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# Mario Espinoza, PhD

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Profesor en la Escuela de Biología  
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## EDUCATION

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2001 – 2005 BSc Biology (Universidad de Costa Rica - UCR)  
2007 – 2010 MSc Marine Biology (California State University, Long Beach in USA- CSULB)  
2012 – 2015 PhD Marine Biology and Conservation (James Cook University in Australia - JCU)

## LANGUAGES

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- Spanish (100%)
- English (100%)
- French (50%)

## FIELD OF COMPETENCE AND EXPERIENCE

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- Ecology and behavior of aquatic predators
- Management and conservation of aquatic species
- Trophic ecology: ecological function of predatory fish in aquatic ecosystems
- Reproduction and feeding ecology of fishes
- Marine ecology and biogeography
- Fisheries and population dynamics
- Acoustic telemetry and satellite tagging of migratory species
- Geographic information systems (GIS)
- Habitat modeling and use of behavioral data as a tool for conservation
- Marine protected areas
- Zoology and taxonomy of elasmobranch species
- Experimental design and applied biostatistics

## SUMMARY OF RESEARCH ACTIVITIES

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I am particularly interested in behavioral ecology, fisheries management and conservation biology, as well as the interaction between these fields. Some of the major threads affecting elasmobranch species are intense fishing pressure and habitat degradation. In 2007, I started a Master's Program at California State University, Long Beach (USA). My research project focused on how coastal elasmobranchs use newly restored estuarine habitat in southern California. This information was important to assess the ecological function of restored habitats, as well as to support the creation of new marine protected areas (MPAs). During this project, we tested a new positioning system to quantify fine-scale movements of aquatic species. This new technology provided important insight into the behavior and ecological interactions of coastal elasmobranchs in a recently restored habitat. Since 2011, I have been involved in a large collaborative project looking at the distribution, diversity, reproduction and feeding ecology of elasmobranch species associated to the commercial trawling fishery along the Pacific of Costa Rica. This information was extremely valuable to develop management strategies focused on the sustainability of marine resources in Costa Rica. Other projects included the study of trophic dynamics of demersal elasmobranchs, and a detailed description of parasites associated to the Costa Rican elasmobranch fauna. In 2012, I started a PhD program at James Cook

University, Australia. For my dissertation, I am using acoustic telemetry, stable isotopes analysis and fisheries independent surveys to examine the movements, habitat use and trophic ecology of reef-associated sharks along the Great Barrier Reef. Ultimately, I would like to gain more information on the patterns and ecosystem consequences of shark declines in aquatic ecosystems.

## **WORK EXPERIENCE**

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- (2012 - Present) Professor at Universidad de Costa Rica, Costa Rica
- (2011) Professor at Universidad Veritas, Costa Rica
- (2010) Associate Researcher at Centro de Investigación en Ciencias del Mar y Limnología (CIMAR), Unidad de Pesca y Acuicultura (UNIP) from UCR
- (2007) Environmental Consultant (DEPATT, Costa Rica): Ecological evaluation of stream fishes in a gold mine area of Costa Rica
- (2006) Environmental Consultant (The Nature Conservancy - TNC / CIMAR): Rapid Assessment of Fish and Coral Reefs in the Caribbean Ocean, Bay Islands, Honduras
- (2006) Environmental Consultant (MARVIVA): Diagnostic of the Status of Sharks and Rays in Costa Rica
- (2005) Environmental Consultant (Conservation International - CI): Marine Environments of Costa Rica: The Marine Economic Zone of Costa Rica

## **TEACHING EXPERIENCE**

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- (2012 - 2015) Teaching Assistant of Geographic Information Systems at JCU
- (2011) Tropical Ecology Course at Universidad VERITAS, Costa Rica
- (2011) Independent Research Course at UCR
- (2009 – 2010) Teaching Assistant at CSULB
- (2011) Ecology and Conservation of Elasmobranch fishes (UCR)
- (2009 – 2010) Teaching Assistant of Biostatistics (CSULB)
- (2007) Ecology and Behavior of Coral Reef Fishes (UCR)
- (2004 – 2006) Teaching Assistant of Ichthyology (UCR)
- (2005 – 2006) Teaching Assistant of Vertebrate Zoology (UCR)

## **RESEARCH EXPERIENCE AT JAMES COOK UNIVERSITY (JCU)**

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### Reef Predator Project (2012-present)

