



# 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.**, Dalke, A., Mayer, B., Blouin, C., Noelle, S., Blum, B., Beard, J. K., Ruyle, G., & Lien, A. (2025). Challenges and opportunities to leverage virtual fence data for rangeland management. *Rangelands*, 47(1), 16–23.  10.1016/j.rala.2024.05.003.
- 2   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](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.** (2025, June 3). *Application of Data Engineering Techniques to Manage Big Data in Precision Livestock Farming*. Conference. U.S. Precision Livestock Farming (Lincoln, Nebraska).
- 2 **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*. Conference. Research Insights in Semi-Arid Ecosystems (University of Arizona, Tucson, Arizona, 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, August 25). *Virtual Fence Applications on the Santa Rita Experimental Range*. Meeting. Southern Arizona Cattleman's Protective Association (Santa Rita Ranch, Green Valley, Arizona, USA).
- 4 **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).
- 5 Mayer, B., **Antaya, A.**, Blouin, C., Noelle, S., & Blum, B. (2023, April 13). *Virtual Fence Technology for Rangeland Livestock – What, How, Why and Should?* Workshop. Northeast Regional Range Livestock Workshop (Holbrook, Arizona, USA).
- 6 **Antaya, A.**, Mayer, B., Blouin, C., Noelle, S., & Blum, B. (2023, March 31). *Virtual Fence Technology for Rangeland Livestock – What, How, Why and Should?* Workshop. Southeast Regional Range Livestock Workshop (Wilcox, Arizona, USA).
- 7 **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).
- 8 **Antaya, A. M.** (2023, February 12). *Invited Speaker Virtual Fence Data Workshop*. Workshop. Virtual Fence In-Service Conference (Boise, Idaho, USA).
- 9 Noelle, S., Blouin, C., Mayer, B., **Antaya, A.**, & Ruyle, G. (2023, February 11). *Reflections on Virtual Fencing: Refining a Revolution in Rangelands*. Meeting. Virtual Fence In-Service Conference (Boise, Idaho, USA).
- 10 Blum, B., **Antaya, A.**, Mayer, B., Blouin, C., & Noelle, S. (2023, February 6). *Applications in Virtual Fencing*. Conference. Arizona Section Society for Range Management Winter Meeting (Maricopa Agricultural Experiment Station, Maricopa, Arizona, USA).
- 11 **Antaya, A.**, Mayer, B., Blouin, C., Noelle, S., & Blum, B. (2022, December 7). *Virtual Fence Applications and Considerations for Public Land Managers*. Webinar. USDA Geofencing Summit Webinar (Virtual).
- 12 **Antaya, A.**, Mayer, B., Blouin, C., Noelle, S., & Blum, B. (2022, December 6). *Virtual Fence Applications and Considerations for Public Land Managers*. Webinar. Kaibab National Forest Range Management Staff (Virtual).
- 13 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*. Conference. Research Insights in Semi-Arid Ecosystems (University of Arizona, Tucson, Arizona, USA).






- 14 **Antaya, A.**, Mayer, B., Noelle, S., Bluoin, C., & Ruyle, G. (2022, April 21). *Heber Wild Horse Territory: Examining Use of Forage Resources*. Meeting. Ranching Heritage Alliance (X Diamond Ranch, Eager, Arizona, USA).
- 15 **Antaya, A. M.**, & Ruyle, G. (2020, September 24). *Range Riders as Citizen Scientists*. Conference. Summer Meeting of the Arizona Section Society for Range Management (Virtual).
- 16 **Antaya, A. M.**, & Ruyle, G. (2020, January 21). *Adding Value to Range Rider Programs through Low-Cost, Scalable Citizen Science*. Conference. Winter Meeting of the Arizona Section Society for Range Management (Wickenburg, Arizona, USA).
- 17 **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*. Conference. The Society for Range Management Annual Meeting (Minneapolis, Minnesota, USA).
- 18 **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 v0.1.0-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

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| 6/24/2025 |  <b>Using the CISA Incident Response Playbook at Your Organization (IR211)</b> – Cybersecurity and Infrastructure Security Agency (4 hours) <a href="#">🔗</a> |
| 6/10/2025 |  <b>Understanding Indicators of Compromise Cyber Range Training (IR208)</b> – Cybersecurity and Infrastructure Security Agency (4 hours) <a href="#">🔗</a>    |
| 6/09/2025 |  <b>Integrating Cyber Threat Intelligence (IR119)</b> – Cybersecurity and Infrastructure Security Agency (1 hour). <a href="#">🔗</a>                          |
| 5/28/2025 |  <b>Defend Against Ransomware Attacks (SS109)</b> – Cybersecurity and Infrastructure Security Agency (1 hour). <a href="#">🔗</a>                              |
| 5/22/2025 |  <b>Introduction to Log Management Cyber Range Training (SS210)</b> – Cybersecurity and Infrastructure Security Agency (4 hours). <a href="#">🔗</a>           |






## Trainings/Workshops/Certifications (continued)

- 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 Diagraming (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. [🔗](#)
- 7/2021  **Working with the IACUC - Investigators, Staff and Students** CITI Program. [🔗](#)

## Service

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

## References

Available on Request