




Andrew M. Antaya, M.S.

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Education





- 2016 – 2018  **M.Sc., Natural Resources, Wildlife Emphasis, University of Arizona**
Thesis title: *Effects of Human Activity on the Distribution of Desert Bighorn Sheep Along the Border in Southwestern Arizona and Northern Sonora* .
- 2009 – 2013  **B.Sc., Fish and Wildlife Sciences, Wildlife Concentration, Paul Smith's College**
Minor, *Geographic Information Systems (GIS)*

Professional Experience

- 7/2024 – Present  **Data Coordinator** West River Research and Extension, Agricultural Experiment Station, South Dakota State University.
- 8/2018 – 7/2024  **Research Professional II** School of Natural Resources and the Environment, University of Arizona, Tucson, AZ.
- 7/2016 – 5/2018  **Graduate Research Assistant (M.S.)** School of Natural Resources and the Environment, University of Arizona, Tucson, AZ.
- 3/2016 – 7/2016  **Associate Wildlife Biologist** School of Natural Resources and the Environment, University of Arizona, Tucson, AZ.
- 4/2015 – 10/2015  **Wildland Firefighter (Seasonal)** U.S. Fish and Wildlife Service, Arizona Fire District, Buenos Aires National Wildlife Refuge, Sasabe, AZ.
- 9/2013 – 5/2015  **Wildlife Technician (Internship)** U.S. Fish and Wildlife Service, Cabeza Prieta National Wildlife Refuge, Ajo, AZ.
- 5/2013 – 9/2013  **Invasive Species Technician (Internship)** U.S. Fish and Wildlife Service, Balcones Canyonlands National Wildlife Refuge, Marble Falls, TX.

Publications

Journal Articles - Peer Reviewed

- 1 Antaya, A. M., Lopez, P. G., Brennan, J. R., Tedeschi, L. O., Husmann, A. L., Feist, H. K., Parsons, I. L., Zuidema, D. M., & Menendez, H. M. (2025). 64. Application of data engineering techniques to manage big data in precision livestock farming. *Animal - Science proceedings*, 16(4), 610–611.  10.1016/j.anscip.2025.08.219.
- 2 Guarnido-Lopez, P., Menendez, H. M., III, Husmann, A., Parsons, I., **Antaya, A.**, Brennan, J., & Tedeschi, L. O. (2025). Unraveling factors influencing the variability and repeatability of greenhouse gases measured through an automated head chamber system in grazing cattle in commercial conditions. *Journal of Animal Science*, 103, skaf229.  10.1093/jas/skaf229.
- 3 **Antaya, A.**, Dalke, A., Mayer, B., Blouin, C., Noelle, S., Blum, B., Beard, J. K., Ruyle, G., & Lien, A. (2025b). Challenges and opportunities to leverage virtual fence data for rangeland management. *Rangelands*, 47(1), 16–23.  10.1016/j.rala.2024.05.003.
- 4 Mayer, B., Dalke, A., **Antaya, A.**, Noelle, S., Blum, B., Blouin, C., Ruyle, G., Beard, J. K., & Lien, A. (2025). Using virtual fence to manage livestock in arid and semi-arid rangelands. *Rangelands*, 47(1), 24–33.  10.1016/j.rala.2024.05.002.