- Movements, habitat use and trophic ecology of reef-associated sharks, Great Barrier Reef
- Movements and habitat use of coastal sharks in Cleveland Bay

## **RESEARCH EXPERIENCE AT UNIVERSIDAD DE COSTA RICA (UCR)**

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### ❖ Elasmobranch Research Project (2010-2012)

- Distribution and trophic dynamics of sharks and rays along the continental platform of the Pacific of Costa Rica (No 808-B1-547)
- Parasites of demersal sharks and rays associated to the deepwater shrimp fishery of the Pacific of Costa Rica (No 808-B1-537)
- Demersal sharks and rays of the continental platform of the Pacific of Costa Rica: identification of reproductive areas and development of management strategies towards a more sustainable fishery (No 808-B0-536)
- Transfer of trace metals and contaminants from pregnant females to embryos in elasmobranch species with different reproductive modes
- Demersal elasmobranch tissue sample library for genetic analyses

- ❖ Pink Brotula Project (*Brotula clarkae*) (2010-2012)
  - Feeding, reproduction and growth of *Brotula clarkae* Hubbs 1944, Pacific of Costa Rica
  - Sexual dimorphism in the swim bladder of *Brotula clarkae*
  - Morphometric characteristics and allometric growth in *Brotula clarkae*

#### **RESEARCH EXPERIENCE AT CALIFORNIA STATE UNIVERSITY, LONG BEACH (CSULB)**

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- ❖ Movements and Habitat Use of Kelp Fish in Catalina Island, California (2009-2010)
  - Use of the VPS to quantify vertical movements in kelp fish
- ❖ Movements and habitat use of coastal elasmobranchs in Bolsa Chica, California (2007-2010)
  - Movements and habitat use of gray smooth-hound sharks
  - Abundance, habitat use and movements of the shovelnose guitarfish
  - Structure and variability of the estuarine fish community in Bolsa Chica, California
- ❖ Testing the VR2W Positioning System (2008-2009)
  - Using a new acoustic positioning system to quantify fine-scale shark movements
- ❖ CSULB / Monterey Aquarium White Shark Rapid Response Team (USA) (2008-2009)
  - Acoustic and satellite tagging of juvenile white sharks in southern California

#### **RESEARCH INTERNSHIPS**

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- (2007) Great Lakes Institute of Environmental Research (GLIER), Ontario (Canada)
  - Environmental and toxicology laboratory
  - Using stable isotopes, trace metals and fatty acid analysis in aquatic animals
- (2006) Center for Shark Research - Mote Marine Laboratory, Florida (USA)
  - Acoustic tracking of coastal elasmobranchs in the Caloosahatchee River, Florida
  - Abundance surveys of coastal elasmobranchs, Everglades National park
  - Tagging program of coastal elasmobranchs in Florida
- (2004) Center for Shark Research - Mote Marine Laboratory, Florida (USA)
  - Saw fish (*Pristis pectinata*) restoration program
  - Abundance surveys of coastal elasmobranchs, Everglades National park
  - Tagging program of coastal elasmobranchs in Florida

#### **RESEARCH PROJECTS (UCR)**

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- (2002 – 2006) Centro de Investigación en Ciencias Marinas y Limnología (CIMAR-UCR)
  - Coral reef lab: identification of marine invertebrates
  - Reef fish monitoring, Pacific of Costa Rica
  - Zooplankton associated to seagrass habitats, Caribbean of Costa Rica
- (2003 – 2006) Zoology Museum (UCR)
  - Assistant curator of the fish collection and database management
- (2003 – 2005) Other Research Projects
  - Rapid Assessment of coral reefs in Golfo Dulce, south Pacific Costa Rica
  - Deepwater fish associated to the commercial trawling fishery, Pacific of Costa Rica
  - Structure of reef fish communities in the Pacific of Costa Rica
  - Crustaceans associated with marine algae in the inter-tidal zone of Bat Islands
  - Effect of highways on tropical bird communities at Braulio Carrillo National Park

## SCIENTIFIC PUBLICATIONS AND TECHNICAL REPORTS

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### Published manuscripts:

