

Martha Marina Gómez Sapiens

PERSONAL INFORMATION

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CURRENT RESEARCH

I am an ecologist who has worked on the Colorado River delta restoration efforts for the last 10 years researching and monitoring the ecosystem response to environmental flows on the Colorado River, following implementation of the binational agreements Minutes 319 and 323 between the U.S. and Mexico. Part of my work is focused on using ground and drone surveys and remote sensing data to document vegetation response to environmental flows. I also co-lead a binational and multidisciplinary scientific team (Minute 323 Binational Science Team) which provides recommendations and planning on restoration and water deliveries.

EDUCATION

- Bachelor's Degree (Ecology), Centro de Estudios Superiores del Estado de Sonora. Hermosillo, Mexico (1999-2000).
- Master of Science Degree (Environmental Biology). Instituto de Ecología, Universidad Nacional Autónoma de México (UNAM), Mexico D.F. (2001-2004).
- Ph.D. Soil Water and Environmental Science, University of Arizona, Tucson AZ (2009-2014).

WORK EXPERIENCE

Researcher Scientist IV (2021 to the present). Department of Geosciences, University of Arizona. Responsibilities include to Coordinate the Minute 323 Binational Science Team, collaborate in the planning and design of environmental flows, and conduct research using ground and remote sensing methods to document the vegetation and wildlife response to environmental flows.

Postdoctoral Research Associate (2014-2020). Department of Geosciences, University of Arizona. Responsibilities include collection and analysis of vegetation recruitment, growth and survival in response to environmental flows using field-based and remote sensing techniques. Research on the application of drone-based remote-sensing and satellite imagery for vegetation health and vegetation mapping.

Teaching assistant (2012) for University of Arizona classes in Freshwater and marine algae, Environmental monitoring and remediation, Introduction to Environmental Sciences. Responsibilities included grading lab reports, assignments and exams, coordination of activities with preceptors, assistance during lab activities and field trips.

Graduate research associate (2010-2011), at the University of Arizona, research on the project "Evaluating the Cienega habitat values" funded by Environmental Defense Fund.

Responsibilities included the analysis of satellite images to determine inundation patterns in wetlands and determine the effects of water management in the availability of habitat for marsh bird and shorebirds.

Biological Monitoring Coordinator (from 2005 to 2008), Reserva de la Biosfera Alto Golfo de California y Delta del Río Colorado, CONANP-SEMARNAT. Responsibilities included monitoring of Shorebirds*, Desert Pupfish, Corvina Golfina and Flat-tailed Horned Lizard, participation in the Marshbird Monitoring Program with Pronatura Noroeste A.C. and facilitation and logistical support for scientific research inside the Biosphere Reserve.

*Programa de Monitoreo de Aves Playeras en Humedales Prioritarios de la Reserva de la Biosfera Alto Golfo de California y Delta del Río Colorado”.

