Curriculum Vitae

Andres Hernandez-Serna
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EDUCATION:

Master of Ecology and Biology, 2016, Department of Biology. University of Puerto Rico, PR, USA
Bachelor of Biology, 2011, Universidad de Antioquia, Antioquia Colombia.

PROFESSIONAL EXPERIENCE:

Faculty Specialist, University of Maryland Department of Geographical Sciences, 2016-Present

- Conduct research for Global Land Analysis & Discovery Group (GLAD) on land-cover change with a special focus on forest cover and agricultural land cover at a global scale utilizing remote sensing.
- Develop new analytical approaches for extracting information and new applications for existing systems.
- Lead Deep learning initiates on agriculture and urbanization; implement different architectures of deep learning and features using GPUs.
- Test performance of Landsat and LiDAR data for measuring continuous changes in tree height and tree cover, using regression tree models to estimate tree height and tree cover from 1985 to 2019.
- Collect Lidar-RIEGL data by flying an M600 drone in various agricultural and primary forest locations (e.g. Congo, US) to quantify the area respective biomass and tree height
- Assist capacity building projects in Latin America to help derive national scale forest loss estimates.

Graduate Teacher Assistant, Applied Ecology Class, University of Puerto Rico, 2013-16

- Prepared lectures, exams, course materials on statistical methods in R and Python in an Applied Ecology class for 70 under graduate students per semester.
- Evaluated grade examinations, maintained regular office hours, and initiated and facilitated class discussions.
- Lead and coordinated five field research trips throughout Puerto Rico for the student's data acquisition on their respective projects (e.g. Mammals, plants, invertebrates, vertebrates).

Research Assistant. Universidad de Antioquia, 2008-2012

- *Magdalena River 2010-2012:* Managed, developed, implemented, and executed the project, 'traditional use of fishery resources and conservation of biodiversity in a sub-development tropical region,' through 450km of the most important river of Colombia, Magdalena river, to define areas of conservation, determine the river's rich fish biodiversity, and study the relationship of the local population and their impact on the floodplain lake. Created workshops geared to the local community, government, and public administrations to demonstrate and propose implementation results at a local scale.
- *Manso River 2010-2012:* Analyzed and recorded biological data and conducted statistical analyses to assess the impact of the Manso River Tunnel that fed into the hydroelectric damn LA MIEL on the fish community. Coordinated monthly field work travel for 36 months, supervised team of three, and collected species for The Natural History Museum of University of Antioquia. Prepared and interpreted species-based GIS maps, research proposals, and reports.
- *Porce River 2008-2010:* Lead project on monitoring fish communities in the Porce river, area of influence by the hydroelectrical Project Porce III. Oversee team of four, collect fish data every three months, conduct statistical analysis, and develop reports for the company to determine the effect of the hydropower plant on the fish community. Published a book based on the results found for the community and Colombian government.

PEER-REVIEWED PUBLICATIONS:

- 2019. P Potapov, A Tyukavina, S Turubanova, Y Talero, A Hernández-Serna, MC Hansen, D. Saah, K Tenneson, A Poortinga, A Aekakkararungroj, F Chishtie, P Towashiraporn, B Bhandari, KS Aung, NH

Quyen. Annual continuous fields of woody vegetation structure in the Lower Mekong region from 2000-2017 Landsat time-series. Remote Sensing of Environment, Volume 232, October 2019, 111278; doi: 10.1016/j.rse.2019.111278.