- **Espinoza M**, Heupel MR, Tobin AJ, Simpfendorfer CA. Movement patterns of silvertip sharks (*Carcharhinus albimarginatus*) on coral reefs. *Coral Reefs*. DOI: 10.1007/s00338-015-1312-0
- **Espinoza M**, Samantha M, Clarke T, Wehrtmann I, Fisk, A (2015) Feeding ecology of common demersal elasmobranch species in the Pacific coast of Costa Rica inferred from stable isotope and stomach content analyses. *Journal of Experimental Marine Biology and Ecology* 470: 12-25.
- **Espinoza M**, Ledee E, Simpfendorfer CA, Tobin AJ, Heupel MR (2015) Contrasting movements and connectivity of reef-associated sharks using acoustic telemetry: implications for management. *Ecological applications*.
- Chabot CL, **Espinoza M**, Mascareñas-Osorio I, Rocha-Olivares A (2015) The effect of biogeographic barriers, phylogeographic barriers, and climate change on gene flow in the brown smoothhound shark, *Mustelus henlei*, in the northeastern Pacific. *Ecology and Evolution*
- Heupel MR, Simpfendorfer CA, **Espinoza M**, Smoothey A, Tobin AJ, Pedemmers V (2015) Conservation challenges of sharks with continental scale migrations. *Frontiers in Marine Science*. 2: 1-7. DOI: 10.3389/fmars.2015.00012
- **Espinoza M**, Heupel MR, Tobin AJ, Simpfendorfer CA (2015) Residency patterns and movements of grey reef sharks (*Carcharhinus amblyrhynchos*) in semi-continuous coral reef habitats. *Marine Biology*. 162: 343-358.
- **Espinoza M**, Cappo M, Heupel, MR, Tobin AJ, Simpfendorfer CA (2014) Quantifying shark distribution patterns and species-habitat associations: implications of Marine Park Zoning. *PLOS ONE*. e106885
- Clarke TM, **Espinoza M**, Wehrtmann IS (2014) Reproductive ecology of demersal elasmobranchs from a data-deficient fishery, Pacific of Costa Rica, Central America. *Fisheries Research*. 157: 96-105
- Tobin AJ, Mapleston A, Harry AV, **Espinoza M** (2014) Big fish in shallow water; use of an intertidal surf-zone habitat by large-bodied teleosts and elasmobranchs in tropical northern Australia. *Environmental Biology of Fishes*. 97: 821-838
- Farrugia TJ, **Espinoza M**, Lowe CG (2014) The fish community of a newly restored southern California estuary: ecological perspective after three years of restoration. *Environmental Biology of Fishes*. 97: 1129-1147
- **Espinoza M**, Clarke T, Villalobos F, Wehrtmann I (2013) Diet composition and diel feeding behaviour of the banded guitarfish, *Zapteryx xyster* (Jordan & Evermann, 1896), along the Pacific coast of Costa Rica, Central America. *Journal of Fish Biology* 82: 286-305
- **Espinoza M**, Clarke T, Villalobos F, Wehrtmann I (2012) Ontogenetic dietary shifts and feeding ecology of the rasptail skate *Raja velezi* and the brown smooth-hound shark *Mustelus henlei* along the Pacific coast of Costa Rica, Central America. *Journal of Fish Biology* 81: 1578-1595
- **Espinoza M**, Farrugia TJ, Lowe, CG (2011) Habitat use, movements and site fidelity of the gray smooth-hound shark (*Mustelus californicus* Gill 1863) in a newly restored California estuary. *Journal of Experimental Marine Biology and Ecology* 401: 63-74
- **Espinoza M**, Farrugia TJ, Webber DM, Smith F, Lowe CG (2011) Testing a new acoustic technique to quantify fine-scale, long-term fish movements. *Fisheries Research* 108: 364-371
- Farrugia TJ, **Espinoza M**, Lowe CG (2011) Abundance, habitat use and movement patterns of the shovelnose guitarfish (*Rhinobatos productus*) in a restored southern California estuary. *Marine and Freshwater Research* 62: 648-657
- **Espinoza M**, Farrugia TJ, Lowe, CG (2010) Influence of water temperature on site fidelity and habitat use of gray smooth-hound sharks in a newly restored estuarine habitat. *Abstract Bulletin of the Southern California Academy of Sciences* 109 (2): 90. (DOI: 10.3160/0038-3872-109.2.68)