PUBLICATIONS

1. Nagler, P.L., Sall, I., **Gómez-Sapiens, M.**, Flessa, K.W., Barreto-Muñoz, A., Didan, K. 2024. Effect of water delivery and irrigation for riparian restoration in the Colorado River Delta, Mexico. *Restoration Ecology* (in press).
2. González-Sargas, E., **Gómez-Sapiens, M.**, Hinojosa-Huerta, O., Villagomez-Palma, S., Calvo-Fonseca, A. Grand, J., Meehan, T.D., Dodge, C., Nagler, P.L. Restrepo-Giraldo, C. Nieblas, C., Meléndez, A., Real Rangel, R., Shafroth, P.B. 2024. Avian communities respond to plant and landscape composition in actively revegetated floodplains of the Colorado River delta in Mexico. *Ecological Engineering* 205, 107266.
3. González-Sargas, E., Meehan, T.D., Hinojosa-Huerta, O., Villagomez-Palma, S., Calvo-Fonseca, A., Dodge, C., **Gómez-Sapiens, M.**, Shafroth, P.B. 2024. Bird community response to one decade of riparian restoration along the Colorado River delta in Mexico. *Ecological Engineering* 205,107291.
4. Nagler, PL, Sall I., **Gomez-Sapiens, M.**, Barreto-Muñoz, A., Jarchow, C.J., Flessa, K., Didan, K. 2024. Greenness and Actual Evapotranspiration in the Unrestored Riparian Corridor of the Colorado River Delta in Response to In-Channel Water Deliveries in 2021 and 2022. *Remote Sensing* 16,1801.
5. Grand, J., Meehan, T.D., DeLuca, W.V., Morton, J., Pitt, J., Calvo-Fonseca, A., Dodge, C., **Gómez-Sapiens M.**, González-Sargas, E., Hinojosa-Huerta, O., Nagler, P.L., Restrepo-Giraldo, C., Shafroth, P.B., Villagomez-Palma, S., Wilsey, C.B. 2024. Strategic restoration planning for land birds in the Colorado River Delta, Mexico, *Journal of Environmental Management* 351, 107266.
6. Nagler, P.L., Sall, I., Barreto-Muñoz, A., **Gómez-Sapiens, M.**, Nouri, H., Chavoshi Borujeni, S., Didan, K. 2022. Effect of restoration on vegetation greenness and water use in relation to drought in the riparian woodlands of the Colorado River delta. *J. Am. Water Resour. Assoc.* 58, 746–784.
7. **Gómez-Sapiens, M.**, Schlatter K., Melendez, A., Hernández, D., Kendy, E., Flessa, K.W. 2021. Improving the efficiency, accuracy and cost-effectiveness of evaluating desert riparian habitat restoration using unmanned aerial vehicles. *Remote Sensing in Ecology and Conservation* 7, 488-503.
8. Nagler, P.L., Barreto-Muñoz, A., Borujeni, S.C., Jarchow, C.J., **Gómez-Sapiens, M.M.**, Nouri, H., Hermann, S.M., Didan, K. 2020. Effect of restoration on vegetation greenness and water use in relation to drought in the riparian woodlands of the Colorado River delta. *Hydrological Processes* 34, 4851-4883.