- 2017. T.M Aide, A Hernández-Serna, M Campos-Cerqueira, O.A Acevedo-Charry, J.L Deichmann. Species richness (of insects) drives the use of acoustic space in the tropics. Remote Sensing. 9 (11), 1096; doi: 10.3390/rs9111096.
- 2017. J.L Deichmann, A Hernández-Serna, J.A Delgado C, M Campos-Cerqueira, T.M Aide. Soundscape analysis and acoustic monitoring document impacts of natural gas exploration on biodiversity in a tropical forest. Ecological Indicators. Volume 74, March 2017, Pages 39–48
- 2016. N Alvarez-Berrios, M Campos-Cerqueira, A Hernández-Serna, JA Delgado C, F Roman-Doñobeytia, and TM Aide. Impacts of small-scale gold-mining on birds and anurans near the Tambopata Natural Reserve, Peru. Tropical Conservation Science. Vol. 9 (2): 832-851.
- 2015. A Hernández-Serna, C Granado-Lorencio and LF Jiménez-Segura. Diel cycle size-dependent trophic structure of neotropical fishes: a three-year case analysis from 35 floodplain lakes in Colombia. Journal of Applied Ichthyology. 31: 638–645.
- 2014. A Hernández-Serna and LF Jiménez-Segura. Automatic identification of species with neural networks. PeerJ. PeerJ 2:e563.
- 2014. A Hernández-Serna, V Márquez Velásquez, JD Carvajal-Quintero, A Gulfo, C Granado-Lorencio and LF Jiménez-Segura. Length–weight relationships of 38 fish species of the Magdalena river floodplain lakes. Journal of Applied Ichthyology. 30: 549-55.
- 2012. C Granado-Lorencio, A Hernández-Serna, JD Carvajal, LF Jiménez-Segura, A Gulfo, and F Alvarez. Regionally nested patterns of fish assemblages in floodplain lakes of the Magdalena River (Colombia). Ecology and Evolution 2: 1296-1303.
- 2012. C Granado-Lorencio, A Gulfo, F Alvarez, LF Jiménez-Segura, JD Carvajal-Quintero, and A Hernández-Serna. Fish assemblages in floodplain lakes in a Neotropical river during the wet season (Magdalena River, Colombia). Journal of Tropical Ecology 28:271-279.

BOOKS AND BOOK CHAPTERS

- 2015. Jiménez-Segura LF, Álvarez J., Ochoa LE., Loaiza A., Londoño JP., Restrepo D., Aguirre K., Hernández-Serna A., Correa J.D. y Jaramillo-Villa U. "Guía Ilustrada Peces cañón del río Porce, Antioquia". EPM. Universidad de Antioquia - Medellín, Colombia. ISBN:978958582968-8 ed:1. 106 pp.
- 2011. Hernandez-Serna A, Carvajal-Quintero JD y Jiménez-Segura LF. "Familia *Lorricariidae*". I Catalogo de los recursos pesqueros continentales de Colombia. Instituto de Investigaciones de Recursos Biológicos Alexander von Humboldt. ISBN: 978958834354-9 ed: 1, vol:1, pag: 300-378.

PRESENTATIONS:

Keynote speaker:

- A Hernandez-Serna et al. 2019, November. Congress Venezolano of Ecology. Towards Global Land Change Monitoring.

Conferences:

- A Hernández-Serna, 2014 December. I Congreso Colombiano Zoologia, X Congreso Latinoamericano de Herpetologia."Effect of temperature on acoustic activity: A meta-analysis" Cartagena-Colombia.
- A Hernández-Serna. 2012. April. "Species Recognition by Digital Image Processing using Artificial Intelligence". Museo Nacional de Ciencias Naturales MNCN-CSIC. Madrid-Spain.
- A Hernández-Serna. 2011 December. Workshop the Engineering Bioinspirada. "Species Recognition by Digital Image Processing using Artificial Intelligenc". Universidad de Antioquia. Medellín-Colombia.
- A Hernández-Serna. 2011 September. "Neural networks", Universidade La Salle. Manaus- Brazil.
- A Hernández-Serna. 2011 August. Lecture in Conservation Biology course. "Species Recognition by Digital Image Processing using Artificial Intelligence". Universidad del CES. Medellín-Colombia.

- A Hernández-Serna. 2011 July. Lecture in the program BEM and the academic coordination. "Species Recognition by Digital Image Processing using Artificial Intelligence". INVEMAR. Santa Marta-Colombia.
- A Hernández-Serna. 2011 May. XI Colombian Congress of Ichthyologists and II South American Meeting of Ichthyologists. “Recognition of neotropical fish species by the digital processing and Images” Tolima-Colombia.
- H Zamora Agudelo; A Hernández-Serna; LF Jiménez Segura. 2009 May. X Colombian Symposium of Ichthyologysts and I South American Meeting of Ichthyologist. “Fish Collection from the University of Antioquia“.Medellín-Colombia.