- Farrugia TJ, **Espinoza M**, Lowe CG (2010) Abundance, habitat use and movement patterns of the shovelnose guitarfish (*Rhinobatos productus*) in a southern California estuary. *Abstract Bulletin of the Southern California Academy of Sciences* 109 (2): 91 (DOI:10.3160/0038-3872-109.2.68)
- **Espinoza M** (2010) Site fidelity, movements and habitat use of gray smooth-hound sharks, *Mustelus californicus* (Gill 1863), in a newly restored estuarine habitat. Master's Thesis, California State University, Long Beach. 91 p
- **Espinoza M** (2008) Rapid ecological assessment of tropical fish communities in a gold mine area of Costa Rica. *Revista Biología Tropical* 56: 1971-1990
- **Espinoza M**, Wehrtmann I (2008) Stomach content analysis of the deep-water fish *Lophiodes spilurus* (Lophiiformes: Lophiidae) associated to commercial shrimp trawls, Pacific Coast of Costa Rica. *Revista Biología Tropical* 56: 1959-1970.
- **Espinoza M** (2007) Composition and community structure of stream fishes in La Cañaza River, Pacific of Costa Rica. *Brenesia* 67: 35-43
- **Espinoza M**, Salas E (2005) Structure of reef fish community in Catalina's Island and Ocotal beach, North Pacific of Costa Rica. *Revista Biología Tropical* 53: 523-536

#### **Manuscripts accepted:**

- **Espinoza M**, Heupel MR, Tobin AJ, Simpfendorfer CA. Accepted. Partial migration of marine predators: is habitat the key? *PLOS ONE*.
- Clarke TM, **Espinoza M**, Ahrens R, Wehrtmann IS. Accepted. Elasmobranch bycatch associated with the shrimp-trawling fishery, Pacific of Costa Rica, Central America. *Fishery Bulletin*
- Naranjo-Elizondo B, **Espinoza M**, Herrera M, Clarke TM, Wehrtmann IS. Feeding habits of the Pacific bearded brotula *Brotula clarkae* (Ophidiidae) along the Pacific coast of Costa Rica, Central America. *Journal of Applied Ichthyology*

#### **Manuscripts submitted:**

- Herrera M, Clarke TM, Naranjo-Elizondo B, **Espinoza M**, Wehrtmann IS. Size at maturity of the Pacific bearded brotula (Ophidiidae: *Brotula clarkae*): a commercially exploited species in the Pacific of Latin America. *Latin American Journal of Aquatic Sciences*
- Sandoval-Herrera NI, Vargas-Soto, JS, Espinoza M, Clarke T, Wehrtmann I, Fisk, A. Mercury levels of four elasmobranchs along the Pacific coast of Costa Rica. *Regional Marine Studies*
- Lédee E, Heupel MR, Tobin AJ, **Espinoza M**, Simpfendorfer CA (In preparation) Identifying movement patterns of reef predators: a network modelling approach. *Ecology*

#### **Manuscripts in preparation:**

- **Espinoza M**, Ledee E, Simpfendorfer CA, Tobin AJ, Heupel MR (2015) Seasonal connectivity of a mobile predator revealed by network analysis. *Ecology*.
- Tobin A, Simpfendorfer CA, Heupel MR, **Espinoza M**. Aggregating for spawning creates a pressure point for exploitation and management action in a pelagic scombrid, *Scomberomorus commerson*. *Marine Biology*.
- **Espinoza M**, Heupel MR, Martín G, Simpfendorfer CA. Predicting the benefits of marine reserve networks for coral reef-associated sharks: a simulation model approach. *Ecological Modelling*.
- Naranjo-Elizondo B, **Espinoza M**, Clarke T, Wehrtmann I. In prep. Feeding and reproductive ecology of the spinetail stingray *Urotrygon aspidura* (Elasmobranchii: Myliobatiformes) in the Pacific of Costa Rica. *Environmental Biology of Fishes*.
- Clarke T, **Espinoza M**, Wehrtmann I. In prep. Sharks and rays as bycatch in tropical shrimp trawling fisheries: current situation of research and management measures in Pacific Costa Rica and Central America. *Biological Conservation*.
- **Espinoza M**, Clarke T, Wehrtmann I. In prep. Ecosystem consequences of demersal elasmobranch declines along the Pacific of Costa Rica. *Biological Conservation*.