Extension Publications - Peer Reviewed

- 1 Audoin, F., **Antaya, A.**, May, T., Burnidge, W., Mayer, B., Noelle, S., Blum, B., Blouin, C., Lien, A., & Dalke, A. (2025). *Foundations of Virtual Fencing: Collar Deployment Basics* (Extension Publication No. az2124). University of Arizona. Tucson, Arizona, USA.
https://extension.arizona.edu/sites/default/files/2025-06/az2124_Foundations-of-Virtual-Fencing_Collar-Deployment-Basics.pdf
- 2 Duval, D., Audoin, F., Dalke, A., Mayer, B., **Antaya, A.**, Quintero, J., Blum, B., & Lien, A. (2025). *Foundations of Virtual Fencing: Economics of Virtual Fence (VF) Systems* (Extension Publication No. az2117). University of Arizona. Tucson, Arizona, USA.
<https://extension.arizona.edu/sites/default/files/2025-03/az2117-2025.pdf>
- 3 Duval, D., Audoin, F., Dalke, A., Mayer, B., **Antaya, A.**, Quintero, J. H., Blum, B., & Lien, A. (2025). *Economics of Virtual Fencing Technology in Arizona* (SSRN Scholarly Paper No. 5136551). Social Science Research Network. Rochester, NY. [doi](https://doi.org/10.2139/ssrn.5136551) 10.2139/ssrn.5136551.
- 4 Mayer, B., Dalke, A., **Antaya, A.**, Audoin, F., May, T., Blum, B., Noelle, S., Beard, J., Blouin, C., & Lien, A. (2024). *Foundations of Virtual Fencing: Exploring the Complexities and Challenges* (Extension Publication No. az2089). University of Arizona. Tucson, Arizona, USA.
<https://extension.arizona.edu/sites/default/files/2024-12/az2089-2024.pdf>
- 5 **Antaya, A.**, May, T., Burnidge, W., Mayer, B., Audoin, F., Noelle, S., Blum, B., Blouin, C., Lien, A., & Dalke, A. (2024). *Foundations of Virtual Fencing: Strategies for Collar Management* (Extension Publication No. az2095). University of Arizona. Tucson, Arizona, USA.
<https://extension.arizona.edu/sites/default/files/2024-11/az2095-2024.pdf>
- 6 Mayer, B., Dalke, A., **Antaya, A.**, Audoin, F., Beard, J., Noelle, S., Ruyle, G. B., & Lien, A. M. (2024). *Foundations of Virtual Fencing: Training and Animal Welfare* (Extension Publication No. az2088). University of Arizona. Tucson, Arizona, USA.
<https://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az2088-2024.pdf>
- 7 **Antaya, A. M.**, Dalke, A., Mayer, B., Blum, B., Beard, J., Blouin, C., Noelle, S., Ruyle, G., & Lien, A. (2024). *Foundations of Virtual Fencing: The Vital Role of High-Quality GIS Data* (Extension Publication No. az2087). University of Arizona. Tucson, Arizona, USA.
<https://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az2087-2024.pdf>
- 8 **Antaya, A. M.**, Dalke, A., Mayer, B., Noelle, S., Beard, J., Blum, B., Ruyle, G., & Lien, A. (2024). *What is Virtual Fence? Basics of a Virtual Fencing System* (Extension Publication No. az2079). University of Arizona Extension Publication az2079. Tucson, Arizona, USA.
<https://extension.arizona.edu/sites/extension.arizona.edu/files/pubs/az2079-2024.pdf>

Scientific Reports - Not Peer Reviewed

- 1 **Antaya, A.**, Mayer, B., Noelle, S., & Ruyle, G. (2022). Examination of Site Use by Grazing Animals and Effects on Vegetation within the Heber Wild Horse Territory, Arizona, USA. *University of Arizona*.
- 2 **Antaya, A.**, Mayer, B., Noelle, S., & Ruyle, G. (2020). Examination of the Ecological Interactions of Free-Roaming Horses on Montane Riparian Systems of the Apache-Sitgreaves National Forest, Arizona, USA. *University of Arizona*.
- 3 Blum, B., Noelle, S., Mayer, B., **Antaya, A.**, & Ruyle, G. (2019). Examination of Behavioral Variation, Site Use and Interspecies Interaction in the Heber Wild Horse Territory, Arizona, USA. *University of Arizona*.

Teaching Experience






- 1 **Antaya, A. M.** (2025, April 7). *Putting FAIR and CARE Data Principles into Practice*. Guest Lecture. Spring Seminar Series, South Dakota State University (Rapid City, SD, USA).
- 2 **Antaya, A. M.** (2024, December 10). *Introduction to ArcGIS*. Guest Lecture. South Dakota State University (Rapid City, SD, USA).
- 3 **Antaya, A. M.** (2024, December 3). *Introduction to R Programming*. Guest Lecture. South Dakota State University (Rapid City, SD, USA).
- 4 **Antaya, A. M.** (2024, October 10). *Putting FAIR Data Principles into Practice*. Guest Lecture. Martin/Short Lab Meeting, South Dakota State University (Rapid City, SD, USA).

