamics of Striped catfish, <i>Pseudoplatystoma magdaleniatum</i> (Buitrago-Suarez & Burr, 2007) in the Colombian Magdalena basin: supplies for use and conservation)	<b>Silvia Rivera</b> (A multidisciplinary study of a fisheries cooperative (sociedad cooperativa de producción pesquera la Sinaloense) of Villa Unión, Mazatlán, México)
2:25 pm – 2:50 pm	<b>Jose Yacomelo</b> (Composition and spatial distribution of the elasmobranch capture in the artisanal fishery, gulf of Salamanca, Colombia Caribbean sea)	<b>Allan Rosales</b> (Age and growth of <i>Urobatis halleri</i> ray on the south coast of Sinaloa, México)
2:50 pm – 3:15 pm	<b>Jorge Espinoza</b> (A proposal of adapted system of management and monitoring in the Gulf of Chiriquí according to Diagnosis of the riverside, handmade fishing and socioeconomic study of the fishermen's community of Port Pedregal.)	<b>Oscar Zamora</b> (Assessing the effects of fishing mortality on the Pacific sierra population ( <i>Scomberomorus sierra</i> ) from the Southern Gulf of California, México)
3:15 pm – 3:40 pm	<b>Omar Tovar</b> (Reproductive biology of the <i>Occidentarius platypogon</i> catfish (Pisces: Ariidae) in the southeastern Gulf of California)	<b>Julio Cesar Parra</b> (Settlement of puerulus and postpuerulus of the spiny lobsters <i>Panulirus inflatus</i> and <i>P. gracilis</i> (Decapoda: Palinuridae) at Ceuta lagoon complex, Culiacan, Sinaloa (2013-2014))
3:40 pm – 4:05 pm	<b>Manuel Becerra</b> (Evaluation of total mercury in <i>Mugil</i> sp. fish in three lagoon systems)	<b>Brigitte Gil</b> (Spawning type and fecundity of Dorado catfish <i>Brachyplatystoma rousseauxii</i> to the border zone of Brazil-Colombia-Perú of the Amazon river)
4:05 pm – 4:30 pm	<b>Yedid Velarde</b> (Analysis size of captured ichthyofauna as fauna accompanying the shrimp fishery for drag in Southeastern Gulf of California)	
4:30 pm – 5:00 pm	Break	
5:00 pm – 7:00 pm	Student Poster and Mentoring Session	

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**Workshop**  
**Dr. Hector Reyes Bonilla**  
 Importance of disclosure and publication of scientific articles in the field of fisheries and related areas

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**Workshop**  
**Silvia Rivera Valle MBA**  
 Professional preparation: From classrooms to working life

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# Continuing Education

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Three Continuing Education courses are offered at the 2014 Western Division meeting on Friday, April 11<sup>th</sup>:

- **Mangrove Ecology, Management, Conservation and Restoration – A Field Tour**  
Dr. Francisco Flores, Universidad Nacional Autónoma de México, Mazatlán, México
- **AFS Standard Methods for Freshwater Fish Sampling & Comparing your Data with North American Standards in [fisheriesstandardsampling.org](http://fisheriesstandardsampling.org)**  
Scott A. Bonar, USGS AZ Fish and Wildlife Coop. Res. Unit, University of Arizona  
Norman Mercado-Silva, Centro Universitario de la Costa Sur, Universidad de Guadalajara, and School of Natural Resources and the Environment, University of Arizona
- **Evaluation Methods in Elasmobranch Populations: With Emphasis on Methods for Fisheries with Limited Data**  
Dr. Juan Carlos Pérez Jiménez, Researcher “A”, SNI 1-Unit ECOSUR Campeche

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## Mangrove Ecology, Management, Conservation, and Restoration

**Dr. Francisco Flores, Universidad Nacional Autónoma de México, Mazatlán, México**

When: Friday April 11<sup>th</sup>, 2014; meet at 9:00 am in lobby of Castilla Hotel

This workshop and field trip will provide the basic concepts of the functional characteristics, services, and attributes of mangrove ecosystems, including their relationship to fisheries. Evaluation of human impacts as well as the strategies for mitigation will be highlighted. Participants will travel to the Urias estuarine complex near Mazatlán where several ongoing experimental restoration projects are occurring. Participants will learn species identification and physiognomic types as well as the application of strategies for the management, conservation and restoration of these ecosystems from a hydrological point of view. Research on mangroves as sewage control and as carbon sinks will also be explored.





# Continuing Education

## AFS Standard Methods for Freshwater Fish Sampling and Comparing your Data with North American Standards in [fisheriesstandardsampling.org](http://fisheriesstandardsampling.org)

**Scott A. Bonar, USGS AZ Fish and Wildlife Coop. Res. Unit, University of Arizona**  
**Norman Mercado-Silva, Centro Universitario de la Costa Sur, Universidad de Guadalajara, and**  
**School of Natural Resources and the Environment, University of Arizona**

When: Friday, April 11<sup>th</sup>; meet at 9:00 am in Reino de Castilla  
Length of course: 3 hrs (course will be delivered in Spanish and English)

Implementation of standardized methods for sampling freshwater fishes has been identified by AFS and numerous other agencies and professional groups as an important task. Standardization will allow better management practices for freshwater fish populations. In this course, participants will be able to:

- 1) learn about the importance of standardization and the progress made so far to establish standard sampling methods for freshwater ecosystems;
- 2) utilize an online tool ([fisheriesstandardsampling.org](http://fisheriesstandardsampling.org)) to compare population data from their own system (sampled using a standard method) to other populations in an ecoregion, throughout North America, or a state, in terms of four common fisheries indices; and
- 3) learn how utilize the online tool graphing capabilities to produce report or manuscript - ready figures that visually compare a population in their system of interest with averages and percentiles from a wider region.

Course title: Métodos estandarizados para el muestreo de peces dulceacuícolas de la AFS y la comparación de datos propios con los estándares Norteamericanos en [fisheriesstandardsampling.org](http://fisheriesstandardsampling.org)

La implementación de métodos estandarizados para el muestreo de peces dulceacuícolas ha sido identificada por la AFS y muchas otras agencias y organizaciones como un reto de gran importancia. La estandarización de métodos de muestreo permitirá la adopción de mejores prácticas de manejo de poblaciones de peces de agua dulce. En este curso los participantes:

- 1) aprenderán acerca de la importancia de la estandarización y el progreso que se ha logrado para establecer métodos estandarizados para el muestreo de peces de agua dulce;
- 2) utilizarán una herramienta en línea ([fisheriesstandardsampling.org](http://fisheriesstandardsampling.org)) para comparar cuatro índices poblacionales de peces entre su sistema de estudio y los datos de poblaciones en otra ecorregión, el continente o un estado; y
- 3) aprenderán como utilizar los gráficos de la herramienta en línea para apoyar reportes o publicaciones en que se compare a una.