- Villalobos F, Clarke T, **Espinoza M**, Wehrtmann I. In prep. Characterization of the reproductive tract of four elasmobranch species according to maturity stages of development, Pacific coast, Costa Rica. *Journal of Fish Biology*.
- Naranjo B, Herrera M, **Espinoza M**, Clarke, T, Wehrtmann I. In prep. Sexual dimorphism of the swim bladder in *Brotula Clarkae* along the Pacific of Costa Rica. *Oecologia*.

#### Technical reports:

- Clarke T, **Espinoza M**, Villalobos F, Wehrtmann IS (2011) Summary of Demersal Elasmobranch Studies in the Continental Platform of the Pacific of Costa Rica with Management and Conservation Strategies. Technical Report. Universidad de Costa Rica (UNIP-CIMAR) and Conservation International. 12 pp.
- **Espinoza M** (2006) Diagnostic on the Status of Sharks and Rays of Costa Rica. Shark Commission Group of Costa Rica
- **Espinoza M**, Nielsen V (2006) Capítulo VII, Especies Comerciales I: Peces: 87-104. *In*: V. Nielsen-Muñoz y M.A. Quesada-Alpizar (Eds.). Ambientes Marino Costeros de Costa Rica. Comisión Interdisciplinaria Marino Costera de la Zona Económica Exclusiva de Costa Rica, Informe Técnico. CIMAR, CI, TNC, San José, Costa Rica.
- **Espinoza M** (2006) Capítulo IX, Tiburones: 119-134. *In*: V. Nielsen-Muñoz y M.A. Quesada-Alpizar (Eds.). Ambientes Marino Costeros de Costa Rica. Comisión Interdisciplinaria Marino Costera de la Zona Económica Exclusiva de Costa Rica, Informe Técnico. CIMAR, CI, TNC, San José, Costa Rica.
- Pihen E, Nielsen V, **Espinoza M** (2006) Capítulo XI, Tortugas marinas: 149-165. *In*: V. Nielsen-Muñoz y M.A. Quesada-Alpizar (Eds.). Ambientes Marino Costeros de Costa Rica. Comisión Interdisciplinaria Marino Costera de la Zona Económica Exclusiva de Costa Rica, Informe Técnico. CIMAR, CI, TNC, San José, Costa Rica.

#### MEETINGS AND CONFERENCES

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- **Espinoza M**, Heupel MH, Tobin A, Simpfendorfer CA (2014) Contrasting movements and habitat connectivity in reef-associated sharks: implications for management. National Environmental Research Program Meeting, Cairns, Australia.
- **Espinoza M**, Heupel MH, Tobin A, Simpfendorfer CA (2014) Movements and residency patterns of grey reef sharks in semi-continuous reef habitats. AIMS@JCU Student Seminar, Townsville, Australia.
- **Espinoza M**, Heupel MH, Tobin A, Simpfendorfer CA (2014) Contrasting movements and patterns of habitat use in reef-associated sharks: implications for management. Sharks International, Durban, South Africa.
- **Espinoza M**, Heupel MH, Tobin A, Simpfendorfer CA (2013) Contrasting movements and patterns of habitat use in reef-associated sharks: implications for management. AIMS@JCU, Australia.
- **Espinoza M**, Heupel MH, Simpfendorfer CA (2013) Predicting marine reserve use by reef-associated sharks: a modelling simulation approach. 9th Indo-Pacific Fish Conference, Okinawa, Japan.
- **Espinoza M**, Clarke TM, Villalobos F, Wehrtmann IS (2011) Distribución y alimentación de elasmobranchios demersales en el Pacífico de Costa Rica. I Mini-Simposio del CIMAR. Ciudad de la Investigación, San José, Costa Rica.
- Clarke TM, **Espinoza M**, Villalobos F, Wehrtmann IS (2011) Elasmobranchios demersales asociados a la pesca de arrastre de camarón: identificación de hábitats esenciales y elaboración de medidas de manejo. I Mini-Simposio del CIMAR. Ciudad de la Investigación, San José, Costa Rica.
- **Espinoza M**, Clarke TM, Villalobos F, Wehrtmann IS (2011) Distribución y alimentación de elasmobranchios demersales en el Pacífico de Costa Rica: implicaciones para la repartición de recursos y el manejo de especies costeras. II Jornada de Investigación sobre el Pacífico Costarricense. Sede del Pacífico, Puntarenas, Costa Rica.