9. **Gómez-Sapiens, M.**, Jarchow, C.J., Flessa, K.W., Shafroth, P.B., Glenn, E.G., Nagler, P.L. 2019. Effect of an environmental flow on vegetation growth and health using ground and remote sensing metrics. *Hydrological Processes* 34, 1682-1696.
10. Brown, D.E., Traphagen, M.B., Lorenzo, A.M.C., **Gómez-Sapiens, M.** 2018. Distribution, status and conservation needs of the White-sided Jackrabbit, *Lepus callotis* (Lagomorpha). *Revista Mexicana de Biodiversidad* 89, 310-320.
11. Guest Editor Special Issue: Environmental Flows for the Colorado River Delta: Results of an Experimental Pulse Release from the US to Mexico, *Ecological Engineering* 106, Part B. September 2017.
12. Shafroth, P., Schlatter, K., **Gómez-Sapiens, M.**, Lundgren, E., Ramirez, J., Rodriguez-Burgueño, E., Flessa, K., Grabau, M. 2017. A large-scale environmental flow experiment for riparian restoration in the Colorado River delta. *Ecological Engineering* 106, 645-660.
13. **Gómez-Sapiens, M.**, 2014. Linking shorebird and marsh bird habitat use to water management in anthropogenic and natural wetlands in the Colorado River delta. PhD Dissertation, The University of Arizona.
14. **Gómez-Sapiens, M.**, Soto-Montoya, E., Hinojosa-Huerta, O. 2013. Shorebird Abundance and Species Diversity in Natural Intertidal and Non-Tidal Anthropogenic Wetlands of the Colorado River Delta, Mexico. *Ecological Engineering* 59, 74-83.
15. **Gómez-Sapiens, M.**, Tang, D., Glenn, E. P., Lomeli, M., Ramirez-Hernandez, J., Pitt, J., 2013. Modeling water management scenarios for the Ciénega de Santa Clara, an anthropogenic coastal desert wetland system, based on inflow volumes and salinities. *Ecological Engineering* 59, 30-40.
16. Glenn, E. P., Mexicano, L., Garcia-Hernandez, J., Nagler, P. L., **Gómez-Sapiens, M.**, Tang, D., Lomeli, M., Ramirez-Hernandez, J., Zamora-Arroyo. 2013. Evapotranspiration and water balance of an anthropogenic coastal desert wetland: Responses to fire, inflows and salinities. *Ecological Engineering*, 59, 176-184.
17. Hinojosa-Huerta, O., Soto-Montoya, E., **Gómez-Sapiens, M.**, Calvo-Fonseca, A., Guzmán-Olachea, R., Butrón-Méndez, J., Butrón-Rodríguez, J.J., Román-Rodríguez, Martha., 2013. The birds of the Ciénega de Santa Clara, a wetland of international importance within the Colorado River Delta. *Ecological Engineering* 59, 61-73.
18. Soto-Montoya, E., Carmona, R., **Gómez, M.**, Ayala-Pérez, V., Arce, N. & Danemann, G.D. 2009. Oversummering and migrant Red Knots at Golfo de Santa Clara, Gulf of California, Mexico. *Wader Study Group Bull.* 116(3): 191–194.
19. **Gómez-Sapiens, M.** 2005. Variabilidad de las características morfológicas y funcionales de las hojas de especies leñosas distribuidas a lo largo de un gradiente de precipitación en Sonora central, Mexico. M.Sc. Thesis. Maestria en Ciencias Biologicas, Instituto de Ecología, UNAM.
20. **Gómez-Sapiens, M.** 2001. Características foliares de las especies arbóreas y arbustivas en tres tipos de vegetación de clima seco en Sonora, México. BSc. Thesis. Centro de Estudios Superiores del Estado de Sonora. Hermosillo, Sonora.

Contributions/Technical Reports:

- IBWC, 2020. Limitrophe and Ciénega de Santa Clara Monitoring. Final Report, November 1, 2020.

- Kendy, E., Schlatter, K., **Gómez-Sapiens, M.**, Meléndez, A., Hernández, D. 2019. Improving the efficiency, accuracy and cost-effectiveness of evaluating desert riparian habitat restoration using unmanned aerial systems. Final Report to The Nature Conservancy.
- IBWC, 2018. Minute 319 Colorado River Limitrophe and Delta Environmental Flows Monitoring Final Report, November 28, 2018.
- IBWC, 2014. Minute 319 Colorado River Delta Environmental Flows Monitoring Initial Progress Report, December 4, 2014.
- **Gómez-Sapiens, M.M.**, Soto-Montoya, E., 2006. Informe Final del Programa de. Monitoreo de Aves Playeras en Humedales Prioritarios de la Reserva de la Biosfera Alto Golfo de California y Delta del Río Colorado. Reserva de la Biosfera Alto Golfo de California y Delta del Río Colorado, CONANP-. SEMARNAT, San Luis Río Colorado Sonora, Mexico.
- Chapter 3: State and Provincial Summaries of Long-billed Curlew Status: Sonora, México, submitted by **Martha Marina Gómez-Sapiens**, Osvel Hinojosa-Huerta, and Eduardo Soto-Montoya. On: Fellows, S. D., and S. L. Jones. 2009. Assessment and conservation action plan for the Long-billed Curlew (*Numenius americanus*). U.S. Department of Interior, Fish and Wildlife Service, Biological Technical Publication, FWS/BTP-R6012-2009, Washington, D.C.

Languages

Spanish (First language), English (second language).

Memberships

N-Gen Sonoran Desert Researchers (Board of director 2018-2022)

Ecogrande A.C. Co-founder

Certifications

FAA- Part 107 Certified Drone Pilot