\*\*A single version of this course will be presented in English to all participants who have signed up for the course. The contents of the course will be translated into Spanish 'live' as the course proceeds. Dr. Mercado will be available to translate content and solve questions in both languages. We thank you for your participation in the course and we look forward to meeting you in Mazatlán.



# Continuing Education

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## National Symposium for Sharks and Rays Evaluation Methods Elasmobranch Populations: With Emphasis on Methods for Fisheries with Limited Data

**Dr. Juan Carlos Pérez Jiménez**  
**Researcher "A", SNI 1-Unit ECOSUR Campeche**  
Contact: somepec@gmail.com

When: Friday, April 11<sup>th</sup>; meet at 9:00 am to travel off-site  
Please see website for meeting information: [www.somepec.org](http://www.somepec.org)

Due to the lack of information for most species and their fisheries, or where information is fragmented, we are currently gaining momentum to evaluate fisheries with limited data, using indicators for estimating risk of overexploitation. In particular, the methods of productivity and susceptibility and a length-based method for estimating the vulnerability to overexploitation of species, will enable you to prioritize future research efforts and management.

This method of productivity and susceptibility requires all available information on species and their fisheries, and also requires consultation of experts to achieve more robust estimates.

The objective of this course is to provide these methodological tools that integrate all available information on fisheries and species, and discuss the implications of the results for fisheries management.

1. Life history parameters necessary for evaluating elasmobranch populations.
  - a. Reproductive parameters.
  - b. Age and growth parameters.
  - c. Demographic parameters.
2. Because it is important to characterize the fisheries?
  - a. Catch composition (size, gender, stages per species).
  - b. Number of individuals per species, total weight of the catch by species.
  - c. Fishing equipment.
  - d. Fishing effort (fishing trips, number of sets).
3. Methods of stock assessment for fisheries with limited data.  
Methods for estimating risk indicators of exploitation:
  - a. Analysis of productivity and susceptibility.
  - b. Methods based on length.
4. Analysis of productivity and susceptibility
  - a. Features to estimate Biological Productivity of species  
Using life history parameters
  - b. Attributes for estimating the susceptibility of species by capture fishing equipment  
Using the characterization of fisheries
  - c. Estimating vulnerability exploitation  
NOAA Software ([www.noaatools.gov](http://www.noaatools.gov)).
5. Methods based on length
  - a. Analysis of size frequencies  
Estimated proportion F/M (fishing mortality/natural mortality) as an indicator of overexploitation risk.



# Submitted Posters

Poster Number	Poster Title	Author
<b>Challenges of invasive Northern Pike in the West: threats and management options</b>		
1-1	Control and eradication efforts for invasive Northern Pike in southcentral Alaska	Kristine Dunker
1-2	Beyond rotenone, creative engineering solutions for manipulating non-native fish communities	Scott Prevatte
<b>Native trout of western North America: where we are 20 years later?</b>		
2-1	The gold pot at the end of the rainbow	Hector Espinosa
2-2	Current conservation status of the San Pedro Mártir Trout in Baja California, México	Gorgonio Ruiz-Campos
<b>Fish barriers for conservation: from design to monitoring and lessons learned</b>		
3-1	Zonation proposal for no-fishing reserves along the Mexican Caribbean	Lyn Santos Rodríguez
<b>Globalized fisheries</b>		
4-1	Phylogeography of the White Mullet <i>Mugil curema</i> coast of Latin America	Luis Fernando Rodrigues Filho (s)
<b>Challenges facing aquaculturists in México</b>		
5-1	Temperature and salinity effects on hatching and larvae of Pacific Red Snapper <i>Lutjanus peru</i>	Roberto Cota Taylor (s)
5-2	Effect of supply bioencapsulated probiotics with freshwater rotifer <i>Brachionus rubens</i> and the cladoceran <i>Moina macrocopa</i> in survival of Pike Silverside <i>Chirostoma estor</i> larvae	Jesús Morales Ventura (s)
5-3	Reproductive performance and quality of spawning of Spotted Rose Snapper, <i>Lutjanus guttatus</i> in captivity	Margarita Rangel Durán (s)
5-4	Aquaculture problems in the Mexican Altiplano Chirostoma	Faustino Rodríguez
<b>Fisheries management in estuarine systems of México and Central America: an integrative view</b>		
6-1	Evaluation of small scale fisheries in the Gulf of Chiriquí, Panama: participative assessment of captures in Puerto Pedregal	Hans J Hartmann
<b>Mangroves as fish habitat</b>		
7-1	Structure of a fish community associated with Fringe Red Mangrove in Carmen Island, Terminos Lagoon, Campeche, Mexico	Luis Enrique Amador-del Ángel
7-2	Reproductive strategies of four native species associated with mangrove areas of the Yucatán	Maribel Badillo-Alemán
7-3	Ichthyoplankton and meroplankton community composition of a restored mangrove and salt marsh aquatic preserve in Tampa Bay Florida	Amanda Croteau (s)
7-4	Occurrence and distribution of fish populations in areas with different influence of mangroves in the Baía de Todos os Santos, Bahia, Brazil	Alexandre Clistenes de Alcântara Santo
7-5	Power of a multi-year monitoring program to detect change in mangrove fish communities adjacent to a nuclear power plant	Tara Dolan (s)
7-6	Mollusks secondary productivity in mangroves of the Ensenada de La Paz, Baja California Sur, Mexico	Esteban F Félix-Pico
7-7	Evidence of panmixia in <i>Guavina guavina</i> (Teleostei: Eleotridae) along the Brazilian coastline, considering possible barriers to gene flow	Aurycéia Guimarães (s)
7-8	The effects of non-native mangroves on near-shore marine fisheries	Andrew Harwood (s)
7-9	Effects of nesting waterbirds on nutrient levels in Honduran mangroves	Tyler McFadden (s)
7-10	Comparison of community structure between intact and restored mangroves in Biscayne Bay, Florida	Joseph Peters (s)
7-11	<i>Microgobius meeki</i> as an ecological indicator of habitat disturbance in shallow estuarine areas: a useful tool for quality estuarine assessment	José Amorim Reis-Filho (s)
7-12	Mapping mangroves as a management tool to enhance fish recruitment and bird conservation: the case of Turks and Caicos Islands, British West Indies	Eric Salamanca
7-13	Mangrove research and rehabilitation as a collaborative outreach tool	Aaron Shultz (s)
7-14	Characterizing the fisheries of a mangrove restoration site north of the Yucatan Peninsula	Wendy Solano-Baak (s)
7-15	Connectivity between protected areas: strategy for biodiversity conservation	Ma. Eugenia Vega-Cendejas