- **Espinoza M**, Clarke TM, Villalobos F, Wehrtmann IS (2011) Elasmobranchios demersales asociados a la pesca de arrastre de camarón: diversidad y distribución en el Pacífico de Costa Rica. II Jornada de Investigación sobre el Pacífico Costarricense. Sede del Pacífico, Puntarenas, Costa Rica.
- Clarke TM, **Espinoza M**, Villalobos F, Wehrtmann IS (2011) Características reproductivas y recomendaciones para el manejo sostenible de tiburones y rayas de la plataforma continental del Pacífico de Costa Rica. II Jornada de Investigación sobre el Pacífico Costarricense. Sede del Pacífico, Puntarenas, Costa Rica.
- Naranjo B, Herrera M, **Espinoza M**, Clarke TM, Wehrtmann IS (2011) Distribución y alimentación del congrio rosado, *Brotula clarkae*, en el Pacífico de Costa Rica: implicaciones para el manejo de recursos demersales. II Jornada de Investigación sobre el Pacífico Costarricense. Sede del Pacífico, Puntarenas, Costa Rica.
- **Espinoza M**, Farrugia T, Lowe C (2010) Uso de telemetría acústica y abundancia de peces para evaluar la función ecológica en un hábitat restaurado. CIMAR, San José, Costa Rica
- **Espinoza M**, Farrugia T, Lowe C (2010) Site fidelity and habitat use of the gray smooth-hound shark in a newly restored estuarine habitat. Joint Meeting of Ichthyologists and Herpetologist, Providence, Rhode Island.
- **Espinoza M**, Farrugia T (2010) Using fish abundances and movement patterns to look at restoration of southern California estuary. Aquarium of the Pacific, Long Beach, CA.
- **Espinoza M**, Farrugia T, Lowe C (2010) Site fidelity and habitat use of the gray smooth-hound shark in a newly restored estuarine habitat. Southern California Academy of Sciences, California State University, Los Angeles, CA.
- **Espinoza M**, Farrugia T, Lowe C (2009) Influence of temperature on site fidelity, movements and habitat use of the gray smooth-hound shark in a newly restored habitat. Western Society of Naturalist Meeting, Monterey, CA.
- **Espinoza M**, Farrugia T, Lowe C (2009) Spatial and temporal patterns of sharks and rays in the Full Tidal Basin of Bolsa Chica. Headwaters to Oceans Conference, Long Beach, CA.
- **Espinoza M**, Farrugia T, Lowe C (2009) Spatial and temporal patterns of sharks and rays in a newly restored habitat. Bolsa Chica Symposium, Huntington Beach, CA.
- **Espinoza M**, Farrugia T, Lowe C (2009) Spatial and temporal patterns of elasmobranchs in a newly restored habitat. Joint Meeting of Ichthyologists and Herpetologist, Portland, Oregon.
- **Espinoza M** (2009) Seasonal residency, movements and habitat use of sharks and rays inside a newly restored habitat. CSULB Research Competition.
- International Coral Reef Symposium, Cairns, Australia (2012)
- Joint Meeting of Ichthyologists and Herpetologist, Montreal, Canada (2008)
- SCAB: Southern California Animal Behavior Symposium, Long Beach, CA, USA (2008)
- Western Society of Naturalist, Ventura, CA (2007)
- APCG: Association of Pacific Coast Geographers (2007)
- International Meeting: X COLACMAR, San José, Costa Rica (2003)

#### **RESEARCH GRANTS, HONORS AND AWARDS**

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2015	AIMS@JCU Travel Award	2011	RELAB travel fund
2015	SEES Student Research Funding	2010	Fondos de Incentivos (CONICIT)
2014	AIMS@JCU Travel Award	2010	AIFRB Hubbs Research Award
2014	SEES Student Research Funding	2010	CSULB Dean's Graduate List Honor
2014	OCS Travel Award	2010	CSULB Dept. Student Honors
2013	SEES Student Research Funding	2010	ASI Travel Fund Award
2013	PADI Foundation Research Grant	2010	CSULB Biol Dept Travel Award
2012	Best Poster Presentation AIMS@JCU	2009	Richard Loomis Student Award
2011	AIMS@JCU Research Scholarship	2009	Reish Research Student Grant
2011	Endeavour Award (Australia)	2009	PADI Foundation Research Grant