Presentations, Posters, Workshops

- 1 **Antaya, A. M.**, Lopez, P. G., Brennan, J. R., Tedeschi, L. O., Husmann, A. L., Feist, H. K., Parsons, I. L., Zuidema, D. M., & Menendez III, H. M. (2025, June 3). *Application of Data Engineering Techniques to Manage Big Data in Precision Livestock Farming*. Oral Presentation. U.S. Precision Livestock Farming 2025 Conference (Lincoln, Nebraska, USA).
- 2 **Antaya, A.**, Dalke, A., Mayer, B., Blouin, C., Noelle, S., Blum, B., Beard, J. K., Ruyle, G., & Lien, A. (2025, February 10). *Challenges with Virtual Fence Data*. Oral Presentation. The Society for Range Management Annual Meeting (Spokane, Washington, USA).
- 3 **Antaya, A. M.**, Mayer, B., Dalke, A., Blouin, C., Noelle, S., Blum, B., Justiniani, H. E., Lien, A., Beard, J., Soto, J., & Ruyle, G. (2023, October 21). *Evaluating Virtual Fence Technology to Improve Rangeland Condition, Enhance Animal Management, and Assess Economic Feasibility*. Poster. Research Insights in Semi-Arid Ecosystems (University of Arizona, Tucson, Arizona, USA).
- 4 **Antaya, A. M.**, Mayer, B., Dalke, A., Blouin, C., Noelle, S., Blum, B., Justiniani, H. E., Lien, A., Beard, J., Soto, J., & Ruyle, G. (2023, August 25). *Virtual Fence Applications on the Santa Rita Experimental Range*. Oral Presentation. Southern Arizona Cattleman's Protective Association (Santa Rita Ranch, Green Valley, Arizona, USA).
- 5 **Antaya, A. M.**, Brennan, J. R., & Menendez, H. M., III (2023, August 7). *From Raw Data Messages to Animal Energetics Models*. Webinar. Agriculture Genome to Phenome Initiative (AG2PI) Workshop 24 (Virtual).
- 6 Mayer, B., **Antaya, A.**, Blouin, C., Noelle, S., Blum, B., Lien, A., Beard, J. K., Soto, J., Justiniani, H. E., & Ruyle, G. (2023, April 13). *Virtual Fence Technology for Rangeland Livestock – What, How, Why and Should?* Workshop. Northeast Regional Range Livestock Workshop (Holbrook, Arizona, USA).
- 7 **Antaya, A.**, Mayer, B., Blouin, C., Noelle, S., Blum, B., Lien, A., Beard, J. K., Soto, J., Justiniani, H. E., & Ruyle, G. (2023, March 31). *Virtual Fence Technology for Rangeland Livestock – What, How, Why and Should?* Oral Presentation. Southeast Regional Range Livestock Workshop (Wilcox, Arizona, USA).
- 8 **Antaya, A. M.**, Mayer, B., Blouin, C., Noelle, S., Blum, B., Aaron Lien, Joslyn Beard, Jose Soto, Amber Dalke, Hector Elias Justiniani, & George Ruyle (2023, March 30). *Evaluating Virtual Fence Technology to Improve Rangeland Condition, Enhance Animal Management, and Assess Economic Feasibility*. Poster. Agriculture, Life and Veterinary Sciences, and Cooperative Extension Research Poster Forum (University of Arizona, Tucson, Arizona).
- 9 **Antaya, A. M.** (2023, February 12). *Invited Speaker Virtual Fence Data Workshop*. Oral Presentation. Virtual Fence In-Service Conference (Boise, Idaho, USA).
- 10 Noelle, S., Blouin, C., Mayer, B., **Antaya, A.**, & Ruyle, G. (2023, February 11). *Reflections on Virtual Fencing: Refining a Revolution in Rangelands*. Oral Presentation. Virtual Fence In-Service Conference (Boise, Idaho, USA).