# Submitted Posters

Poster Number	Poster Title	Author
<b>National symposium of sharks and rays</b>		
8-1	Composición específica de rayas capturadas por la flota ribereña del Sur de Tamaulipas y Norte de Veracruz	Angélica Cruz Ramírez
8-2	Ecología Trófica del tiburón piloto <i>Carcharhinus falciformis</i> en la costa sur de Jalisco, México	Alma Vianney Barajas Calderón (s)
8-3	Distribución de <i>Urotrygon chilensis</i> (Günther, 1872) (Myliobatiformes: Urolophidae) en la plataforma continental del Golfo de Tehuantepec, México	Gabriela Alejandra Cuevas Gómez
8-4	Modificando Paradigmas Sociales: Jóvenes Embajadores del Tiburón Ballena	Surizaray Espinoza García
8-5	Reproducción y alimentación de <i>Urotrygon munda</i> en la costa sur de Jalisco, México	Lucano-Ramírez Gabriela
8-6	Caracterización Preliminar de la Pesquería Artesanal de Elasmobranquios en Bahía, Tortugas, B.C.S., México	Juan Jesus García Constante
8-7	Edad y crecimiento del tiburón piloto <i>Carcharhinus falciformis</i> en la Costa Sur de Jalisco, México	Jorge Domingo Hermosillo Corona (s)
8-8	Reproducción de las rayas <i>Gymnura marmorata</i> , <i>Urotrygon chilensis</i> y <i>Narcine entemedor</i> en el Pacífico Ecuatoriano	Javier Palma-Chávez (s)
8-9	Evaluación de la actividad turística de avistamiento con tiburón ballena en la costa central de Nayarit y Bahía de La Paz, Baja California Sur, México: Una propuesta de estudio	Gala Esmeralda Pelayo Del Real (s)
8-10	Pesca incidental de tiburones en la costa sur de Jalisco, México	Adriana Rodríguez-Matus (s)
8-11	Anatomía microscópica de la glándula oviducal de la raya <i>Raja velezi</i> (Chondrichthyes: Rajidae) de la Costa Occidental de Baja California Sur, México	Katherin Soto Lopez (s)
8-12	Especies de batoides presentes en la costa del Pacífico ecuatoriano	Cecibel M. Tenelema-Delgado (s)
<b>General session</b>		
9-1	Age and growth of Chilean stripe, <i>Chilensis urotrygon</i> , on the south coast of Sinaloa, México	Jose Luis Abarca-Paniagua (s)
9-2	Marine fronts are important fishing areas for demersal species at the Argentine Sea (Southwest Atlantic Ocean)	Daniela Alemany
9-3	Effects of a large-scale and offshore marine protected area on demersal fish assemblage in the Southwest Atlantic	Daniela Alemany
9-4	Fishing areas of the Chocolate Clam in Bahía Magdalena-Almejas, Baja California Sur, México	Sergio Amezcua Castro (s)
9-5	Spatial distribution of Cortes geoduck from Central Gulf of California	E. Alberto Aragón-Noriega
9-6	Marine Stewardship Council: Sustainable Fisheries recognized through Scientific Assessments, Certification and Fishery Improvement Projects	Dan Averill
9-7	Environmental Contests as a comprehensive conservation strategy: promoting youth taking action for responsible fishing in the northern Gulf of California	Felipe Barrera-Aguirre
9-8	Length-weight relationships and condition factors of the Humboldt squid ( <i>Dosidicus gigas</i> ) from the Gulf of California and the Pacific Ocean	Gastón A. Bazzino Ferreri
9-9	Abundance assessment of Humboldt Squid ( <i>Dosidicus gigas</i> ) preyed by top predators from the Gulf of California and the Northeastern Pacific Ocean	Gastón A. Bazzino Ferreri
9-10	Use of ultrasonic imaging and Ovaprim® to evaluate egg maturation of humpback chub <i>Gila cypha</i>	Morgan Brizendine (s)
9-11	Chemical cues of predation induce anti-predator behavior in naïve rainbow trout: implications for training hatchery-reared fish	E Dale Broder (s)
9-12	Nutritional status of the lobster <i>Panulirus argus</i> in the South West and North Central regions of Cuba	Norberto Capetillo-Piñar (s)
9-13	Monitoring Outmigration of Juvenile Chinook Salmon and Rainbow Trout with Screw-traps in the Sacramento River, Central Valley California	Felipe Carrillo





# Submitted Posters

Poster Number	Poster Title	Author
<b>General session (cont.)</b>		
9-14	Lobster fisheries in the Rocky Coastal communities and ecosystems in Dzilam Bravo Sisal Yucatan	Denab Cervera
9-15	Exploitation of macrozoobenthic resources by fish in the Gironde estuary (France)	Claire Coiraton (s)
9-16	Survey of parasites in fishes of Lake Powell	Elias Combs (s)
9-17	The presence and prevalence of trematode parasites in juvenile steelhead trout, <i>Oncorhynchus mykiss</i>	Andrew Futerman (s)
9-18	Modeling spatially explicit life history strategies in juvenile Fall Chinook Salmon: Integrating microchemical signatures to improve determination of source location	Jens Hegg (s)
9-19	Internet communication strategies and public policies of marine resources	Jessica Hernández (s)
9-20	Pacific Lamprey research and restoration	Aaron Jackson
9-21	Are patterns of Terminal Investment general across species?	Allystair Jones
9-22	Modeling trophic flows in a bay's system under the impact of intense scallop bottom culture	Lotta Clara Kluger (s)
9-23	Straying of late fall run Chinook salmon from the Coleman National Fish Hatchery in to the Lower American River, California	Gena Lasko
9-24	Biological-fishing aspects of two Mugillidae species in Tamaulipas and Northern Veracruz, based on the actions proposed fisheries management plan	Hortensia López Navarrete
9-25	Comparison of two tag types and four tagging locations on long-term tag retention rates in wild trout of spawning size	Elizabeth Mamer
9-26	Ecological and socio-economic impacts of by-catch mortality associated with shrimp trawling in Bahía de Kino, Sonora, Mexico	Johnson Maria
9-27	Overwinter survival, growth, and movement of juvenile coho salmon in Prairie Creek, California	Tancy Moore (s)
9-28	Small scale finfish fisheries of Magdalena Bay Baja California Sur, Mexico: Fleet operation dynamic and interactions	Miguel Ángel Ojeda Ruiz
9-29	The potential of Sea Cucumber, <i>Isostichopus badionotus</i> , fisheries in the southeastern region of Cuba	Maray Ortega- Martínez (s)
9-30	Shifting species ranges and changing phenology: A new approach to mining social media for ecosystems observations	Jeremiah Osborne-Gowey (s)
9-31	Reproduction of <i>Oreochromis niloticus</i> at Huitchila microreservoir, Morelos, Mexico	Bertha Peña-Mendoza
9-32	Body shape analysis as a tool for <i>Opisthonema</i> species discrimination in the southeast coast of the Gulf of California	Carlos I. Pérez- Quiñonez (s)
9-33	Food web dynamics in a tropical mangrove lagoon determined by stable carbon and nitrogen isotope analysis	Jesus Quintero (s)
9-34	Temporal and spatial variation in springtime ichthyoplankton assemblages in Puget Sound: the search for an ecological baseline	Jessica Randall (s)
9-35	An attempt to spawn endangered Moapa Dace in captivity	Jack Ruggirello (s)
9-36	Assessment of ocean climate and its associated physical-biological response in northwest Mexico	Romeo Saldívar-Lucio (s)
9-37	Biodiversity of coral reef fishes in the South-Central coast of Cuba	Héctor Miguel Salvat-Torres
9-38	Age and growth of Red Claw Crayfish at an experimental culture at Mexico City	Daniel Santibáñez-Márquez (s)
9-39	Characterizing gill lice interactions with salmonid populations	Estevan Vigil
9-40	Estimation of growth marks of abalone caught in Baja California Sur	Marcela S. Zúñiga Flores