2009	Project AWARE Grant	2006	Asistencia Económica de la UCR
2008	Southern California Tuna Club	2005	IDEA WILD Latin American Award
2007	Fulbright Scholarship		

### SCIENTIFIC SOCIETIES AND ORGANIZATIONS

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2014	International Society for Reef Studies
2012	Oceania Chondrichthyan Society
2012	Australian Coral Reef Society
2012	Australian Marine Science Association
2010	Fulbright State Alumni
2010	American Institute of Fisheries Research
2008	Sigma Xi Scientific Research Society
2007	American Elasmobranch Society
2007	American Fisheries Society
2007	Western Society of Naturalist
2006	Colegio de Biólogos de Costa Rica

### SKILLS, TECHNIQUES AND DATA ANALYSIS

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- Project Coordinator (organizational and management of ecological projects)
- Acoustic Telemetry Techniques a / Satellite Tracking of Migratory Fish
- Geographic Information Science (GIS) and Spatial Analysis of Ecological Data (ArcGIS software)
- Long-term Environmental Monitory (CTD sonde for measuring environmental variables)
- Internal (surgical procedures) and External Fish Tagging Techniques
- Fishing Techniques: Long-lines, Beach seines, Trawling, Drum-lines, Rod and reel, etc.
- Experimental Design and Statistical Analysis: R, PRIMER, SAS, MINITAB, STATISTICA, SYSTAT, JMP, SPSS, SigmaPlot
- Environmental and Toxicology Analysis: Stable Isotopes, Trace-metals and Fatty Acid Analysis
- Marine, Estuarine, Freshwater, Deep-water, and Reef Fish Identification (Tropical / Temperate Oceans)
- Database Management (Microsoft Access, VUE, Microsoft Excel)
- PADI Open Water, PADI Advanced, PADI Rescue Diver
- Scientific Research Diving (American Academy of Underwater Sciences - AAUS)
- Field Experience on Small (< 17 feet) and Larger Vessels (32 feet)
- Environmental Education, Planning and Organization of Workshops and Scientific Conferences

### WORKSHOPS AND COURSES

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2015	IUCN - Shark Assessment Workshop, Townsville, Australia
2013	Skills for International Postgraduates (SKIP). Townsville, Australia
2013	R statistics course. Townsville, Australia
2010	Elasmobranch Parasite Workshop. Universidad de Costa Rica ( <a href="http://www.ucr.ac.cr/noticias/2011/08/22/en-estudio-de-ucr-y-universidad-de-kansas.html">http://www.ucr.ac.cr/noticias/2011/08/22/en-estudio-de-ucr-y-universidad-de-kansas.html</a> )
2011	Demersal Elasmobranchs of the Pacific of Costa Rica: Identification of Essential Habitats and Development of Management Strategies. San José, Costa Rica
2010	Embryology and Development Workshop. Universidad de Costa Rica
2006	Marine Conservation of Golfo Dulce. CIMAR-UCR
2006	Ray and Skate Fisheries in the Central Pacific of Costa Rica. CIMAR-UCR
2006	Status of Elasmobranch Research in Costa Rica. INBIO, Costa Rica



## THESIS SUPERVISION

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### *Thesis committee member:*

- Beatriz Naranjo. Ecología trófica de la trucha arcoiris *Oncorhynchus mykiss* (Salmonidae) en el Río Savegre, San Gerardo de Dota, Costa Rica. Universidad de Costa Rica, Tesis de Licenciatura.
- Arturo Angulo Sibaja. 2014. Peces de aguas profundas del Pacífico de Costa Rica: diversidad, distribución y relaciones biogeográficas. Universidad de Costa Rica, Tesis de Maestría.
- Allan Carrillo Baltodano. 2012. Diversidad, abundancia, composición y biomasa del zooplancton de la zona arrecifal del Parque Nacional Cahuita, Limón ¿Cuál es la disponibilidad de larvas de invertebrados bentónicos 25 años después?. Universidad de Costa Rica, Tesis de Licenciatura.