Poster:
- A Hernandez-Serna et al. 2019. AGU Fall Meeting Monitoring tree height, loss, and gain in South America using Lidar and Landsat data for 1985-2018.
- A Hernández-Serna. 2010 July. Fish Biology Congres.” Application of parsimony analysis of endemicity (PAE) for fresh water fishes in the water systems of Colombia”. Barcelona-Spain.
- LF Jiménez Segura; JD Correa; S Lopez-Casas; A Gulfo; A Hernández-Serna; J Escobar. 2011 May. XI Colombian Congress of Ichthyologists and II South American Meeting of Ichthyologists. “Fish community in the River Manso (Caldas, Colombia)”. Tolima-Colombia.
- A Hernandez-Serna 2010 July. Fish Biology Congress.” Recognition of neotropical fish species by digital image processing”. Barcelona-Spain.

WORKSHOPS HOSTED:

- “Utilización de Sistema Satelital para el Monitoreo de Bosques y Uso de la Tierra en Guatemala” Universidad Rafael Landívar Del 10 al 14 de julio de 2017, Ciudad de Guatemala, Guatemala.

GRANTS:

- Agencia Española de Cooperación Internacional para el Desarrollo-ACEID 2010-2011 ($181,689 USD).

HONORS AND AWARDS:

- University of Puerto Rico 2014-15. “Scholarship merit and excellence” Graduate student.
- University of Antioquia 2011. Magna cum laude “Fish species recognition by digital image” undergraduate student.

FIELD WORK:

- South West, USA, August 2019, over 17 states of *in situ* agricultural data.
- Republic of the Congo, April 2019, 12 sites of *in situ* survey of forest/non-forest cover.
- North East, USA, September 2018, 14 states of *in situ* agricultural data.
- Brazil, January 2018, 7 states of *in situ* agricultural data.
- Magdalena medio, Colombia, 2010-12, Hydrobiological monitoring of Magdalena river.
- Caldas, Colombia, 2010-12, Hydrobiological monitoring of Manso river.
- Antioquia, Colombia, 2008-10, Hydrobiological monitoring of Porce river.

ADDITIONAL TRAINING:

- 2015. June and July. Tropical Biology. Organization for tropical studies. University of Costa Rica and Duke University. Costa Rica.
- 2012. August 13-17th. Tools for conservation analysis: integrating levels of biological organization. Universidad de Antioquia. Medellin - Colombia.

- 2009. August 5-20th. Conservation biology in Latin America. Tirimbina Biological Reserve. Tirimbina-Costa Rica.
- 2009. May 15-18th. Hydroelectric: Effect of fish and handling. Universidad de Antioquia. Medellin - Colombia.
- 2009. May 15-18 th. Determining the age and growth parameters in tropical fish. Universidad de Antioquia. Medellin - Colombia.
- 2008. December 3-23th. Biological Morphometry. Universidad de Antioquia. Medellin - Colombia.
- 2006. February – June. Introduction to astrophysics. Universidad de Antioquia. Medellin - Colombia.

INTERNSHIPS:

- 2016. January-March. Center for Conservation and Sustainability. Smithsonian Conservation Biology Institute. Washington DC- The United States.
- 2012. April 03-21th. Photographic record of the ichthyological collection of the Museo Nacional de Ciencias Naturales MNCN-CSIC. Madrid-Spain.
- 2011. August 7 th - September 30th. Photographic record of the ichthyological collection of the Instituto Nacional de Pesquisas da Amazônia, Museu Nacional Rio de Janeiro, and Museu de zoologia universidade de São Paulo - Brazil.
- 2011. July 17-27th. Photographic record of the ichthyological collection of the Museo de Historia Natural Marina Colombiano (MHNMC). Instituto de investigaciones Marinas y Costeras de punta de Betin (INVEMAR). Santa Marta, Colombia

PROFESSIONAL MEMBERSHIPS:

- American Geophysical Union-AGU
- Asociacion Colombiana de Zoologia – ACZ
- Asociacion Colombiana de Ictiologos – ACICTIOS
- Asociacion de Biologos de la Universidad de Antioquia – ASBIUDEA

REFERENCES:

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