# Submitted Posters

Poster Number	Poster Title	Author
<b>Student colloquium</b>		
10-1	Protocol for relaxation, fixation and dissection of Poliplacóforos gonads for histological and morphological studies	Quetzalli Yasú Abadía Chanona (s)
10-2	Habitat association of rainbow trout across a volcanic disturbance gradient	Tara Blackman (s)
10-3	Identification and evaluation of wild rotifers, <i>Dormitator latifrons</i> , as live food in the Puyequé Larvicultivo	René Bojórquez Domínguez (s)
10-4	Exploitation of macrozoobenthic resources by fish in the Gironde estuary (Gironde)	Claire Coiraton (s)
10-5	Tuna yield by the Venezuelan purse-seine fleet in the Pacific and its impact on elasmobranchs as bycatch from 2005 to 2012	Manuel Correia-Aguiar (s)
10-6	Estimation of biomass available in the biological production of the Chocolate Clam, <i>Megapitaria squalida</i> , in Navachiste Bay Guasave, Sinaloa, Mexico	Yanira Leyva Vázquez (s)
10-7	Applications of student fisheries research from the Marine Biodiversity and Conservation Program at Scripps Institution of Oceanography	Chelsey Nieman
10-8	Trophic ecology of two sympatric flounders in continental shelf SE Gulf California	Juan Diego Partida Santos (s)
10-9	Comparative trophic ecology of two sympatric flounders ( <i>Cyclopsetta querna</i> and <i>Cyclopsetta panamensis</i> (Paralichthyidae) in the South East Gulf of California	Juan Diego Partida Santos (s)
10-10	Susceptibility of <i>Litopenaeus vannamei</i> , previously exposed to a mixture of metals, to <i>Vibrio parahaemolyticus</i>	María Luisa Polanco Estrada (s)
10-11	Loss of Migratory Life History Strategy in Native Inland Trout of the Rocky Mountain West	Katie Rayfield (s)
10-12	Abundance and explicit spatially distribution indicator of <i>Haemulopsis nitidus</i> (Haemulidae), captured as bycatch in the southeastern Gulf of California	Alberto Rodríguez-Preciado (s)
10-13	Short-term conservation of two marine fish spermatozoa ( <i>Sphoeroides annulatus</i> and <i>Lutjanus guttatus</i> ) and cytotoxicity of cryoprotectant agents	Tania Sarabia Espinoza (s)
10-14	Environmental biomonitoring of mercury using oysters of the genus <i>Crassostrea</i> , the fish <i>Mugil cephalus</i> and <i>Eugerres axillaris</i> in the Estero de Urias, Mazatlan, Sinaloa	Areli Vargas Jiménez (s)



# El Cid Center Map of Hotels



## Did You Know?

The Western Division has historically been a very active Division, thanks to many including its officers, Chapter Presidents, and active members. Division and Chapter Presidents contribute a tremendous amount of their time and energy. The current and Past Presidents for the last 15 yrs include: 2014 Pam Sponholtz, 2013 Christina Swanson, 2012 Dave Ward, 2011 Lori Martin, 2010 Leanne Roulson, 2009 Scott Bonar, 2008 Eric Wagner, 2007 Bob Hughes, 2006 Joe Margaf, 2005 Lynn Starnes, 2004, Tom McMahon, 2003 Don MacDonald, 2002 Eric Knudsen, 2001 Bill Bradshaw, and 2000 Ken Hashagen.