- 11 Blum, B., **Antaya, A.**, Mayer, B., Bluoin, C., Noelle, S., Dalke, A., Beard, J., Lien, A., McClaran, M., & Ruyle, G. (2023, February 6). *Applications in Virtual Fencing*. Oral Presentation. Arizona Section Society for Range Management Winter Meeting (Maricopa Agricultural Experiment Station, Maricopa, Arizona, USA).
- 12 **Antaya, A.**, Mayer, B., Bluoin, C., Noelle, S., Blum, B., Dalke, A., Beard, J., Lien, A., & Ruyle, G. (2022, December 7). *Virtual Fence Applications and Considerations for Public Land Managers*. Webinar. USDA Geofencing Summit Webinar (Virtual).
- 13 **Antaya, A.**, Mayer, B., Bluoin, C., Noelle, S., Blum, B., Dalke, A., Beard, J., Lien, A., & Ruyle, G. (2022, December 6). *Virtual Fence Applications and Considerations for Public Land Managers*. Webinar. Kaibab National Forest Range Management Staff (Virtual).
- 14 Mayer, B., **Antaya, A. M.**, Dalke, A., Blouin, C., Noelle, S., Blum, B., Justiniani, H. E., Lien, A., Beard, J., Soto, J., & Ruyle, G. (2022, November 5). *Reflections on Virtual Fencing: Refining a Revolution in Rangelands*. Oral Presentation. Research Insights in Semi-Arid Ecosystems (University of Arizona, Tucson, Arizona, USA).
- 15 **Antaya, A.**, Mayer, B., Noelle, S., Bluoin, C., & Ruyle, G. (2022, April 21). *Heber Wild Horse Territory: Examining Use of Forage Resources*. Oral Presentation. Ranching Heritage Alliance (X Diamond Ranch, Eager, Arizona, USA).
- 16 **Antaya, A. M.**, & Ruyle, G. (2020, September 24). *Range Riders as Citizen Scientists*. Oral Presentation. Summer Meeting of the Arizona Section Society for Range Management (Virtual).
- 17 **Antaya, A. M.**, & Ruyle, G. (2020, January 21). *Adding Value to Range Rider Programs through Low-Cost, Scalable Citizen Science*. Oral Presentation. Winter Meeting of the Arizona Section Society for Range Management (Wickenburg, Arizona, USA).
- 18 **Antaya, A. M.**, Blum, B., Mayer, B., Noelle, S., & Ruyle, G. (2019, February 13). *Free-Roaming Horses in Montane Riparian Areas of Arizona: Examining Use of Forage Resources*. Oral Presentation. The Society for Range Management Annual Meeting (Minneapolis, Minnesota, USA).
- 19 **Antaya, A. M.**, Christianson, D., & Coleman, T. (2017, September 27). *Using Occupancy Models to Understand the Effects of Border-Related Human Activity on Desert Bighorn Sheep (*Ovis Canadensis Mexicana*)*. Poster. The Wildlife Society Conference (Albuquerque, New Mexico, USA).

Scientific Software

- 1 **Antaya, A.**, & Brennan, J. R. *Python API to Retrieve Data from Vence Corp. Virtual Fence Collars. Version 1.0.0*. Version v1.0.0.  <https://github.com/amantaya/Vence-API>
- 2 **Antaya, A. M.**, & Brennan, J. R. *R, Python, and Jupyter Notebook Files for the AG2PI Workshop*.  <https://github.com/amantaya/vf-workshop>
- 3 McMullen, L., & **Antaya, A.** *ArcPy (Jupyter) Notebook to Find the Optimal Location for Virtual Fence Base Stations v.0.1.0-Alpha*. Version 0.1.0-alpha.
- 4 **Antaya, A.** *R Scripts for Processing and Analyzing Camera Trap Photos and Vegetation Data from Grazing Studies*.  <https://github.com/amantaya/grazing-interaction>
- 5 **Antaya, A.** *Python API to Retrieve Data from Vence Corp. Virtual Fence Collars. Version 0.1.0-Beta*. Version v0.1.0-beta.
- 6 **Antaya, A. M.** *The Rangelands Literature Map of Arizona - A Pilot Project for Place-Based Knowledge*. Version v0.3.2.  <https://amantaya.github.io/RangelandsLiteratureMap/>
- 7 **Antaya, A.** *grazeR: R Package for Managing and Analyzing Data from Grazing Studies*.  <https://github.com/amantaya/grazeR>