## POSTERS

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- **Espinoza M**, Heupel MR, Tobin AJ, Simpfendorfer CA (2015) Partial migration of marine predators: is habitat the key? JCU Student Seminar Day, Townsville, Australia.
- **Espinoza M**, Heupel MR, Simpfendorfer CA (2012) The role of sharks in coral reef ecosystems: movements and trophic ecology of top predators along the Great Barrier Reef. AIMS, Australia.
- **Espinoza M**, Clarke TM, Villalobos F, Wehrtmann IS (2011) Feeding ecology of elasmobranchs in the Pacific of Costa Rica: Implications for resource partitioning and management. XIV Congreso Latinoamericano de Ciencias del Mar (COLACMAR). Balneário Camboriú, Santa Catarina, Brasil.
- Villalobos F, Clarke TM, **Espinoza M**, Wehrtmann IS (2011) Distribution and diversity of elasmobranchs associated to the shrimp trawling fishery of the Pacific of Costa Rica. XIV Congreso Latinoamericano de Ciencias del Mar (COLACMAR). Balneário Camboriú, Santa Catarina, Brasil.
- Naranjo B, Herrera M, **Espinoza M**, Clarke TM, Wehrtmann IS (2011) Distribution and feeding ecology of *Brotula clarkae* (Ophidiidae) along the Pacific of Costa Rica. XIV Congreso Latinoamericano de Ciencias del Mar (COLACMAR). Balneário Camboriú, Santa Catarina, Brasil.
- **Espinoza M**, Farrugia T, Lowe C (2009) Testing a new technique to quantify fish movements. CSULB Research Celebration

## BLOGS

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- Espinoza (2015) Importancia de los tiburones en los ecosistemas marinos. Blog - Conservation International.
- Espinoza (2015) Situación de los tiburones en Costa Rica. Blog - Conservation International

## LINKS TO STUDIES

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<http://www.livescience.com/47778-coral-reef-sharks.html>  
<http://conservationmagazine.org/2014/09/sharks-prefer-healthy-reefs-healthy-reefs-need-sharks/>  
<http://sciencealert.com.au/news/20141209-26168.html>  
<http://www.sciencedaily.com/releases/2014/09/140910152508.htm>  
[http://www.terraily.com/reports/Sharks\\_more\\_abundant\\_on\\_healthy\\_coral\\_reefs\\_999.html](http://www.terraily.com/reports/Sharks_more_abundant_on_healthy_coral_reefs_999.html)  
<http://www.xray-mag.com/content/healthy-reefs-have-more-sharks>  
<http://phys.org/news/2014-09-sharks-abundant-healthy-coral-reefs.html>  
[http://www.spacedaily.com/reports/Sharks\\_more\\_abundant\\_on\\_healthy\\_coral\\_reefs\\_999.html](http://www.spacedaily.com/reports/Sharks_more_abundant_on_healthy_coral_reefs_999.html)  
<http://www.veooz.com/news/1HU5jpR.html>  
<http://www.fishchannel.com/fish-news/2014/09/sharks-thrive-when-coral-reefs-are-healthy.aspx>  
[http://www.aims.gov.au/docs/media/latest-releases/-/asset\\_publisher/8Kfw/content/Sharks-More-Abundant-on-Healthy-Coral-Reefs](http://www.aims.gov.au/docs/media/latest-releases/-/asset_publisher/8Kfw/content/Sharks-More-Abundant-on-Healthy-Coral-Reefs)

## SCIENTIFIC AND TECHNICAL REVIEWER

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- Biological Conservation
- African Journal of Marine Science
- Restoration Ecology
- Environmental Biology of Fishes
- Marine Ecology Progressive Series
- Marine and Freshwater Research
- Fisheries Research
- Animal Biotelemetry
- Environmental Monitoring and Assessment
- Journal of Fish Biology
- Revista Biología Tropical
- Revista Brenesia
- Revista Ciencias Marinas y Costeras
- Scientific Reports

## PROGRAMS, COURSES AND OUTREACH ACTIVITIES

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- Science Fair Judge at the Jose Figueres Elementary School (2011)
- Science Fair Judge at the Jose Figueres Elementary School (2010)
- Kids Fishing Rodeo (CSULB Shark's Lab and the Southern California Tuna Club – SCTC) (2009)
- Seal Beach Stingray's Outreach Activity (2008)
- Individual Environmental Consultant (SETENA # CI-033-2007) (2007)
- Tropical Field Biology Course at Golfito, south Pacific of Costa Rica (2005)
- Save the Mangroves Activity in Flamingo Beach, Pacific of Costa Rica (2004)

## REFERENCES

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