# El Cid Center Map of Hotels

Ground Level



2nd Level



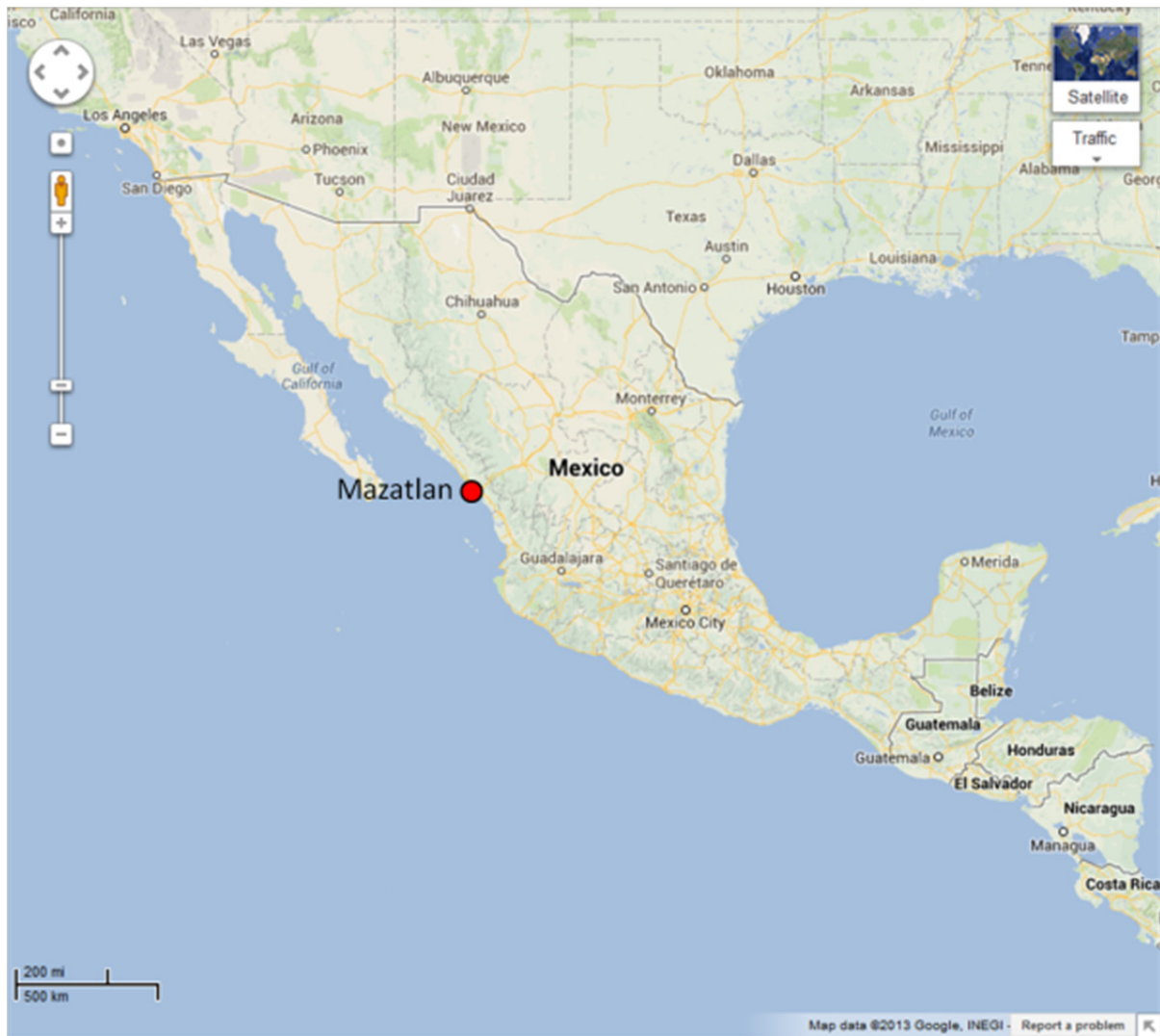
3rd Level





# The City of Mazatlán

Mazatlán is located in the Sinaloa State in the Northwest Region of México on the Pacific Coast, almost directly across from the tip of the Baja California peninsula. Is one of the Mexican Riviera's premier resort areas and its remarkable scenic beauty is complemented by a delightful festive atmosphere and a wealth of exciting activities.



Although Mazatlán is one of México's most popular vacation destinations, it has another identity as the largest fishing port in México. The most important shrimp fleet of the Mexican Pacific is located here, with a bustling economy independent of the tourism industry.

This duality adds an interesting cosmopolitan flavor to this unique city that you are sure to savor.

The City is concentrated in two areas: In the north, there is the Zona Dorada (Golden Zone) where the majority of hotels and restaurants are located. In the south there is El Centro (downtown), also known as Old Mazatlán, that is the heart of the cultural activities in Mazatlán. These two areas are linked by Avenida del Mar, also known as the Malecón, which is a scenic beach-front avenue that bridges the gap between the two areas.



# The City of Mazatlán

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## **Fisheries in Mazatlán**

Mazatlán is the main fishing port of Sinaloa and the second most important at national level, counts on a length of dockage of 2,684 meters of which 334 m are destined to the tuna fleet operations, 465 m for small pelagics and 1,885 m for shrimp. The fishing fleet of Mazatlán counts with more than 500 ships focused on shrimp fishery, 30 ships focused on tuna fishery, 10 for sardines, 24 for demersal fishes and shark, and around of 10,000 boats dedicated to the near shore shrimp fishery.

Mazatlán catches the 69% of the national production of tuna and around 37% of the shrimp. In the industrial section of the city there are the 16.2% of the industrial marine plants of Sinaloa dedicated mainly to the shrimp processing, tuna and sardine. Of each 10 tins of tuna that are consumed in México, 6 are produced in Mazatlán.

Also Mazatlán has an important sport fishing industry. The sport fishing fleet of Mazatlán is the second largest of México after the one at Los Cabos.

Moreover, the state of Sinaloa is one of the main states in the country's most important aquaculture region, with more than 1,350 hectares destined to culture farms, mainly of white shrimp.

## **Academic and Research Institutions Focused on Aquatic Sciences**

There are 5 academic Institutions in Mazatlán focused on marine investigations and fishing sciences: 1) Instituto de Ciencias del Mar y Limnología de la Universidad Nacional Autónoma de México (Institute of Marine Sciences and Limnology); 2) La Facultad de Ciencias del Mar de la Universidad Autónoma de Sinaloa, (Faculty of Marine Sciences), 3) El Instituto Tecnológico del Mar (Marine Technological Institute); 4) El Centro de Investigación en Alimentación y Desarrollo en Acuicultura y Manejo Ambiental (Research Center in Feeding and Aquaculture Development and Environmental Management), and 5) El Centro Regional de Investigación Pesquera (Regional Centre of Fisheries Research). Also the Federal offices of Comisión Nacional de Acuacultura y Pesca (National Commission of Aquaculture and Fisheries) are based in Mazatlán.

These institutions lodge around 110 investigators focused on subjects mainly related to marine and fishing sciences for the coastal states of Sinaloa, Sonora and Nayarit in México.



# Travel Tips for Mazatlán

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## **Things to know once you are at El Cid:**

There are three hotels that we are using for the conference (Castilla, Moro and Granada). The Castilla and Moro hotels are connected to each other with the conference center in between. The Granada is very close, but across the street from the other two; crossing the street is easy.

The hotel has several “nicer” restaurants (Sushi, Italian, etc.) and they ask that you make reservations to eat at these places.

Although most folks we encountered at El Cid spoke enough English so that we could communicate, it would be time well spent if you could learn a bit of the key Spanish words before you arrive.

Weather is warm during the day and cool-ish at night (light jacket). Some of the nicer restaurants do have a dress code (no sandals), but in general dress is very casual here.

Be careful with your receipts here, they still have your full credit card number and expiration date on them!!! Do not have them lying around in your room or in other obvious places.

Water is fine to drink on the resort; can't say for off resort, I'd stick to bottled water in that case.

There are lots of vendors at the airport as well as on the beach in front of El Cid. Simply say “No, gracias” if you are not interested in what they are selling; remember that their prices are high because they expect people to negotiate.

## **If you decide to go exploring:**

We totally encourage you to explore the area around the hotel and find adventures on your own!! El Cid is a wonderful place to stay but provides a very singular view of Mazatlán and México in general.

The area just outside and around the hotel has shops, restaurants, banks, small grocery stores. If you drive, plan on paying to park. This isn't a parking fee per se but more for someone to watch your car.

Tipping and negotiating price for items is key outside the resort. If you eat or drink off the resort, use pesos!! Currently the exchange rate is about 13:1 dollars to pesos but for ease of math, I just use 10:1 (which is the rate you'll typically get if you use dollars to pay for stuff off resort). So if it says \$200 pesos, it is about \$18 to \$20 in US currency.



# Transportation in Mazatlán

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## **Mazatlán Airport Transfers**

From the airport you can get round-trip airport transfers to all Mazatlán hotels and resorts. All vehicles are new, clean, air conditioned, seven passenger vans or five passenger taxis. You can choose a non-stop private service or you can share the service getting one or two stops. All drivers are bilingual and they can give support assistance in the case of lost or delayed luggage.