Trainings/Workshops/Certifications

Trainings

07/24/2025	■	Preventing DNS Infrastructure Tampering Cyber Range Training (SS206) – Cybersecurity and Infrastructure Security Agency (4 hours) 🔗
7/22/2025	■	Living Off the Land (LOTL): An Intrusion Technique Overview (SS130) – Cybersecurity and Infrastructure Security Agency (1 hour)
7/17/2025	■	Implementing SaaS Security Guidelines Cyber Range Training (SS213) – Cybersecurity and Infrastructure Security Agency (4 hours) 🔗
7/03/2025	■	Understanding Indicators of Compromise (IR108) – Cybersecurity and Infrastructure Security Agency (1 hour) 🔗
6/24/2025	■	Using the CISA Incident Response Playbook at Your Organization (IR211) – Cybersecurity and Infrastructure Security Agency (4 hours) 🔗
6/10/2025	■	Understanding Indicators of Compromise Cyber Range Training (IR208) – Cybersecurity and Infrastructure Security Agency (4 hours) 🔗
6/09/2025	■	Integrating Cyber Threat Intelligence (IR119) – Cybersecurity and Infrastructure Security Agency (1 hour). 🔗
5/28/2025	■	Defend Against Ransomware Attacks (SS109) – Cybersecurity and Infrastructure Security Agency (1 hour). 🔗
5/22/2025	■	Introduction to Log Management Cyber Range Training (SS210) – Cybersecurity and Infrastructure Security Agency (4 hours). 🔗
5/15/2025	■	Incident Response Triage: Mitigation Cyber Range Training (IR218) – Cybersecurity and Infrastructure Security Agency (4 hours). 🔗
5/12/2025	■	Incident Response Triage: Mitigation (IR118) – Cybersecurity and Infrastructure Security Agency (1 hour). 🔗
4/01/2025	■	Introduction to Network Diagramming (SS107) – Cybersecurity and Infrastructure Security Agency (1 hour). 🔗
5/2022	■	CyVerse Advanced Container Camp – Dockerfiles, virtual machines (VM), High Performance Computing (HPC), Introduction to Kubernetes (3 days).
3/2021	■	CyVerse Container Camp – Docker Container basics (1 day).

Workshops

4/2023	■	2023 Research Bazaar – Instructor. Data science trainings and discussions (4 days).
5/2022	■	2022 Research Bazaar – Data science trainings and discussions (4 days).
5/2021	■	2021 Research Bazaar – Data science trainings and discussions (4 days).
2/2020	■	Python Image Processing Workshop – Machine learning package “scikit-learn” (2 days).
2/2020	■	Data Wrangling with Python Workshop – Introduction to shell, git, Python, and Jupyter Notebooks (2 days).

Certifications




1/2024	■	Human Research – Social and Behavioral Research Investigators CITI Program. 🔗
7/2023	■	SQL Essentials. LinkedIn Learning. 🔗
7/2021	■	Wildlife Research - Lab Animal Research CITI Program. 🔗
7/2021	■	Working with Cattle in Agricultural Research Settings CITI Program. 🔗

Trainings/Workshops/Certifications (continued)


7/2021  Working with the IACUC - Investigators, Staff and Students CITI Program. 

Service & Awards

Service

- Peer Reviewer**  *Rangelands, Rangeland Ecology and Management*
- Website Designer**  Arizona Section Society for Range Management
 azrangelands.org
- Committee Chair**  Public Relations and Media Outreach, Society for Range Management Annual Meeting 2022 Planning Committee

Awards

2023 Outstanding Service Award  *Arizona Section Society for Range Management*

References

Available on Request