## **Public Buses, Taxis, and Pulmonias**

The 380 buses operated within the city of Mazatlán are each owned by respective drivers and driven along routes established by the Alianza, a union that regulates bus operations in the city. On April 2001 new buses were added to Mazatlán's public transit system. These new buses, green in color, run through the Golden Zone, which is the main coastal road to cater tourism. The fare is \$7.50 pesos (about 70 US cents) regardless of your destination and time of day. General hours of bus operation are between 5:00 am and 10:30 pm. If you take the "old" buses to travel around the city limits, the fare would be \$ 3.90 pesos (39 US cents). If your final destination is out on the highway or it's past 9pm, it'll cost you \$4.40 pesos. A separate fare must be paid on each connecting bus.

All Golden zone Hotels have a 24 hour taxi service, that are very safe and incredibly cheap, but staying in Mazatlán you can choose between a common taxi or a pulmonia.

Pulmonias are open-air taxis, little more than fiberglass go-carts powered by Volkswagen Bug engines. When they first arrived here 36 years ago, jealous drivers of regular taxis warned their customers not to ride in the door-less, window-less vehicles because they would catch pneumonia (pulmonia). The name stuck.



### **Did You Know?**

Did you know that you could be eligible for Western Division Small Project Grant funding? The Division currently has project funding available for Division Chapters, Subunits, and other fisheries-related groups to help get a project started or to complement other funding. Check out our website to find evaluation criteria and application procedures and see if what you have in mind is eligible for Small Project Grant funding.





# Cultural Activities in Mazatlán

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## **Angela Peralta Theater**

This theater was built in the early 1870's and was originally named the Rubio Theater. In 1883 however, the famous opera singer Angela Peralta 'The Nightingale of México' arrived in Mazatlán to perform. Upon her arrival, the crowd that gathered to meet her, unhitched the horses from her carriage and carried her to her hotel. She was so taken back by their enthusiasm that she performed to her fans from the balcony of her hotel. Unfortunately, the boat she arrived on carried the yellow fever and she died before she could ever perform in the theater. The theater was soon renamed after her and a plaque commemorates her tragic death.

Unfortunately, the theater also had tragedy awaiting it. In later years, the theater was turned into a movie theater, then a vaudeville stage, a boxing ring, and eventually a parking garage! Finally, in 1975, a hurricane hit Mazatlán and destroyed the inside of the theater. Standing in ruin for years, a restoration of the theater began in 1987 and re-opened in 1992.

Today the Angela Peralta Theater is a principal cultural and tourist attraction in Mazatlán. It is one of the few opera houses of its type and age in México that still functions as a working theater. You can tour the theater for 6 pesos (about 60 US cents), and view the history of the building. There also many events throughout the year.

## **The Archaeological Museum of Mazatlán**

The archeological museum can be found in the Historical Center of Mazatlán, only a block away from the oceanside boulevard known as Olas Altas.

It is possible to trace the museum's origins back to the State Government that designated the building as a historical site in the 1800's. It was opened on June 29, 1989, in order to spread the regional and cultural account of the beautiful state of Sinaloa.

The museum contributes to the cultural task of showing the history of the area and of México. The Museum attests to the importance and richness of the archeology that characterizes the cultures that flourished and developed during the prehispanic era in this region. This is the sixth museum in the state of Sinaloa and is the ideal place to find archeological material specifically from Mazatlán.

The museum encourages recreational and cultural activities for the areas primary, junior and secondary schools as well as colleges in an attempt to enrich and teach the areas youth the importance of their race and cultural origins.

This museum has a prehispanic regional salon open for your enjoyment as well as a gallery where contemporary artists exhibit their paintings. There is a delightful open air patio for special artistic and cultural events.

## **The Sinaloa Tambora**

Almost every region of México has its local bands, but in Mazatlán the band acquired a different personality thanks to the nostalgic feelings of a group of Germany businessmen who lived here. They wanted to incorporate new wind instruments into the traditional bands, and they gave local musicians access to the musical scores for Prussian songs, polkas and marches, so that these local groups began to sound different from bands in the rest of the country. The Sinaloan tambora of the 20th century was the precursor of what is now called "música grupera", whose popularity reaches all of México.

## **The Architecture of Historic Mazatlán**

Various styles of construction are found in Old Mazatlán, but among them the predominant one has neoclassical flourishes with adaptations for a tropical climate.



## Cultural Activities in Mazatlán

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Mazatlán has 479 buildings designated as national historic landmarks; all located in the Historic Center of the city. The value of these buildings lies in their age and in the quality of their architectural styles. Some of them were constructed under the supervision of foreigners like the Spaniard don Federico Imaña who designed the buildings along the side of the Plazuela Machado on Calle Constitucion between Calles Heriberto Frias and Carnaval, and don Juan Mondini, an Italian builder who had the job of remodeling the Portales de Canobbio.

But there were also Mexicans such as Navidad Librado Tapia, an engineer who gave us the Angela Peralta Theater, and a master named Ramirez who built the old Banco Occidental and various other structures that have survived along Calle Mariano Escobedo. In the 20th century an engineer named Guillermo Freeman incorporated certain art deco forms and North American functionalism into Mazatlán's architecture.

The Portals of Canobbio: This building is one of the most historic in the city. Originally it was just one story and served as a sort of market called Portal de la Lonja. In 1864, during remodeling, the second story was added. Later it was sold to a family who set up an apothecary shop on the premises, and people began to call it Portales de Canobbio after the last name of the owners.

Municipal Center for the Arts: This building occupies the site of one of the first inns in Mazatlán, built in the 1870s as a mansion which functioned for a time under the name Hotel Iturbide, it was there, in Room No. 10, that "the Mexican Nightingale" Angela Peralta died. Days before her death, when her ship landed in Mazatlán, she was received with great jubilation by a large group of Mazatlecos. As a gesture of thanks, she sang from the balcony of her room for the cheering crowd, an event that is reenacted today and is considered very important for the cultural life of the city. By the end of the 19th century, this building had become the Casino de Mazatlán, a popular meeting place for the city's elite. Eventually, around 1965, the first pulmonias to emerge on our streets were built in its courtyard, by then a workshop.

Monument to the Continuity of Life: A symbol of the beginning and end of human's life. The monument is located in the northern zone of Paseo Olas Altas and represents a mixture of races. Some of the area's top restaurants are located in this area.

The Paseo del Centenario Pergola: This pergola, also called the Angela Peralta Pergola, is a landmark in Mazatlán's history. It was built in 1848 to defend the port. Three English cannons were brought here to defend Mazatlán from foreign invaders during the 19th century.

Cathedral: Located in the heart of downtown, the cathedral was built during the religious splendor that characterized Sinaloa during the 19th century. The church was named the Basilica Cathedral in 1937 in honor of the Immaculate Conception. The building is marked by its' two slender towers. The interior decor is in the baroque style with exuberant tendencies.



# Mazatlán Restaurants & Night-Life

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## **Mazatlán Restaurants**

Mazatlán's dining scene centers on seafood, particularly shrimp, lobster and fish; but, also there are many typical Mexican food and international food restaurants along Golden Zone and Downtown. Almost all tend to be casual, serving bountiful and reasonably priced meals. You can have a complete meal (starter, entrée, dessert and drink) for as little as \$3.50 US dollars.

All restaurants serve purified water, purified ice, and their salads are safe to eat. Be aware the Mexican tradition is never to bring the bill unless it is asked for. Most restaurants will take VISA or Master Card. American Express is not widely accepted. Fiesta Nights are popular particularly the ones held at the El Cid, Pueblo Bonito and Playa Mazatlán hotels.

## **Mazatlán Night-Life**

While basking in the sun all day, don't forget to keep some energy for the night because Mazatlán's nightlife has the reputation of being first rate. Dancing, live music, and festive watering holes are plentiful. The selection to choose from is large. Music at local bars and discotheques ranges from easy-on-the-ears piano bar music to mariachi groups or sonorous tambora bands, as well as electronic, hip-hop, reggae, salsa, and other rhythms. To get a real Mexican experience you should try a fiesta night offered at some hotels. Be sure to bring a sweater because it gets a little chilly at night.

Most places don't charge cover, but some, such as the Fiesta Land clubs will charge anywhere from 40 to 120 pesos on weekends for guys and about half of that for girls. As in the U.S., many bars offer 'ladies nights' during the week with free admission and drinks for the ladies.



### **Did You Know?**

Each year the Western Division recognizes individuals and groups for their achievements by awarding eight awards. Did you know that the Outstanding Chapter Award was established in 1981, and since its inception, the Oregon Chapter has won 12 times - including the first year it was awarded and last year in 2013. Congratulations to the Oregon Chapter and all other Chapters who have won this award!



# Outdoor Activities in Mazatlán

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In Mazatlán you can take one of the many city tours that hotels offers, visiting the highlights of Mazatlán such as: Shopping areas, The Old Mazatlán area where you will see fantastic old style buildings such as: The Majestic “Angela Peralta Theater”, The Oldest Town Bakery, Casa Machado, The School of Art, the Downtown to visit the famous open market, and The Cathedral, the famous cliff divers on Olas Altas Avenue, and many other interesting constructions that make this city unique in the north west of México.

## **The Mazatlán Aquarium**

Unique on the western coast of the Pacific Ocean, it is one of Mazatlán’s main attractions. It is considered one of the best aquariums in México. The Mazatlán Aquarium is a transparent way for its visitors to get to know its marine life.

Observe more than 300 aquatic species from different parts of the world in a perfect recreation of their natural habitat. Comfortably and safely observe everything from Sixgill Sharks to the inoffensive Sea Horses, be surprised by the piranhas’ wickedness; a whole marine world of splendor and learning. The Mazatlán Aquarium’s prime objective is that the spectators learn to respect the marine ecosystem, which we all dependent upon and are an intrinsic part of, through the knowledge of marine species.

The Marine Turtles Permanent Protection Program, operating since 1991 helps in the protection of marine turtles through different activities such as: collection and protection of nests, egg incubation, and finally the baby turtles liberation in the beaches of Mazatlán.

The Aquarium’s Botanical Garden is next to the Aquarium, where visitors can get to know the regional flora and fauna. Inside this garden there’s a small zoo that hosts deer and crocodiles that stroll freely among the pond’s cascades, as well as hundreds of birds of different species.

## **Sport Fishing**

The warm, tropical waters off the Pacific coasts of México provide a treasure trove of opportunities for the “catch of a lifetime”. Even common food fish grow to tackle-busting size and ferocity in the teeming waters that beach Mazatlán. There’s truly something to keep every angler hookin’ and haulin’ denizens of the not-so-deep. Here are some sport favorites that’ll put a smirk on your face in no time.

México welcomes nearly 100,000 sport fishermen yearly. The great diversity of both salt and fresh water species positions Mazatlán as one of the privileged places throughout the world for the practice of sport fishing. The waters around Mazatlán provide some of the finest sport fishing in the world.

You can fish from the shore for species such as snappers, weakfish, rock fish, grouper, flatfish and sea bass, or you can adventure away from the shore to catch Dorado, mackerel, skipjack, bonito, and bill fish. Of the nine species exclusively reserved for sport fishing worldwide, seven are available in Mazatlán’s sea.

If you like to fish on continental waters, just outside Mazatlán you can also find suitable reservoirs in which you will find bass, carp, perch, and tilapia.

Bibi Fleet will be offering special rates for conference attendees. Go to their website: [www.bibifleet.com](http://www.bibifleet.com) (owner Tadeo’s email: [gogetem@bibifleet.com](mailto:gogetem@bibifleet.com)).

## **Parasailing**

This is an exciting experience for all ages. I’d recommend taking a camera with you to get some really good scenic aerial shots. The most common spots for take-off and other rentals are: south to north near Los Sabalos, Costa de Oro, El Cid, and Pueblo Bonito resorts.



# Outdoor Activities in Mazatlán

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## **Juvenile Turtle Liberation**

This activity is done in agreement with the local Aquarium. Persons interested will free turtles born in captivity from the turtle's eggs collected at the local beaches. This is done on the beaches of Mazatlán, or at the estuary of El Verde, just 18km north of Mazatlán.

## **Jet Skis, Kayaking, Sailing, and Boogie Board Surfing**

Jet Skis, Hobie Cat Sailing, and Boogie Board Surfing are other rental water activities in the resort zone. Surfing is best in the south of the Golden Zone near Valentinos and in the north at Playa Bruja. If spend time at Playa Bruja, besides surfing, wading, swimming, looking for sea shells, you can take a horse rides.

## **Surfing**

Crystal, morning, perfect, overhead, point-surf, light off-shores, and warm, tropical conditions. This is what some of Mazatlán's beaches offer to the surfers. Please consider that Mazatlán is a protected bay. When tourists come to Mazatlán, they often assume the surf conditions are temporarily flat due, in no small measure, to the tiny waves lapping up at their feet in front of their hotels. Traveling just a few minutes away from their hotel/s, they come to find that they were mistaking Mazatlán's long waterfront for the open ocean.

## **Swimming and Snorkeling**

Snorkeling at Deer Island includes getting an amphibian ride to the island from the El Cid resort. This can be a full day picnic activity for the whole family that could include hiking, swimming or just laying around. Take some food and refreshments as they can be limited or non-existent on the island.

## **Cetacean Xplorer (Dolphin Watching Expedition)**

You can search and observe cetaceans in their natural habitat in Mazatlán. The company Onca Explorations promotes whale and dolphin research, and conservation in the region. Our research project "Fins and Tails of the Bay" is focused on local populations of bottlenose dolphins (*Tursiops truncatus*) inhabiting the coastal waters off Mazatlán and southern Sinaloa, as well as Humpback Whales (*Megaptera novaeangliae*) that transit through these waters during their winter migration.

By taking pictures of the dolphins' dorsal fins (Photo-identification), the crew, composed of oceanographers and naturalists, will be collecting information that will help us determine several aspects of these species natural history, like their distribution, movements, social structure, and behavior. If you participate in this activity, you will be contributing to the research effort Onca Explorations is doing to promote whale and dolphin conservation and environmental consciousness in the region.

Onca Explorations will be offering special rates for conference attendees. Go to their website: [oncaexplorations.com](http://oncaexplorations.com) (email is [oxinfo@gmail.com](mailto:oxinfo@gmail.com)).

## **Golfing**

Not only is the climate here ideal for golf, Mazatlán offers some of the best rates for top-rate golf in México! El Cid Mega Resort's 18-hole course is complemented with the addition of nine new holes built at its sister resort, Marina El Cid. The Marina Nine, as the course is called, was designed by Lee Treviño using water on seven of the nine holes. Golf Today has rated the course "an absolute winner." This beautiful course is situated in the heart of the Golden Zone and is surrounded by the El Cid marina.

This professionally-designed, PGA-rated par 72, 6,472 yard 18-hole golf course is open from 7:00 am to 5:30 pm daily. A driving range and putting green are also located at the course. Club and cart rentals are available in addition to caddies. To complement the course, El Cid offers golfers the usual club amenities: a pro shop, caddies and carts, plus a sauna, hot tub and gym.



# Outdoor Activities in Mazatlán

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The El Cid Golf & Country Club has played host to many international golf events and is situated on a biological reserve that is home to deer, turtles, fish, exotic birds, and crocodiles in a natural setting. The course is known for its excellent views and for its lakes. El Cid Mazatlán offers a challenge to all skill levels. A 3rd nine, designed by Lee Treviño has recently been added to complete this wonderful 27 hole layout.

## **Mountain Biking**

Mazatlán is a paradise for mountain bikers. Several competitions take place here all year long; Mazatlán hosted the 2000 edition of the Tissot-UCI Mountain Bike World Cup, with bikers racing and partying like a bunch of college kids in the spring break haven of Mazatlán.

In Mazatlán you can find excellent courses such as bitachi, hediondera, and piedras blancas, as well as different MTB routes through the rain forest. There are local companies which organize MTB tours, or you can rent a bike for the day and go wherever you want for \$8 US dollars. The fare includes helmet.



### **Did You Know?**

Did you know that the Division has 11 Student Subunits (British Columbia, Colorado State University, Montana State University, New Mexico State University, Oregon State University, Palouse Unit - University of Idaho, UNAM, University of Alaska, University of Montana, University of Wyoming, and Utah State University)? The Division and Chapters recognize that students are the future of the Society and provide considerable resources, including travel support, to students and encourage them to become more active when opportunities arise.



## Mazatlán Surroundings & Vicinities

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### **Hacienda Las Moras**

Just 30 minutes northeast of Mazatlán, a deserted agave ranch-house and tequila distillery has been transformed into a tasteful, tranquil guest ranch. The 3,000-acre ranch is a refuge for both humans and animals, from miniature horses to exotic pure-white peacocks. A small white chapel sits atop a slight ridge overlooking the property, with the Sierra Madres rising in the background. The original stables, hacienda, and tequila-factory buildings have been completely renovated with attention to detail. The ranch is a peaceful, completely secluded hideaway with accommodations that make you feel like you're staying in a luxurious private home. The chef prepares superb regional Mexican cuisine with breads baked daily in a wood-burning beehive oven. Guests are welcome to ride the horses up the mountain. There is a pool and tennis courts, and plenty of space to roam in complete solitude.

### **Teacapán**

Just two hours south of Mazatlán (82 miles) is the fishing village of Teacapán. Here you can enjoy natural places like mangrove lagoons, palm and mango groves, and bird-watching you can see herons, flamingos, Canadian ducks, and countless other species of birds. Inland, the sparsely populated land is a haven for deer, ocelot, and wild boars. There's talk of making the entire peninsula into an ecological preserve, and thus far, residents have resisted attempts by developers to turn the area into a large-scale resort.

### **Concordia**

The colonial town of Concordia, a short distance off of the Durango highway (México 40), is a side trip on the Copala tour route. Concordia is a town of furniture makers which sell their wares in small stands on the way into town.

Concordia also offers an abundance of locally made pottery in the pre-Columbian motif. There is an old style town square, built in front of the church, which is a great place for photos of the family. The church, is over 350 years old making it the oldest in the state of Sinaloa. This area produces a lot of mangoes which are for sale everywhere along the road, and they are delicious. If you are on a tour you will probably be taken to the nearby mineral springs where the local women do their laundry, just as they have been doing for many generations.

### **El Rosario**

El Rosario, a small town about 50 miles south of Mazatlán, is famous for the altar in the town church which is said to be worth over a million dollars. The altar alone makes a visit to El Rosario worth the drive. El Rosario was once the richest town in Northwest México because of the local mining operations. This small town was the home of the famous Mexican singer, Lola Beltrán. They have built a small museum in her honor although the museum is open only sporadically. You might want to do a little shopping for pottery, furniture or leather products, all of which are produced locally.

### **La Noria**

The little mountain village of La Noria is just 40 minutes northeast of Mazatlán – and well worth a visit. Nestled into its own little corner of the world, "La Noria," which means "The Well," is named for the shape it takes; entering the town means descending into a bowl-shaped area, giving the appearance of a town set in a well. Highlights include an old jail, which is still in use, the church of San Antonio, and a variety of locally-made leather goods.

### **El Quelite**

Thirty-three kilometers northeast of Mazatlán, visitors leave behind the sun and sand attractions of one of México's most popular destinations to step into a fine example of rural or agricultural tourism. Such vacation experiences are increasingly in demand around the world by travelers who want to learn how others work and live.



## Mazatlán Surroundings & Vicinities

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### **Las Labradas (Barras de Piaxtla)**

One of Mazatlán's most interesting archeological sites is just 45 minutes north, near the fishing village of Barras de Piaxtla. A wonderful group of petroglyphs called Las Labradas is on a beach near the village, in San Ignacio municipality. The petroglyphs or rock paintings are the voices of ancient testimonies, of hundreds of years of mythological traditions made by the ancient peoples of the American continent. They are beautiful abstract and symbolic expressions for the continent's new inhabitants.

These petroglyphs of Tolteca origin are the remains of the most ancient artistic expressions of México's northwestern territory. Some archeologists state that these may have been created 1,000 or 1,500 years ago.



### **Did You Know?**

In 2015, the Annual Western Division AFS meeting will be held in conjunction with the Annual AFS meeting. The Western Division, AFS, and Oregon Chapter will be co-hosting the meeting in Portland, OR.

Hope to see you there!





# 2014 Sponsors

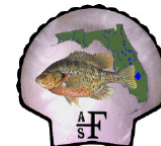
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